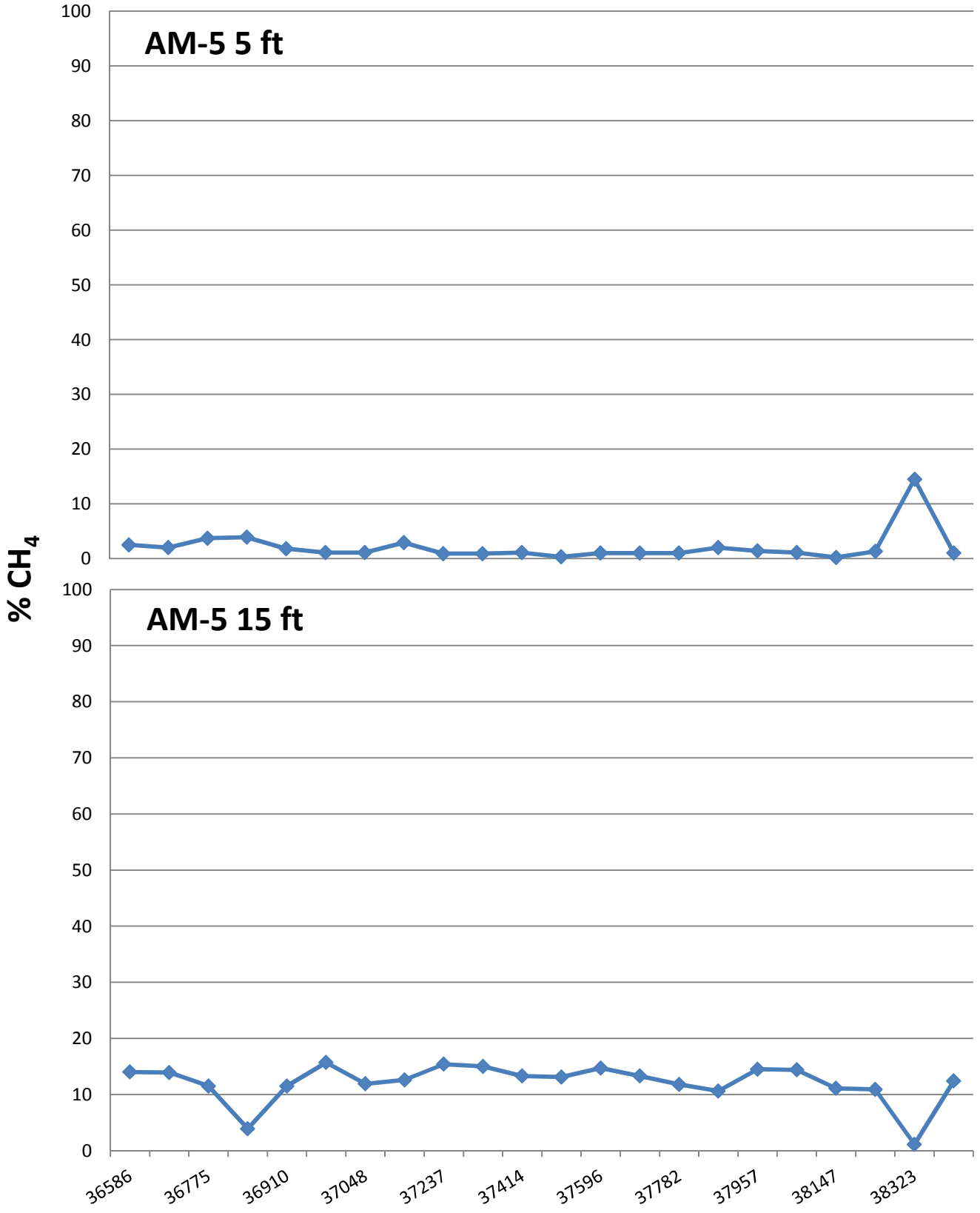
APPENDEX A

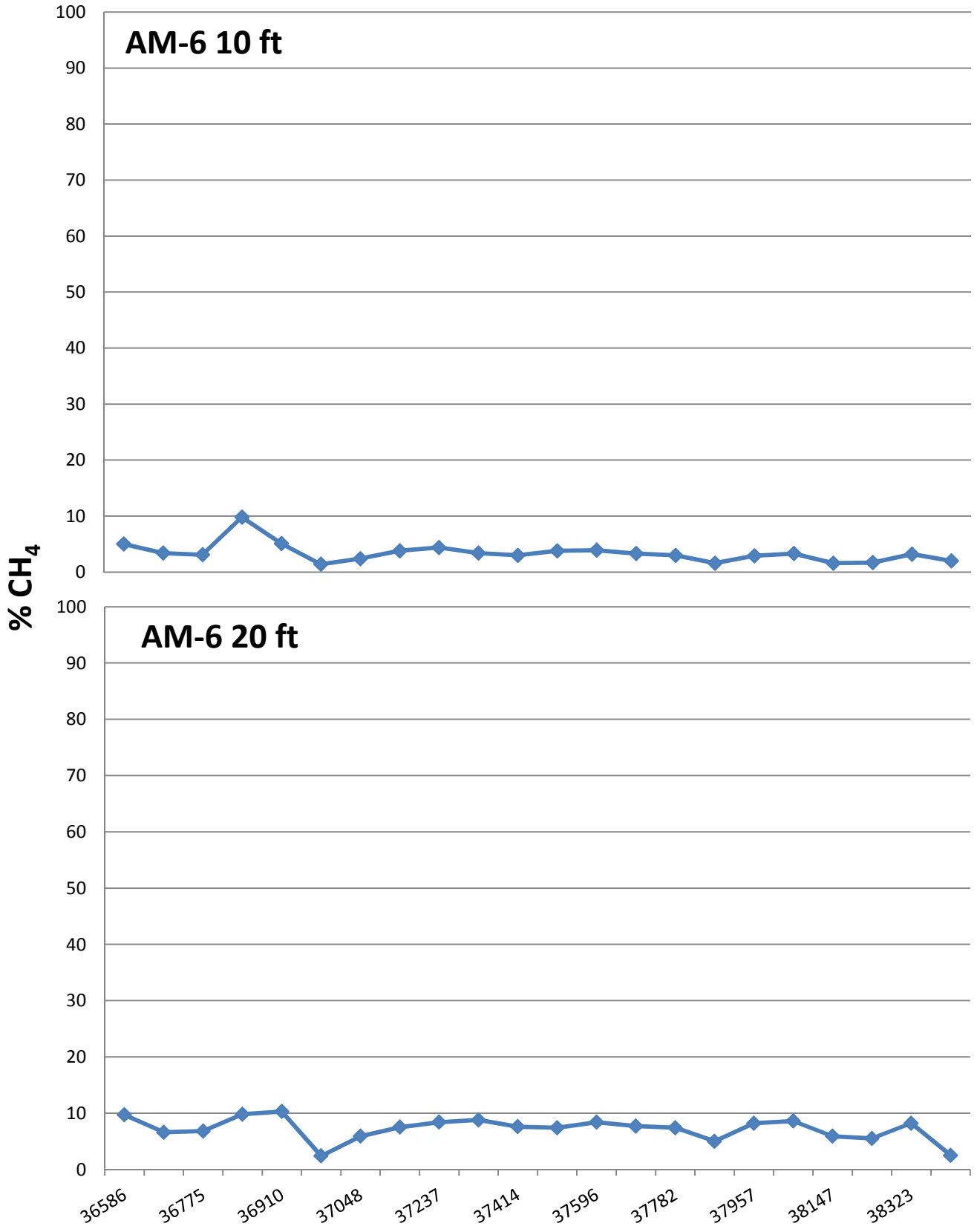
HISTORICAL METHANE MONITORING RESULTS



HYDRO GEO CHEM, INC.

PERCENT METHANE AT AM-5, 2000-2005
5 FT AND 15 FT BGS PROBES

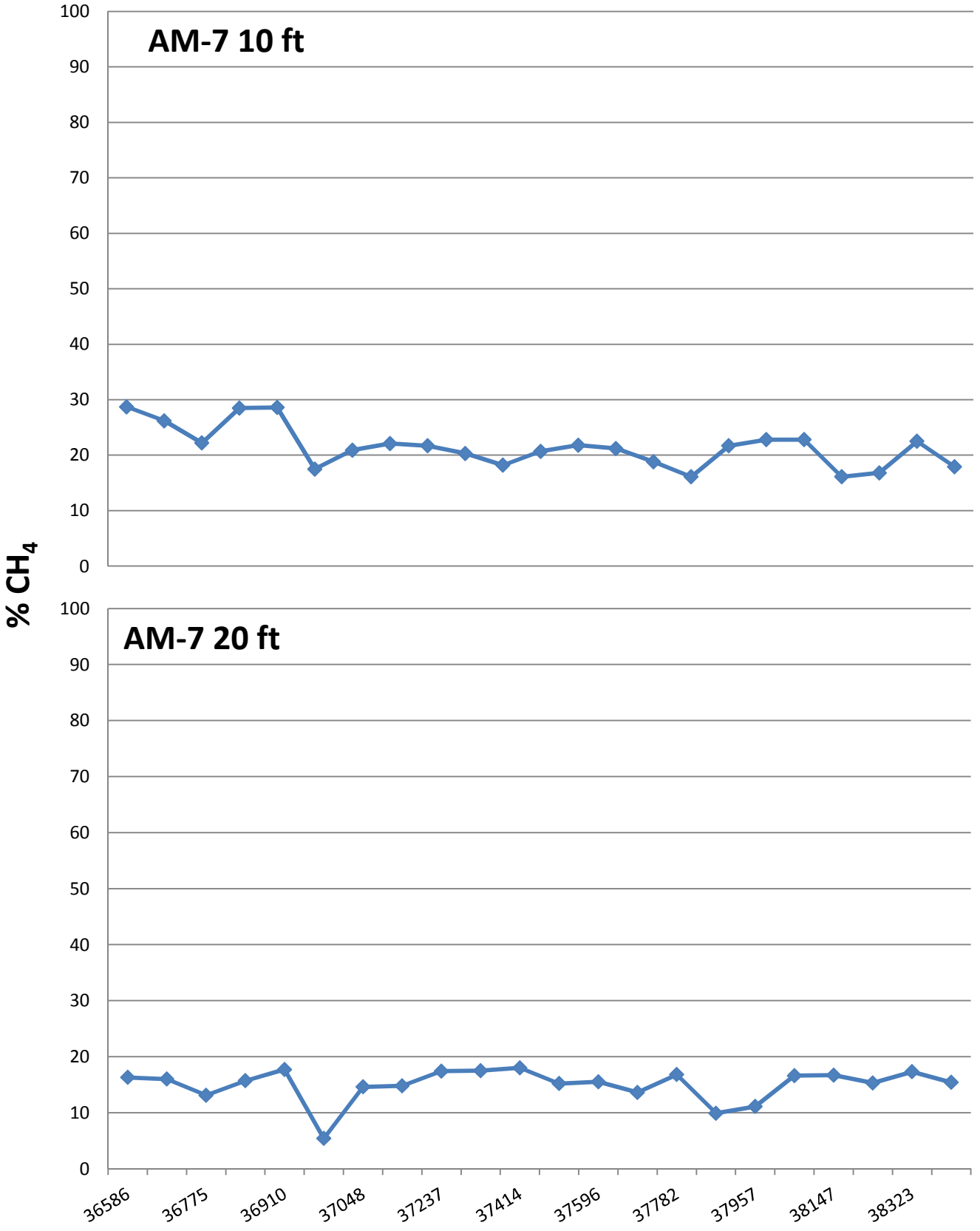
Approved	Date	Author	Date	File Name	Figure
MJB	4/27/15	GEM	4/17/15	201403703	A.1



HYDRO GEO CHEM, INC.

PERCENT METHANE AT AM-6, 2000-2005
10 FT AND 20 FT BGS PROBES

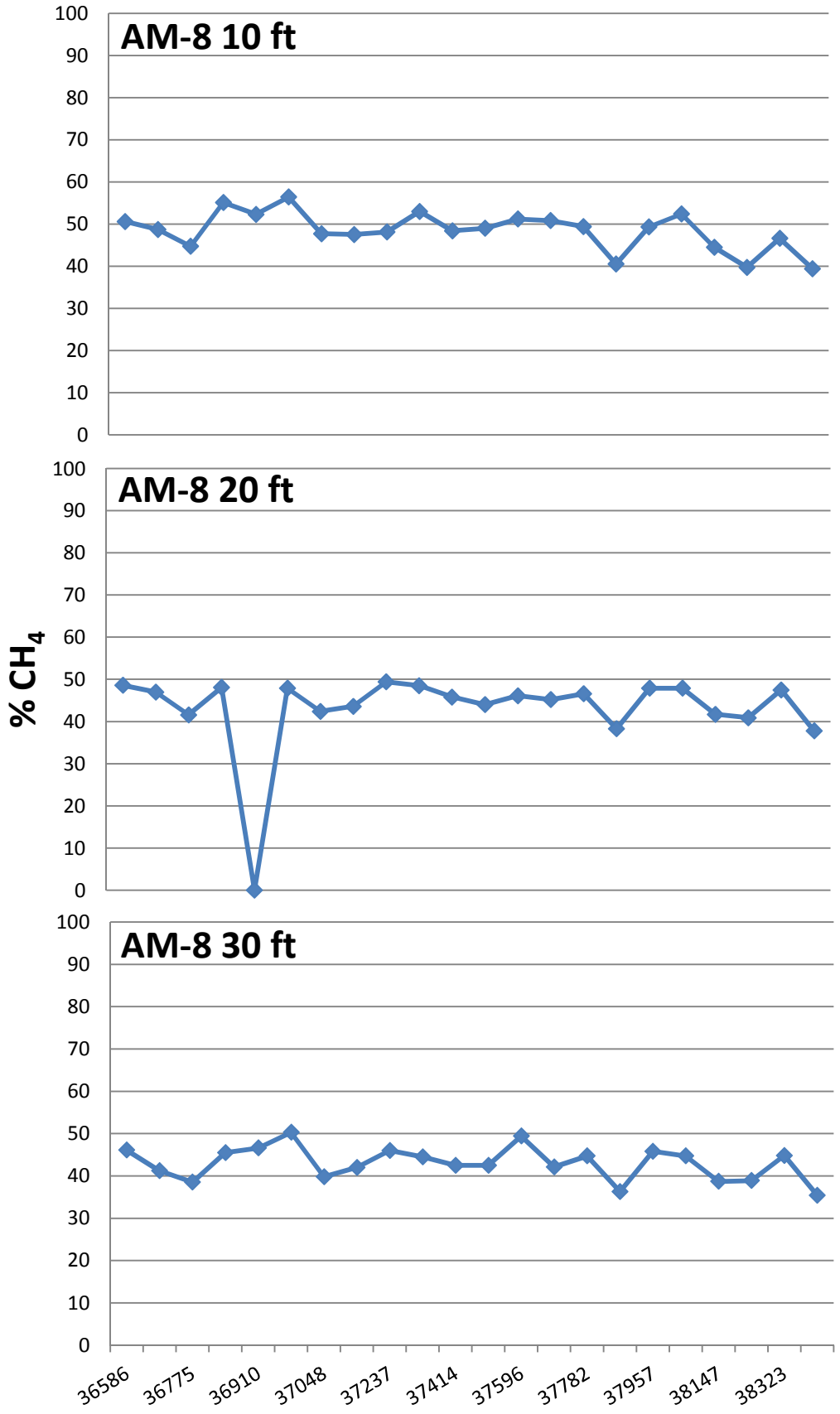
Approved	Date	Author	Date	File Name	Figure
MJB	4/27/15	GEM	4/17/15	201403704	A.2



HYDRO GEO CHEM, INC.

PERCENT METHANE AT AM-7, 2000-2005
10 FT AND 20 FT BGS PROBES

Approved	Date	Author	Date	File Name	Figure
MJB	4/27/15	GEM	4/17/15	201403705	A.3



HYDRO GEO CHEM, INC.

PERCENT METHANE AT AM-8, 2000-2005
10 FT, 20 FT AND 30 FT BGS PROBES

Approved	Date	Author	Date	File Name	Figure
MJB	4/27/15	GEM	4/17/15	201403706	A.4

H:\2014037.00 Rio Nuevo A Mtn landfill\Report\Appendicies\Appendix A - Historical CH4\AM-5-8 Figs.xlsx: FA.4 AM-8

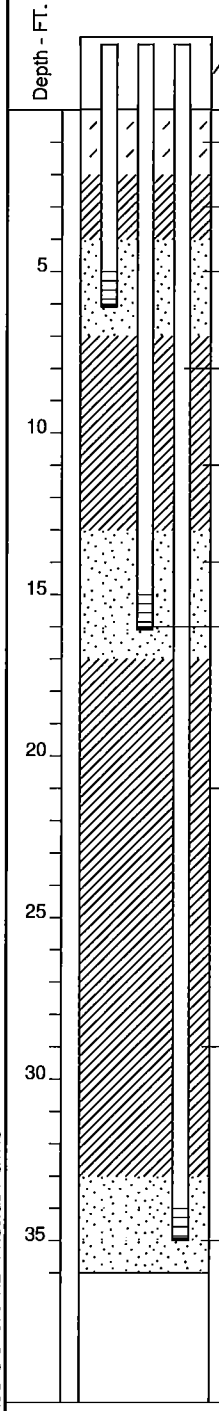
APPENDIX B

NESTED VAPOR PROBE CONSTRUCTION DIAGRAMS AND LITHOLOGIC LOGS

Project: Rio Nuevo "A" Mountain Landfill | Boring: **AMVP-1** | Pg. 1 of 1

Drilling Co:	Cascade Drilling - J. Cothron	Drilling Method:	Auger	Date Started:	2/23/15
Location:	~360 ft E of the Mission Gardens & ~250 ft S of Mission Lane	Sampler:	Grab	Date Completed:	2/23/15
		Desc. of Meas Pt:	Top of Outer Casing	Logged by:	W.Thompson
Land Surf. Elev:	2367.00	Meas. Pt. Elev:	2340	Reviewed by:	WT

WELL COMPLETION



Depth - FT.	Graphic Log	DESCRIPTION (see lithologic log for details)
		Silt with Sand - pinkish gray (7.5YR6/2); sand fraction is coarse to very fine grained, fairly well-graded through to silt fraction; gravel fraction to 3" diameter with few cobbles to 6" in diameter, subangular to rounded; loose mix; dry; strong reaction to HCl
		Silt - brown (7.5YR5/3); sand fraction is primarily very fine grained; gravel fraction to 1" max diameter, subangular to rounded; soft gritty texture; loose; dry; strong reaction to HCl
5		Refuse - dark gray (7.5YR4/1); primarily wood; some plastic and other household waste; highly decomposed; strong acidic odor; damp
10		
15		
20		
25		
30		
35		less wood fibers and more plastic
		Total Depth 36 ft bls

HYDRO GEO CHEM, INC.

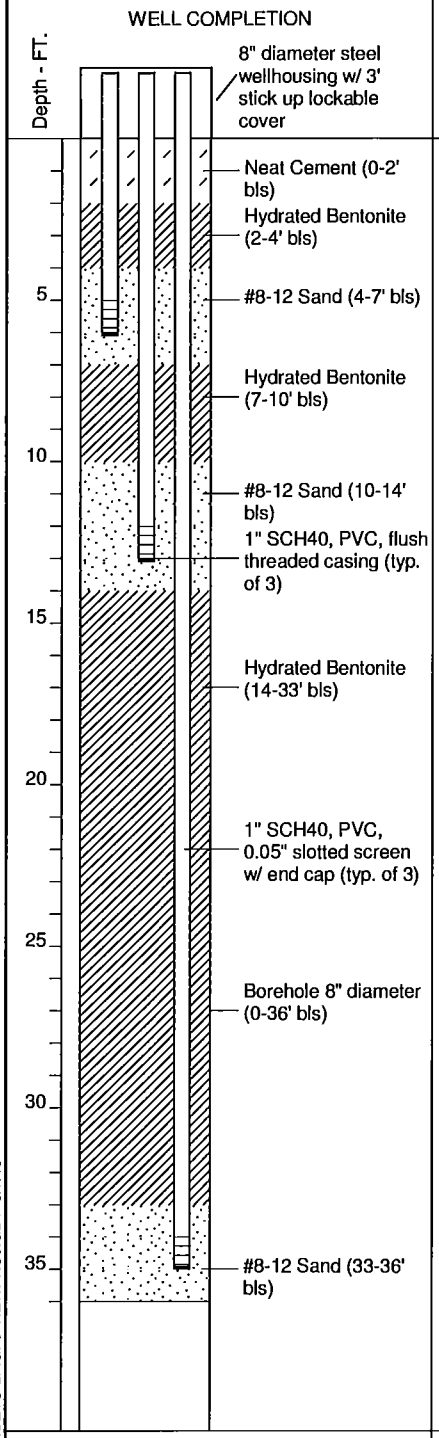
Lithologic Log and Well Construction Details of AMVP-1

Approved	Date	Revised	Date	Reference:	FIG.
MB	5/1/15	BDV	5/7/15		

HGC-WELL-IUC RIO NUEVO LF.GPJ NEWPROJ.GDT 5/7/15

Project:	Rio Nuevo "A" Mountain Landfill	Boring:	**AMVP-2**	Pg. 1 of 1	
Drilling Co:	Cascade Drilling - J. Cothron	Drilling Method:	Auger	Date Started:	2/24/15
Location:	~300 ft SE of AMVP-1	Sampler:	Grab	Date Completed:	2/24/15
		Desc. of Meas Pt:	Top of Outer Casing	Logged by:	W.Thompson
Land Surf. Elev:	2368.00	Meas. Pt. Elev:	2371	Reviewed by:	WT

WELL COMPLETION



Depth - FT.	Graphic Log	DESCRIPTION (see lithologic log for details)
		Sandy Silt with Gravel - light brown (7.5YR6/4) - sand fraction is medium to fine grained; gravel fraction to 2" max diameter, subrounded to rounded; loose mix; dry; strong reaction HCl
5		Silt with Sand - light brown (7.5YR6/4); sand fraction is medium to fine grained; gravel fraction to 2" max diameter, subrounded to rounded; loose mix; dry; strong reaction HCl
10		
		Refuse - very dark gray (7.5YR3/1); wood fibers, plastic, glass; mulch like texture; strong acidic odor; damp; strong reaction HCl
15		
20		
25		
30		
35		
		Total Depth 36 ft bls

HYDRO GEO CHEM, INC.

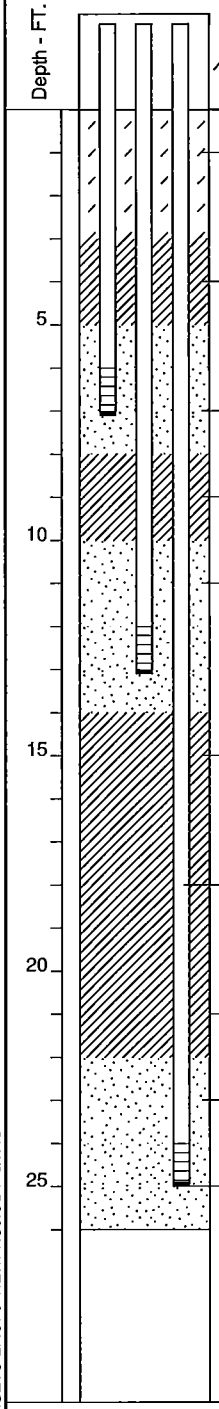
Lithologic Log and Well Construction Details of AMVP-2

Approved	Date	Revised	Date	Reference:	FIG.
MB	5/1/15	BDV	5/7/15		

HGC-WELL-IUC RIO NUEVO LF.GPJ NEWPROJ.GDT 5/7/15

Project:	Rio Nuevo "A" Mountain Landfill	Boring:	**AMVP-3**	Pg. 1 of 1	
Drilling Co:	Cascade Drilling - J. Cothron	Drilling Method:	Auger	Date Started:	2/25/15
Location:	~300 ft SE of Mission Gardens	Sampler:	Grab	Date Completed:	2/25/15
		Desc. of Meas Pt:	Top of Outer Casing	Logged by:	W.Thompson
Land Surf. Elev:	2362.00	Meas. Pt. Elev:	2365	Reviewed by:	WT

WELL COMPLETION



Depth - FT.	Graphic Log	DESCRIPTION (see lithologic log for details)
0–5		Silt with Sand - brown (10YR5/3); sand fraction is primarily fine to very fine grained; gravel fraction to 2" max diameter, subangular to rounded; soft; gritty flour like texture; loose mix; dry; strong reaction to HCl
5–26		Refuse - dark gray (7.5YR4/1); glass and metal shards, plastic, rubber and typical household waste
26		Total Depth 26 ft bls

HYDRO GEO CHEM, INC.

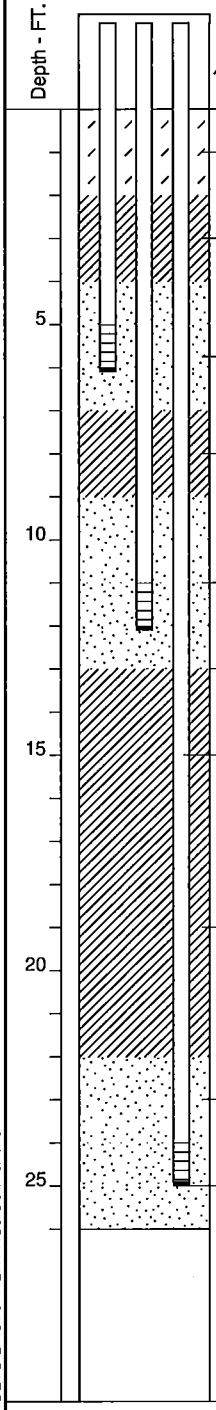
Lithologic Log and Well Construction Details of AMVP-3

Approved	Date	Revised	Date	Reference:	FIG.
MB	5/1/15	BDV	5/7/15		

HGC-WELL-IUC RIO NUEVO LF.GPJ NEWPROJ.GDT 5/7/15

Project:	Rio Nuevo "A" Mountain Landfill	Boring:	**AMVP-4**	Pg. 1 of 1	
Drilling Co:	Cascade Drilling - J. Cothron	Drilling Method:	Auger	Date Started:	2/24/15
Location:	~450 ft S of AMVP-2 amd ~35 ft W of perimeter road	Sampler:	Grab	Date Completed:	2/24/15
		Desc. of Meas Pt:	Top of Outer Casing	Logged by:	W.Thompson
Land Surf. Elev:	2370.00	Meas. Pt. Elev:	2370	Reviewed by:	WT

WELL COMPLETION



Depth - FT.	Graphic Log	DESCRIPTION (see lithologic log for details)
		Sandy Silt with Gravel - brown (7.5YR5/3); sand fraction is fine to very fine grained; gravel fraction to 1" max diameter, subangular to rounded; soft flour like texture; dry; strong reaction to HCl
5		Refuse - primarily plastic, glass, and typical household waste; damp; acidic odor; moderate reaction to HCl
		refuse becomes black; with mulch like texture
10		
15		
20		
25		
		Total Depth 26 ft bls

HYDRO GEO CHEM, INC.

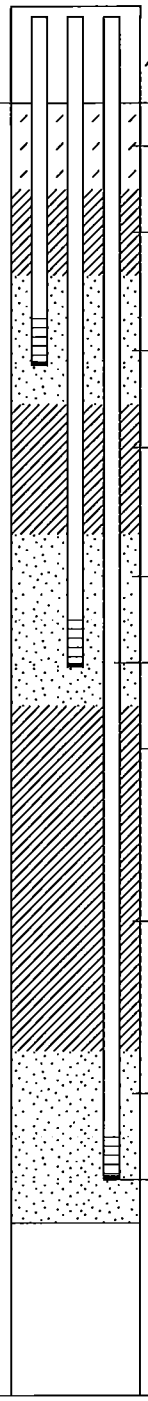
Lithologic Log and Well Construction Details of AMVP-4

Approved	Date	Revised	Date	Reference:	FIG.
MB	5/1/15	BDV	5/7/15		

HGC-WELL-IUC RIO NUEVO LF.GPJ NEWPROJ.GDT 5/7/15

Project:	Rio Nuevo "A" Mountain Landfill	Boring:	**AMVP-5**	Pg. 1 of 1	
Drilling Co:	Cascade Drilling - J. Cothron	Drilling Method:	Auger	Date Started:	2/26/15
Location:	~400 ft E of Mission Rd & ~350 ft S of Mission Gardens	Sampler:	Grab	Date Completed:	2/26/15
		Desc. of Meas Pt:	Top of Outer Casing	Logged by:	W.Thompson
Land Surf. Elev:	2366.00	Meas. Pt. Elev:	2369	Reviewed by:	WT

WELL COMPLETION



- 8" diameter steel wellhousing w/ 3' stick up lockable cover
- Neat Cement (0-2' bls)
- Hydrated Bentonite (2-4' bls)
- #8-12 Sand (4-7' bls)
- Hydrated Bentonite (7-9' bls)
- #8-12 Sand (9-13' bls)
- 1" SCH40, PVC, flush threaded casing (typ. of 3)
- 8" Borehole diameter (0-26' bls)
- Hydrated Bentonite (13-22' bls)
- #8-12 Sand (22-26' bls)
- 1" SCH40, PVC, 0.05" slotted screen w/ end cap (typ. of 3)

Depth - FT.	Graphic Log	DESCRIPTION (see lithologic log for details)
		Silt with Sand - yellowish brown (10YR5/4); sand fraction is fine to very fine grained; gravel fraction to 1" max diameter, subangular to rounded; gritty flour like texture; soft; loose mix; dry; strong reaction to HCl
		refuse present at about 20% silt/sand mix
5		Refuse - very dark gray (7.5YR3/1); wood fibers, plastic, glass, steel shards, rubber and typical household waste; mulch like texture; strong acidic odor; damp; moderate reaction to HCl
10		
15		
20		
25		
		Total Depth 26 ft bls

HYDRO GEO CHEM, INC.

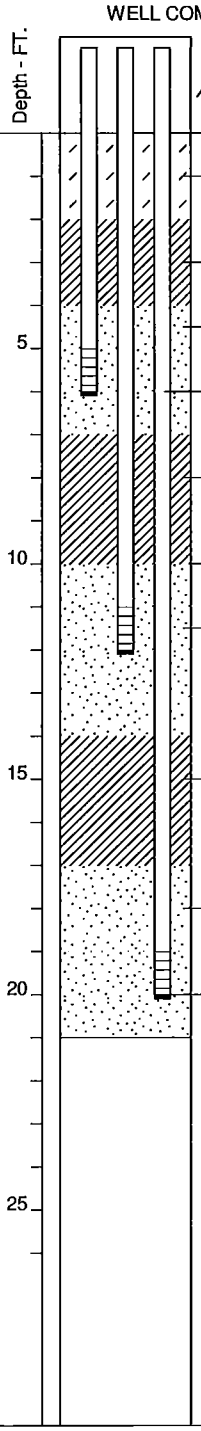
Lithologic Log and Well Construction Details of AMVP-5

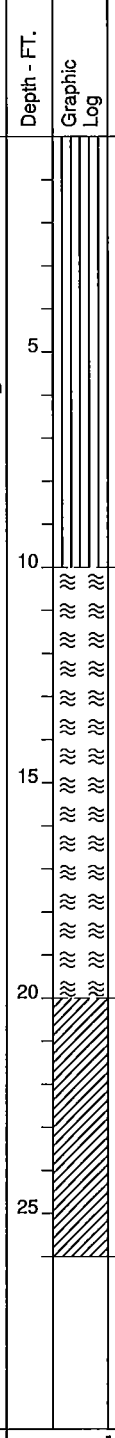
Approved	Date	Revised	Date	Reference:	FIG.
MB	5/1/15	BDV	5/7/15		

HGC-WELL-IUC RIO NUEVO LF.GPJ NEWPROJ.GDT 5/7/15

Project:	Rio Nuevo "A" Mountain Landfill	Boring:	**AMVP-6**	Pg. 1 of 1	
Drilling Co:	Cascade Drilling - J. Cothron	Drilling Method:	Auger	Date Started:	2/26/15
Location:	~120 ft E of Mission Rd & ~190 ft S of Mission Gardens	Sampler:	Grab	Date Completed:	2/26/15
		Desc. of Meas Pt:	Top of Outer Casing	Logged by:	W.Thompson
Land Surf. Elev:	2365.00	Meas. Pt. Elev:	2368	Reviewed by:	WT

WELL COMPLETION





DESCRIPTION
(see lithologic log for details)

Silt with Sand - yellowish brown (10YR5/4); sand fraction is fine to very fine grained; gravel fraction to 2" max diameter, subangular to rounded; gritty flour like texture; soft; loose mix; dry; strong reaction to HCl

decreased gravel and sand; corresponding increase in silt fraction

Refuse - very dark gray (7.5YR3/1); wood fibers, plastic, glass, metal shards; fairly decomposed; mulch like texture; acidic odor; damp; moderate reaction to HCl

Silty Clay - dark grayish brown (10YR4/2); sand fraction is very fine grained; very soft, moderately plastic, cohesive; moist; strong reaction to HCL; bottom of refuse layer

Total Depth 26 ft bls

HYDRO GEO CHEM, INC.

Lithologic Log and Well Construction Details of AMVP-6

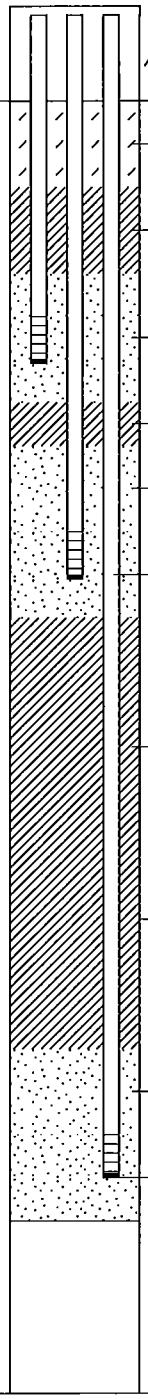
Approved	Date	Revised	Date	Reference:	FIG.
MB	5/1/15	BDV	5/7/15		

HGC-WELL-IUC RIO NUEVO LF.GPJ NEWPROJ.GDT 5/7/15

Project: Rio Nuevo "A" Mountain Landfill | Boring: **AMVP-7** | Pg. 1 of 1

Drilling Co:	Cascade Drilling - J. Cothron	Drilling Method:	Auger	Date Started:	2/25/15
Location:	~120 ft E Mission Rd & ~600 ft S of Mission Gardens	Sampler:	Grab	Date Completed:	2/25/15
		Desc. of Meas Pt:	Top of Outer Casing	Logged by:	W.Thompson
Land Surf. Elev:	2372.00	Meas. Pt. Elev:	2375	Reviewed by:	WT

WELL COMPLETION



- 8" diameter steel wellhousing w/ 3' stick up lockable cover
- Neat Cement (0-2' bls)
- Hydrated Bentonite (2-4' bls)
- #8-12 Sand (4-7' bls)
- Hydrated Bentonite (7-8' bls)
- #8-12 Sand (8-12' bls)
- 1" SCH40, PVC, flush threaded casing (typ. of 3)
- Hydrated Bentonite (12-22' bls)
- 8" Borehole diameter (0-26' bls)
- #8-12 Sand (22-26' bls)
- 1" SCH40, PVC, 0.05" slotted screen w/ end cap (typ. of 3)

Depth - FT. | Graphic Log | DESCRIPTION (see lithologic log for details)

Sandy Silt with Gravel - brown (7.5YR4/3); sand fraction is primarily fine grained; gravel fraction to 2" max diameter, subangular to rounded; gritty flour like texture; loose mix; dry; strong reaction to HCl

Silt - brown (7.5YR5/4); sand fraction is very fine, flour like texture; slightly damp; strong reaction to HCl

Refuse - wood fibers, glass, metal, plastic; fairly decomposed; mulch like texture; damp; strong reaction to HCl

Total Depth 26 ft bls

HYDRO GEO CHEM, INC.

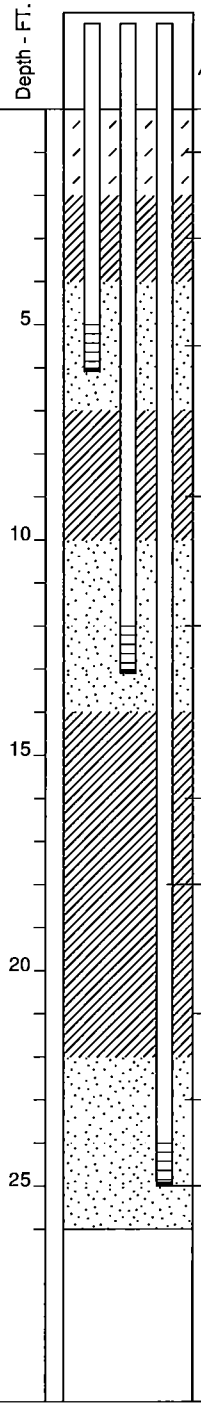
Lithologic Log and Well Construction Details of AMVP-7

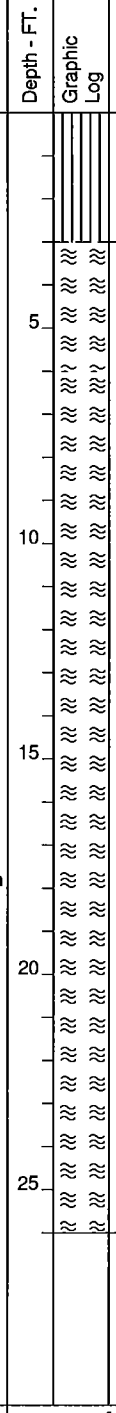
Approved	Date	Revised	Date	Reference:	FIG.
MB	5/1/15	BDV	5/7/15		

HGC-WELL-IUC RIO NUEVO LF.GPJ NEWPROJ.GDT 5/7/15

Project:	Rio Nuevo "A" Mountain Landfill	Boring:	**AMVP-8**	Pg. 1 of 1	
Drilling Co:	Cascade Drilling - J. Cothron	Drilling Method:	Auger	Date Started:	2/25/15
Location:	~450 ft E of Mission Rd & ~600 ft S of Mission Gardens	Sampler:	Grab	Date Completed:	2/25/15
		Desc. of Meas Pt:	Top of Outer Casing	Logged by:	W.Thompson
Land Surf. Elev:	2365.00	Meas. Pt. Elev:	2368	Reviewed by:	WT

WELL COMPLETION





DESCRIPTION
(see lithologic log for details)

Sandy Silt with Gravel - brown (10YR4/3); sand fraction is medium to very fine grained; gravel fraction to 2" max diameter, subangular to rounded; soft; loose mix; dry; strong reaction to HCl

Refuse - glass and metal shards, plastic and typical household waste; mixed with some soil as described above; very strong acidic odor

refuse only

Total Depth 26 ft bls

HYDRO GEO CHEM, INC.

Lithologic Log and Well Construction Details of AMVP-8

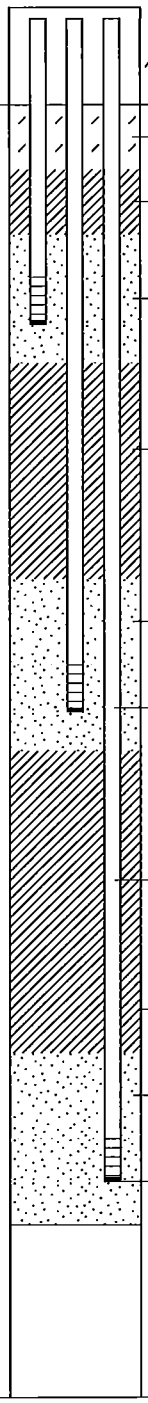
Approved	Date	Revised	Date	Reference:	FIG.
MB	5/1/15	BDV	5/7/15		

HGC-WELL-IUC RIO NUEVO LF.GPJ NEWPROJ.GDT 5/7/15

Project: Rio Nuevo "A" Mountain Landfill | Boring: **AMVP-9** | Pg. 1 of 1

Drilling Co:	Cascade Drilling - J. Cothron	Drilling Method:	Auger	Date Started:	2/24/15
Location:	~500 ft SW of AMVP-4 & ~900 ft SE of mission Gardens	Sampler:	Grab	Date Completed:	2/24/15
		Desc. of Meas Pt:	Top of Outer Casing	Logged by:	W.Thompson
Land Surf. Elev:	2367.00	Meas. Pt. Elev:	2367	Reviewed by:	WT

WELL COMPLETION



- 8" diameter steel wellhousing w/ 3' stick up lockable cover
- Neat Cement (0-1.5' bls)
- Hydrated Bentonite (1.5-3' bls)
- #8-12 Sand (3-6' bls)
- Hydrated Bentonite (6-11' bls)
- #8-12 Sand (11-15' bls)
- 1" SCH40, PVC, flush threaded casing (typ. of 3)
- Hydrated Bentonite (15-22' bls)
- 8" Borehole diameter (0-26' bls)
- #8-12 Sand (22-26' bls)
- 1" SCH40, PVC, 0.05" slotted screen w/ end cap (typ. of 3)

Depth - FT. | Graphic Log | DESCRIPTION (see lithologic log for details)

Sandy Silt with Gravel - brown (7.5YR4/4); sand fraction is primarily fine to very fine grained; gravel fraction to 2" max diameter, subangular to rounded; loose mix; gritty flour like texture; dry; strong reaction to HCl

Sandy Silt - brown (7.5YR4/4); sand fraction is fine to very fine grained; trace fine grained gravel to 3/4" max diameter, subangular to rounded; gritty flour like texture; small pieces of glass and metal; dry; strong reaction to HCl

Refuse - paper, glass, metal shards; typical household waste

Sandy Silt - brown (7.5YR4/4); sand fraction is very fine grained; loose mix; dry; strong reaction to HCl; refuse is absent

Refuse - paper, glass, metal shards; typical household waste

very dark gray (7.5YR3/1); fairly well decomposed into a mulch like texture; strong acidic odor; moist; strong reaction to HCl

Total Depth 26 ft bls

HYDRO GEO CHEM, INC.

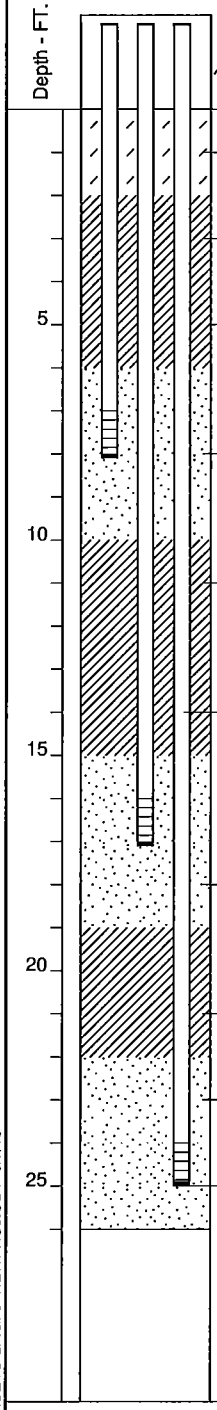
Lithologic Log and Well Construction Details of AMVP-9

Approved	Date	Revised	Date	Reference:	FIG.
MB	5/1/15	BDV	5/7/15		

HGC-WELL-IUC RIO NUEVO LF.GPJ NEWPROJ.GDT 5/7/15

Project:	Rio Nuevo "A" Mountain Landfill	Boring:	**AMVP-10**	Pg. 1 of 1	
Drilling Co:	Cascade Drilling - J. Cothron	Drilling Method:	Auger	Date Started:	2/25/15
Location:	~280 ft SE of AMVP-9	Sampler:	Grab	Date Completed:	2/25/15
		Desc. of Meas Pt:	Top of Outer Casing	Logged by:	W.Thompson
Land Surf. Elev:	2368.00	Meas. Pt. Elev:	2371	Reviewed by:	WT

WELL COMPLETION



Depth - FT.	Graphic Log	DESCRIPTION (see lithologic log for details)
		Silt with Sand - brown (7.5YR5/4); sand fraction is primarily very fine grained; gravel fraction to 2" max diameter, subangular to rounded; gritty flour like texture; dry; strong reaction to HCl
		Refuse - very dark gray (7.5YR3/1); wood fibers, plastic, glass and metal shards, typical household waste; fairly well decomposed to mulch like texture
		Total Depth 26 ft bls

HYDRO GEO CHEM, INC.

Lithologic Log and Well Construction Details of AMVP-10

Approved	Date	Revised	Date	Reference:	FIG.
MB	5/1/15	BDV	5/7/15		

HGC-WELL-IUC RIO NUEVO LF.GPJ NEWPROJ.GDT 5/7/15

APPENDIX C

FIELD FORMS FOR LANDFILL GAS SAMPLING

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-1

Project Name/Number: 2014037 Date: 3-16-15 Sampler: B. Vernar

PURGE CALCULATION

Casing Diameter ("d", in.): 1" Length of Air Column ("a", ft): ~~10~~ 6 Casing Volume: (a) X d^2 X 0.0055 = b: 0.06 ft^3

Purge Volume (b X 3) = c: 0.165 ft^3 Purge Rate ("e"): 2.0 ft^3/min Purge Time (c/e) = < 1 min

min.

16" Hg.

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 14:33 Time Completed: 14:36

Total Purge Time: ~~14:36~~ 3 min. Total Purge Volume: 6 ft^3

Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
14:34	7.8	18.3	3.4	~~landfill~~ decomposition smell
14:35	8.1	17.6	3.8	"
14:36	8.4	17.4	4.0	"

Calibration Check on Landfill
CH_4 50% = 52%
CO_2 35% = 35.2%

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: 14:36 Time Completed: 14:37 Sampling Method: Grab

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Notes
AMVP-1	14:36	Suma	1L	5101	EPA-3C	25	0	Regulator # 3711

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-2

Project Name/Number: 2014037 Date: 3-16-15 Sampler: BDV

PURGE CALCULATION

Casing Diameter ("d", in.): 1 Length of Air Column ("a", ft): 6 Casing Volume: (a) X d^2 X 0.0055 = b: 0.03 ft^3

Purge Volume (b X 3) = c: 0.9 ft^3 Purge Rate ("e"): 2 ft^3/min Purge Time (c/e) = <1 min

min.

16" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 15:15 Time Completed: 15:17

Total Purge Time: 2 min. Total Purge Volume: 4 ft^3

Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
15:15	0.8	2.7	4.7	strong decomp. odor
15:16	1.0	12.6	6.1	moderate " "
15:17	1.1	12.3	5.9	" " "

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: 15:18 Time Completed: 15:19 Sampling Method: Grab

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Regulator #
AMVP-2	15:18	Suma	1L	A7203	EPA-3C	27	0	7311

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-3

Project Name/Number: 2014037 Date: 3-16-15 Sampler: BDV

PURGE CALCULATION

Casing Diameter ("d", in.): 1" Length of Air Column ("a", ft): 7 Casing Volume: (a) X d^2 X 0.0055 = b: 0.04 ft^3

Purge Volume (b X 3) = c: 0.16 ft^3 Purge Rate ("e"): 2.0 ft^3/min Purge Time (c/e) = < 1-min min.

16" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 14:48 Time Completed: 14:51

Total Purge Time: 3-min min. Total Purge Volume: 6 ft^3

Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
14:48	2.1	18.6	2.6	
14:49	1.1	11.2	9.0	
14:50	1.0	10.9	9.0	

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: 14:51 Time Completed: 14:52 Sampling Method: Grab

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Regulator # Notes
AMVP-1	14:51	Suma	1L	A7000	EPA-3C	25	~2	7311

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-4

Project Name/Number: 2014037 Date: 3-16-15 Sampler: BDV

PURGE CALCULATION

Casing Diameter ("d", in.): 1" Length of Air Column ("a", ft): 6 Casing Volume: (a) X d^2 X 0.0055 = b: 0.03 ft^3

Purge Volume (b X 3) = c: 0.09 ft^3 Purge Rate ("e"): 2.0 ft^3/min Purge Time (c/e) = < 1 min.

16" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 15:03 Time Completed: 15:05

Total Purge Time: 2 min. Total Purge Volume: 4 ft^3

Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
15:03	0.5	14.2	6.4	decomposition odor
15:04	0.5	7.5	12.1	" "
15:05	0.6	7.2	12.3	Soil odor

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: 15:06 Time Completed: 15:07 Sampling Method: Grab

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Regulator #
AMVP-4	15:06	Suma	1L	A6770	EPA 3C	25	0	7311

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-5

Project Name/Number: 2014037 Date: 3-16-15 Sampler: BDV

PURGE CALCULATION

Casing Diameter ("d", in.): 1 Length of Air Column ("a", ft): 6 Casing Volume: (a) X d^2 X 0.0055 = b: 0.03 ft^3

Purge Volume (b X 3) = c: 0.09 ft^3 Purge Rate ("e"): 2 ft^3/min Purge Time (c/e) = < 1 min

min.

16" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: ~~13~~ 15:55 Time Completed: 15:57

Total Purge Time: 2 min. Total Purge Volume: 4 ft^3

Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
15:55	0.5	10.3	9.4	moderate decomp. odor
15:56	0.5	6.1	13.8	" " "
15:57	0.5	3.1	16.0	slight " "

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: 15:58 Time Completed: 15:59 Sampling Method: Grab

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Regulator
AMVP-5	15:58	Suma	1L	A6971	EPA 3C	25	~2	7311

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-6

Project Name/Number: 2014037 Date: 3-16-15 Sampler: BDV

PURGE CALCULATION

Casing Diameter ("d", in.): 1 Length of Air Column ("a", ft): 6 Casing Volume: (a) X d^2 X 0.0055 = b: 0.03 ft^3

Purge Volume (b X 3) = c: 0.09 ft^3 Purge Rate ("e"): 2 ft^3/min Purge Time (c/e) = < 1 min

min.

16" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 16:02 Time Completed: 16:04

Total Purge Time: 2 min. Total Purge Volume: 4 ft^3

Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
16:02	0.5	11.8	8.5	Strong decomp odor
16:03	0.5	1.4	17.5	no " "
16:04	0.5	1.3	17.6	" " "

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: 16:05 Time Completed: 16:06 Sampling Method: Grab

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Regulator
AMVP-6	16:05	Summa	1L	A6783	EPA-3C	25	0	

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-7

Project Name/Number: 2014037 Date: 3-16-15 Sampler: BDV

PURGE CALCULATION

Casing Diameter ("d", in.): 1 Length of Air Column ("a", ft): 6 Casing Volume: (a) X d^2 X 0.0055 = b: 0.03 ft^3

Purge Volume (b X 3) = c: 0.09 ft^3 Purge Rate ("e"): 2.0 ft^3/min Purge Time (c/e) = < 1 mm min.

16" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 13:40 Time Completed: 13:42

Total Purge Time: 2 min. Total Purge Volume: 4 ft^3

Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
13:40	0.5	10.0	10.5	moderate decomp odor
13:41	0.5	1.7	17.4	slight " "
13:42	0.5	1.2	17.6	" " "

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: 13:43 Time Completed: 13:44 Sampling Method: Grab

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Notes
AMVP-7	13:43	Summa	1L	1877	EPA 3C	25	-2	
				?				

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-8

Project Name/Number: 2014037 Date: 3-16-15 Sampler: BDV

PURGE CALCULATION

Casing Diameter ("d", in.): 1 Length of Air Column ("a", ft): 6 Casing Volume: (a) X d^2 X 0.0055 = b: 0.03 ft^3

Purge Volume (b X 3) = c: 0.09 ft^3 Purge Rate ("e"): 2 ft^3/min Purge Time (c/e) = < 1 min

min.

16" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 15:48 Time Completed: 15:50

Total Purge Time: 2 min. Total Purge Volume: 4 ft^3

Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
15:48	1.0	15.9	1.7	strong decomp odor
15:49	0.9	15.1	4.8	" " "
15:50	1.0	14.3	5.5	" " "

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: 15:51 Time Completed: 15:52 Sampling Method: Grab

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Regulator #
AMVP-8	15:51	Suma	1L	A6868	EPA-3C	25	~2	7311

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-9

Project Name/Number: 2014037 Date: 3-16-15 Sampler: JDV

PURGE CALCULATION

Casing Diameter ("d", in.): 1 Length of Air Column ("a", ft): 5 Casing Volume: (a) X d^2 X 0.0055 = b: 0.03 ft^3

Purge Volume (b X 3) = c: 0.09 ft^3 Purge Rate ("e"): 2 ft^3/min Purge Time (c/e) = < 1 min

min.

16" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: ~~15~~ 15:26 Time Completed: 15:28

Total Purge Time: 2 min. Total Purge Volume: 4 ft^3

Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
15:26	0.6	4.0	11.6	Strong decomp odor
15:27	0.6	7.5	11.2	moderate " "
15:28	0.6	7.4	11.3	" " "

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: 15:29 Time Completed: 15:30 Sampling Method: Grab

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Regulator Notes
AMVP-9	15:29	Summa	1L	A7195	EPA 3C	27	-2	7311

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-10

Project Name/Number: Date: 3-16-15 Sampler: BDV

PURGE CALCULATION

Casing Diameter ("d", in.): 1 Length of Air Column ("a", ft): 8 Casing Volume: (a) X d^2 X 0.0055 = b: 0.04 ft^3

Purge Volume (b X 3) = c: 0.13 ft^3 Purge Rate ("e"): 2.0 ft^3/min Purge Time (c/e) = < 1 min

min.

16" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 15:33 Time Completed: 15:35

Total Purge Time: 2 min. Total Purge Volume: 4 ft^3

Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
15:33	0.5	10.2	10.2	moderate decomp odor
15:34	0.5	5.7	13.8	slight " "
15:35	0.5	3.8	15.2	no odor

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: 15:36 Time Completed: 15:37 Sampling Method: Grab

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Regulator #
AMVP-10	15:36	Suma	1L	A6826	EPA 3C	27	4	J7311

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-1 s, m, d

Project Name/Number: 2014037 Date: 3-18-15 Sampler: BDV

B Deepest 1 probe

PURGE CALCULATION

Casing Diameter ("d", in.): 1 Length of Air Column ("a", ft): 35 Casing Volume: (a) X d^2 X 0.0055 = b: 0.2 ft^3

Purge Volume (b X 3) = c: 0.6 ft^3 Purge Rate ("e"): 3 ft^3/min Purge Time (c/e) = < 1 mm min.

10" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 13:28, 13:31, 13:36 Time Completed: 13:30, 13:33, 13:38

Total Purge Time: each probe 2 min. Total Purge Volume: 6 ft^3

	Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
1s	13:30	7.0	19.0	3.1	
1m	13:33	31.8	27.6	0.0	
1d	13:38	24.2	25.5	0.0	

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: _____ Time Completed: _____ Sampling Method: _____

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Notes

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-2 s,m,d

Project Name/Number: 201403T Date: 3-18-15 Sampler: BDV

PURGE CALCULATION

Dampest

Casing Diameter ("d", in.): 1 Length of Air Column ("a", ft): 35 Casing Volume: (a) X d^2 X 0.0055 = b: 0.2 ft^3

Purge Volume (b X 3) = c: 0.6 ft^3 Purge Rate ("e"): 3 ft^3/min Purge Time (c/e) = < 1-min min.

10"Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 13:50, 13:53, 13:56 Time Completed: 13:52, 13:55, 13:58

Total Purge Time: each probe 2 min. Total Purge Volume: 6 ft^3

	Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
2s	13:52	0.8	13.6	5.7	
2m	13:55	7.3	20.5	0.4	
2d	13:58	55.6	35.5	0.0	

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: _____ Time Completed: _____ Sampling Method: _____

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Notes

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-3s,m,d

Project Name/Number: 2014037 Date: 3-18-15 Sampler: BDV

PURGE CALCULATION

Deepest

Casing Diameter ("d", in.): 1 Length of Air Column ("a", ft): 25 Casing Volume: (a) X d^2 X 0.0055 = b: 0.14 ft^3

Purge Volume (b X 3) = c: 0.41 ft^3 Purge Rate ("e"): 3 ft^3/min Purge Time (c/e) = < 1mm min.

10" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 13:40, 13:43, 13:46 Time Completed: 13:42, 13:45, 13:48

Total Purge Time: each well 2 min. Total Purge Volume: 6 ft^3

	Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
3s	13:42	0.7	11.7	9.3	
3m	13:45	4.3	21.6	0.0	
3d	13:48	7.0	23.4	0.0	

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: _____ Time Completed: _____ Sampling Method: _____

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Notes

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-4s,m,d

Project Name/Number: 2014037 Date: 3-18-14 Sampler: BDV

PURGE CALCULATION

Casing Diameter ("d", in.): 1 (Deepest) Length of Air Column ("a", ft): 20 Casing Volume: (a) X d^2 X 0.0055 = b: 0.11 ft^3

Purge Volume (b X 3) = c: 0.33 ft^3 Purge Rate ("e"): 3 ft^3/min Purge Time (c/e) = < 1 min

min.

10"Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 13:59, 14:02, 14:05 Time Completed: 14:01, 14:04, 14:07

Total Purge Time: each probe 2 min. Total Purge Volume: 6 ft^3

	Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
4s	14:01	0.2	8.3	12.5	
4m	14:04	7.4	21.1	0.0	
4d	14:07	12.7	23.9	0.0	

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: _____ Time Completed: _____ Sampling Method: _____

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Notes

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-5 s,m,d

Project Name/Number: 2014037 Date: 3-18-15 Sampler: BDV

PURGE CALCULATION

Casing Diameter ("d", in.): 1 (Deepest) Length of Air Column ("a", ft): 25 Casing Volume: (a) X d^2 X 0.0055 = b: 0.14 ft^3

Purge Volume (b X 3) = c: 0.41 ft^3 Purge Rate ("e"): 3 ft^3/min Purge Time (c/e) = < 1 mm min.

10" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 14:45, 14:48, 14:51 Time Completed: 14:47, 14:50, 14:53

Total Purge Time: each probe 2 min. Total Purge Volume: 6 ft^3

	Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
5s	14:47	0.2	3.5	16.9	
5m	14:50	3.3	19.9	0.9	
5d	14:53	6.0	22.8	0.0	

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: _____ Time Completed: _____ Sampling Method: _____

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Notes

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-6 s,m,d

Project Name/Number: 2014037 Date: 3-18-15 Sampler: BDV

Deepest

PURGE CALCULATION

Casing Diameter ("d", in.): 1 Length of Air Column ("a", ft): 20 Casing Volume: (a) X d^2 X 0.0055 = b: 0.11 ft^3

Purge Volume (b X 3) = c: 0.33 ft^3 Purge Rate ("e"): 3 ft^3/min Purge Time (c/e) = < 1 min

min.

10" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 14:54, 14:57, 15:00 Time Completed: 14:56, 14:59, 15:02

Total Purge Time: each probe 2 min. Total Purge Volume: 6 ft^3

	Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
6s	14:56	0.2	1.6	18.4	
6m	14:59	0.5	9.8	10.9	
6d	15:02	1.4	16.1	4.3	

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: _____ Time Completed: _____ Sampling Method: _____

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Notes

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-7s, m, d

Project Name/Number: 2014037 Date: 3-18-15 Sampler: BDV

PURGE CALCULATION

Casing Diameter ("d", in.): Dupest 1 Length of Air Column ("a", ft): 25 Casing Volume: (a) X d^2 X 0.0055 = b: 0.14 ft^3

Purge Volume (b X 3) = c: 0.41 ft^3 Purge Rate ("e"): 2.5 ft^3/min Purge Time (c/e) = < 1 min min.

12" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 14:27, 14:30, 14:33 Time Completed: 14:29, 14:32, 14:35

Total Purge Time: each probe 2 min. Total Purge Volume: 5 ft^3

	Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
7s	14:29	0.2	1.5	19.2	
7m	14:32	0.6	15.9	5.1	
7d	14:35	2.1	21.2	0.0	

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: _____ Time Completed: _____ Sampling Method: _____

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Notes

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-8,s,m,d

Project Name/Number: 2014037 Date: 3-18-15 Sampler: BDV

PURGE CALCULATION

Casing Diameter ("d", in.): 1 (Dampost) Length of Air Column ("a", ft): 25 Casing Volume: (a) X d^2 X 0.0055 = b: 0.14 ft^3

Purge Volume (b X 3) = c: 0.41 ft^3 Purge Rate ("e"): 3.0 ft^3/min Purge Time (c/e) = < 1 min

min.

10" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 14:36, 14:39, 14:42 Time Completed: 14:38; 14:41, 14:44

Total Purge Time: each probe 2 min. Total Purge Volume: 6 ft^3

	Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
8s	14:38	0.8	14.4	6.0	
8m	14:41	7.3	23.0	0.0	
8d	14:44	9.3	24.0	0.0	

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: _____ Time Completed: _____ Sampling Method: _____

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Notes

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-9s,md

Project Name/Number: 2014037 Date: 3-18-15 Sampler: BDV

PURGE CALCULATION

Casing Diameter ("d", in.): 1 (Deepest) Length of Air Column ("a", ft): 25 Casing Volume: (a) X d^2 X 0.0055 = b: 0.14 ft^3

Purge Volume (b X 3) = c: 0.41 ft^3 Purge Rate ("e"): 3 ft^3/min Purge Time (c/e) = < 1-min min.

10" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 14:09, 14:12, 14:15 Time Completed: 14:11, 14:14, 14:17

Total Purge Time: each probe 2 min. Total Purge Volume: 6 ft^3

	Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
9s	14:09	0.2	8.4	12.1	
9m	14:14	1.7	21.0	0.0	
9d	14:17	8.1	23.7	0.0	

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: _____ Time Completed: _____ Sampling Method: _____

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Notes

HYDRO GEO CHEM, INC.

Soil Vapor Sampling Form

Well ID: AMVP-10s, m, d

Project Name/Number: 2014037 Date: 3-18-15 Sampler: BDV

PURGE CALCULATION

Casing Diameter ("d", in.): 1 (decapost) Length of Air Column ("a", ft): 25 Casing Volume: (a) X d^2 X 0.0055 = b: 0.14 ft^3

Purge Volume (b X 3) = c: 0.41 ft^3 Purge Rate ("e"): 3 ft^3/min Purge Time (c/e) = <1-min min.

10" Hg

PURGE INFORMATION AND FIELD MEASUREMENTS

Time Started: 14:18, 14:21, 14:24 Time Completed: 14:20, 14:23, 14:26

Total Purge Time: each probe 2 min. Total Purge Volume: 6 ft^3

	Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Notes
10s	14:20	0.2	4.5	16	
10m	14:23	1.7	20.4	0.0	
10d	14:26	2.8	22.2	0.0	

SAMPLING INFORMATION AND SAMPLE RECORD

Time Started: _____ Time Completed: _____ Sampling Method: _____

Sample No.	Time	Container Type	Volume	Serial Number	Analysis Method	Start Pressure	End Pressure	Notes

APPENDIX D

LABORATORY REPORT FOR LANDFILL GAS SAMPLING

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

TestAmerica Job ID: 320-12151-1
TestAmerica Sample Delivery Group: Rio Nuevo
Client Project/Site: Landfill Gases

For:
Hydro Geo Chem
51 W. Wetmore Rd, Suite 101
Tucson, Arizona 85706

Attn: Mike Barden

Authorized for release by:
3/30/2015 3:45:45 PM

Vic Nielsen, Project Manager II
(602)437-3340
vic.nielsen@testamericainc.com

LINKS

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Have a Question? Ask The Expert

Visit us at: www.testamericainc.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.

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Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
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)

Job ID: 320-12151-1

Laboratory: TestAmerica Sacramento

Narrative

Job Narrative
320-12151-1

Comments
No additional comments.

Receipt
The samples were received on 3/18/2015 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice.

Except:
The canister IDs listed on the CoC are incorrect . Samples are logged in based on the IDs on the canisters and not the CoC.

Air - GC 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: Hydro Geo Chem
Project/Site: Landfill Gases

TestAmerica Job ID: 320-12151-1
SDG: Rio Nuevo

Client Sample ID: AMVP-1 — Lab Sample ID: 320-12151-1

Analyte	Result ppm v/v	Result Qualifier	RL ppm v/v	MDL ppm v/v	Dil Fac	Method	Prep Type
CH4-TCD	82000		10000		2.03	EPA 3C	Total/NA
CO2-TCD	190000		10000		2.03	EPA 3C	Total/NA
Oxygen	45000		4100		2.03	EPA 3C	Total/NA

Client Sample ID: AMVP-3 — Lab Sample ID: 320-12151-2

Analyte	Result ppm v/v	Result Qualifier	RL ppm v/v	MDL ppm v/v	Dil Fac	Method	Prep Type
CH4-FID	6100		21		21	EPA 3C	Total/NA
CO2-TCD	120000		11000		2.1	EPA 3C	Total/NA
Oxygen	100000		4200		2.1	EPA 3C	Total/NA

Client Sample ID: AMVP-4 — Lab Sample ID: 320-12151-3

Analyte	Result ppm v/v	Result Qualifier	RL ppm v/v	MDL ppm v/v	Dil Fac	Method	Prep Type
CH4-FID	190		2.1		2.09	EPA 3C	Total/NA
CO2-TCD	81000		10000		2.09	EPA 3C	Total/NA
Oxygen	140000		4200		2.09	EPA 3C	Total/NA

Client Sample ID: AMVP-2 — Lab Sample ID: 320-12151-4

Analyte	Result ppm v/v	Result Qualifier	RL ppm v/v	MDL ppm v/v	Dil Fac	Method	Prep Type
CH4-FID	6500		20		19.9	EPA 3C	Total/NA
CO2-TCD	140000		10000		1.99	EPA 3C	Total/NA
Oxygen	71000		4000		1.99	EPA 3C	Total/NA

Client Sample ID: AMVP-9 — Lab Sample ID: 320-12151-5

Analyte	Result ppm v/v	Result Qualifier	RL ppm v/v	MDL ppm v/v	Dil Fac	Method	Prep Type
CH4-FID	38		2.2		2.15	EPA 3C	Total/NA
CO2-TCD	87000		11000		2.15	EPA 3C	Total/NA
Oxygen	130000		4300		2.15	EPA 3C	Total/NA

Client Sample ID: AMVP-10 — Lab Sample ID: 320-12151-6

Analyte	Result ppm v/v	Result Qualifier	RL ppm v/v	MDL ppm v/v	Dil Fac	Method	Prep Type
CH4-FID	13		2.2		2.22	EPA 3C	Total/NA
CO2-TCD	45000		11000		2.22	EPA 3C	Total/NA
Oxygen	170000		4400		2.22	EPA 3C	Total/NA

Client Sample ID: AMVP-7 — Lab Sample ID: 320-12151-7

Analyte	Result ppm v/v	Result Qualifier	RL ppm v/v	MDL ppm v/v	Dil Fac	Method	Prep Type
CH4-FID	18		2.2		2.22	EPA 3C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: AMVP-7 (Continued) — Lab Sample ID: 320-12151-7

Analyte	Result ppm v/v	Result Qualifier	RL ppm v/v	MDL ppm v/v	Dil Fac	Method	Prep Type
CO2-TCD	16000		11000		2.22	EPA 3C	Total/NA
Oxygen	200000		4400		2.22	EPA 3C	Total/NA

Client Sample ID: AMVP-8 — Lab Sample ID: 320-12151-8

Analyte	Result ppm v/v	Result Qualifier	RL ppm v/v	MDL ppm v/v	Dil Fac	Method	Prep Type
CH4-FID	4500		21		21.4	EPA 3C	Total/NA
CO2-TCD	150000		11000		2.14	EPA 3C	Total/NA
Oxygen	70000		4300		2.14	EPA 3C	Total/NA

Client Sample ID: AMVP-5 — Lab Sample ID: 320-12151-9

Analyte	Result ppm v/v	Result Qualifier	RL ppm v/v	MDL ppm v/v	Dil Fac	Method	Prep Type
CH4-FID	51		2.0		2.02	EPA 3C	Total/NA
CO2-TCD	37000		10000		2.02	EPA 3C	Total/NA
Oxygen	180000		4000		2.02	EPA 3C	Total/NA

Client Sample ID: AMVP-6 — Lab Sample ID: 320-12151-10

Analyte	Result ppm v/v	Result Qualifier	RL ppm v/v	MDL ppm v/v	Dil Fac	Method	Prep Type
CH4-FID	54		2.1		2.06	EPA 3C	Total/NA
CO2-TCD	17000		10000		2.06	EPA 3C	Total/NA
Oxygen	200000		4100		2.06	EPA 3C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Hydro Geo Chem
Project/Site: Landfill Gases

TestAmerica Job ID: 320-12151-1
SDG: Rio Nuevo

Client Sample ID: AMVP-1

Lab Sample ID: 320-12151-1

Date Collected: 03/16/15 14:37
Matrix: Air
Date Received: 03/18/15 09:20
Sample Container: Summa Canister 1L

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result ppm v/v	Result	Qualifier	RL ppm v/v	MDL ppm v/v	Prepared	Analyzed	Dil Fac
CH4-TCD	82000			10000			03/23/15 11:49	2.03
CO2-TCD	190000			10000			03/23/15 11:49	2.03
Oxygen	45000			4100			03/23/15 11:49	2.03

Client Sample ID: AMVP-3

Lab Sample ID: 320-12151-2

Date Collected: 03/16/15 14:52
Matrix: Air
Date Received: 03/18/15 09:20
Sample Container: Summa Canister 1L

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result ppm v/v	Result	Qualifier	RL ppm v/v	MDL ppm v/v	Prepared	Analyzed	Dil Fac
CH4-FID	6100			21			03/24/15 09:16	21
CO2-TCD	120000			11000			03/23/15 12:12	2.1
Oxygen	100000			4200			03/23/15 12:12	2.1

Client Sample ID: AMVP-4

Lab Sample ID: 320-12151-3

Date Collected: 03/16/15 15:07
Matrix: Air
Date Received: 03/18/15 09:20
Sample Container: Summa Canister 1L

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result ppm v/v	Result	Qualifier	RL ppm v/v	MDL ppm v/v	Prepared	Analyzed	Dil Fac
CH4-FID	190			2.1			03/24/15 09:41	2.09
CO2-TCD	81000			10000			03/23/15 12:41	2.09
Oxygen	140000			4200			03/23/15 12:41	2.09

Client Sample ID: AMVP-2

Lab Sample ID: 320-12151-4

Date Collected: 03/16/15 15:19
Matrix: Air
Date Received: 03/18/15 09:20
Sample Container: Summa Canister 1L

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result ppm v/v	Result	Qualifier	RL ppm v/v	MDL ppm v/v	Prepared	Analyzed	Dil Fac
CH4-FID	6500			20			03/24/15 10:14	19.9
CO2-TCD	140000			10000			03/23/15 13:44	1.99
Oxygen	71000			4000			03/23/15 13:44	1.99

Client Sample Results

Client: Hydro Geo Chem
Project/Site: Landfill Gases

TestAmerica Job ID: 320-12151-1
SDG: Rio Nuevo

Client Sample ID: AMVP-9

Lab Sample ID: 320-12151-5

Date Collected: 03/16/15 15:30
Matrix: Air
Date Received: 03/18/15 09:20
Sample Container: Summa Canister 1L

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result ppm v/v	Result	Qualifier	RL ppm v/v	MDL ppm v/v	Prepared	Analyzed	Dil Fac
CH4-FID	38			2.2			03/24/15 10:40	2.15
CO2-TCD	87000			11000			03/23/15 14:22	2.15
Oxygen	130000			4300			03/23/15 14:22	2.15

Client Sample ID: AMVP-10

Lab Sample ID: 320-12151-6

Date Collected: 03/16/15 15:37
Matrix: Air
Date Received: 03/18/15 09:20
Sample Container: Summa Canister 1L

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result ppm v/v	Result	Qualifier	RL ppm v/v	MDL ppm v/v	Prepared	Analyzed	Dil Fac
CH4-FID	13			2.2			03/24/15 11:06	2.22
CO2-TCD	45000			11000			03/23/15 14:51	2.22
Oxygen	170000			4400			03/23/15 14:51	2.22

Client Sample ID: AMVP-7

Lab Sample ID: 320-12151-7

Date Collected: 03/16/15 15:44
Matrix: Air
Date Received: 03/18/15 09:20
Sample Container: Summa Canister 1L

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result ppm v/v	Result	Qualifier	RL ppm v/v	MDL ppm v/v	Prepared	Analyzed	Dil Fac
CH4-FID	18			2.2			03/24/15 11:32	2.22
CO2-TCD	16000			11000			03/23/15 15:10	2.22
Oxygen	200000			4400			03/23/15 15:10	2.22

Client Sample ID: AMVP-8

Lab Sample ID: 320-12151-8

Date Collected: 03/16/15 15:52
Matrix: Air
Date Received: 03/18/15 09:20
Sample Container: Summa Canister 1L

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result ppm v/v	Result	Qualifier	RL ppm v/v	MDL ppm v/v	Prepared	Analyzed	Dil Fac
CH4-FID	4500			21			03/24/15 12:00	21.4
CO2-TCD	150000			11000			03/23/15 15:39	2.14
Oxygen	70000			4300			03/23/15 15:39	2.14

Client Sample Results

Client: Hydro Geo Chem
Project/Site: Landfill Gases

TestAmerica Job ID: 320-12151-1
SDG: Rio Nuevo

Client Sample ID: AMVP-5

Lab Sample ID: 320-12151-9

Date Collected: 03/16/15 15:59
Matrix: Air
Date Received: 03/18/15 09:20
Sample Container: Summa Canister 1L

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result ppm v/v	Result	Qualifier	RL ppm v/v	MDL ppm v/v	Prepared	Analyzed	Dil Fac
CH4-FID	51			2.0			03/24/15 12:36	2.02
CO2-TCD	37000			10000			03/23/15 16:03	2.02
Oxygen	180000			4000			03/23/15 16:03	2.02

Client Sample ID: AMVP-6

Lab Sample ID: 320-12151-10

Date Collected: 03/16/15 16:06
Matrix: Air
Date Received: 03/18/15 09:20
Sample Container: Summa Canister 1L

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result ppm v/v	Result	Qualifier	RL ppm v/v	MDL ppm v/v	Prepared	Analyzed	Dil Fac
CH4-FID	54			2.1			03/24/15 13:38	2.06
CO2-TCD	17000			10000			03/23/15 16:24	2.06
Oxygen	200000			4100			03/23/15 16:24	2.06

Method: EPA 3C - Fixed Gases from Stationary Sources

Lab Sample ID: MB 320-69043/7 — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 69043

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
CH4-TCD	ND		5000		ppm v/v			03/23/15 11:35	1
CO2-TCD	ND		5000		ppm v/v			03/23/15 11:35	1
Oxygen	ND		2000		ppm v/v			03/23/15 11:35	1

Lab Sample ID: LCS 320-69043/3 — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 69043

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
CH4-TCD	115000	122000		ppm v/v		106	80 - 120
CO2-TCD	281000	276000		ppm v/v		98	80 - 120

Lab Sample ID: LCS 320-69043/5 — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 69043

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Oxygen	218000	210000		ppm v/v		96	80 - 120

Lab Sample ID: LCSD 320-69043/4 — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 69043

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
CH4-TCD	115000	122000		ppm v/v		106	80 - 120
CO2-TCD	281000	276000		ppm v/v		98	80 - 120

Lab Sample ID: LCSD 320-69043/6 — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 69043

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Oxygen	218000	211000		ppm v/v		97	80 - 120

Lab Sample ID: MB 320-69154/4 — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 69154

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
CH4-FID	ND		1.0		ppm v/v			03/24/15 09:00	1

Lab Sample ID: LCS 320-69154/2 — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 69154

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
CH4-FID	250	228		ppm v/v		91	80 - 120

Method: EPA 3C - Fixed Gases from Stationary Sources (Continued)

Lab Sample ID: LCSD 320-69154/3
Matrix: Air
Analysis Batch: 69154

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
CH4-FID	250	230		ppm v/v		92	80 - 120

QC Association Summary

Client: Hydro Geo Chem
Project/Site: Landfill Gases

TestAmerica Job ID: 320-12151-1
SDG: Rio Nuevo

Air - GC VOA

Analysis Batch: 69043

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-12151-1	AMVP-1	Total/NA	Air	EPA 3C	
320-12151-2	AMVP-3	Total/NA	Air	EPA 3C	
320-12151-3	AMVP-4	Total/NA	Air	EPA 3C	
320-12151-4	AMVP-2	Total/NA	Air	EPA 3C	
320-12151-5	AMVP-9	Total/NA	Air	EPA 3C	
320-12151-6	AMVP-10	Total/NA	Air	EPA 3C	
320-12151-7	AMVP-7	Total/NA	Air	EPA 3C	
320-12151-8	AMVP-8	Total/NA	Air	EPA 3C	
320-12151-9	AMVP-5	Total/NA	Air	EPA 3C	
320-12151-10	AMVP-6	Total/NA	Air	EPA 3C	
LCS 320-69043/3	Lab Control Sample	Total/NA	Air	EPA 3C	
LCS 320-69043/5	Lab Control Sample	Total/NA	Air	EPA 3C	
LCSD 320-69043/4	Lab Control Sample	Total/NA	Air	EPA 3C	
LCSD 320-69043/6	Lab Control Sample	Total/NA	Air	EPA 3C	
MB 320-69043/7	Method Blank	Total/NA	Air	EPA 3C	

Analysis Batch: 69154

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-12151-2	AMVP-3	Total/NA	Air	EPA 3C	
320-12151-3	AMVP-4	Total/NA	Air	EPA 3C	
320-12151-4	AMVP-2	Total/NA	Air	EPA 3C	
320-12151-5	AMVP-9	Total/NA	Air	EPA 3C	
320-12151-6	AMVP-10	Total/NA	Air	EPA 3C	
320-12151-7	AMVP-7	Total/NA	Air	EPA 3C	
320-12151-8	AMVP-8	Total/NA	Air	EPA 3C	
320-12151-9	AMVP-5	Total/NA	Air	EPA 3C	
320-12151-10	AMVP-6	Total/NA	Air	EPA 3C	
LCS 320-69154/2	Lab Control Sample	Total/NA	Air	EPA 3C	
LCSD 320-69154/3	Lab Control Sample	Total/NA	Air	EPA 3C	
MB 320-69154/4	Method Blank	Total/NA	Air	EPA 3C	

Lab Chronicle

Client: Hydro Geo Chem
Project/Site: Landfill Gases

TestAmerica Job ID: 320-12151-1
SDG: Rio Nuevo

Client Sample ID: AMVP-1

Lab Sample ID: 320-12151-1
Date Collected: 03/16/15 14:37
Matrix: Air
Date Received: 03/18/15 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 3C		2.03	50 mL	50 mL	69043	03/23/15 11:49	TAD	TAL SAC

Client Sample ID: AMVP-3

Lab Sample ID: 320-12151-2
Date Collected: 03/16/15 14:52
Matrix: Air
Date Received: 03/18/15 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 3C		21	50 mL	50 mL	69154	03/24/15 09:16	TAD	TAL SAC
Total/NA	Analysis	EPA 3C		2.1	50 mL	50 mL	69043	03/23/15 12:12	TAD	TAL SAC

Client Sample ID: AMVP-4

Lab Sample ID: 320-12151-3
Date Collected: 03/16/15 15:07
Matrix: Air
Date Received: 03/18/15 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 3C		2.09	50 mL	50 mL	69154	03/24/15 09:41	TAD	TAL SAC
Total/NA	Analysis	EPA 3C		2.09	50 mL	50 mL	69043	03/23/15 12:41	TAD	TAL SAC

Client Sample ID: AMVP-2

Lab Sample ID: 320-12151-4
Date Collected: 03/16/15 15:19
Matrix: Air
Date Received: 03/18/15 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 3C		19.9	50 mL	50 mL	69154	03/24/15 10:14	TAD	TAL SAC
Total/NA	Analysis	EPA 3C		1.99	50 mL	50 mL	69043	03/23/15 13:44	TAD	TAL SAC

Client Sample ID: AMVP-9

Lab Sample ID: 320-12151-5
Date Collected: 03/16/15 15:30
Matrix: Air
Date Received: 03/18/15 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 3C		2.15	50 mL	50 mL	69154	03/24/15 10:40	TAD	TAL SAC
Total/NA	Analysis	EPA 3C		2.15	50 mL	50 mL	69043	03/23/15 14:22	TAD	TAL SAC

Client Sample ID: AMVP-10

Lab Sample ID: 320-12151-6
Date Collected: 03/16/15 15:37
Matrix: Air
Date Received: 03/18/15 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 3C		2.22	50 mL	50 mL	69154	03/24/15 11:06	TAD	TAL SAC
Total/NA	Analysis	EPA 3C		2.22	50 mL	50 mL	69043	03/23/15 14:51	TAD	TAL SAC

Lab Chronicle

Client: Hydro Geo Chem
Project/Site: Landfill Gases

TestAmerica Job ID: 320-12151-1
SDG: Rio Nuevo

Client Sample ID: AMVP-7

Lab Sample ID: 320-12151-7

Date Collected: 03/16/15 15:44
Matrix: Air
Date Received: 03/18/15 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 3C		2.22	50 mL	50 mL	69154	03/24/15 11:32	TAD	TAL SAC
Total/NA	Analysis	EPA 3C		2.22	50 mL	50 mL	69043	03/23/15 15:10	TAD	TAL SAC

Client Sample ID: AMVP-8

Lab Sample ID: 320-12151-8

Date Collected: 03/16/15 15:52
Matrix: Air
Date Received: 03/18/15 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 3C		21.4	50 mL	50 mL	69154	03/24/15 12:00	TAD	TAL SAC
Total/NA	Analysis	EPA 3C		2.14	50 mL	50 mL	69043	03/23/15 15:39	TAD	TAL SAC

Client Sample ID: AMVP-5

Lab Sample ID: 320-12151-9

Date Collected: 03/16/15 15:59
Matrix: Air
Date Received: 03/18/15 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 3C		2.02	50 mL	50 mL	69154	03/24/15 12:36	TAD	TAL SAC
Total/NA	Analysis	EPA 3C		2.02	50 mL	50 mL	69043	03/23/15 16:03	TAD	TAL SAC

Client Sample ID: AMVP-6

Lab Sample ID: 320-12151-10

Date Collected: 03/16/15 16:06
Matrix: Air
Date Received: 03/18/15 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 3C		2.06	50 mL	50 mL	69154	03/24/15 13:38	TAD	TAL SAC
Total/NA	Analysis	EPA 3C		2.06	50 mL	50 mL	69043	03/23/15 16:24	TAD	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Certification Summary

Client: Hydro Geo Chem
Project/Site: Landfill Gases

TestAmerica Job ID: 320-12151-1
SDG: Rio Nuevo

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-16
Alaska (UST)	State Program	10	UST-055	12-18-15
Arizona	State Program	9	AZ0708	08-11-15
Arkansas DEQ	State Program	6	88-0691	06-17-15
California	State Program	9	2897	01-31-16
Colorado	State Program	8	N/A	08-31-15
Connecticut	State Program	1	PH-0691	06-30-15
Florida	NELAP	4	E87570	06-30-15
Hawaii	State Program	9	N/A	01-29-16
Illinois	NELAP	5	200060	03-17-16
Kansas	NELAP	7	E-10375	10-31-15
Louisiana	NELAP	6	30612	06-30-15
Michigan	State Program	5	9947	01-31-16
Nevada	State Program	9	CA44	07-31-15
New Jersey	NELAP	2	CA005	06-30-15
New York	NELAP	2	11666	04-01-15
Oregon	NELAP	10	CA200005	01-29-16
Oregon	NELAP Secondary AB	10	E87570	06-30-15
Pennsylvania	NELAP	3	9947	03-31-16
Texas	NELAP	6	T104704399-08-TX	05-31-15
US Fish & Wildlife	Federal		LE148388-0	02-28-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	QUAN1	02-28-16
Washington	State Program	10	C581	05-05-15
West Virginia (DW)	State Program	3	9930C	12-31-15
Wyoming	State Program	8	8TMS-Q	01-29-16

Laboratory: TestAmerica Phoenix

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Arizona	State Program	9	AZ0728	06-09-15

Method Summary

Client: Hydro Geo Chem
Project/Site: Landfill Gases

TestAmerica Job ID: 320-12151-1
SDG: Rio Nuevo

Method	Method Description	Protocol	Laboratory
EPA 3C	Fixed Gases from Stationary Sources	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Hydro Geo Chem
Project/Site: Landfill Gases

TestAmerica Job ID: 320-12151-1
SDG: Rio Nuevo

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-12151-1	AMVP-1	Air	03/16/15 14:37	03/18/15 09:20
320-12151-2	AMVP-3	Air	03/16/15 14:52	03/18/15 09:20
320-12151-3	AMVP-4	Air	03/16/15 15:07	03/18/15 09:20
320-12151-4	AMVP-2	Air	03/16/15 15:19	03/18/15 09:20
320-12151-5	AMVP-9	Air	03/16/15 15:30	03/18/15 09:20
320-12151-6	AMVP-10	Air	03/16/15 15:37	03/18/15 09:20
320-12151-7	AMVP-7	Air	03/16/15 15:44	03/18/15 09:20
320-12151-8	AMVP-8	Air	03/16/15 15:52	03/18/15 09:20
320-12151-9	AMVP-5	Air	03/16/15 15:59	03/18/15 09:20
320-12151-10	AMVP-6	Air	03/16/15 16:06	03/18/15 09:20

TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
phone 916 374 4378 fax 916 372 1059

Canister Samples Chain of Custody Record

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact Information	Project Manager: Mike Barder	Samples Collected By: Benjamin Vernon	COC No
Company Name: HydroGeoChemy	Phone:		1 of 1 COCs
Address: 51 W Wilmot Rd #101	Email: M.Ke@HGCinc.com		
City/State/Zip: Tucson AZ 85705			For Lab Use Only:
Phone: 520 293 1500	Site Contact:		Walk-in Client
FAX: 520 293 1550	TA Contact:		Lab Sampling:
Project Name: Rio Nuevo	Anaylsis Turnaround Time		
Site/Location: Tucson AZ	Standard (Specific): X		Job / SDG No.:
P O # 2014037	Rush (Specify)		(See below for Add'l Items)

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, 'Hg (Start)'	Canister Vacuum in Field, 'Hg (Stop)'	Flow Controller ID	Canister ID	TO-15 (Med / Std / Low / SIM)	MA-APH	EPA 3C	EPA 25C / 25 3	ASTM D-1946 / 1945 / 3588	EPA 15/16	TO-3	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)	Sample Specific Notes:
AMVP-1	3-16	14:36	14:37	25	0	7311	5101			X										X		
AMVP-3		14:51	14:52	25	~2		A7000			X										X		
AMVP-4		15:06	15:07	25	~1		A6770			X										X		
AMVP-2		15:18	15:19	27	0		A7203			X										X		
AMVP-9		15:29	15:30	27	~2		A7195			X										X		
AMVP-10		15:36	15:37	27	4		A6826			X										X		
AMVP-7		15:43	15:44	25	~2		1877			X										X		Serial # on Summa Canister Cracked
AMVP-8		15:51	15:52	25	~2		A6868			X										X		
AMVP-5		15:58	15:59	25	~2		A6971			X										X		
AMVP-6	↓	16:05	16:06	25	0	↓	A6783			X										X		

Temperature (Fahrenheit)			
Start	Interior	Ambient	
Stop			

Temperature (Fahrenheit)			
Start	Interior	Ambient	
Stop			

320-12151 Chain of Custody

Special Instructions/QC Requirements & Comments:

Samples Shipped by:	Date / Time:	Samples Received by:
Samples Relinquished by:	Date / Time: 3-17-15 / 8:35	Received by: 3-17-15 835
Relinquished by:	Date / Time: 3-17-15 15 30	Received by: AMTechum AMS 3/18/15 920
Lab Use Only: Shipper Name:	Opened by:	Condition:

Form No. CA-C-WI-003, Rev. 1, dated 05/10/2013

20°

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CANISTER FIELD DATA RECORD

Sacramento

JOB # 320-12151
Sample # 1

Client/Project:		VFR ID:		
Canister Serial #:	34001947	Duration:		☐ Hrs ☐ Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY			
READING	PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT
☐ Helium Pre-dilution - Final Pressure (INCHES Hg)			
INITIAL PRESSURE (PSIA)	12.49	03/23/15	ep
FINAL PRESSURE (PSIA)	25.34	03/23/15	ep
Pressurization Gas: ☐ N2 ☐ He	SCREENED ☐	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor = 2.03			

CANISTER REPRESSURIZATION

Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.03		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors

								Date	Instr.	File #	
Canister DF =	2.03	X	Load DF =	#DIV/0!	X	Bag DF =	1		=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.03	X	Load DF =	#DIV/0!	X	Bag DF =	1		=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.03	X	Load DF =	#DIV/0!	X	Bag DF =	1		=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CANISTER FIELD DATA RECORD

Sacramento

JOB # 320-12151
Sample # 2

Client/Project:		VFR ID:		
Canister Serial #:	34000904	Duration:		☐ Hrs ☐ Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY			
READING	PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT
☐ Helium Pre-dilution - Final Pressure (INCHES Hg)			
INITIAL PRESSURE (PSIA)	11.93	03/23/15	ep
FINAL PRESSURE (PSIA)	25.07	03/23/15	ep
Pressurization Gas: ☐ N2 ☐ He	SCREENED ☐	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor = 2.10			

CANISTER REPRESSURIZATION

Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.10		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors

							Date	Instr.	File #		
							3/24/2015	ATGC1			
Canister DF =	2.10	X	Load DF =	10	X	Bag DF =	1	=	FINAL DF 21.01424979		
			LVf (mLs)	50		BVf (mLs)					
			LVi (mLs)	5		Bvi (mLs)					
							Date	Instr.	File #		
Canister DF =	2.10	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF #DIV/0!		
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					
							Date	Instr.	File #		
Canister DF =	2.10	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF #DIV/0!		
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CANISTER FIELD DATA RECORD

Sacramento

JOB # 320-12151
Sample # 3

Client/Project:		VFR ID:		
Canister Serial #:	34000964	Duration:		☐ Hrs ☐ Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY			
READING	PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT
☐ Helium Pre-dilution - Final Pressure (INCHES Hg)			
INITIAL PRESSURE (PSIA)	12.00	03/23/15	ep
FINAL PRESSURE (PSIA)	25.12	03/23/15	ep
Pressurization Gas: ☐ N2 ☐ He	SCREENED ☐	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor = 2.09			

CANISTER REPRESSURIZATION

Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.09		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors

								Date	Instr.	File #	
Canister DF =	2.09	X	Load DF =	#DIV/0!	X	Bag DF =	1			FINAL DF	=
			LVf (mLs)			BVf (mLs)				#DIV/0!	
			LVi (mLs)			Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.09	X	Load DF =	#DIV/0!	X	Bag DF =	1			FINAL DF	=
			LVf (mLs)			BVf (mLs)				#DIV/0!	
			LVi (mLs)			Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.09	X	Load DF =	#DIV/0!	X	Bag DF =	1			FINAL DF	=
			LVf (mLs)			BVf (mLs)				#DIV/0!	
			LVi (mLs)			Bvi (mLs)					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CANISTER FIELD DATA RECORD

Sacramento

JOB # 320-12151
Sample # 4

Client/Project:		VFR ID:		
Canister Serial #:	34001944	Duration:		☐ Hrs ☐ Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY			
READING	PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT
☐ Helium Pre-dilution - Final Pressure (INCHES Hg)			
INITIAL PRESSURE (PSIA)	12.57	03/23/15	ep
FINAL PRESSURE (PSIA)	25.04	03/23/15	ep
Pressurization Gas: ☐ N2 ☐ He	SCREENED ☐	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor = 1.99			

CANISTER REPRESSURIZATION

Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.99		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors

							Date	Instr.	File #		
							3/24/2015	ATGC1			
Canister DF =	1.99	X	Load DF =	10	X	Bag DF =	1	=	FINAL DF 19.92044551		
			LVf (mLs)	50		BVf (mLs)					
			LVi (mLs)	5		Bvi (mLs)					
							Date	Instr.	File #		
Canister DF =	1.99	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF #DIV/0!		
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					
							Date	Instr.	File #		
Canister DF =	1.99	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF #DIV/0!		
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CANISTER FIELD DATA RECORD

Sacramento

JOB # 320-12151
Sample # 5

Client/Project:		VFR ID:		
Canister Serial #:	34000947	Duration:		☐ Hrs ☐ Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY			
READING	PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT
☐ Helium Pre-dilution - Final Pressure (INCHES Hg)			
INITIAL PRESSURE (PSIA)	11.66	03/23/15	ep
FINAL PRESSURE (PSIA)	25.09	03/23/15	ep
Pressurization Gas: ☐ N2 ☐ He	SCREENED ☐	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor = 2.15			

CANISTER REPRESSURIZATION

Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.15		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors

								Date	Instr.	File #	
Canister DF =	2.15	X	Load DF =	#DIV/0!	X	Bag DF =	1			FINAL DF	=
			LVf (mLs)			BVf (mLs)				#DIV/0!	
			LVi (mLs)			Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.15	X	Load DF =	#DIV/0!	X	Bag DF =	1			FINAL DF	=
			LVf (mLs)			BVf (mLs)				#DIV/0!	
			LVi (mLs)			Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.15	X	Load DF =	#DIV/0!	X	Bag DF =	1			FINAL DF	=
			LVf (mLs)			BVf (mLs)				#DIV/0!	
			LVi (mLs)			Bvi (mLs)					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CANISTER FIELD DATA RECORD

Sacramento

JOB # 320-12151
Sample # 6

Client/Project:		VFR ID:		
Canister Serial #:	34000329	Duration:		☐ Hrs ☐ Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY			
READING	PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT
☐ Helium Pre-dilution - Final Pressure (INCHES Hg)			
INITIAL PRESSURE (PSIA)	11.31	03/23/15	ep
FINAL PRESSURE (PSIA)	25.13	03/23/15	ep
Pressurization Gas: ☐ N2 ☐ He	SCREENED ☐	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor = 2.22			

CANISTER REPRESSURIZATION

Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.22		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors

								Date	Instr.	File #	
Canister DF =	2.22	X	Load DF =	#DIV/0!	X	Bag DF =	1		=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.22	X	Load DF =	#DIV/0!	X	Bag DF =	1		=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.22	X	Load DF =	#DIV/0!	X	Bag DF =	1		=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CANISTER FIELD DATA RECORD

Sacramento

JOB # 320-12151
Sample # 7

Client/Project:		VFR ID:		
Canister Serial #:	34001952	Duration:		☐ Hrs ☐ Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY			
READING	PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT
☐ Helium Pre-dilution - Final Pressure (INCHES Hg)			
INITIAL PRESSURE (PSIA)	11.22	03/23/15	ep
FINAL PRESSURE (PSIA)	24.92	03/23/15	ep
Pressurization Gas: ☐ N2 ☐ He	SCREENED ☐	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor = 2.22			

CANISTER REPRESSURIZATION

Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.22		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors

								Date	Instr.	File #	
Canister DF =	2.22	X	Load DF =	#DIV/0!	X	Bag DF =	1		=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.22	X	Load DF =	#DIV/0!	X	Bag DF =	1		=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.22	X	Load DF =	#DIV/0!	X	Bag DF =	1		=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CANISTER FIELD DATA RECORD

Sacramento

JOB # 320-12151
Sample # 8

Client/Project:		VFR ID:		
Canister Serial #:	34001243	Duration:		☐ Hrs ☐ Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY			
READING	PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT
☐ Helium Pre-dilution - Final Pressure (INCHES Hg)			
INITIAL PRESSURE (PSIA)	11.69	03/23/15	ep
FINAL PRESSURE (PSIA)	25.03	03/23/15	ep
Pressurization Gas: ☐ N2 ☐ He	SCREENED ☐	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor = 2.14			

CANISTER REPRESSURIZATION

Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.14		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors

								Date	Instr.	File #	
								3/24/2015	ATGC1		
Canister DF =	2.14	X	Load DF =	10	X	Bag DF =	1	=		FINAL DF	21.41146279
			LVf (mLs)	50		BVf (mLs)					
			LVi (mLs)	5		Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.14	X	Load DF =	#DIV/0!	X	Bag DF =	1	=		FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.14	X	Load DF =	#DIV/0!	X	Bag DF =	1	=		FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CANISTER FIELD DATA RECORD

Sacramento

JOB # 320-12151
Sample # 9

Client/Project:		VFR ID:		
Canister Serial #:	34001023	Duration:		☐ Hrs ☐ Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY			
READING	PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT
☐ Helium Pre-dilution - Final Pressure (INCHES Hg)			
INITIAL PRESSURE (PSIA)	12.42	03/23/15	ep
FINAL PRESSURE (PSIA)	25.03	03/23/15	ep
Pressurization Gas: ☐ N2 ☐ He	SCREENED ☐	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor = 2.02			

CANISTER REPRESSURIZATION

Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.02		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors

								Date	Instr.	File #	
Canister DF =	2.02	X	Load DF =	#DIV/0!	X	Bag DF =	1		=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.02	X	Load DF =	#DIV/0!	X	Bag DF =	1		=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.02	X	Load DF =	#DIV/0!	X	Bag DF =	1		=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CANISTER FIELD DATA RECORD

Sacramento

JOB # 320-12151
Sample # 10

Client/Project:		VFR ID:		
Canister Serial #:	34000672	Duration:		☐ Hrs ☐ Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY			
READING	PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT
☐ Helium Pre-dilution - Final Pressure (INCHES Hg)			
INITIAL PRESSURE (PSIA)	12.14	03/23/15	ep
FINAL PRESSURE (PSIA)	24.99	03/23/15	ep
Pressurization Gas: ☐ N2 ☐ He	SCREENED ☐	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor = 2.06			

CANISTER REPRESSURIZATION

Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.06		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors

								Date	Instr.	File #	
Canister DF =	2.06	X	Load DF =	#DIV/0!	X	Bag DF =	1	=		FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.06	X	Load DF =	#DIV/0!	X	Bag DF =	1	=		FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					
								Date	Instr.	File #	
Canister DF =	2.06	X	Load DF =	#DIV/0!	X	Bag DF =	1	=		FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)					
			LVi (mLs)			Bvi (mLs)					

Login Sample Receipt Checklist

Client: Hydro Geo Chem

Job Number: 320-12151-1
SDG Number: Rio Nuevo

Login Number: 12151
List Number: 1
Creator: Sadler, Jeremy

List Source: TestAmerica Sacramento

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.	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.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	N/A	
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	Refer to Job Narrative for details.
Samples are received within Holding Time.	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	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

320-11796 Chain of Custody

Canister QC Certification

Certification Type: TO-15 SCAN

Date Cleaned/Batch ID: 2/24/15 320-11796

Date of QC: 3/3/15

Data File Number: 15030224

CANISTER ID NUMBERS

34000741	34001923	
1011	1686	
1964	1845	
1794	0334 *	
0669		
1555		
0329		
1909		

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "*Certification Type*" indicated above.

"*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.

SS for TD — 1st level Reviewed By: — 3/16/15 — Date:

SS for DH — 2nd level Reviewed By: — 3/4/15 — Date:

Q:\FORMS\QA-814 CAN QC CERT 20130729.DOC
QA-814

ERS 7/29/2013

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

320-11961 Chain of Custody

Canister QC Certification

Certification Type: TO-15 SCAN

Date Cleaned/Batch ID: 3/4/15 320-11961

Date of QC: 3/10/15

Data File Number: 15031022

CANISTER ID NUMBERS

34001645 *	34001944	
1023	1715	
0904	1895	
0947	1700	
1629		
1090		
1671		
1095		

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "*Certification Type*" indicated above.

"*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.

for TD — 3/11/15

1st level Reviewed By: — Date:

3/12/15

2nd level Reviewed By: — Date:

Q:\FORMS\QA-814 CAN QC CERT 20130729.DOC
QA-814

ERS 7/29/2013

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

320-12001 Chain of Custody

Sa

Canister QC Certification

Certification Type: TO-15 SCAN

Date Cleaned/Batch ID: 3/9/15 320-12001

Date of QC: 3/10/15

Data File Number: 1503023

CANISTER ID NUMBERS

34001243	34000643	
0672	1962	
0964	1831	
0645	1875 *	
1952		
1947		
1905		
1134		

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "*Certification Type*" indicated above.

"*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.

for TD — 3/11/15

1st level Reviewed By: — Date:

2/12/15

2nd level Reviewed By: — Date:

Q:\FORMS\QA-814 CAN QC CERT 20130729.DOC
QA-814

ERS 7/29/2013

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-11796-1

SDG No.: 1L SCAN Batch

Client Sample ID: 34000334 | Lab Sample ID: 320-11796-12

Matrix: Air | Lab File ID: 15030224.D

Analysis Method: TO-15 | Date Collected: 02/24/2015 00:00

Sample wt/vol: 500(mL) | Date Analyzed: 03/03/2015 19:53

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 67092 | Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	2.9	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-11796-1
SDG No.: 1L SCAN Batch
Client Sample ID: 34000334
Lab Sample ID: 320-11796-12
Matrix: Air
Lab File ID: 15030224.D
Analysis Method: TO-15
Date Collected: 02/24/2015 00:00
Sample wt/vol: 500(mL)
Date Analyzed: 03/03/2015 19:53
Soil Aliquot Vol:
Dilution Factor: 1
Soil Extract Vol.:
GC Column: RTX-Volatiles ID: 0.32(mm)
% Moisture:
Level: (low/med) Low
Analysis Batch No.: 67092
Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-11796-1
SDG No.: 1L SCAN Batch
Client Sample ID: 34000334
Lab Sample ID: 320-11796-12
Matrix: Air
Lab File ID: 15030224.D
Analysis Method: TO-15
Date Collected: 02/24/2015 00:00
Sample wt/vol: 500(mL)
Date Analyzed: 03/03/2015 19:53
Soil Aliquot Vol:
Dilution Factor: 1
Soil Extract Vol.:
GC Column: RTX-Volatiles ID: 0.32(mm)
% Moisture:
Level: (low/med) Low
Analysis Batch No.: 67092
Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	101		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	102		70-130
2037-26-5	Toluene-d8 (Surr)	101		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS2\20150302-19857.b\15030224.D
Lims ID: 320-11796-A-12 Lab Sample ID: 320-11796-12
Client ID: 34000334
Sample Type: Client
Inject. Date: 03-Mar-2015 19:53:30 ALS Bottle#: 8 Worklist Smp#: 30
Purge Vol: 250.000 mL Dil. Factor: 1.0000
Sample Info: 320-11796-A-12
Misc. Info.: 500mL
Operator ID: SRS Instrument ID: ATMS2

Method: \\SACCHROM\ChromData\ATMS2\20150302-19857.b\TO15_ATMS2N.m
Limit Group: MSA - TO15 - ICAL
Last Update: 04-Mar-2015 00:59:31 Calib Date: 14-Feb-2015 02:39:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\SACCHROM\ChromData\ATMS2\20150213-19467.b\15021314.D

Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
Process Host: XAWRK008

First Level Reviewer: duncant Date: 04-Mar-2015 00:59:31

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	10.334	10.334	0.000	94	49987	4.00	
* 2 1,4-Difluorobenzene	114	11.678	11.678	0.000	94	205067	4.00	
* 3 Chlorobenzene-d5 (IS)	117	15.997	15.998	-0.001	87	177523	4.00	
$ 4 1,2-Dichloroethane-d4 (Sur	65	11.100	11.100	0.000	98	67351	4.08	
$ 5 Toluene-d8 (Surr)	100	13.856	13.856	0.000	99	122122	4.03	
$ 6 4-Bromofluorobenzene (Surr	174	17.749	17.750	-0.001	94	107715	4.06	
31 Acetone	43	6.994	6.963	0.031	99	47519	2.86	
48 Carbon disulfide	76	8.034	8.028	0.006	94	776	0.0203	
68 Benzene	78	11.331	11.331	0.000	1	1019	0.0246	
98 m-Xylene & p-Xylene	91	16.265	16.265	0.000	92	2837	0.0606	
101 o-Xylene	91	16.898	16.898	0.000	90	1193	0.0249	
115 1,2,4-Trimethylbenzene	120	18.857	18.851	0.006	95	1560	0.0529	

Reagents:

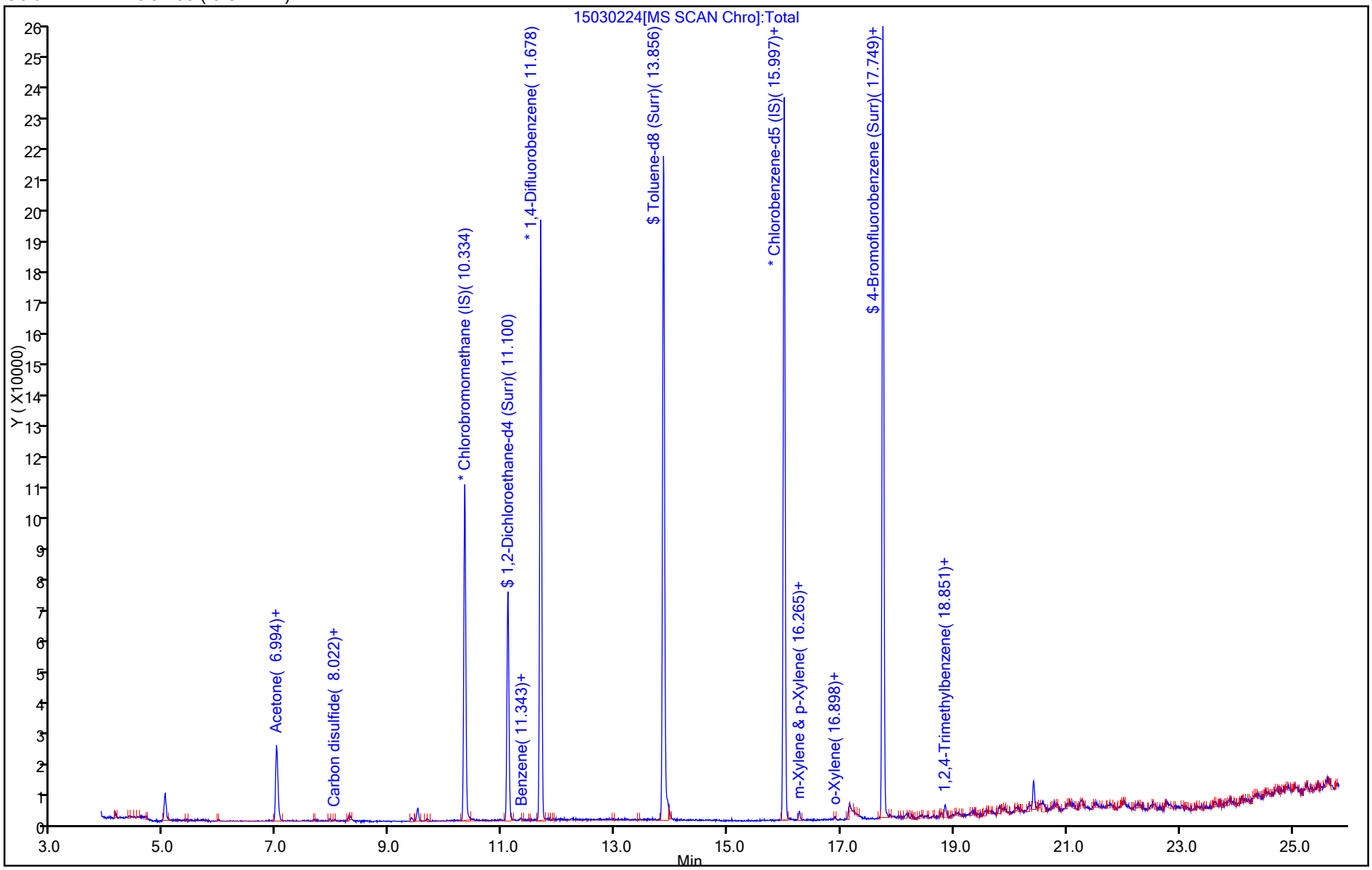
VASUISIM_00154 Amount Added: 50.00 Units: mL Run Reagent

Report Date: 04-Mar-2015 00:59:31 Chrom Revision: 2.2 15-Jan-2015 13:05:58

TestAmerica Sacramento

Data File:	\\SACCHROM\ChromData\ATMS2\20150302-19857.b\15030224.D				
Injection Date:	03-Mar-2015 19:53:30	Instrument ID:	ATMS2	Operator ID:	SRS
Lims ID:	320-11796-A-12	Lab Sample ID:	320-11796-12	Worklist Smp#:	30
Client ID:	34000334				
Purge Vol:	250.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	8
Method:	TO15_ATMS2N	Limit Group:	MSA - TO15 - ICAL		

Column: RTX Volatiles (0.32 mm)

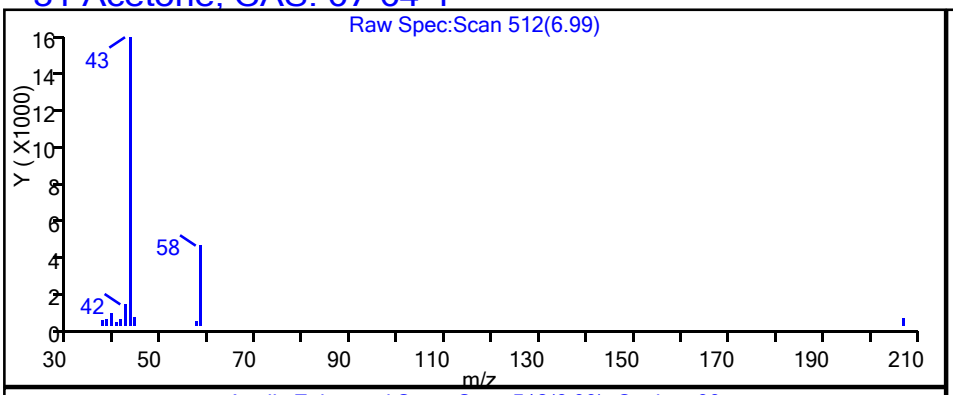


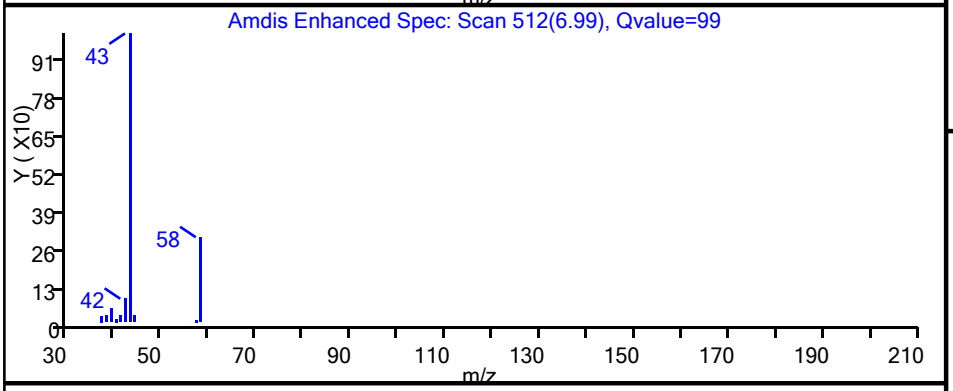
Report Date: 04-Mar-2015 00:59:31 Chrom Revision: 2.2 15-Jan-2015 13:05:58

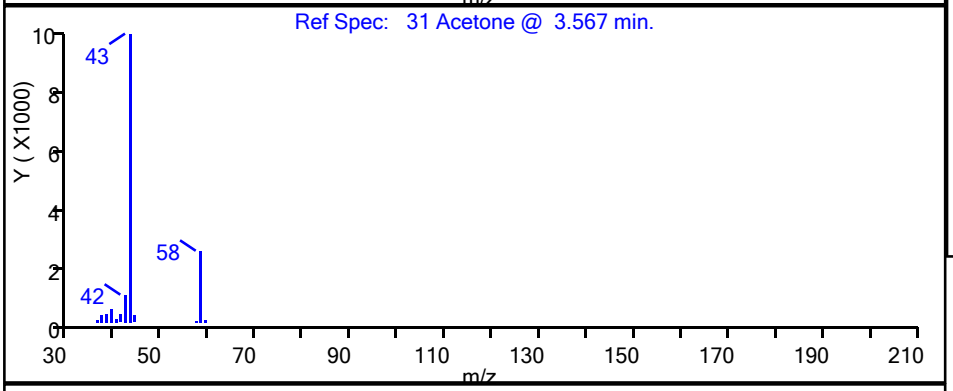
TestAmerica Sacramento

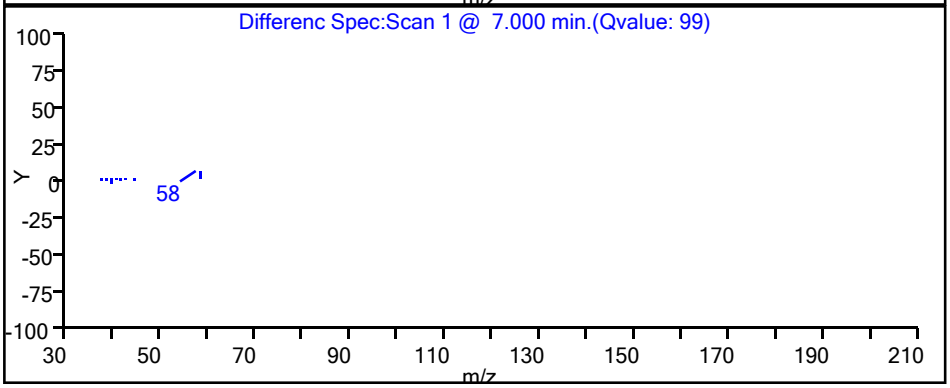
Data File:	\\SACCHROM\ChromData\ATMS2\20150302-19857.b\15030224.D				
Injection Date:	03-Mar-2015 19:53:30	Instrument ID:	ATMS2		
Lims ID:	320-11796-A-12	Lab Sample ID:	320-11796-12		
Client ID:	34000334				
Operator ID:	SRS	ALS Bottle#:	8	Worklist Smp#:	30
Purge Vol:	250.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS2N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

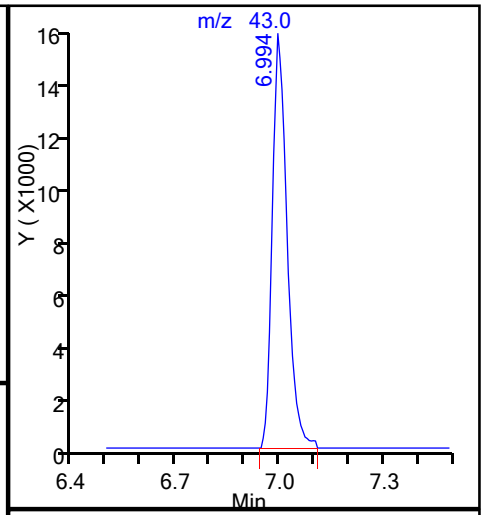
31 Acetone, CAS: 67-64-1

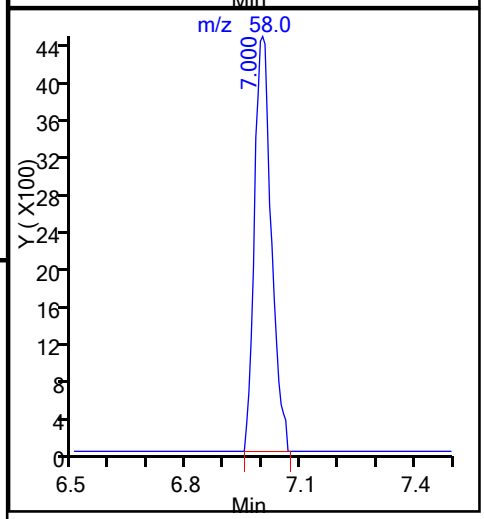












FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-11961-1

SDG No.: 1L SCAN Batch

Client Sample ID: 34001645 | Lab Sample ID: 320-11961-1

Matrix: Air | Lab File ID: 15031022.D

Analysis Method: TO-15 | Date Collected: 03/04/2015 00:00

Sample wt/vol: 500(mL) | Date Analyzed: 03/11/2015 01:53

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 67686 | Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	3.0	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	0.30	J	0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-11961-1
SDG No.: 1L SCAN Batch
Client Sample ID: 34001645
Lab Sample ID: 320-11961-1
Matrix: Air
Lab File ID: 15031022.D
Analysis Method: TO-15
Date Collected: 03/04/2015 00:00
Sample wt/vol: 500(mL)
Date Analyzed: 03/11/2015 01:53
Soil Aliquot Vol:
Dilution Factor: 1
Soil Extract Vol.:
GC Column: RTX-Volatiles ID: 0.32(mm)
% Moisture:
Level: (low/med) Low
Analysis Batch No.: 67686
Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-11961-1
SDG No.: 1L SCAN Batch
Client Sample ID: 34001645
Lab Sample ID: 320-11961-1
Matrix: Air
Lab File ID: 15031022.D
Analysis Method: TO-15
Date Collected: 03/04/2015 00:00
Sample wt/vol: 500(mL)
Date Analyzed: 03/11/2015 01:53
Soil Aliquot Vol:
Dilution Factor: 1
Soil Extract Vol.:
GC Column: RTX-Volatiles ID: 0.32(mm)
% Moisture:
Level: (low/med) Low
Analysis Batch No.: 67686
Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	0.61	J	0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	0.19	J	0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	0.35	J	0.80	0.10
95-47-6	o-Xylene	0.24	J	0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	103		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	101		70-130
2037-26-5	Toluene-d8 (Surr)	101		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File:	\\SACCHROM\ChromData\ATMS2\20150310-20030.b\15031022.D				
Lims ID:	320-11961-A-1	Lab Sample ID:	320-11961-1		
Client ID:	34001645				
Sample Type:	Client				
Inject. Date:	11-Mar-2015 01:53:30	ALS Bottle#:	13	Worklist Smp#:	38
Purge Vol:	250.000 mL	Dil. Factor:	1.0000		
Sample Info:	320-11961-A-1				
Misc. Info.:	500mL				
Operator ID:	SRS	Instrument ID:	ATMS2		
Method:	\\SACCHROM\ChromData\ATMS2\20150310-20030.b\TO15_ATMS2N.m				
Limit Group:	MSA - TO15 - ICAL				
Last Update:	11-Mar-2015 05:30:14	Calib Date:	14-Feb-2015 02:39:30		
Integrator:	RTE	ID Type:	Deconvolution ID		
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\SACCHROM\ChromData\ATMS2\20150213-19467.b\15021314.D				
Column 1 :	RTX Volatiles (0.32 mm)		Det: MS SCAN		
Process Host:	XAWRK031				
First Level Reviewer: duncant		Date:	11-Mar-2015 05:30:14		

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	10.328	10.327	0.001	95	42012	4.00	
* 2 1,4-Difluorobenzene	114	11.678	11.678	0.000	94	172795	4.00	
* 3 Chlorobenzene-d5 (IS)	117	15.992	15.991	0.001	87	148958	4.00	
$ 4 1,2-Dichloroethane-d4 (Sur	65	11.094	11.094	0.000	98	56092	4.04	
$ 5 Toluene-d8 (Surr)	100	13.850	13.850	0.000	98	103088	4.04	
$ 6 4-Bromofluorobenzene (Surr	174	17.744	17.743	0.001	93	92073	4.13	
31 Acetone	43	6.988	6.963	0.025	97	42355	3.04	
48 Carbon disulfide	76	8.034	8.028	0.006	97	2432	0.0757	
54 2-Butanone (MEK)	72	9.646	9.610	0.036	98	1117	0.2959	
85 Toluene	91	13.960	13.965	-0.005	87	1242	0.0305	
97 Ethylbenzene	91	16.138	16.143	-0.005	92	2559	0.0506	
98 m-Xylene & p-Xylene	91	16.265	16.265	0.000	97	13903	0.3542	
101 o-Xylene	91	16.892	16.892	0.000	98	9701	0.2414	
107 N-Propylbenzene	91	18.030	18.023	0.007	99	3237	0.0491	
110 4-Ethyltoluene	120	18.188	18.188	-0.006	97	2194	0.1203	M
111 1,3,5-Trimethylbenzene	120	18.255	18.254	0.001	93	4473	0.1855	
115 1,2,4-Trimethylbenzene	120	18.851	18.845	0.006	97	15197	0.6144	
116 sec-Butylbenzene	105	19.112	19.124	-0.012	1	709	0.0105	
127 Naphthalene	128	23.456	23.456	0.000	96	8782	0.2730	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

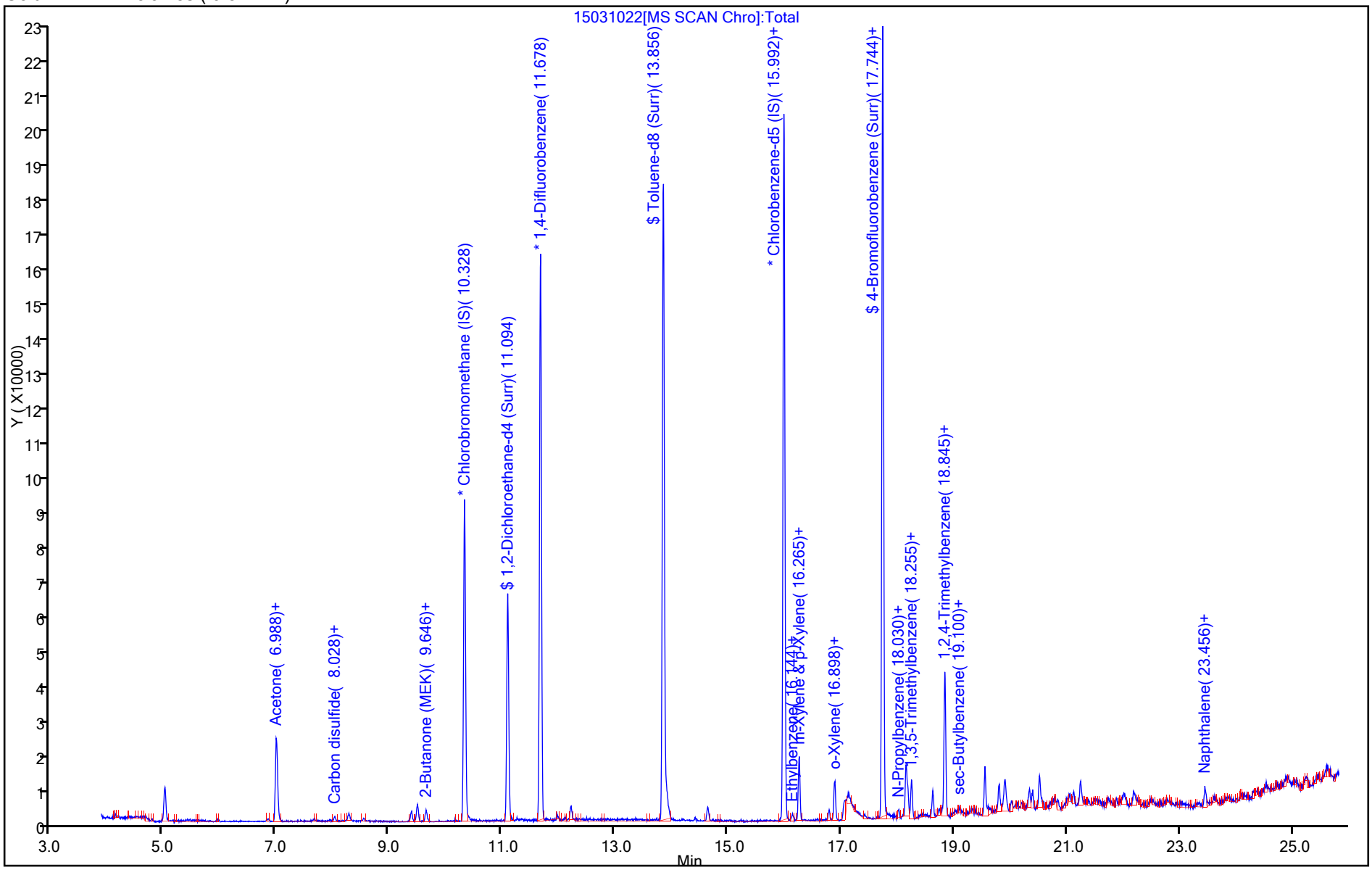
VASUISIM_00154 Amount Added: 50.00 Units: mL Run Reagent

Report Date: 11-Mar-2015 05:30:14 Chrom Revision: 2.2 06-Mar-2015 13:13:48

TestAmerica Sacramento

Data File:	\\SACCHROM\ChromData\ATMS2\20150310-20030.b\15031022.D				
Injection Date:	11-Mar-2015 01:53:30	Instrument ID:	ATMS2	Operator ID:	SRS
Lims ID:	320-11961-A-1	Lab Sample ID:	320-11961-1	Worklist Smp#:	38
Client ID:	34001645				
Purge Vol:	250.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	13
Method:	TO15_ATMS2N	Limit Group:	MSA - TO15 - ICAL		

Column: RTX Volatiles (0.32 mm)

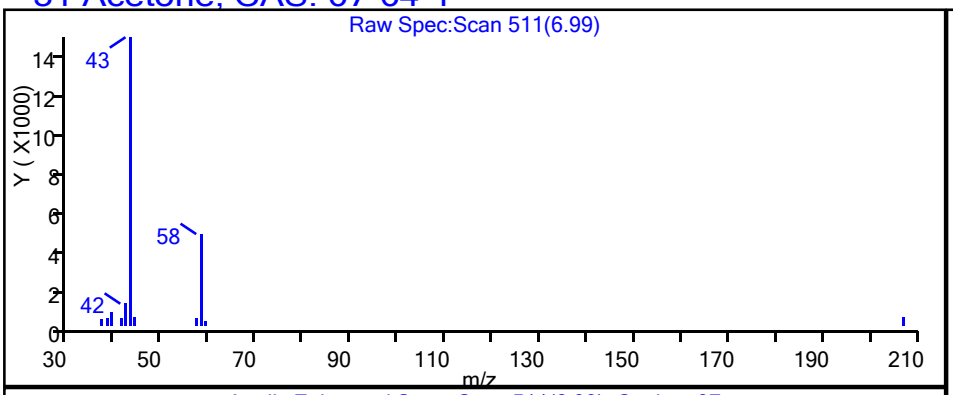


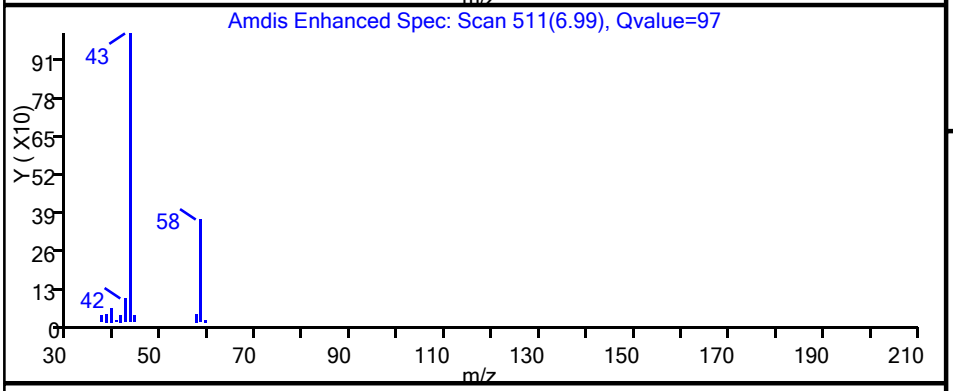
Report Date: 11-Mar-2015 05:30:14 Chrom Revision: 2.2 06-Mar-2015 13:13:48

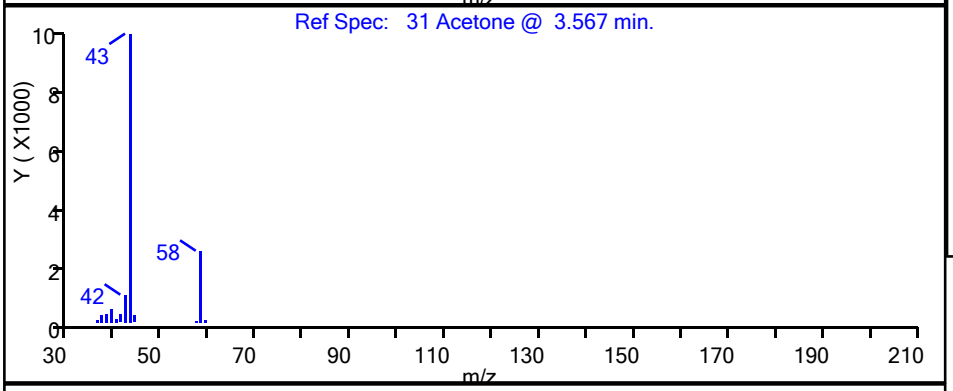
TestAmerica Sacramento

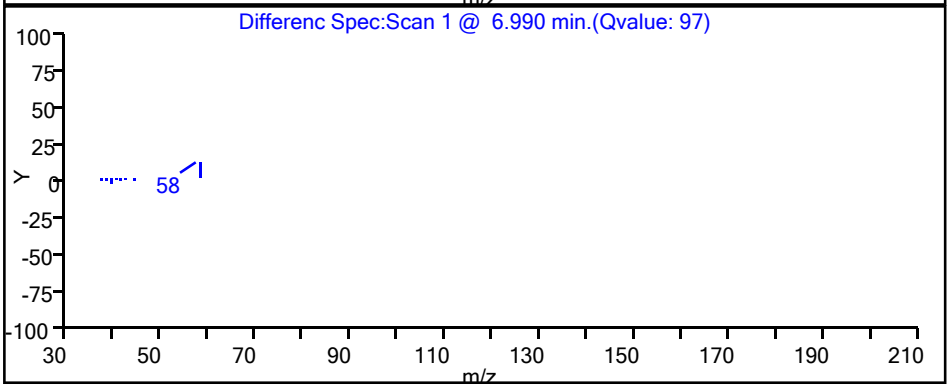
Data File:	\\SACCHROM\ChromData\ATMS2\20150310-20030.b\15031022.D				
Injection Date:	11-Mar-2015 01:53:30	Instrument ID:	ATMS2		
Lims ID:	320-11961-A-1	Lab Sample ID:	320-11961-1		
Client ID:	34001645				
Operator ID:	SRS	ALS Bottle#:	13	Worklist Smp#:	38
Purge Vol:	250.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS2N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

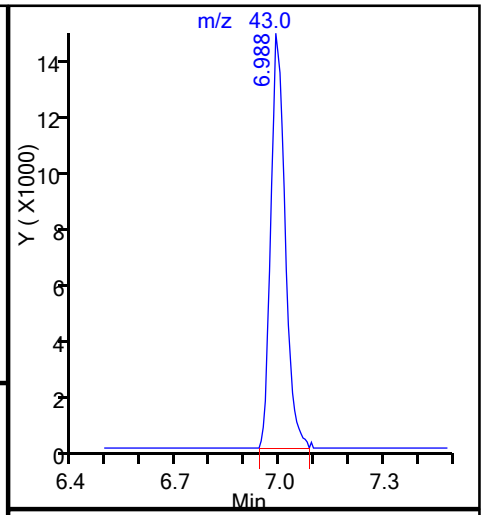
31 Acetone, CAS: 67-64-1

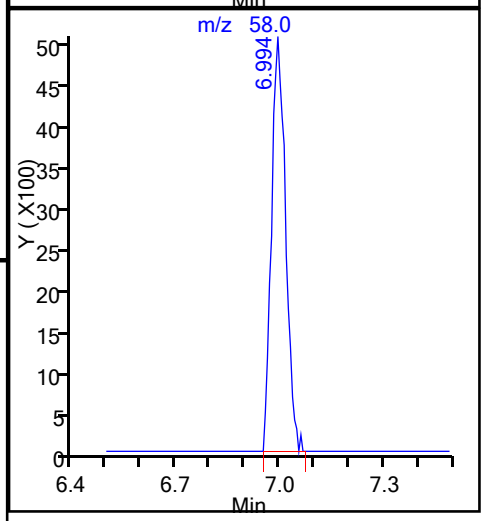










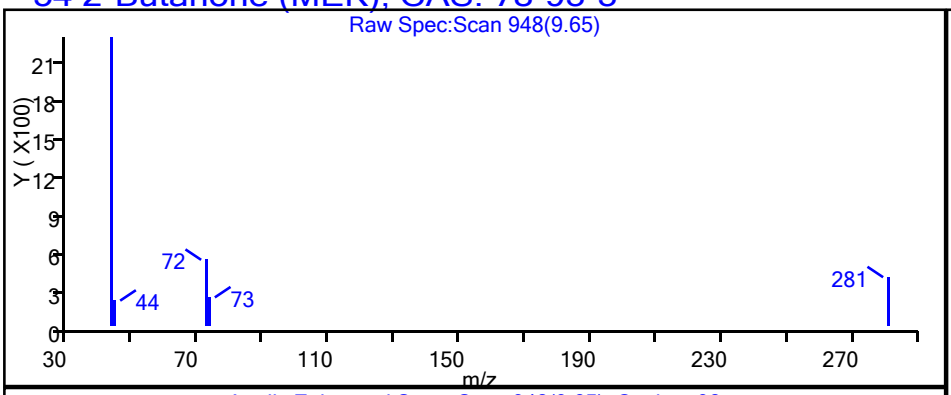


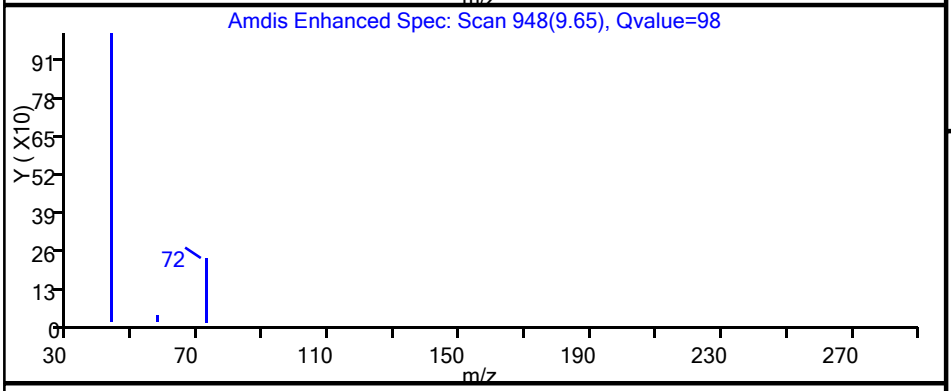
Report Date: 11-Mar-2015 05:30:14 Chrom Revision: 2.2 06-Mar-2015 13:13:48

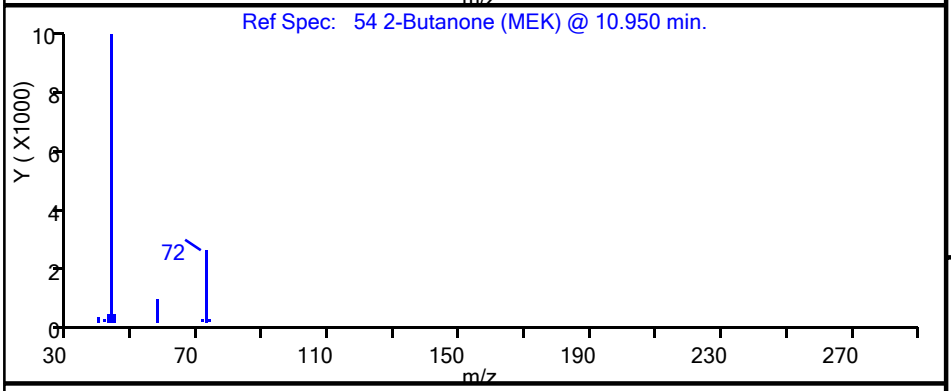
TestAmerica Sacramento

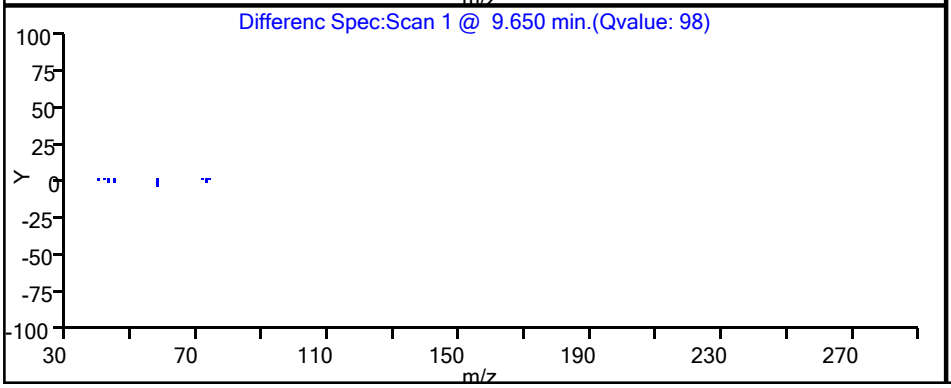
Data File:	\\SACCHROM\ChromData\ATMS2\20150310-20030.b\15031022.D				
Injection Date:	11-Mar-2015 01:53:30	Instrument ID:	ATMS2		
Lims ID:	320-11961-A-1	Lab Sample ID:	320-11961-1		
Client ID:	34001645				
Operator ID:	SRS	ALS Bottle#:	13	Worklist Smp#:	38
Purge Vol:	250.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS2N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

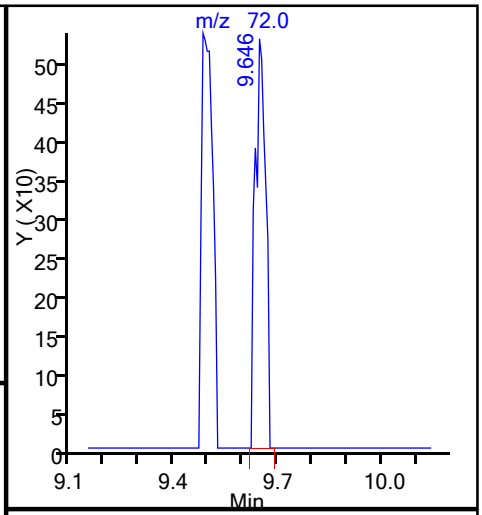
54 2-Butanone (MEK), CAS: 78-93-3

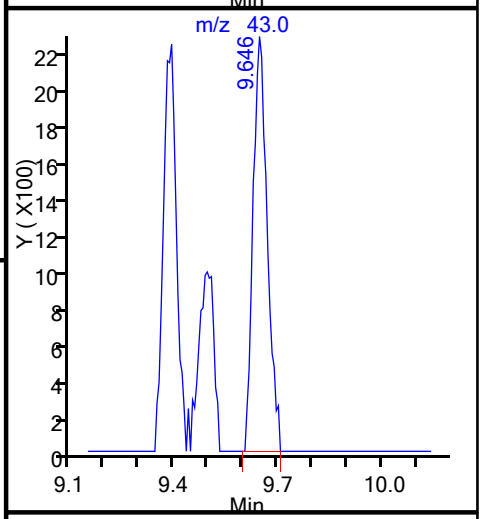


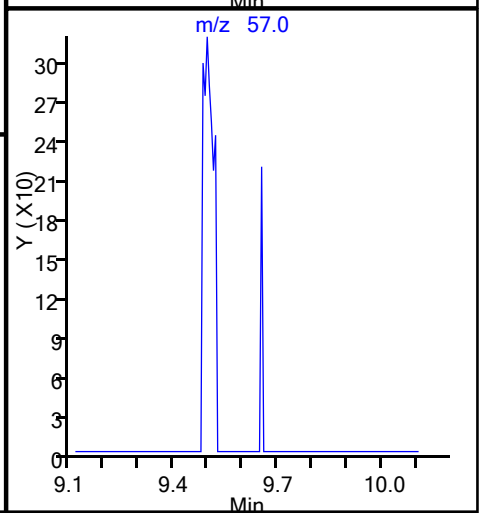










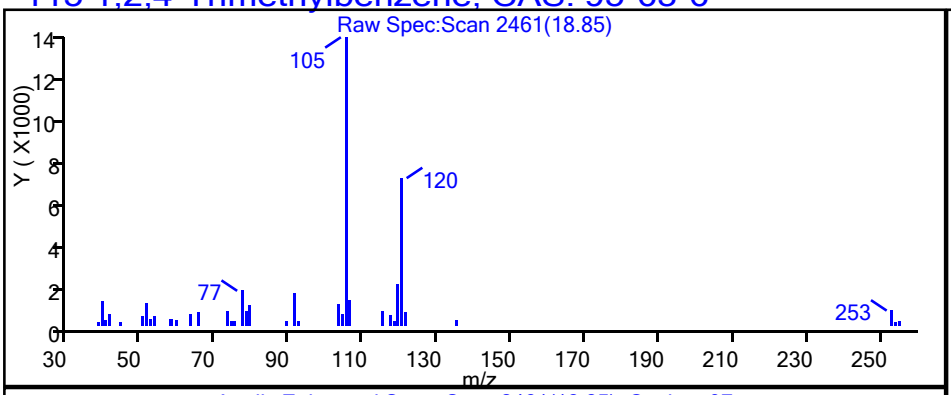


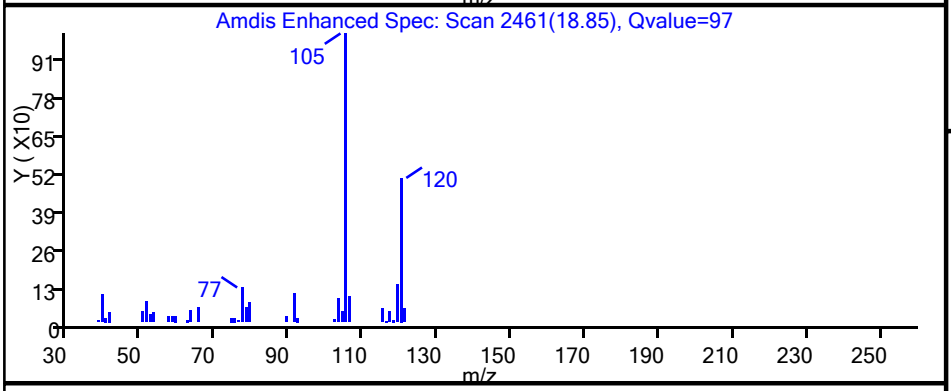
Report Date: 11-Mar-2015 05:30:15 Chrom Revision: 2.2 06-Mar-2015 13:13:48

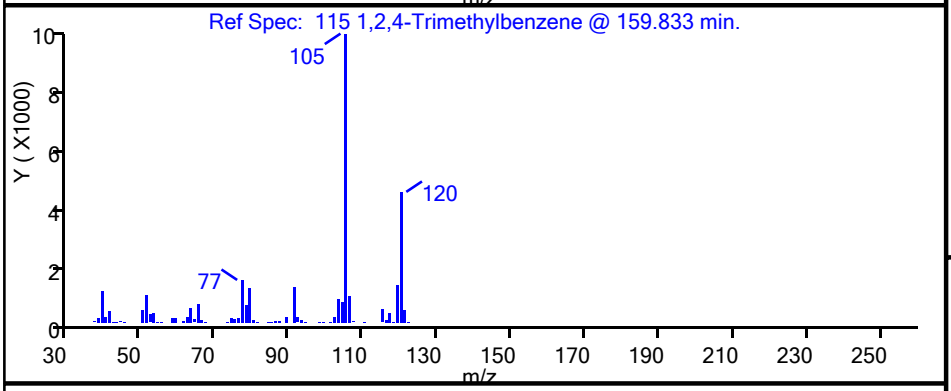
TestAmerica Sacramento

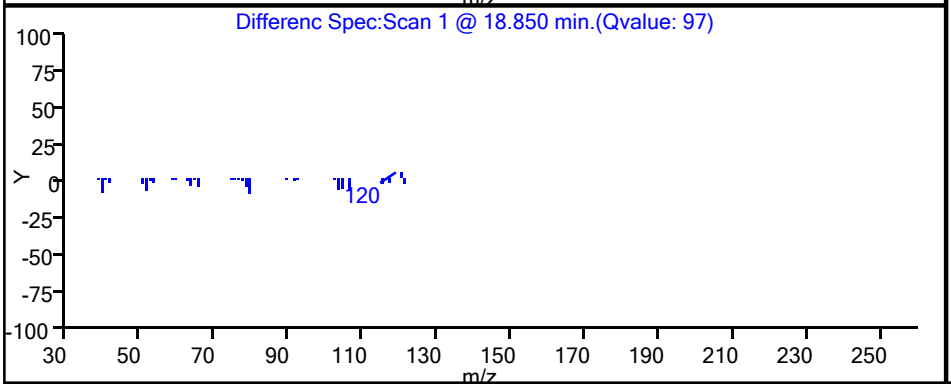
Data File:	\\SACCHROM\ChromData\ATMS2\20150310-20030.b\15031022.D				
Injection Date:	11-Mar-2015 01:53:30	Instrument ID:	ATMS2		
Lims ID:	320-11961-A-1	Lab Sample ID:	320-11961-1		
Client ID:	34001645				
Operator ID:	SRS	ALS Bottle#:	13	Worklist Smp#:	38
Purge Vol:	250.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS2N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

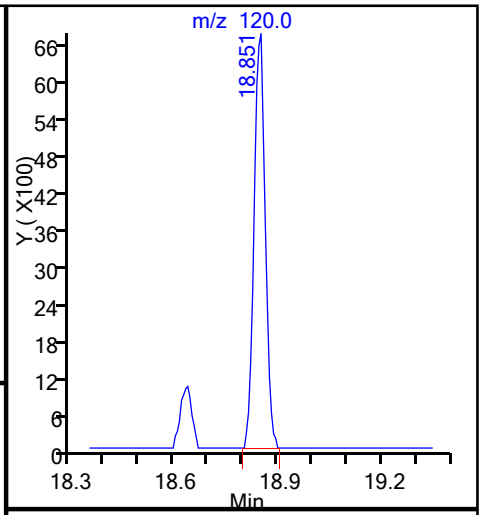
115 1,2,4-Trimethylbenzene, CAS: 95-63-6

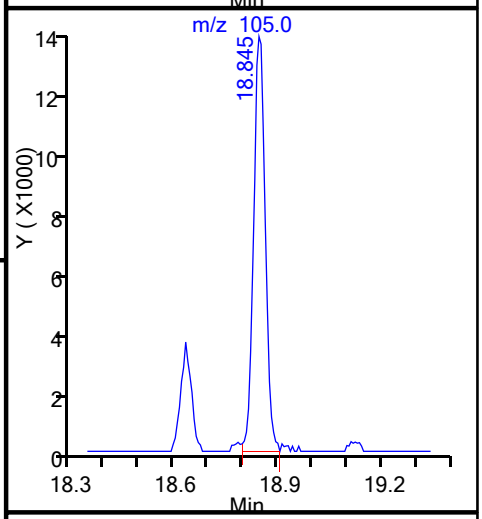


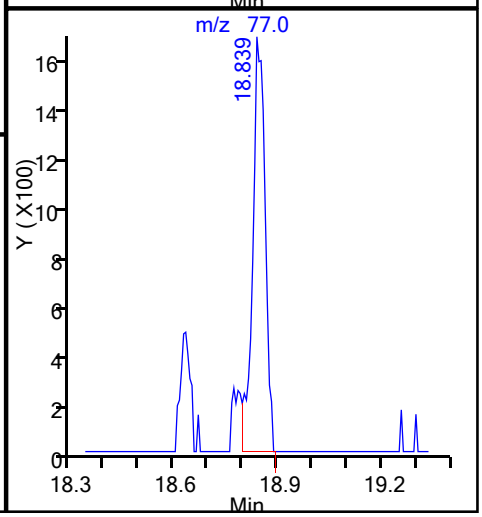










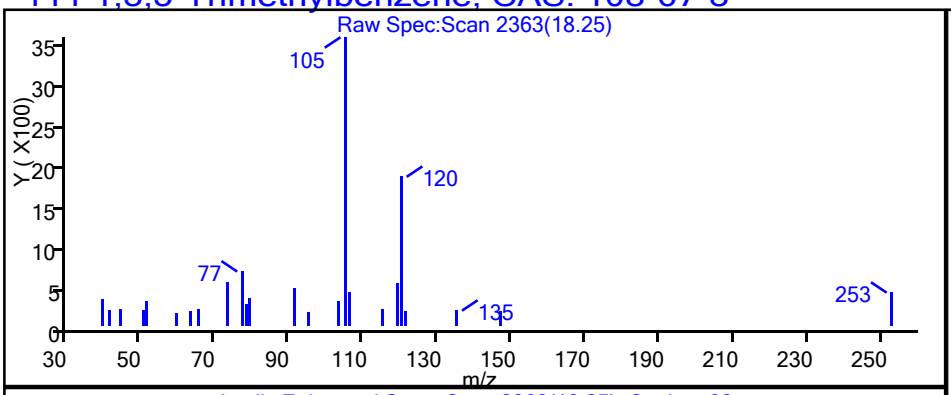


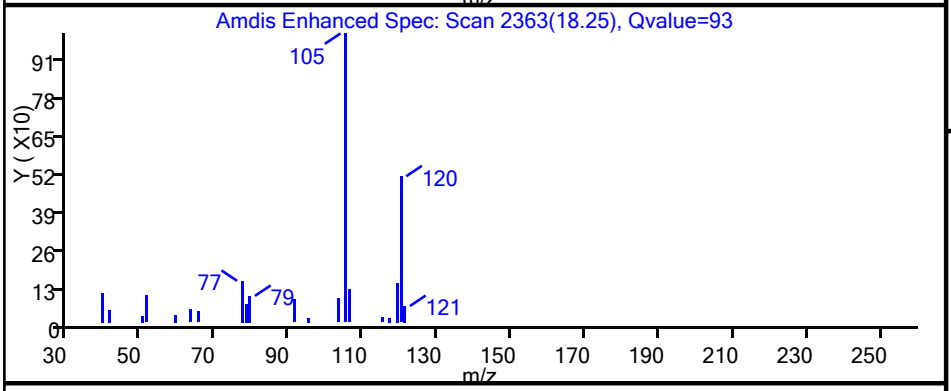
Report Date: 11-Mar-2015 05:30:15 Chrom Revision: 2.2 06-Mar-2015 13:13:48

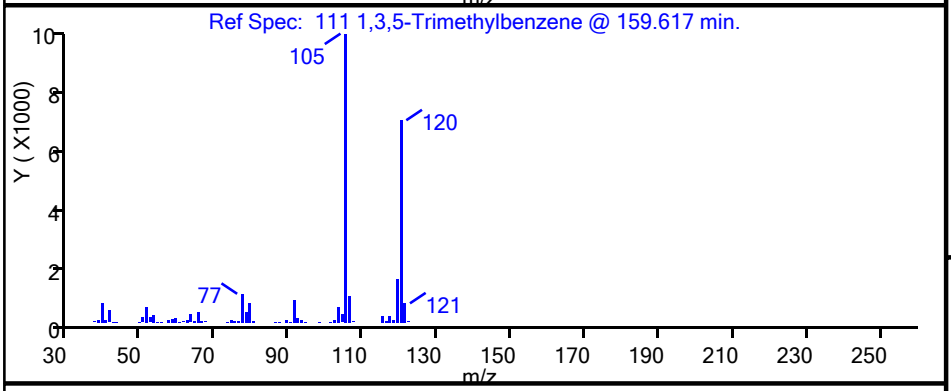
TestAmerica Sacramento

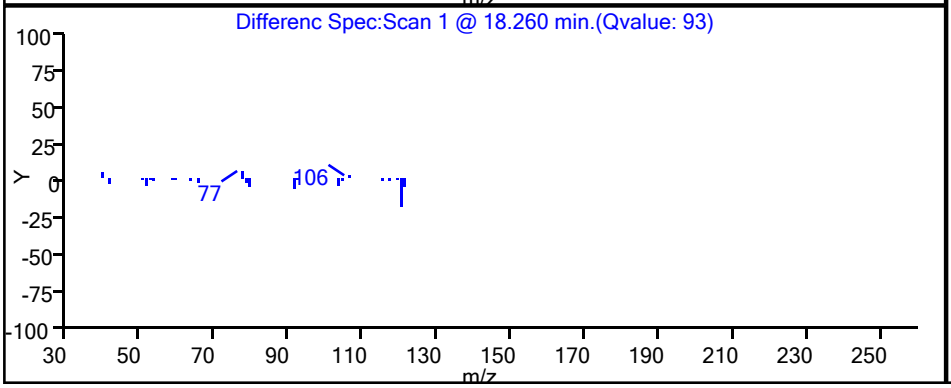
Data File:	\\SACCHROM\ChromData\ATMS2\20150310-20030.b\15031022.D				
Injection Date:	11-Mar-2015 01:53:30	Instrument ID:	ATMS2		
Lims ID:	320-11961-A-1	Lab Sample ID:	320-11961-1		
Client ID:	34001645				
Operator ID:	SRS	ALS Bottle#:	13	Worklist Smp#:	38
Purge Vol:	250.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS2N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

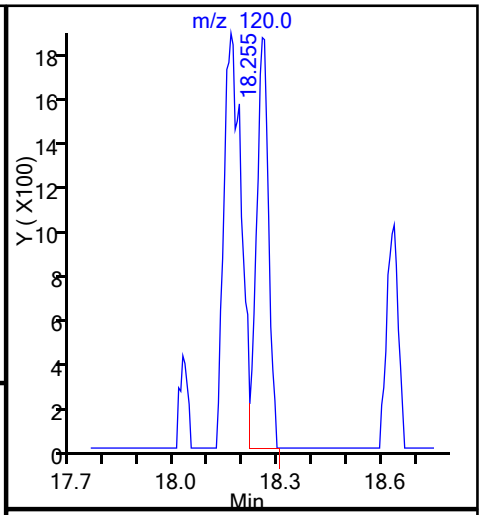
111 1,3,5-Trimethylbenzene, CAS: 108-67-8

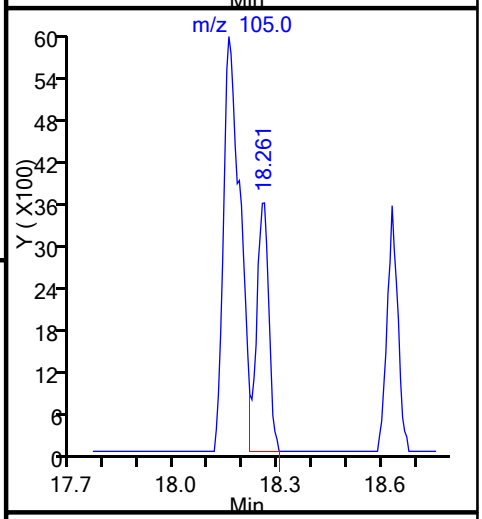


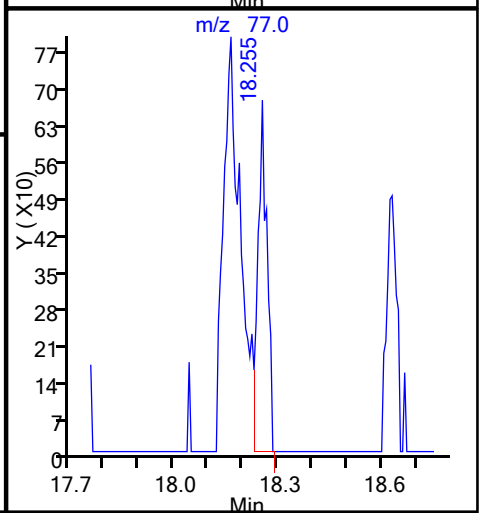










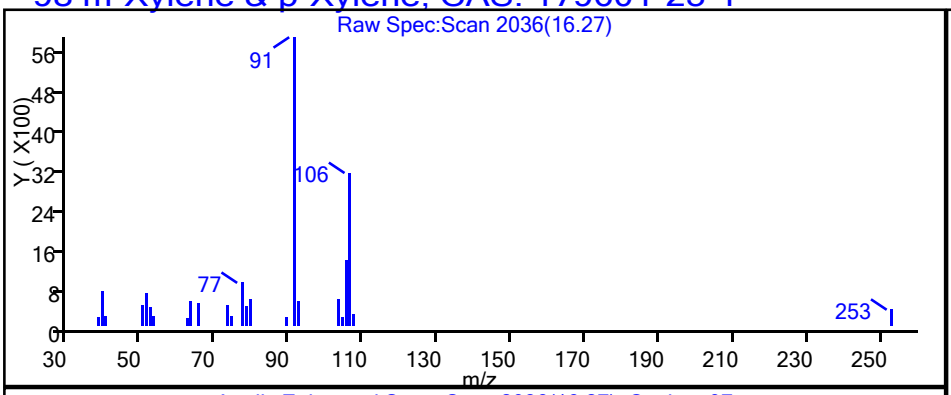


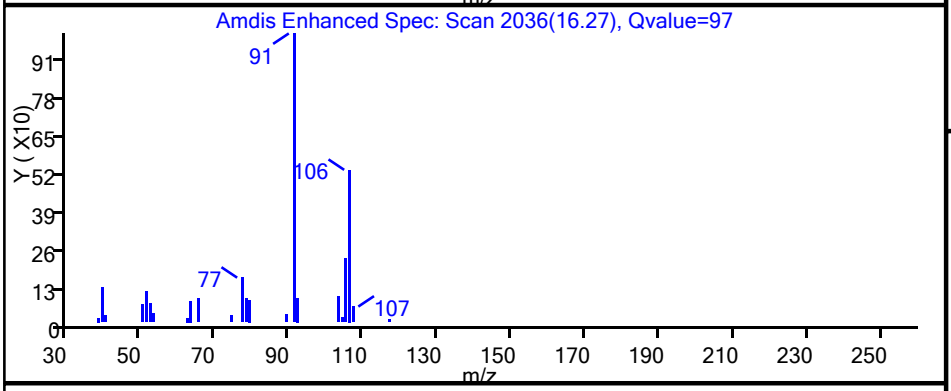
Report Date: 11-Mar-2015 05:30:14 Chrom Revision: 2.2 06-Mar-2015 13:13:48

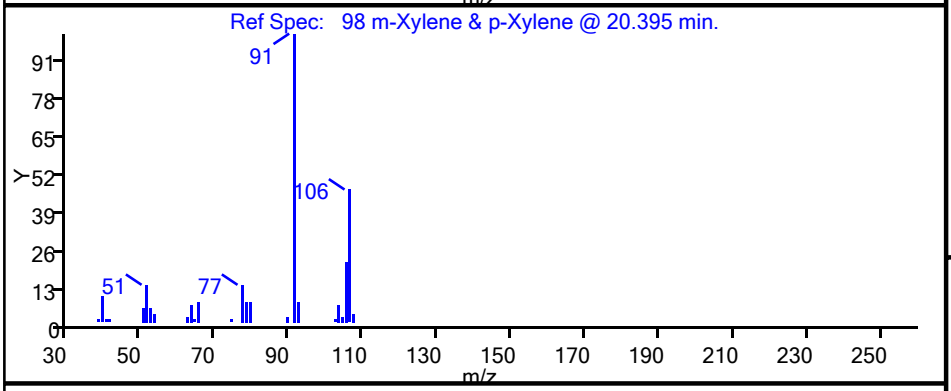
TestAmerica Sacramento

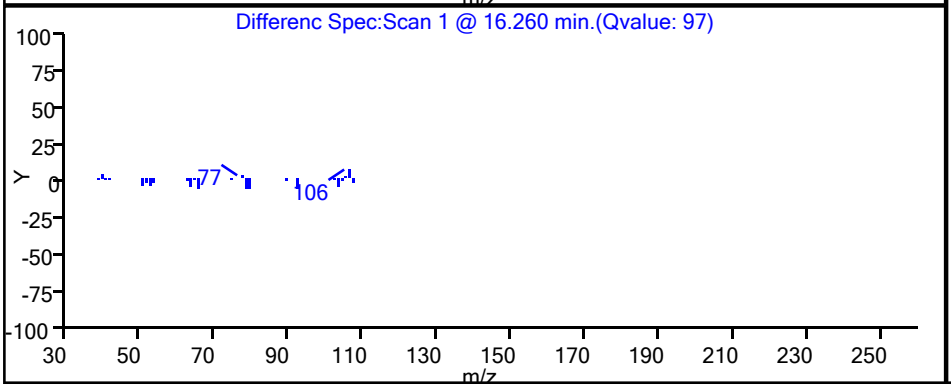
Data File:	\\SACCHROM\ChromData\ATMS2\20150310-20030.b\15031022.D				
Injection Date:	11-Mar-2015 01:53:30	Instrument ID:	ATMS2		
Lims ID:	320-11961-A-1	Lab Sample ID:	320-11961-1		
Client ID:	34001645				
Operator ID:	SRS	ALS Bottle#:	13	Worklist Smp#:	38
Purge Vol:	250.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS2N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

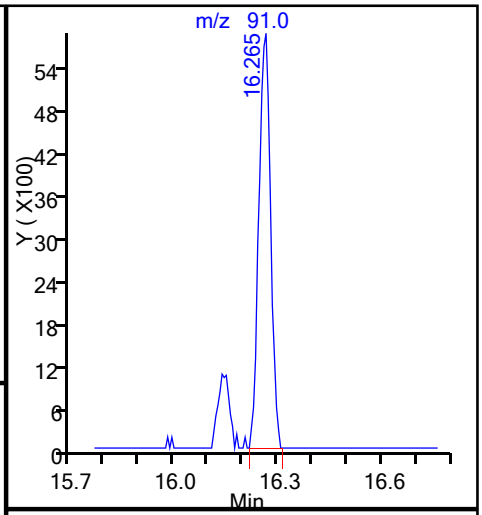
98 m-Xylene & p-Xylene, CAS: 179601-23-1

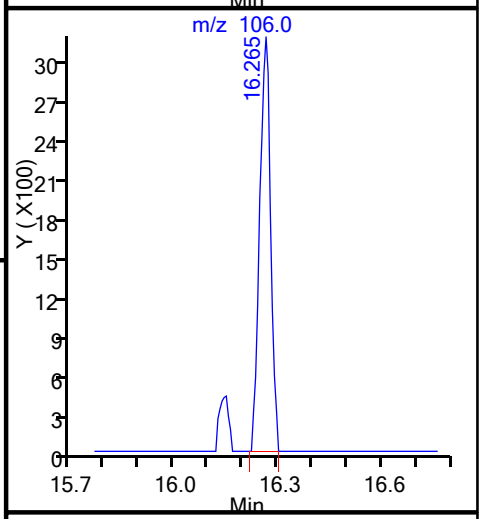


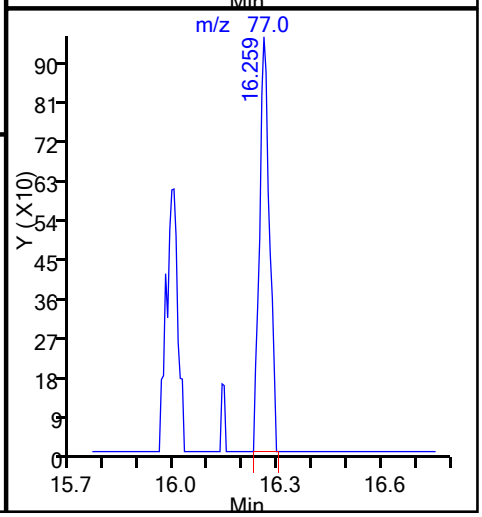










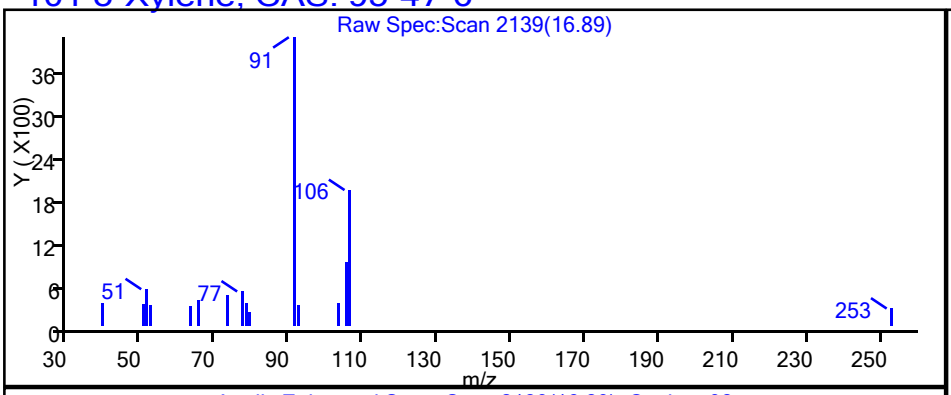


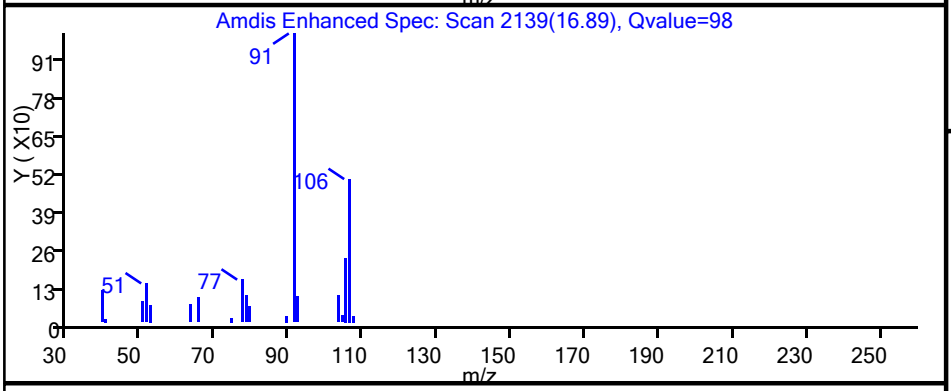
Report Date: 11-Mar-2015 05:30:14 Chrom Revision: 2.2 06-Mar-2015 13:13:48

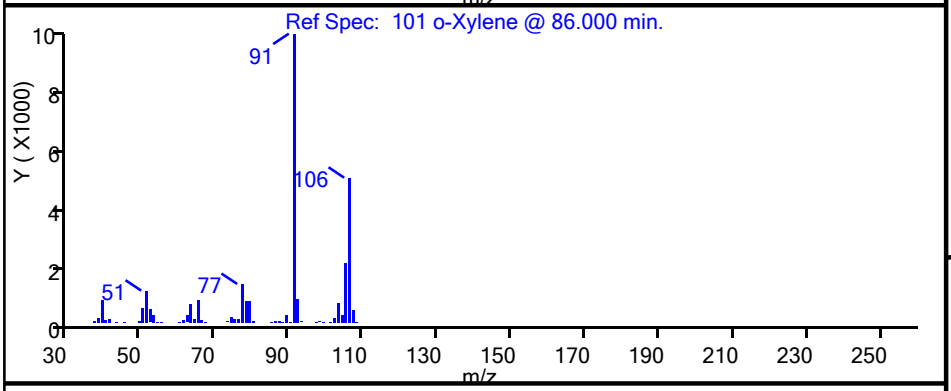
TestAmerica Sacramento

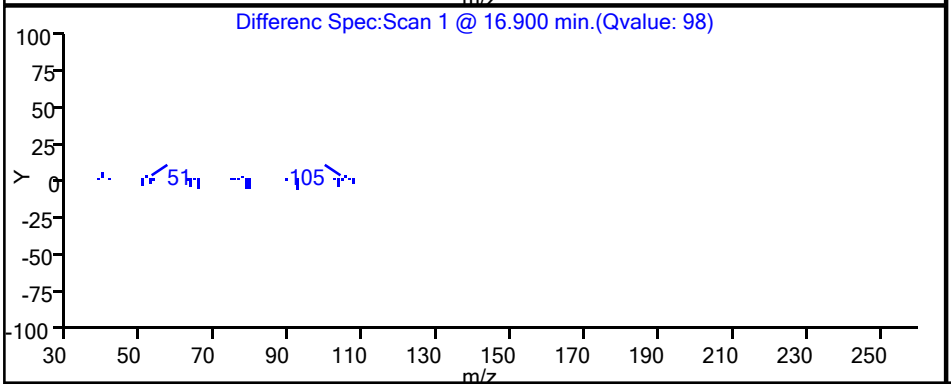
Data File:	\\SACCHROM\ChromData\ATMS2\20150310-20030.b\15031022.D				
Injection Date:	11-Mar-2015 01:53:30	Instrument ID:	ATMS2		
Lims ID:	320-11961-A-1	Lab Sample ID:	320-11961-1		
Client ID:	34001645				
Operator ID:	SRS	ALS Bottle#:	13	Worklist Smp#:	38
Purge Vol:	250.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS2N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

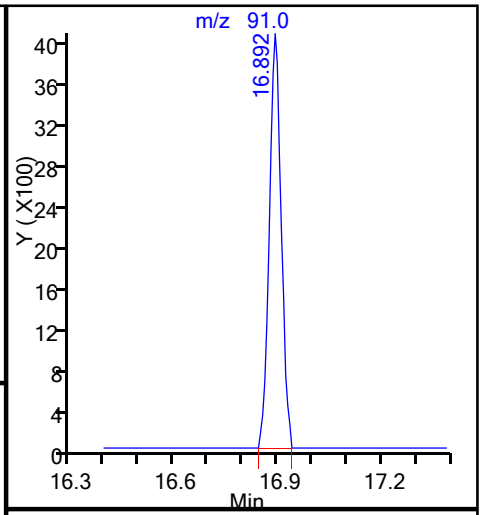
101 o-Xylene, CAS: 95-47-6

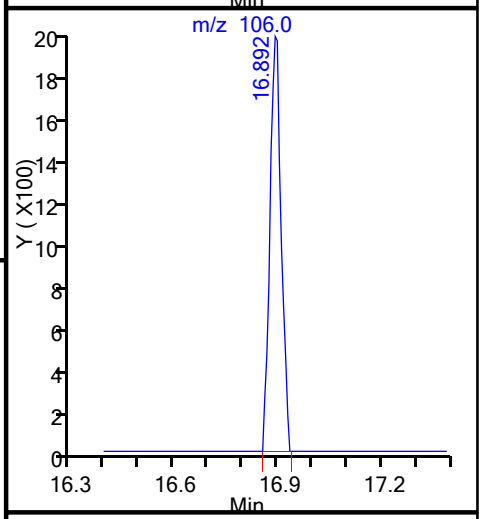


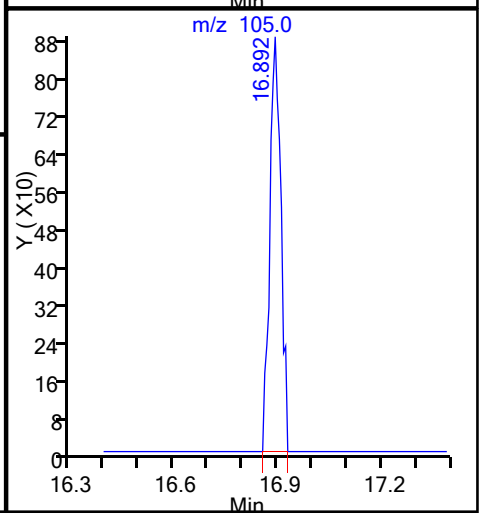












Manual Integration/User Assign Peak Report

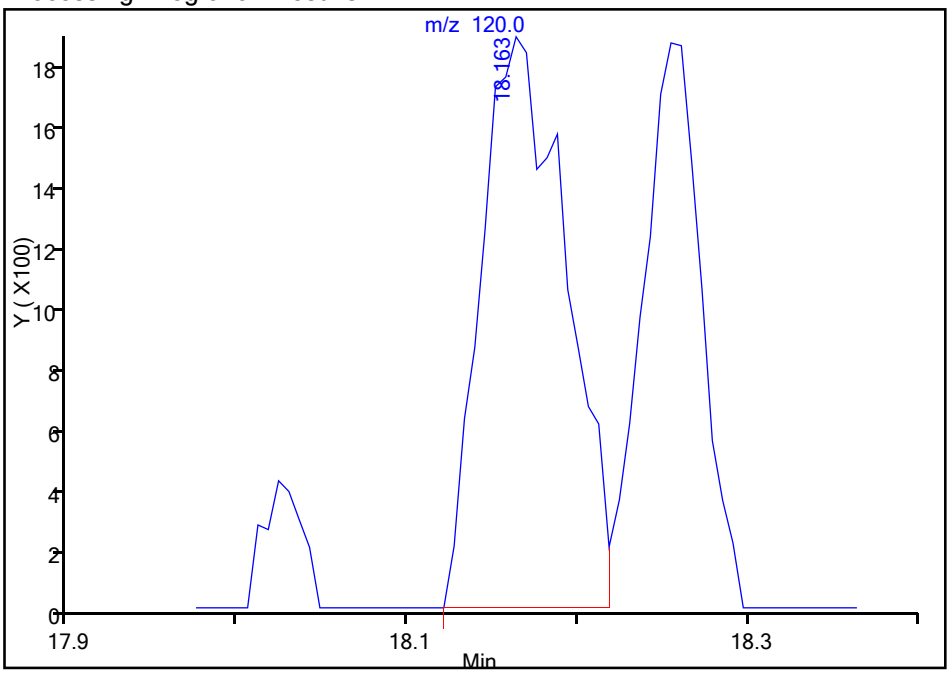
TestAmerica Sacramento

Data File:	\\SACCHROM\ChromData\ATMS2\20150310-20030.b\15031022.D				
Injection Date:	11-Mar-2015 01:53:30	Instrument ID:	ATMS2		
Lims ID:	320-11961-A-1	Lab Sample ID:	320-11961-1		
Client ID:	34001645				
Operator ID:	SRS	ALS Bottle#:	13	Worklist Smp#:	38
Purge Vol:	250.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS2N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

110 4-Ethyltoluene, CAS: 622-96-8

Processing Integration Results

RT: 18.16
Area: 6490
Amount: 0.355920
Amount Units: ppb v/v



Manual Integration Results

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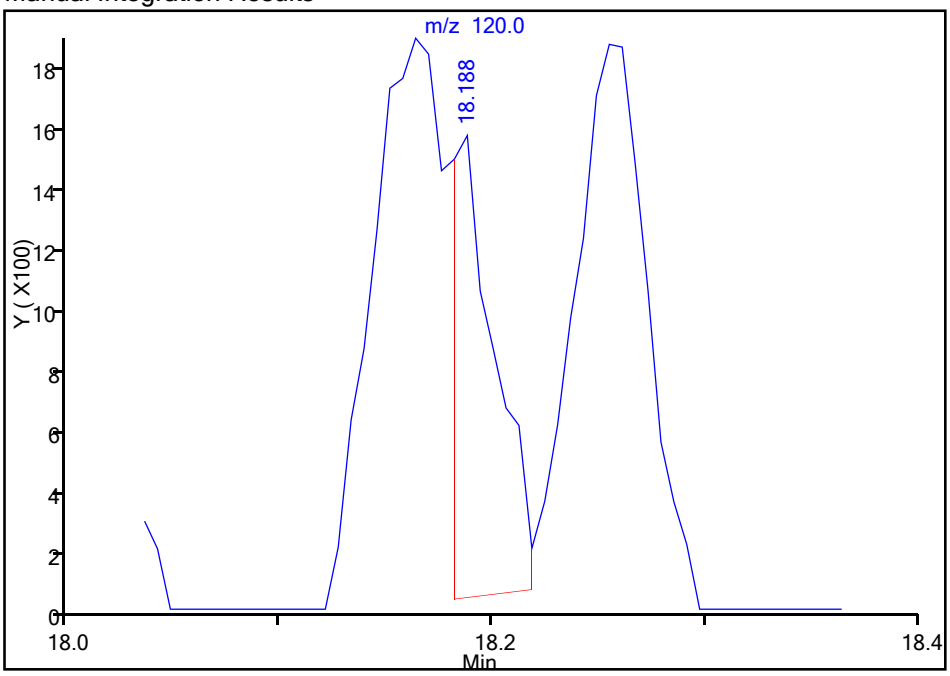
Area: 2194
Amount: 0.120322
Amount Units: ppb v/v



Reviewer: duncant, 11-Mar-2015 05:30:14
Audit Action: Manually Integrated
Audit Reason: Split Peak

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-12001-1
SDG No.: 1L SCAN Batch
Client Sample ID: 34001875
Lab Sample ID: 320-12001-12
Matrix: Air
Lab File ID: 15031023.D
Analysis Method: TO-15
Date Collected: 03/09/2015 00:00
Sample wt/vol: 500(mL)
Date Analyzed: 03/11/2015 02:38
Soil Aliquot Vol:
Dilution Factor: 1
Soil Extract Vol.:
GC Column: RTX-Volatiles ID: 0.32(mm)
% Moisture:
Level: (low/med) Low
Analysis Batch No.: 67686
Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	ND		5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-12001-1

SDG No.: 1L SCAN Batch

Client Sample ID: 34001875 | Lab Sample ID: 320-12001-12

Matrix: Air | Lab File ID: 15031023.D

Analysis Method: TO-15 | Date Collected: 03/09/2015 00:00

Sample wt/vol: 500(mL) | Date Analyzed: 03/11/2015 02:38

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 67686 | Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-12001-1
SDG No.: 1L SCAN Batch
Client Sample ID: 34001875
Lab Sample ID: 320-12001-12
Matrix: Air
Lab File ID: 15031023.D
Analysis Method: TO-15
Date Collected: 03/09/2015 00:00
Sample wt/vol: 500(mL)
Date Analyzed: 03/11/2015 02:38
Soil Aliquot Vol:
Dilution Factor: 1
Soil Extract Vol.:
GC Column: RTX-Volatiles ID: 0.32(mm)
% Moisture:
Level: (low/med) Low
Analysis Batch No.: 67686
Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	91		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	95		70-130
2037-26-5	Toluene-d8 (Surr)	103		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\SACCHROM\ChromData\ATMS2\20150310-20030.b\15031023.D
Lims ID: 320-12001-A-12 Lab Sample ID: 320-12001-12
Client ID: 34001875
Sample Type: Client
Inject. Date: 11-Mar-2015 02:38:30 ALS Bottle#: 14 Worklist Smp#: 39
Purge Vol: 250.000 mL Dil. Factor: 1.0000
Sample Info: 320-12001-A-12
Misc. Info.: 500mL
Operator ID: SRS Instrument ID: ATMS2

Method: \\SACCHROM\ChromData\ATMS2\20150310-20030.b\TO15_ATMS2N.m
Limit Group: MSA - TO15 - ICAL
Last Update: 11-Mar-2015 05:30:35 Calib Date: 14-Feb-2015 02:39:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\SACCHROM\ChromData\ATMS2\20150213-19467.b\15021314.D

Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
Process Host: XAWRK031

First Level Reviewer: duncant Date: 11-Mar-2015 05:30:35

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	10.328	10.327	0.001	96	41352	4.00	
* 2 1,4-Difluorobenzene	114	11.678	11.678	0.000	94	160513	4.00	
* 3 Chlorobenzene-d5 (IS)	117	15.991	15.991	0.000	87	139632	4.00	
$ 4 1,2-Dichloroethane-d4 (Sur	65	11.094	11.094	0.000	98	52076	3.81	
$ 5 Toluene-d8 (Surr)	100	13.856	13.850	0.006	98	97898	4.13	
$ 6 4-Bromofluorobenzene (Surr	174	17.744	17.743	0.001	93	76351	3.66	

Reagents:

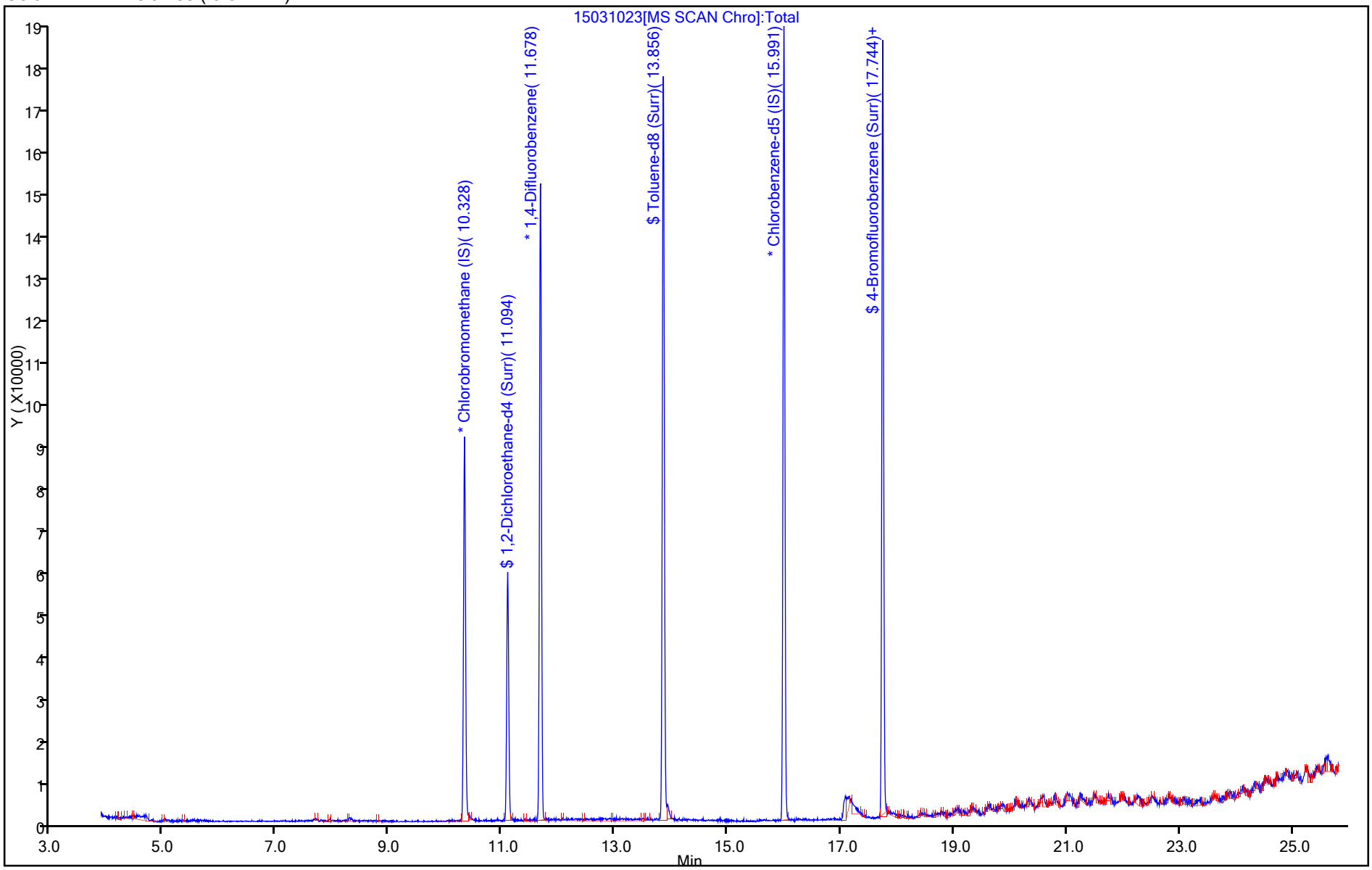
VASUISIM_00154 Amount Added: 50.00 Units: mL Run Reagent

Report Date: 11-Mar-2015 05:30:35 Chrom Revision: 2.2 06-Mar-2015 13:13:48

TestAmerica Sacramento

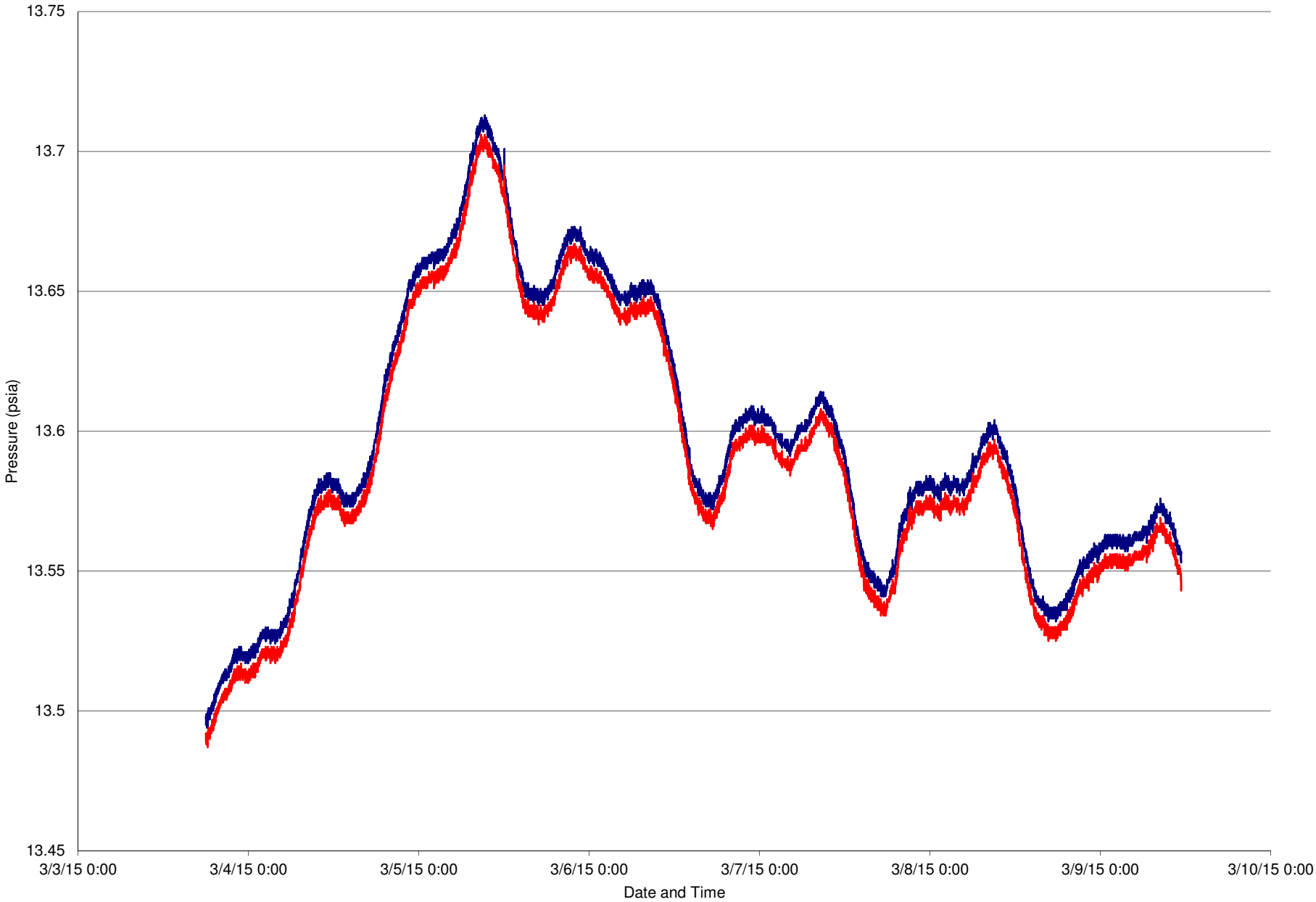
Data File:	\\SACCHROM\ChromData\ATMS2\20150310-20030.b\15031023.D				
Injection Date:	11-Mar-2015 02:38:30	Instrument ID:	ATMS2	Operator ID:	SRS
Lims ID:	320-12001-A-12	Lab Sample ID:	320-12001-12	Worklist Smp#:	39
Client ID:	34001875				
Purge Vol:	250.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	14
Method:	TO15_ATMS2N	Limit Group:	MSA - TO15 - ICAL		

Column: RTX Volatiles (0.32 mm)



APPENDIX E

PLOTS OF PRESSURE MEASUREMENTS

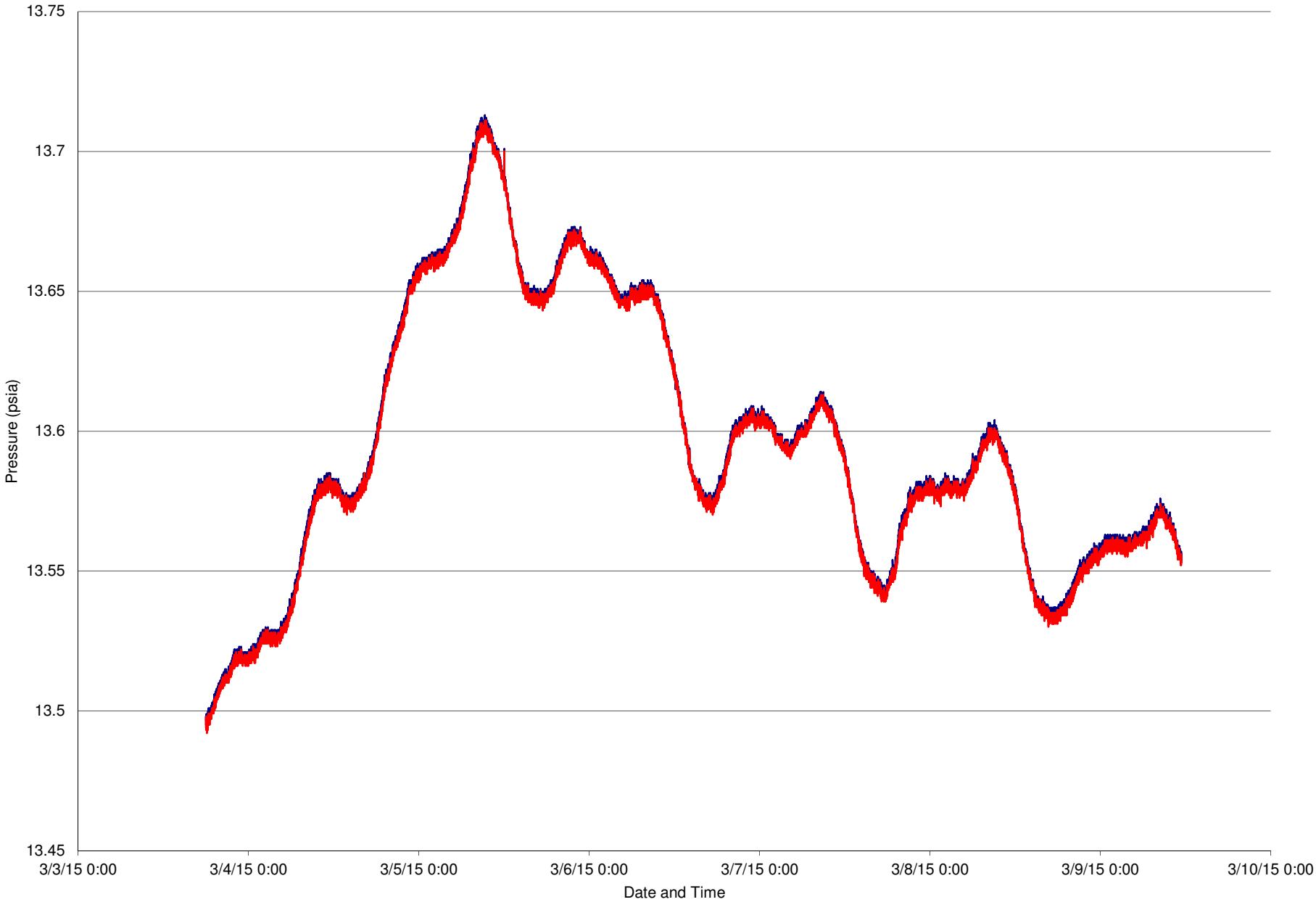


HYDRO GEO CHEM, INC.

AMVP-1-S Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
MJB	5/15/15	GEM	4/9/15	2014037007E	E.1

H:\2014037.00 Rio Nuevo A Mtn landfill\Report\Appendicies\Appendix E - Pres Meas Plots\FiguresE.1_E.30: AMVP-1-S



HYDRO GEO CHEM, INC.

AMVP-1-M Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
MJB	5/15/15	GEM	4/9/15	2014037008E	E.2

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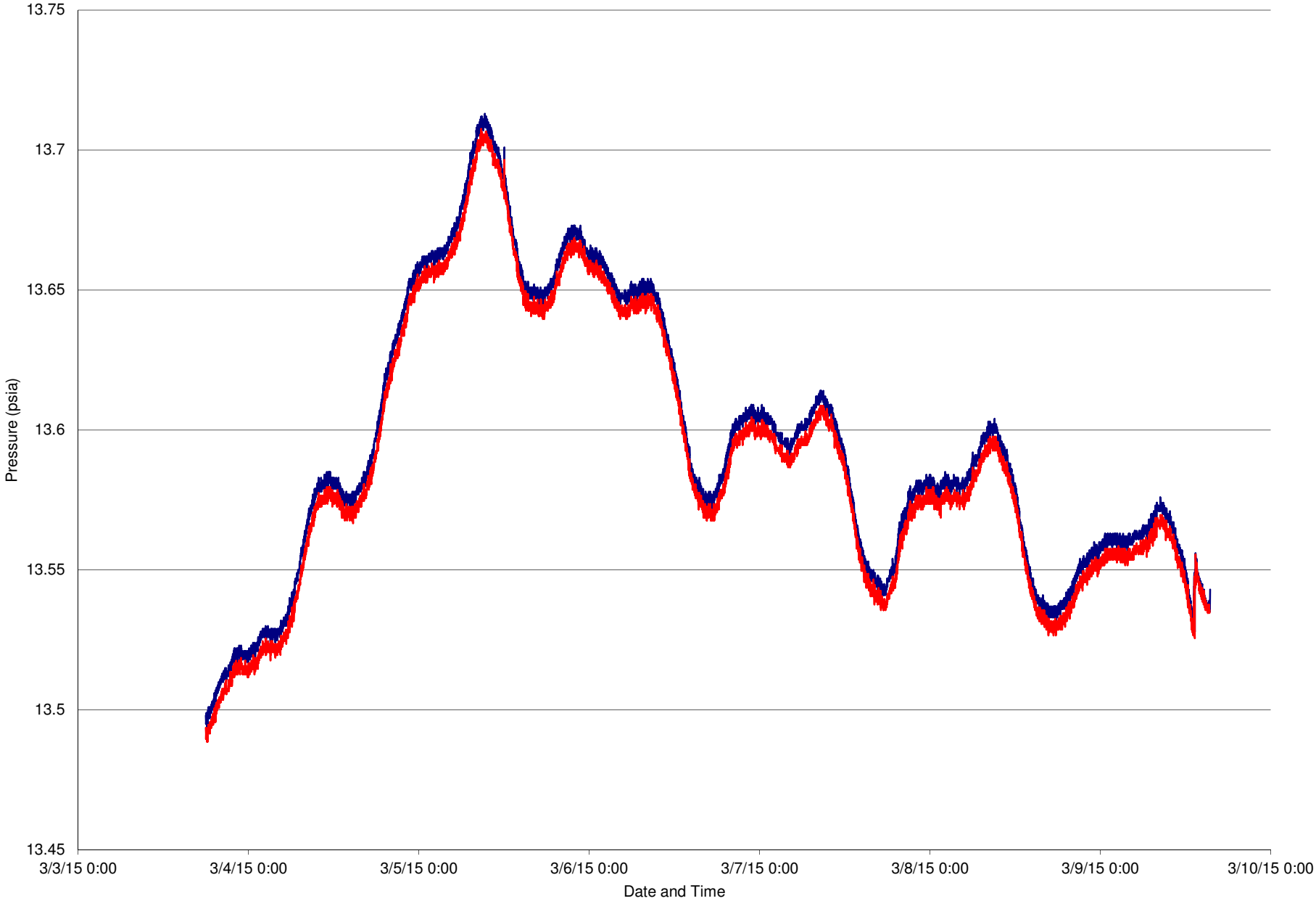

HYDRO GEO CHEM, INC.

AMVP-1-D Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
MJB	5/15/15	GEM	4/9/15	2014037009E	E.3

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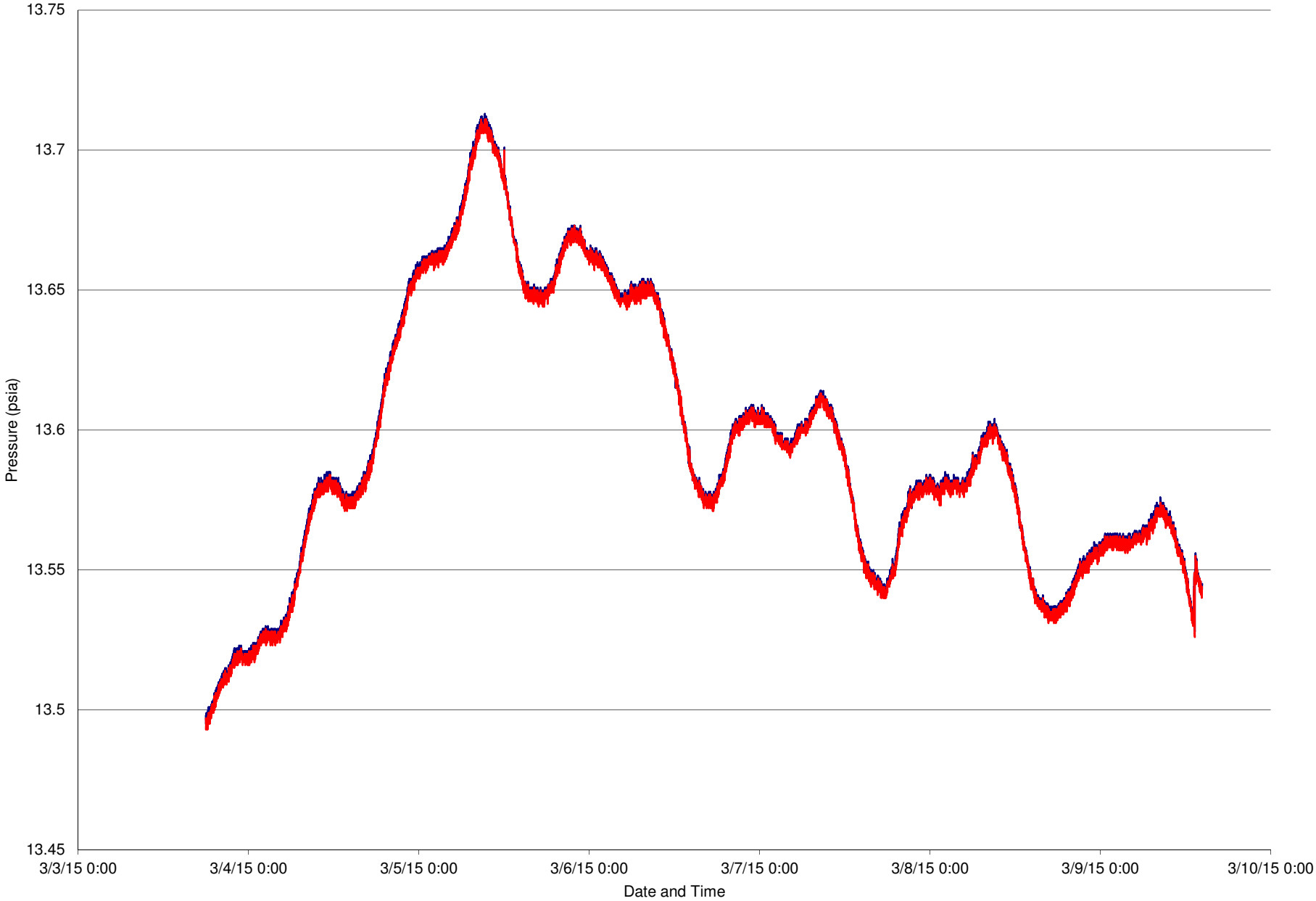

HYDRO GEO CHEM, INC.

AMVP-2-S Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
MJB	5/15/15	GEM	4/9/15	2014037010E	E.4

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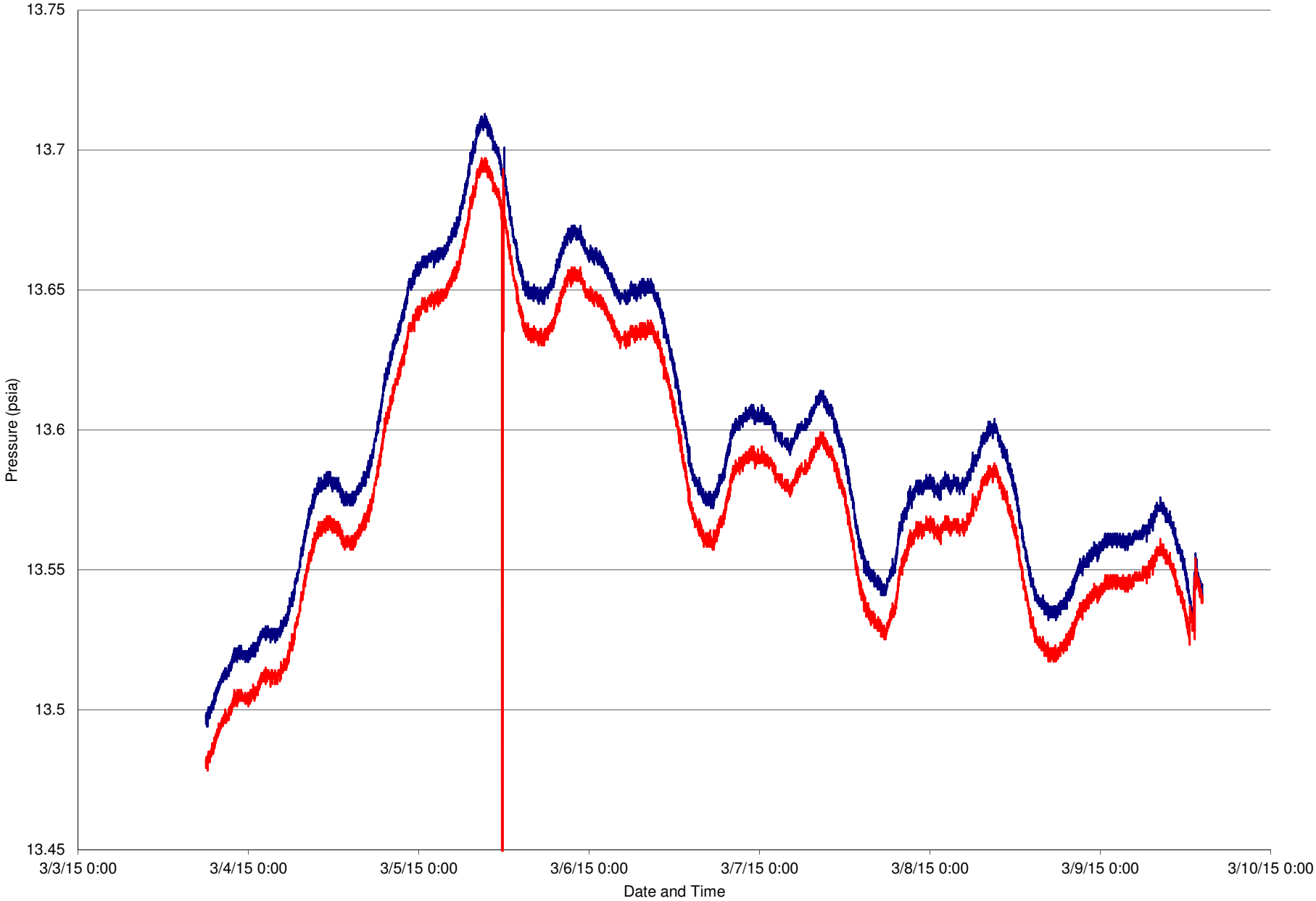

HYDRO GEO CHEM, INC.

AMVP-2-M Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
MJB	5/15/15	GEM	4/9/15	2014037011E	E.5

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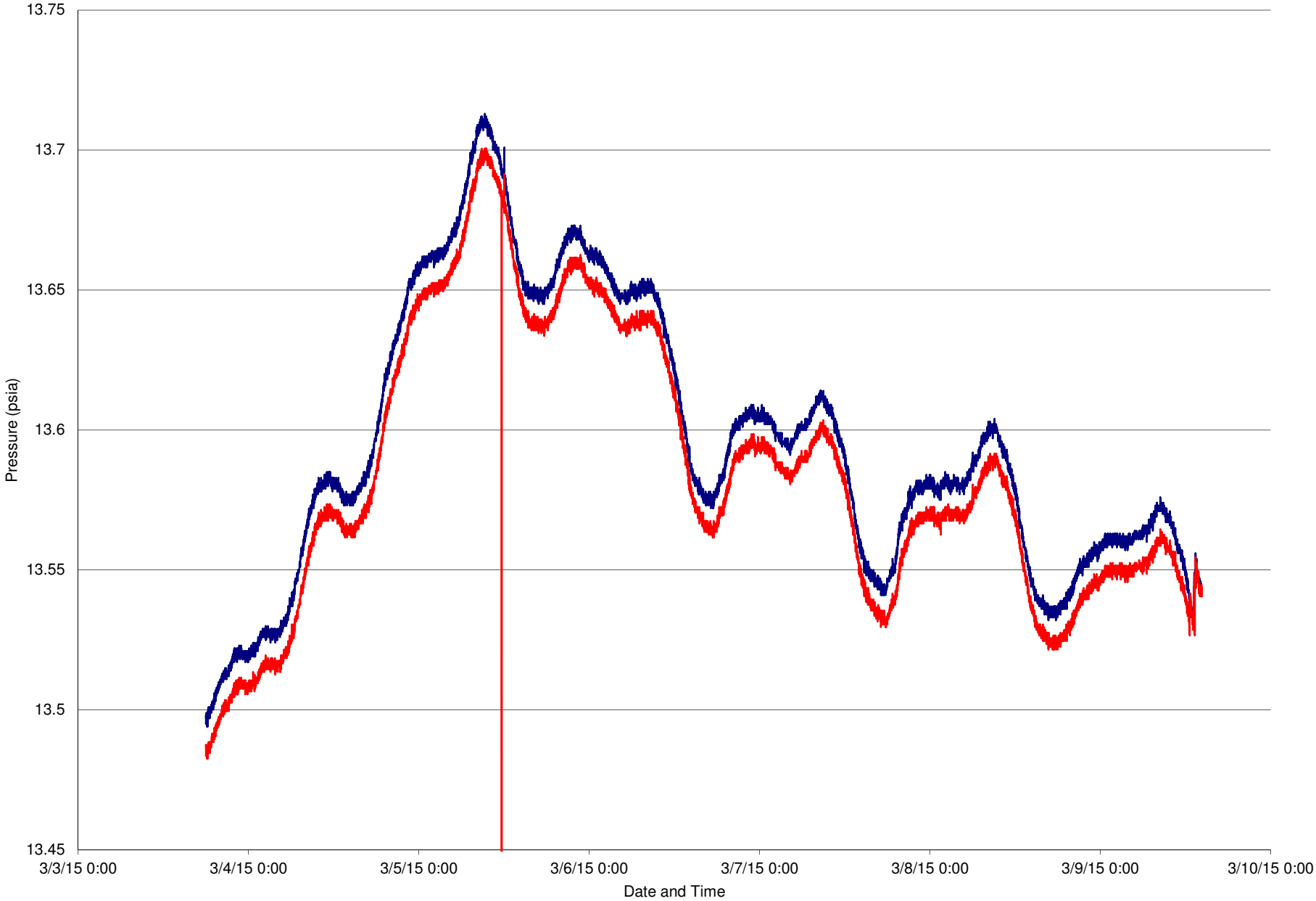

HYDRO GEO CHEM, INC.

AMVP-2-D Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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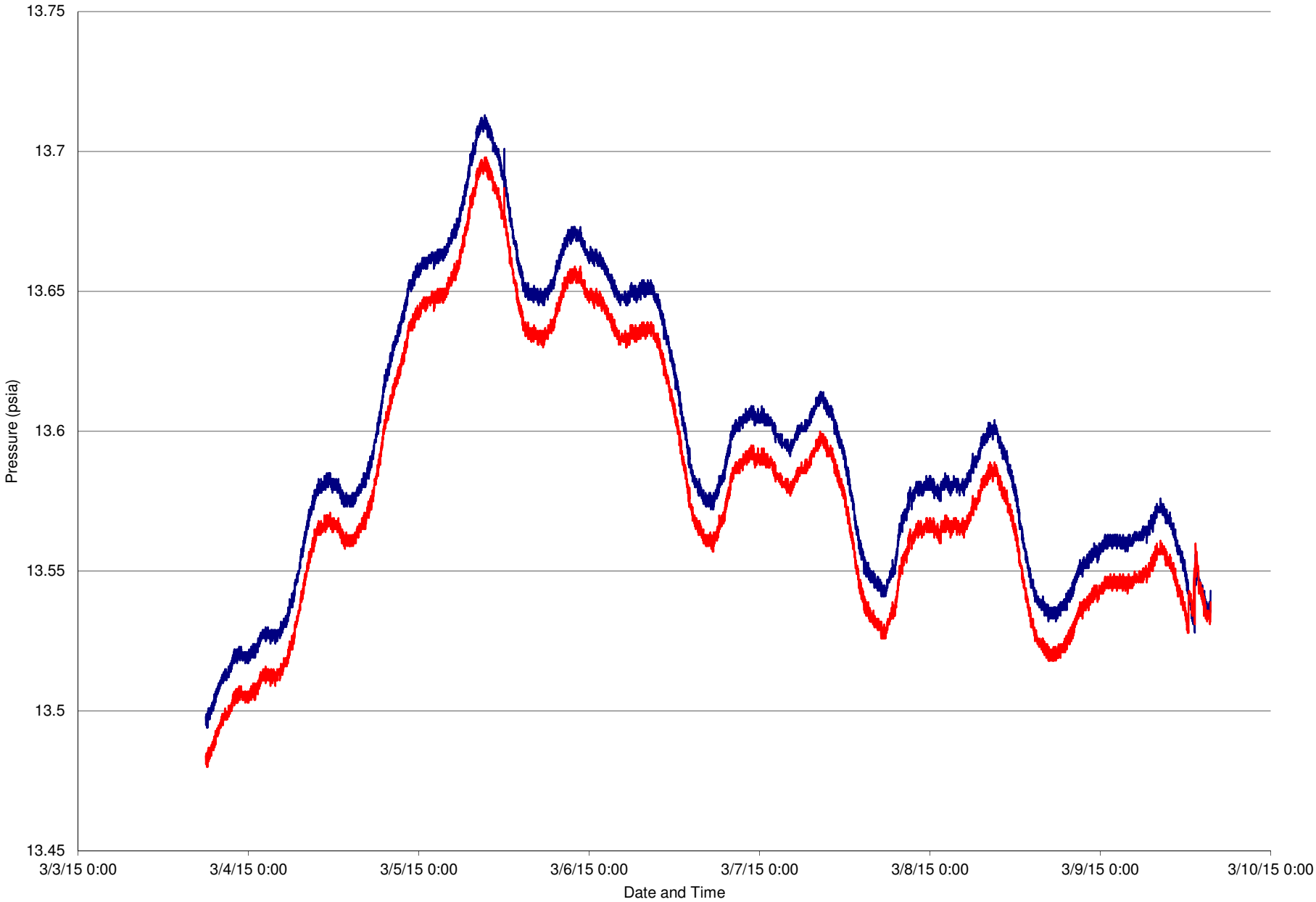

HYDRO GEO CHEM, INC.

AMVP-3-S Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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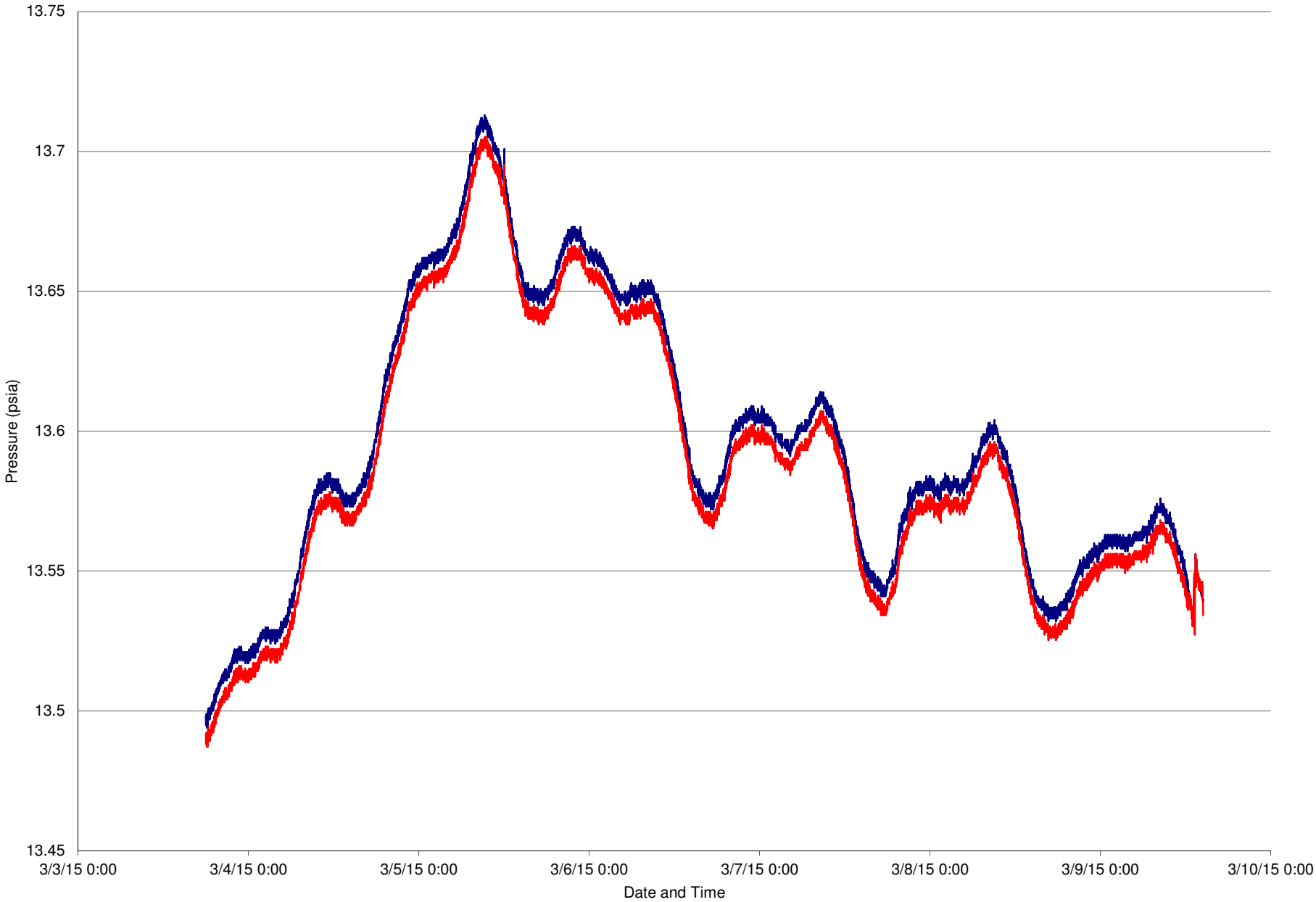

HYDRO GEO CHEM, INC.

AMVP-3-M Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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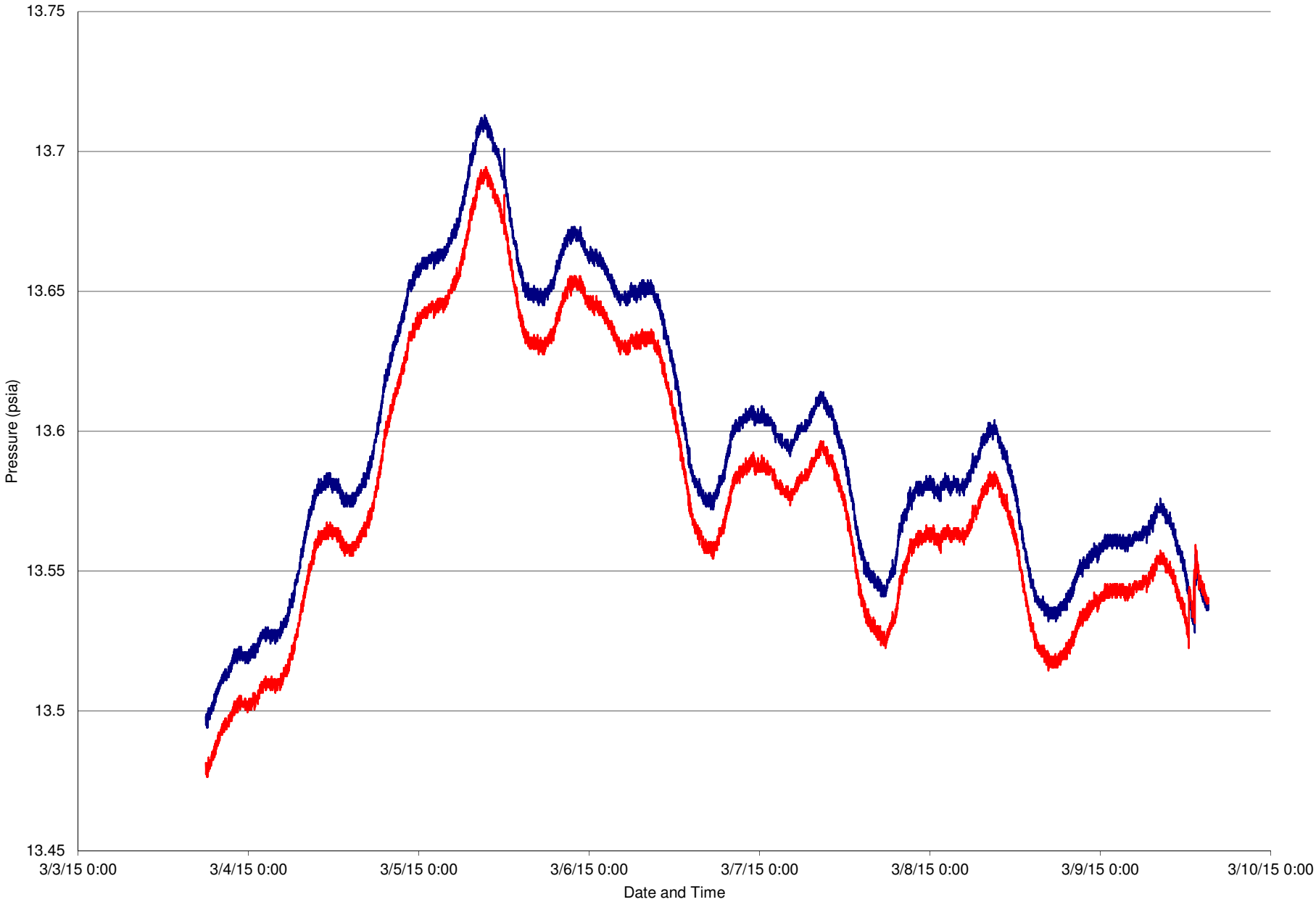

HYDRO GEO CHEM, INC.

AMVP-3-D Pressure and Barometric Pressure during Baropneumatic Test

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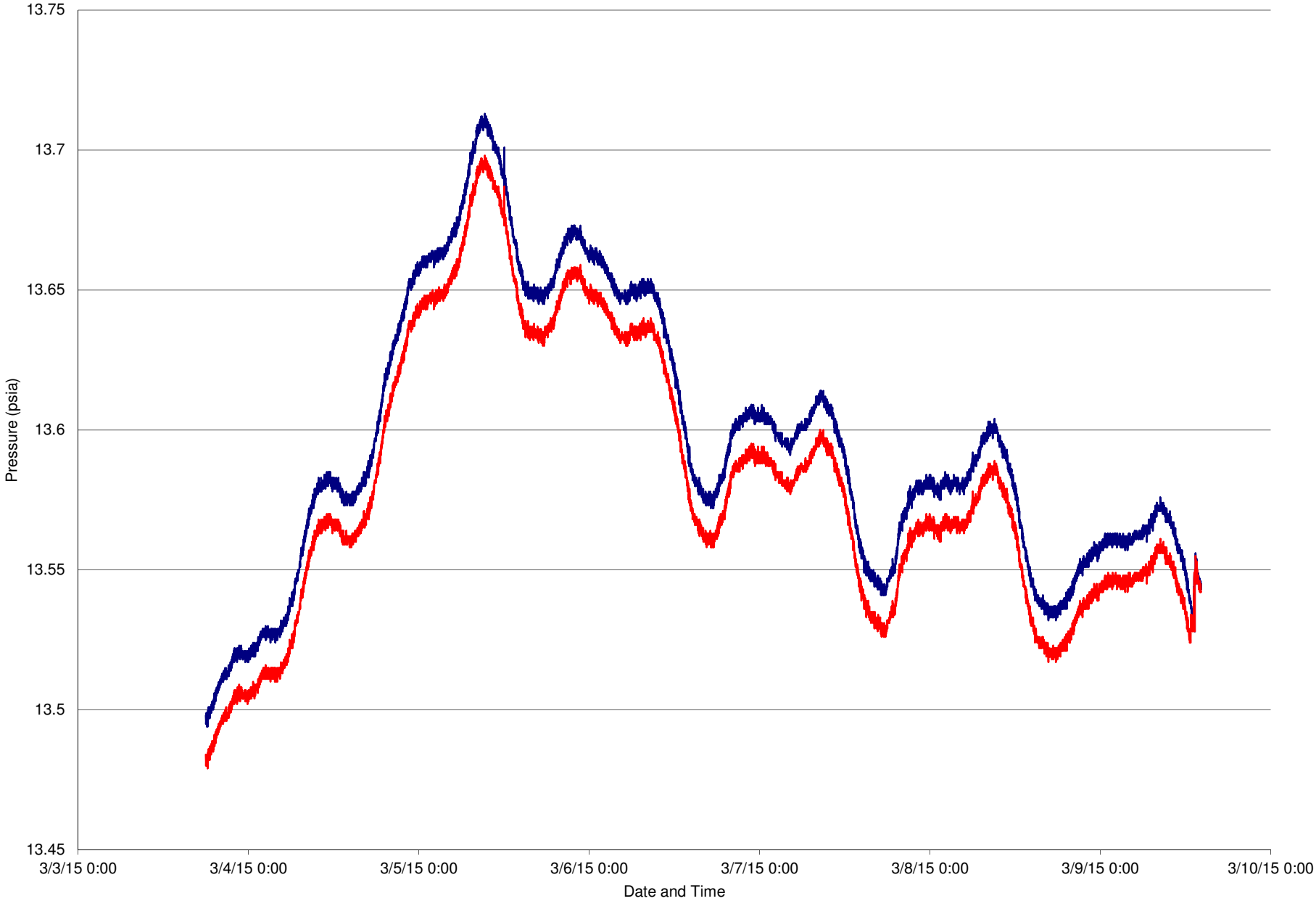

HYDRO GEO CHEM, INC.

AMVP-4-S Pressure and Barometric Pressure during Baropneumatic Test

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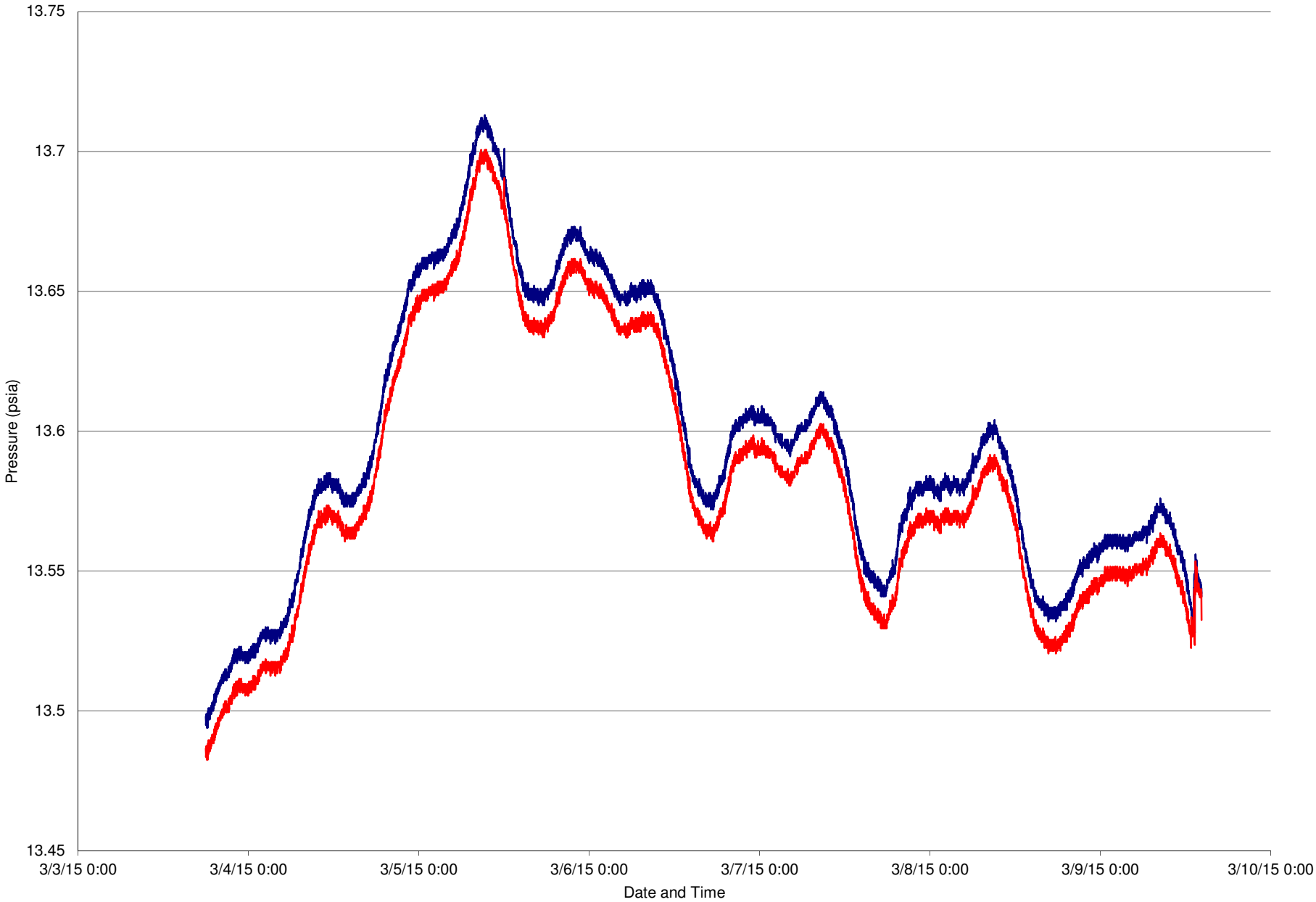

HYDRO GEO CHEM, INC.

AMVP-4-M Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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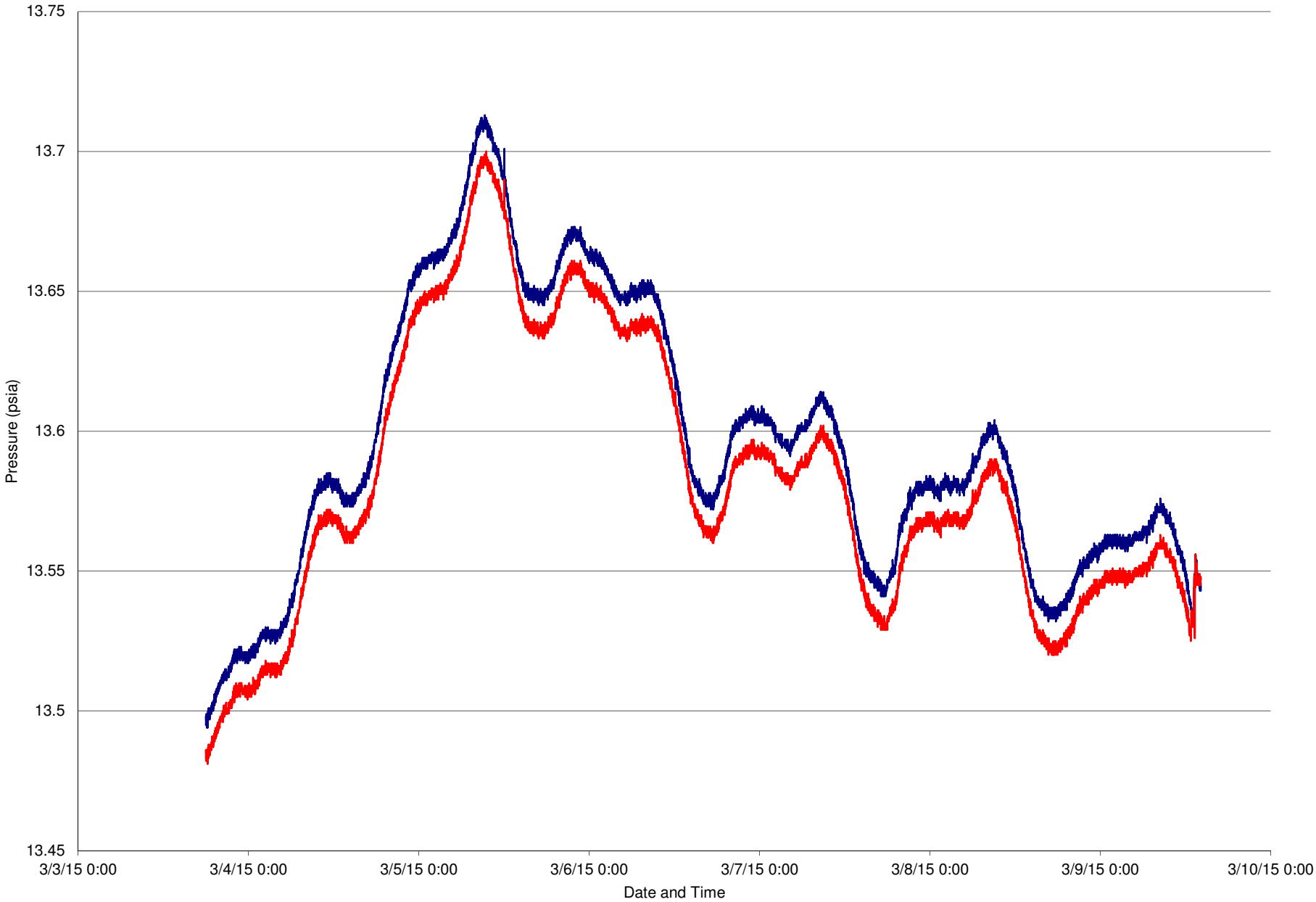

HYDRO GEO CHEM, INC.

AMVP-4-D Pressure and Barometric Pressure during Baropneumatic Test

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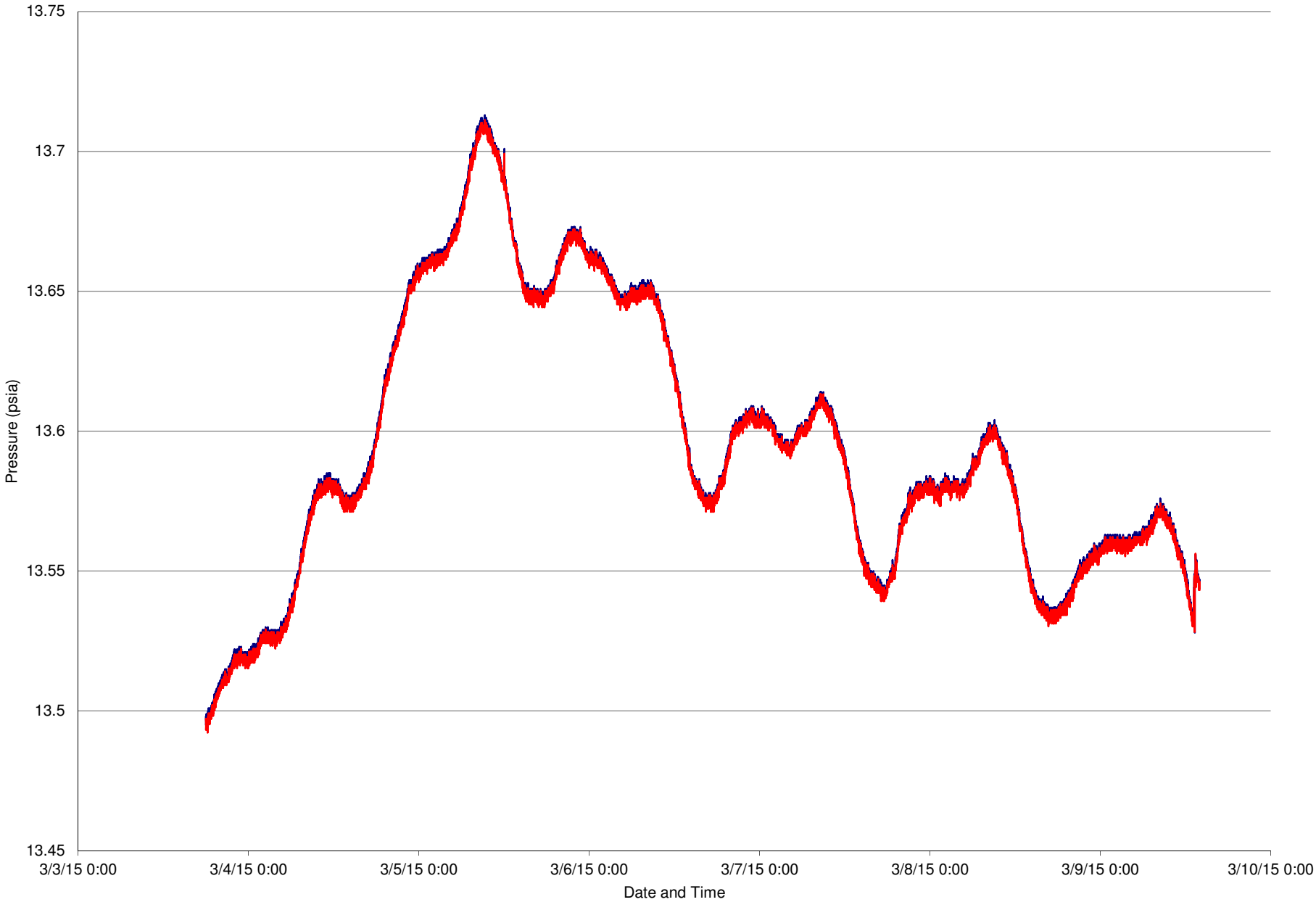

HYDRO GEO CHEM, INC.

AMVP-5-S Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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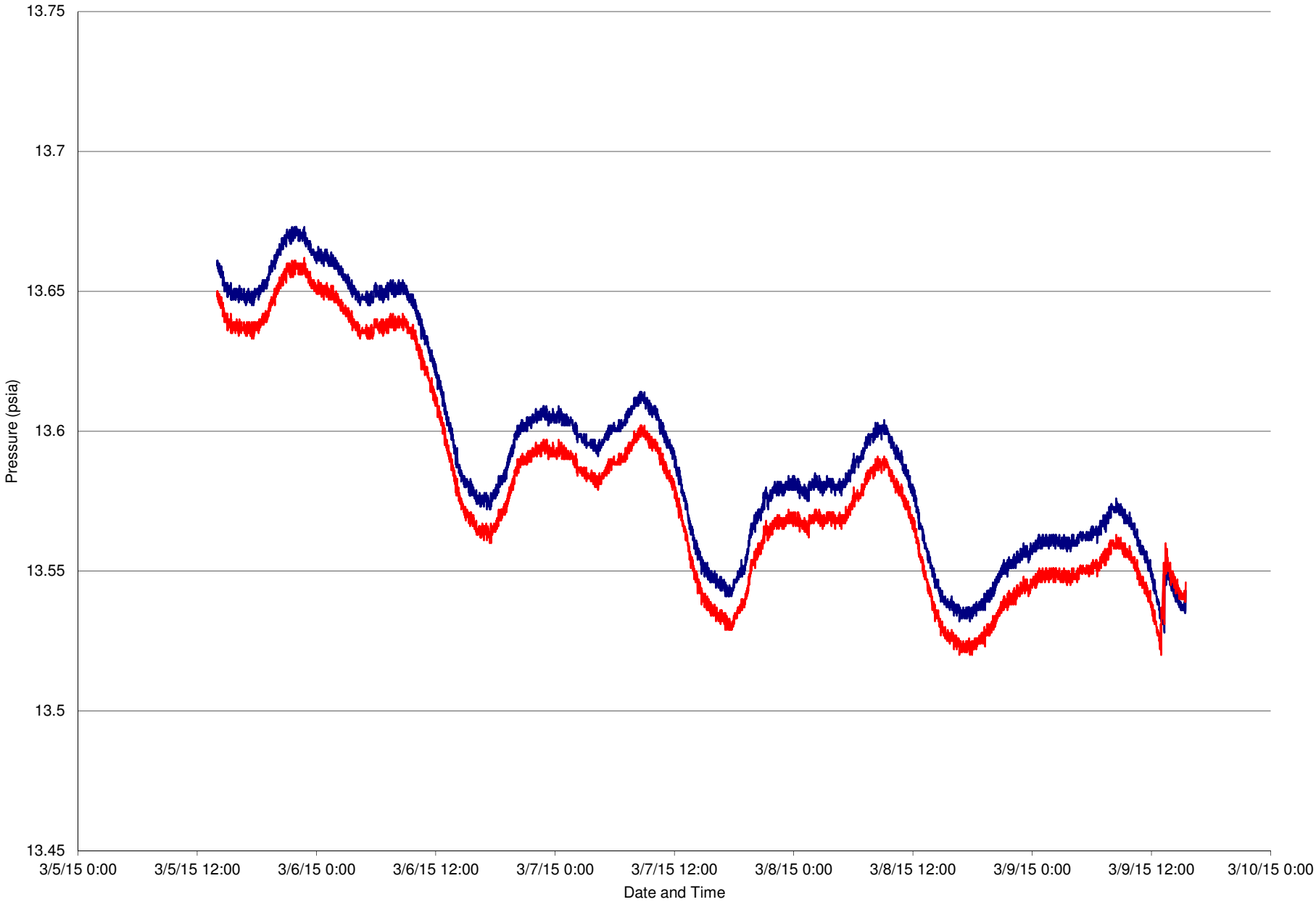

HYDRO GEO CHEM, INC.

AMVP-5-M Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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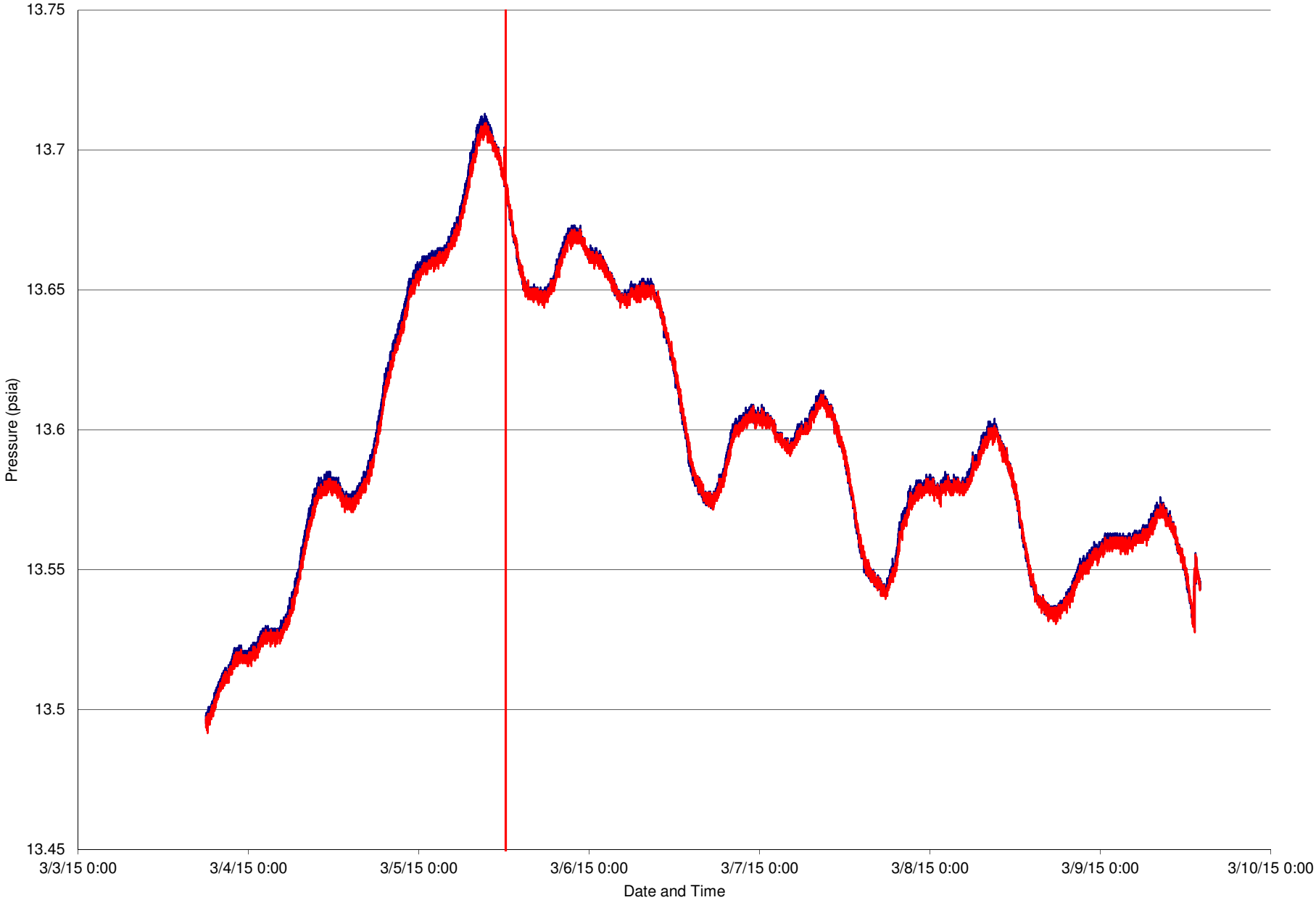

HYDRO GEO CHEM, INC.

AMVP-5-D Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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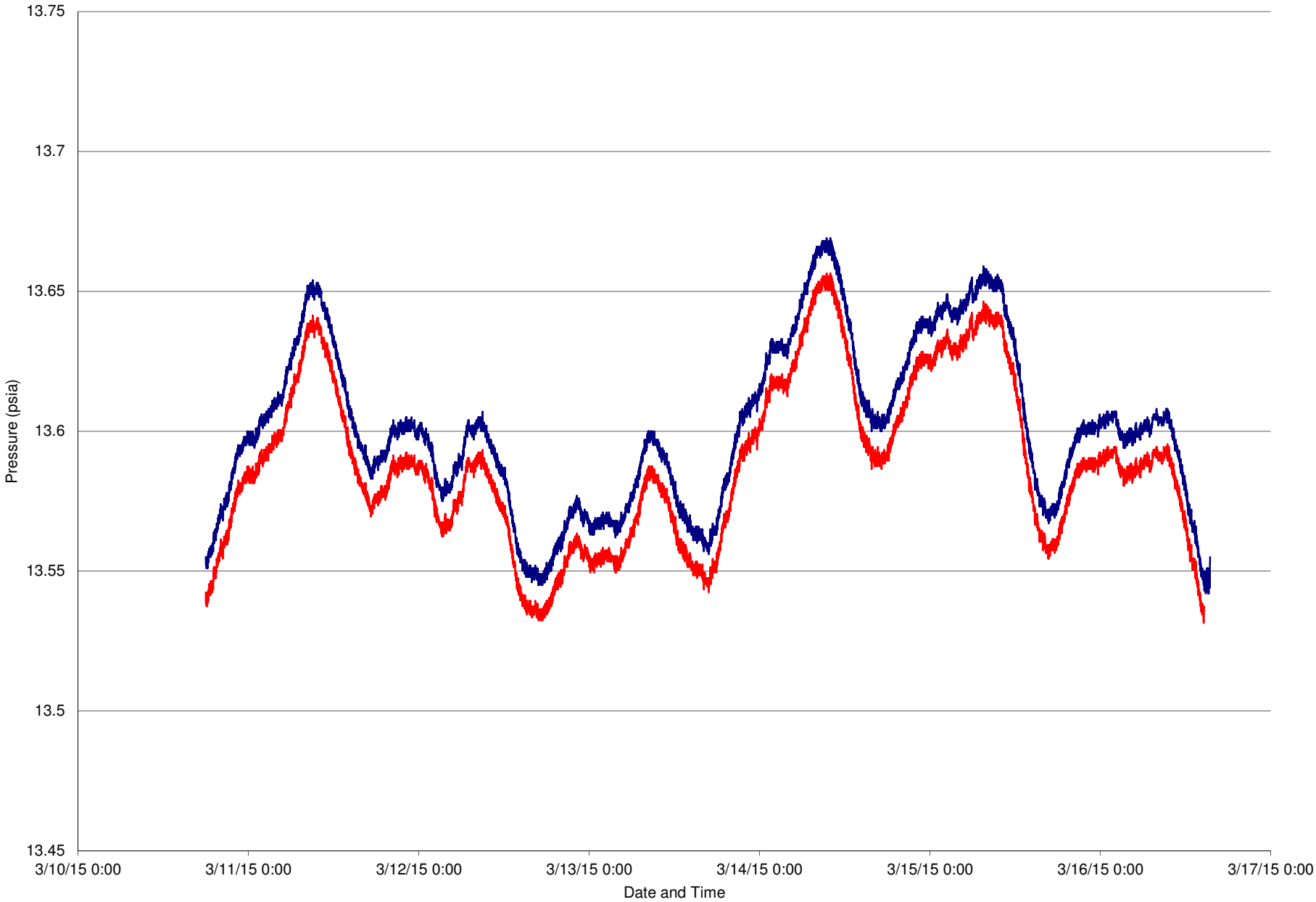

HYDRO GEO CHEM, INC.

AMVP-6-S Pressure and Barometric Pressure during Baropneumatic Test

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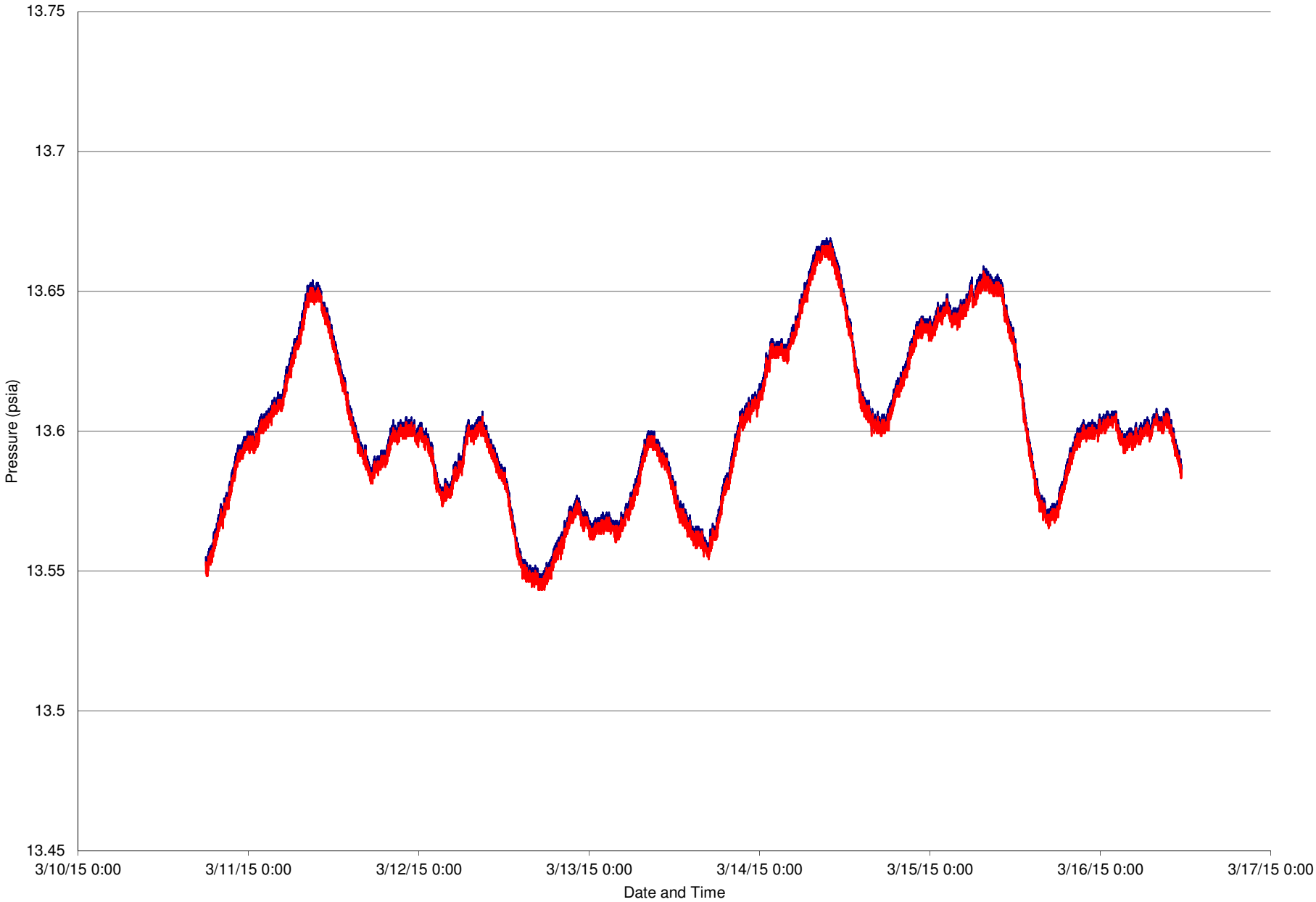

HYDRO GEO CHEM, INC.

AMVP-6-M Pressure and Barometric Pressure during Baropneumatic Test

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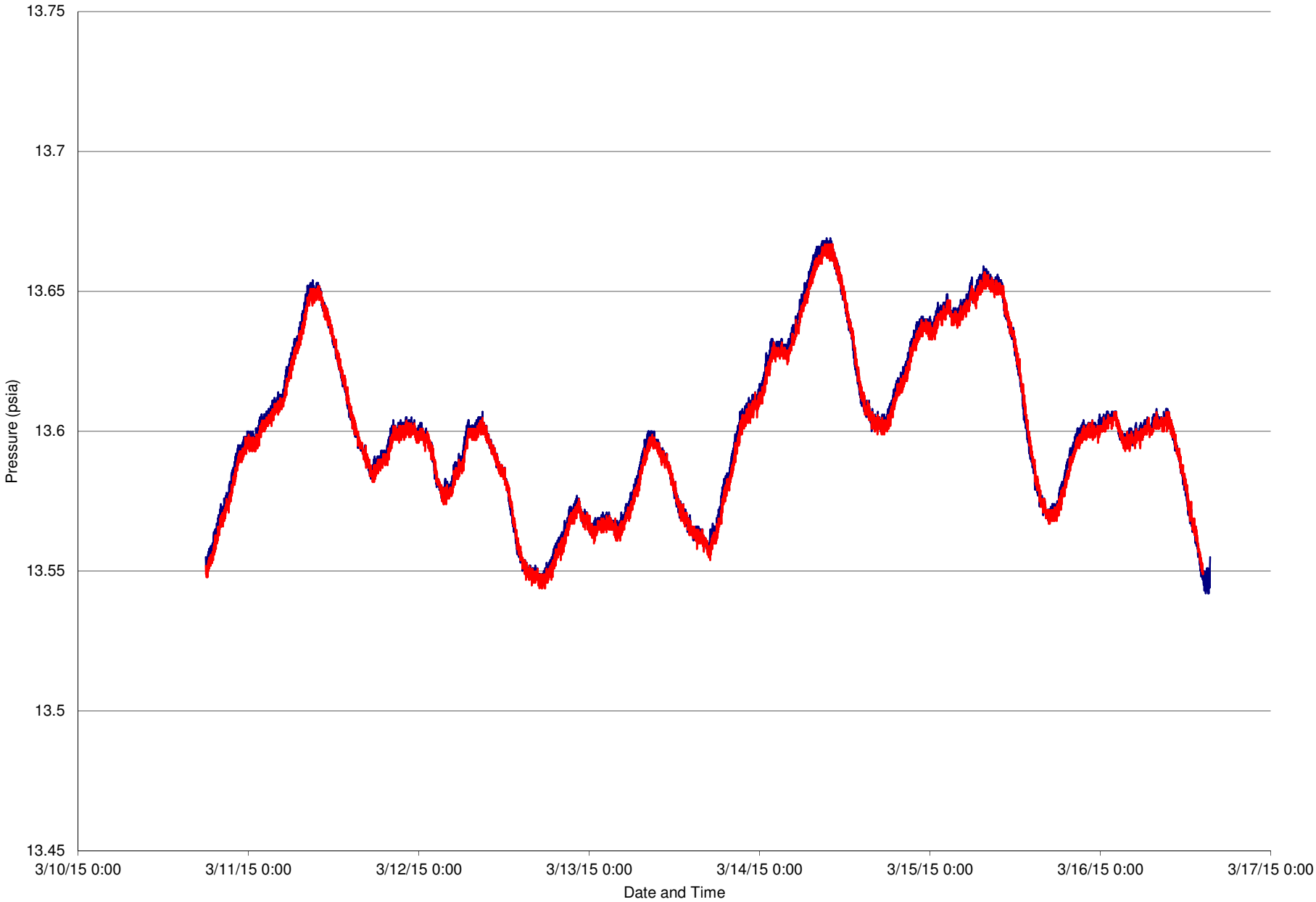

HYDRO GEO CHEM, INC.

AMVP-6-D Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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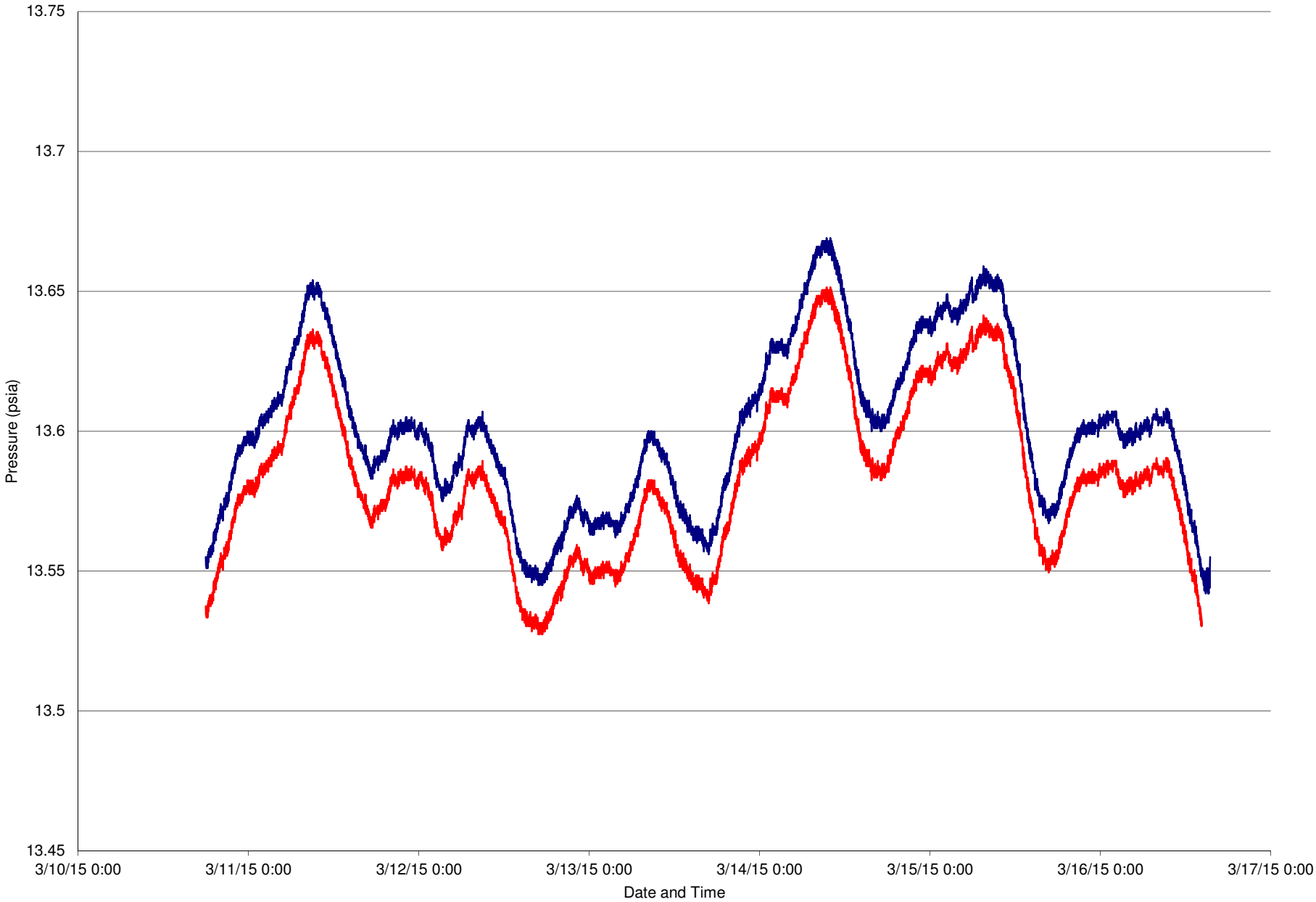

HYDRO GEO CHEM, INC.

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Approved	Date	Author	Date	File Name	Figure
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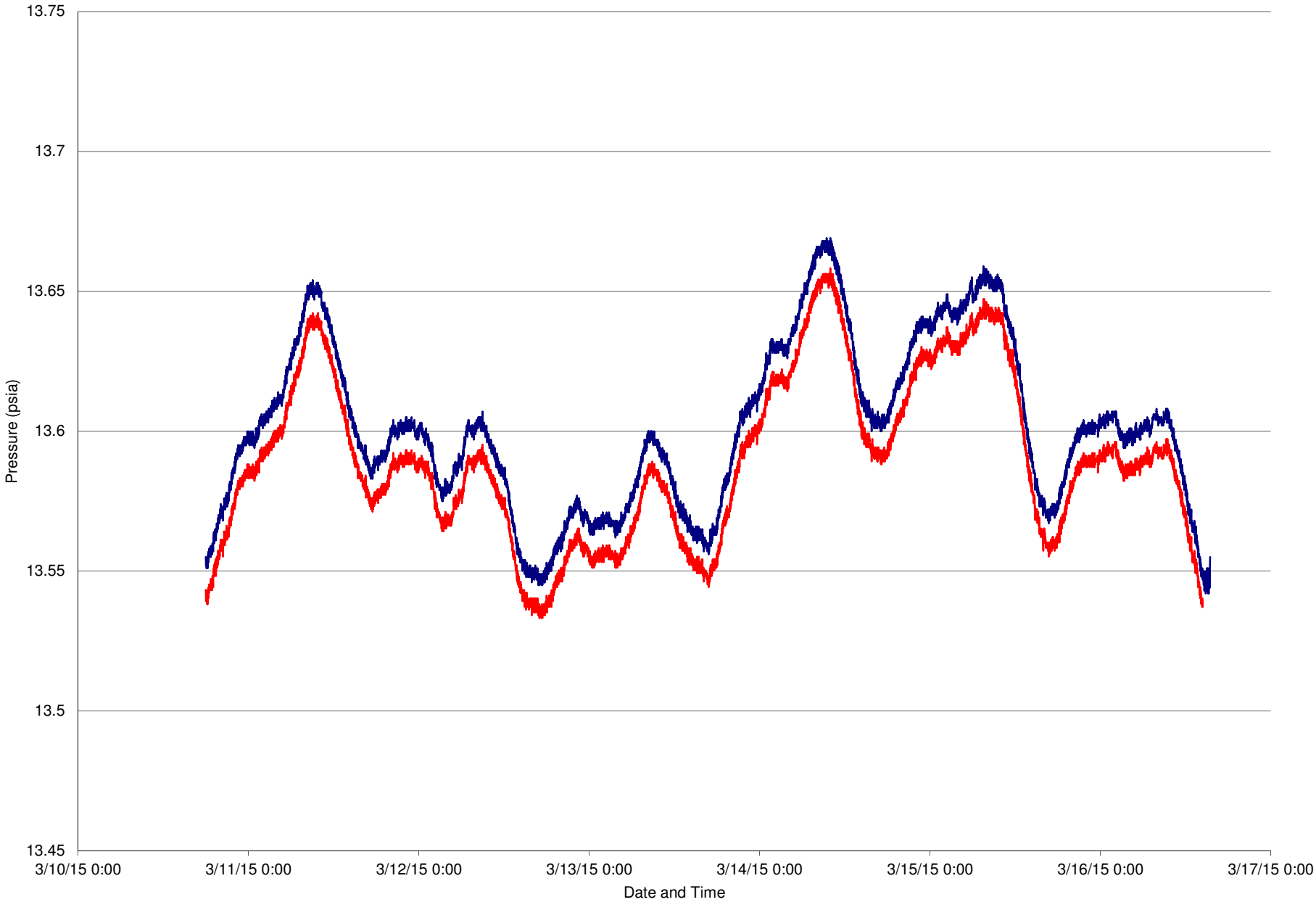

HYDRO GEO CHEM, INC.

AMVP-7-M Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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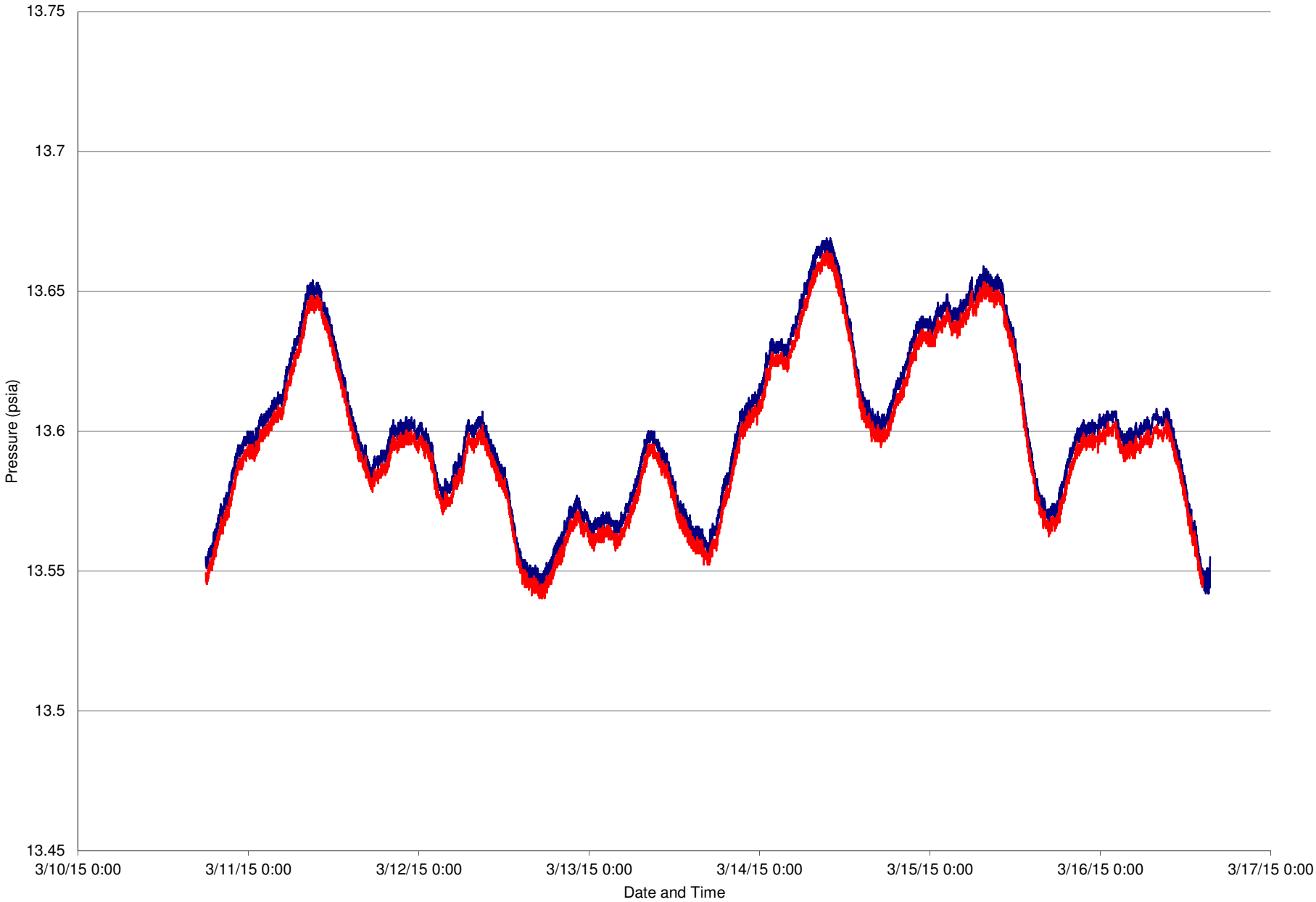

HYDRO GEO CHEM, INC.

AMVP-7-D Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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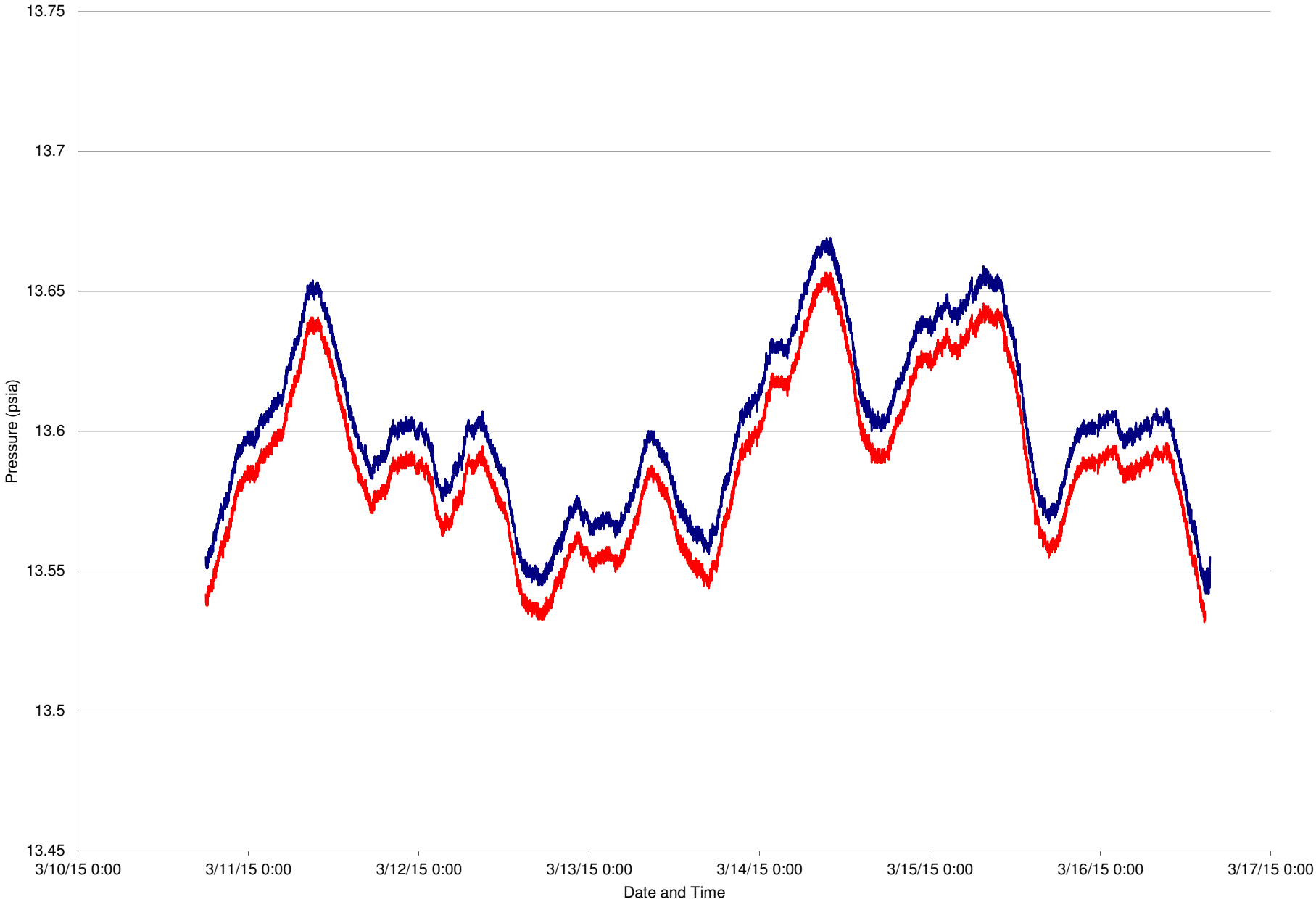

HYDRO GEO CHEM, INC.

AMVP-8-S Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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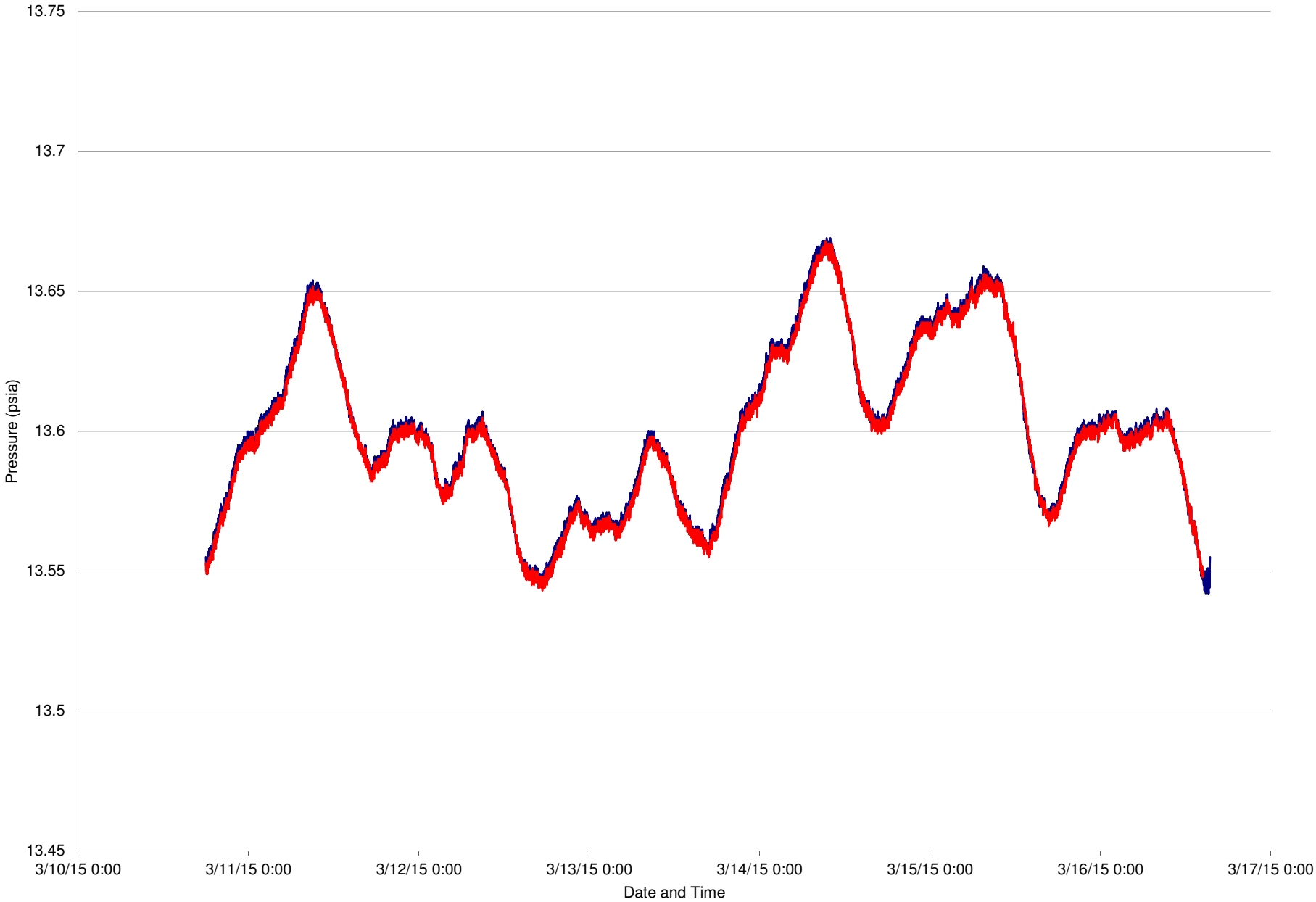

HYDRO GEO CHEM, INC.

AMVP-8-M Pressure and Barometric Pressure during Baropneumatic Test

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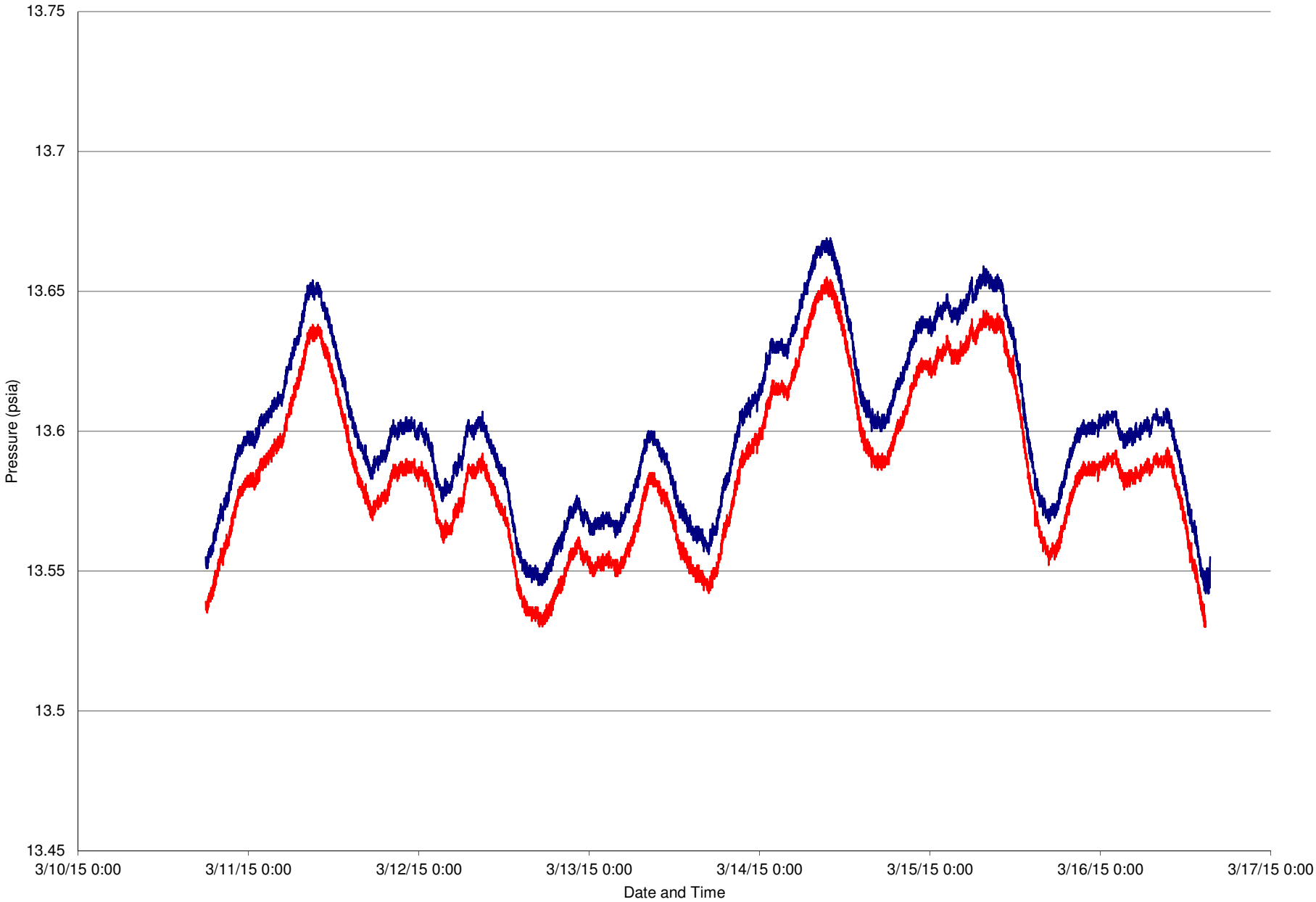

HYDRO GEO CHEM, INC.

AMVP-8-D Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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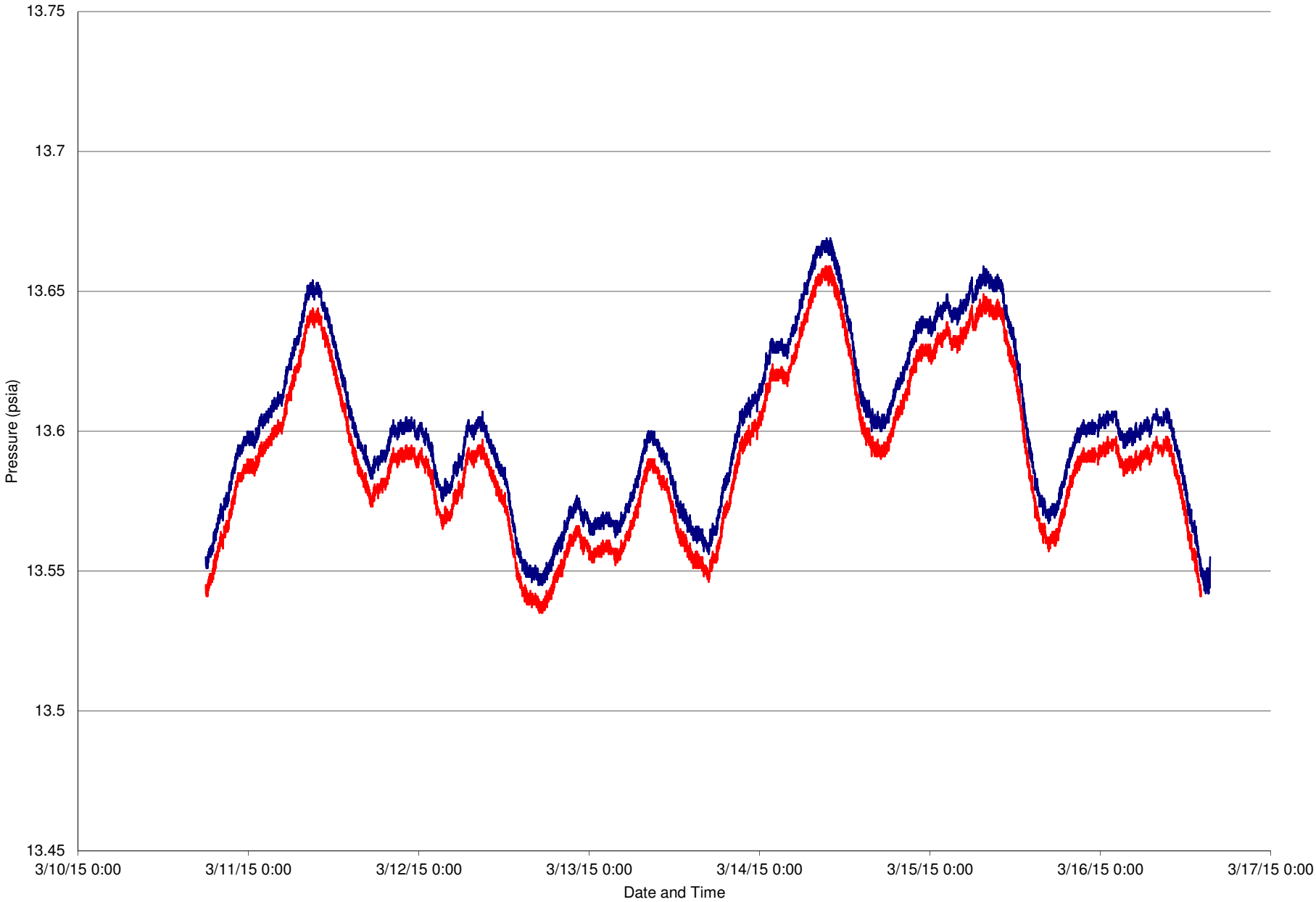

HYDRO GEO CHEM, INC.

AMVP-9-S Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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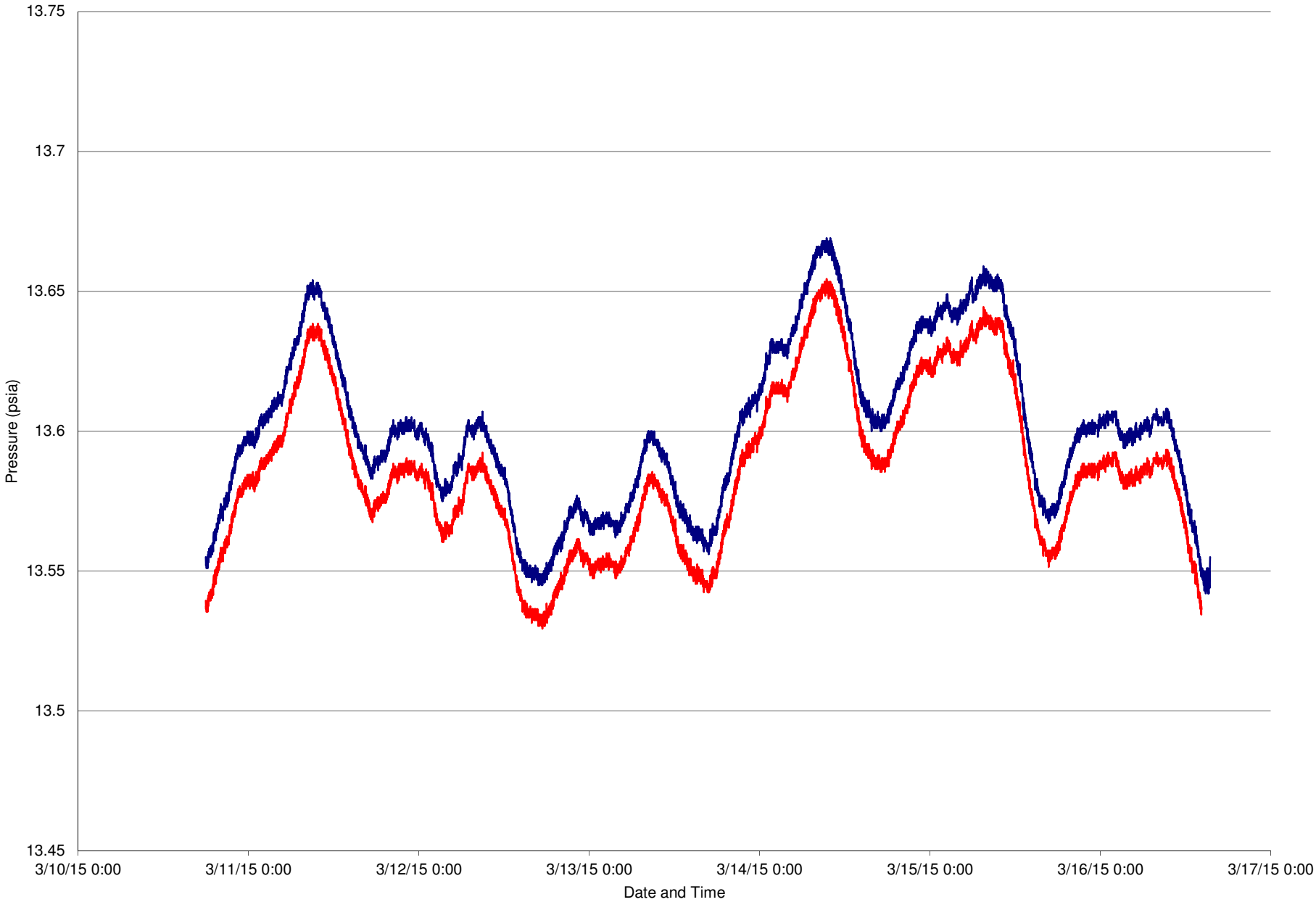

HYDRO GEO CHEM, INC.

AMVP-9-M Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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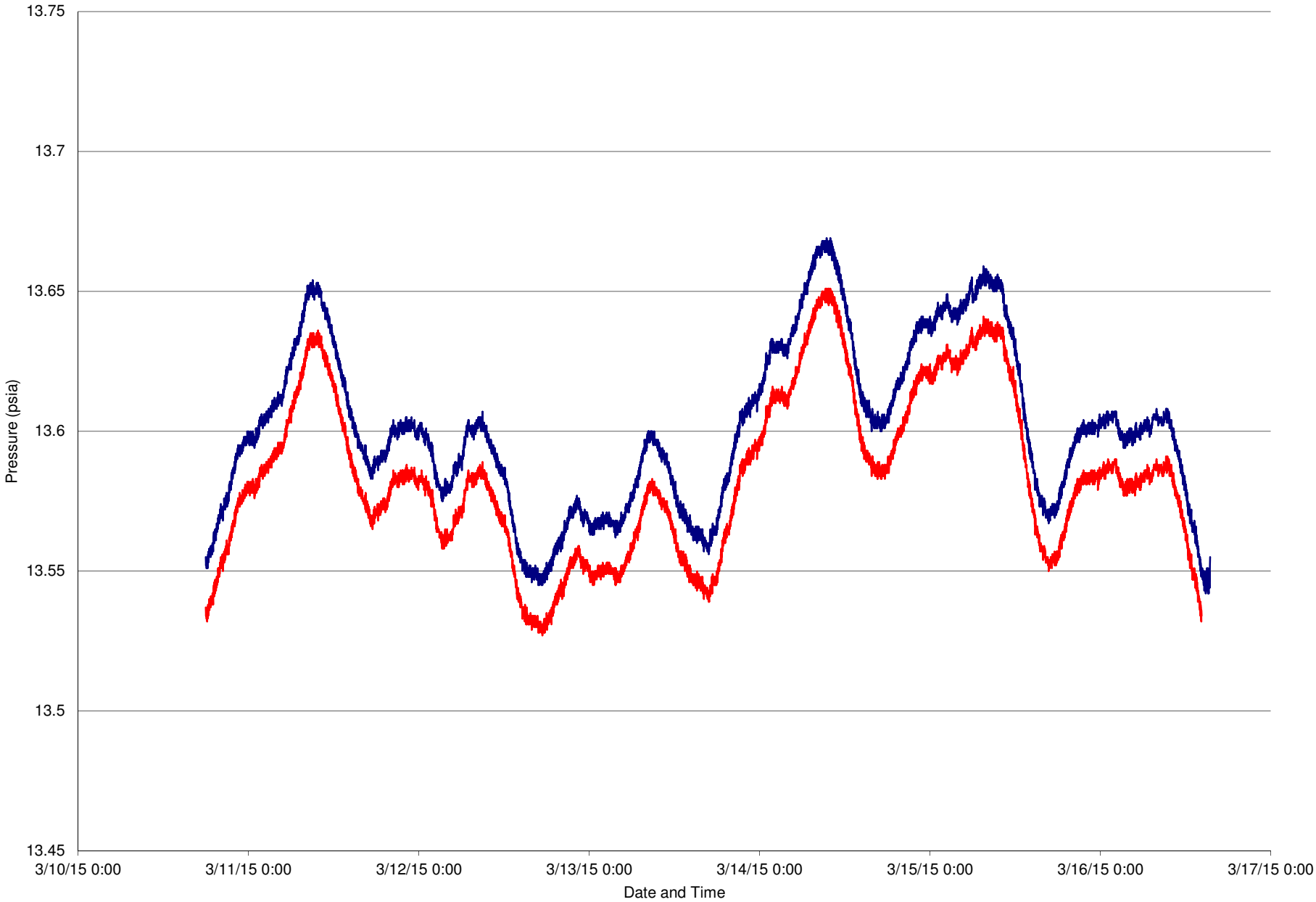

HYDRO GEO CHEM, INC.

AMVP-9-D Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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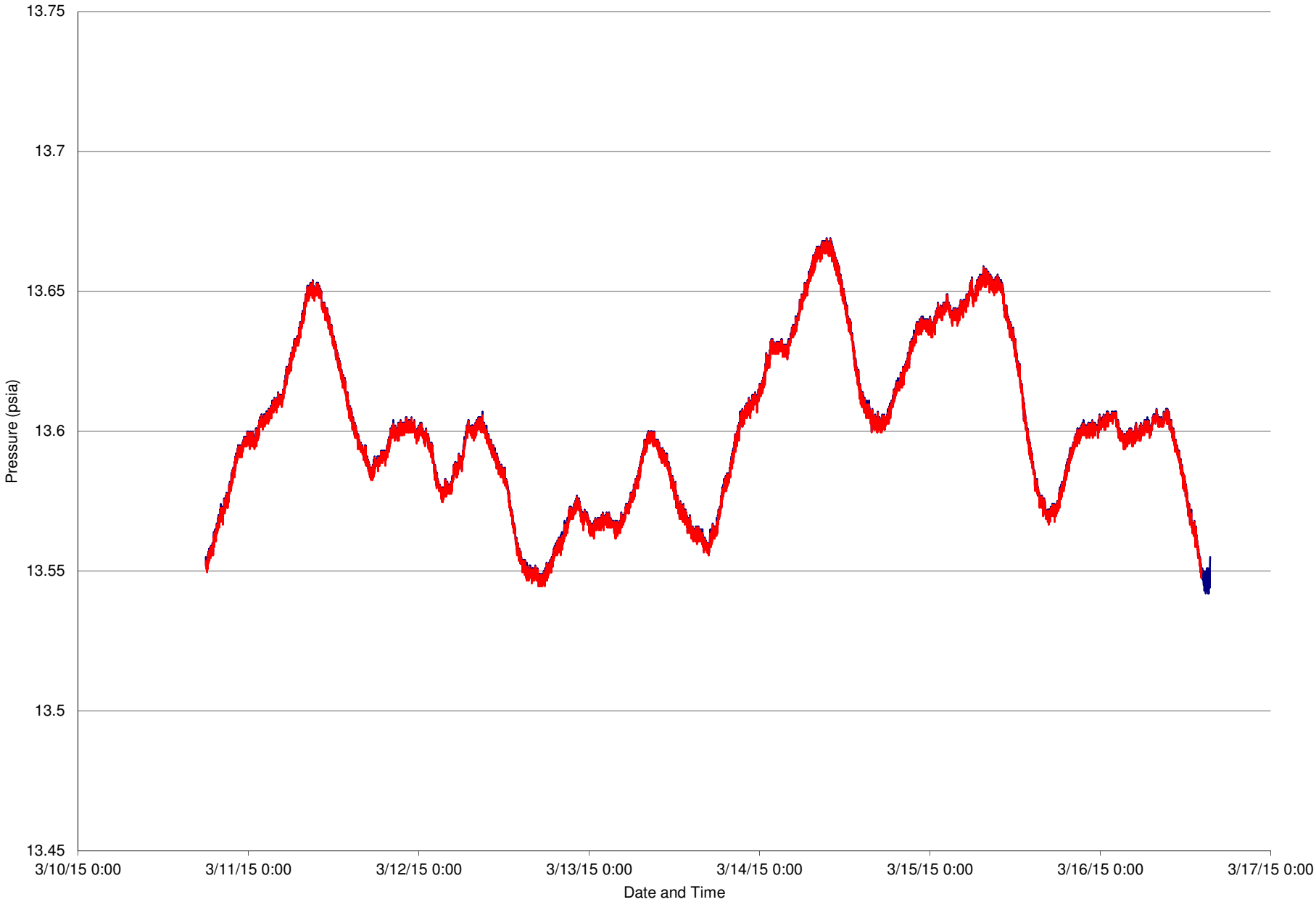

HYDRO GEO CHEM, INC.

AMVP-10-S Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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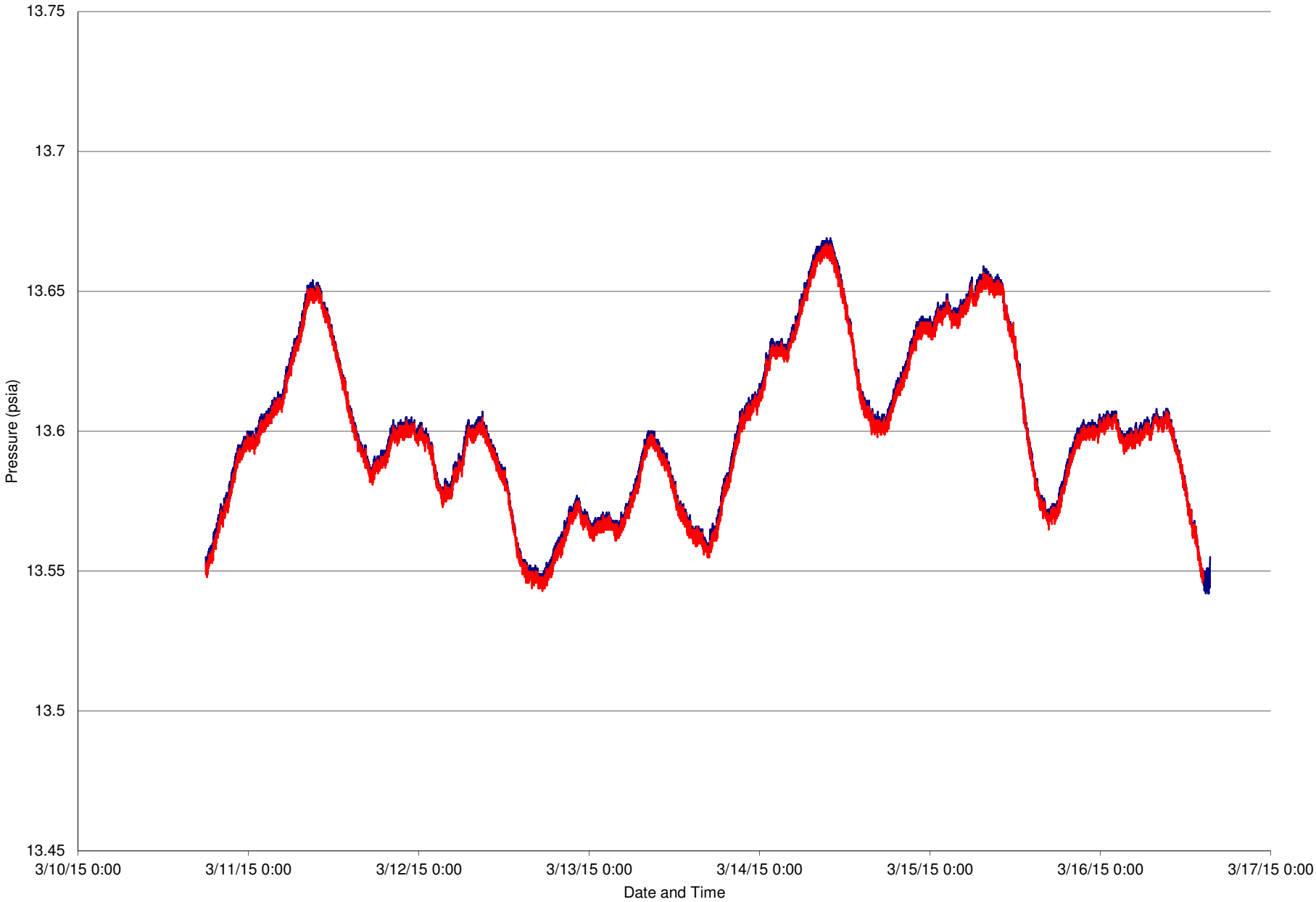

HYDRO GEO CHEM, INC.

AMVP-10-M Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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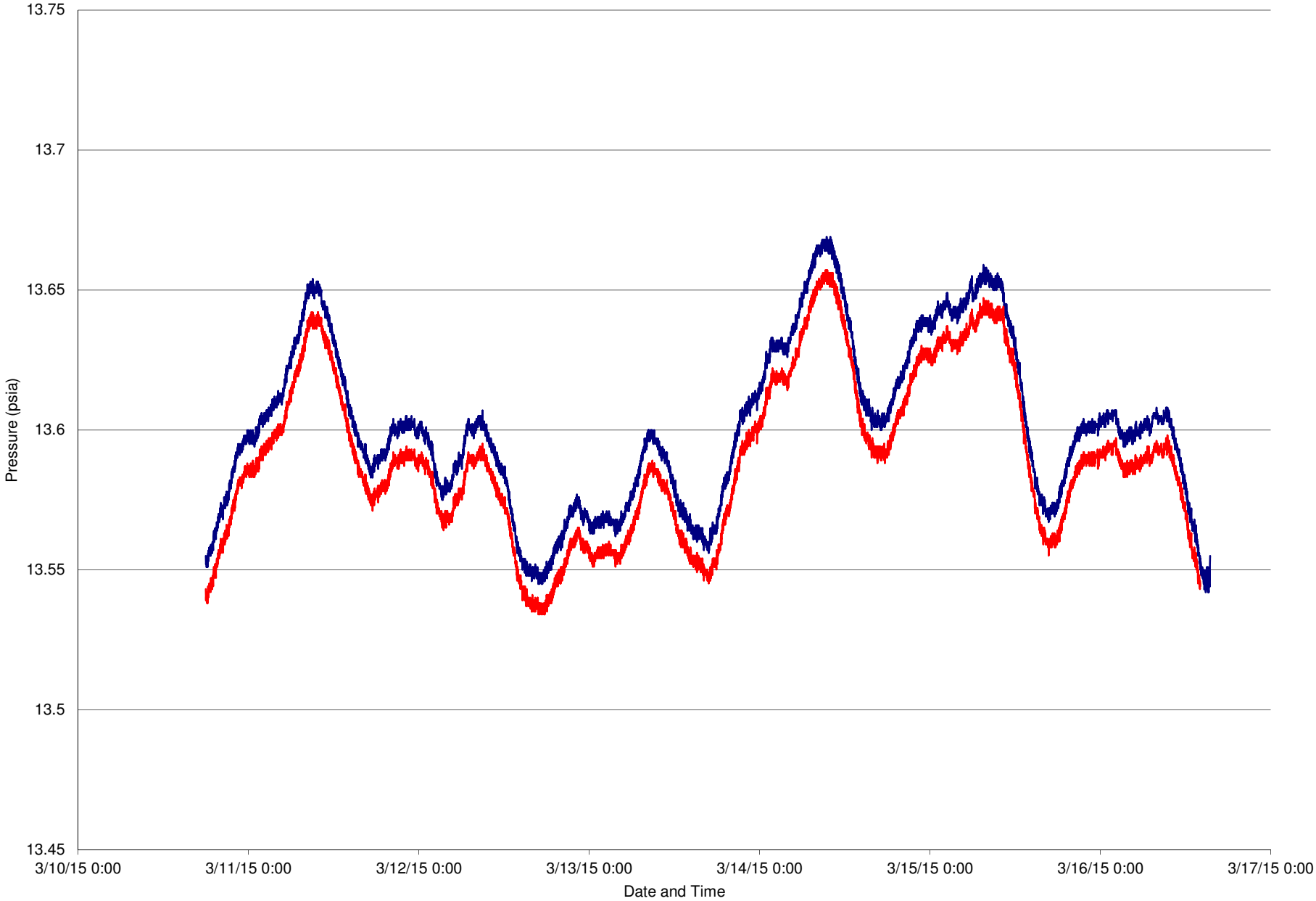

HYDRO GEO CHEM, INC.

AMVP-10-D Pressure and Barometric Pressure during Baropneumatic Test

Approved	Date	Author	Date	File Name	Figure
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APPENDIX F

METHANE OXIDATION

APPENDIX F
AEROBIC DEGRADATION OF METHANE AND REFUSE

Oxygen flow or diffusion into a landfill can result in aerobic biooxidation of landfill materials. Some of these reactions cause a change in gas volume and gas pressure. Aerobic biodegradation of organic material results in the oxidation of solid organic materials and/or the oxidation of methane (CH_4), both reactions producing intermediates such as fatty acids (acetate is an example) and carbon dioxide (CO_2) and water (H_2O). Assuming these reactions go to completion, they can be represented as (Themelis and Kim, 2002[1]):

$(C_6H_{10}O_4)_x(s)$ [mixed food and plant wastes] $+ 6.5O_2(g)$
$\rightarrow (C_6H_{10}O_4)_{x-1}(s) + 6CO_2(g) + 5H_2O(l)$ [net reduction of 0.5 moles of gas (oxygen)] ***(1)***

$(C_6H_{10}O_5)_x$ [mixed paper; cellulose] $+ 6O_2 \rightarrow (C_6H_{10}O5)_{x-1} + 6CO_2 + 5H_2O$ ***(2)***
[no net molar reduction of gas]

$CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_20(l)$ [net gas reduction of 2 moles gas per mole of methane consumed] ***(3)***

Where:

s = solid phase
l = liquid phase, and
g = gas phase

Examination of these reactions provides some insight regarding their potential impact on LFG pressures. Reaction ***(1)*** indicates that the aerobic biodegradation of solid material removes **1/2** mole of gas [$O_2(g)$] per **6** moles of gas produced [$CO_2(g)$]. Thus the bioreaction of oxygen with mixed food and plant waste produces volume of gas (CO_2) **5/6** of the volume of O_2 consumed and should produce a vacuum (ignoring the expansion of gas associated with the heat released by the reaction). The water produced by the reaction is assumed to condense and therefore to contribute only a negligible change in volume. Reaction ***(2)*** indicates no reduction in gas volume when cellulosic materials react with oxygen. However, the incomplete reaction of cellulosic degradation, as evidenced by the buildup of reaction products, indicates that cellulosic material oxidation also can result in a reduction of gas pressure. Reaction ***(3)*** indicates that the

[1] Themelis, N.J. and Y.H. Kim. 2002. Material and Energy Balances in a Large-Scale Aerobic Bioconversion Cell. Waste Management and Research 20: 234-242.

consumption of oxygen by biodegradation of methane removes **3** moles of gas (CH_4+ $2O_2$) per **1** mole of gas (CO_2) produced, a change in gas volume twice that of the methane consumed. Thus the biodegradation of a given volume of methane would produce a negative pressure (vacuum) that would be twice the magnitude of the positive pressure produced by the generation of the same volume of methane.

According to the above discussion, aerobic biodegradation processes can result in vacuums such as those observed in the A-Mountain Landfill. Measured vacuums (although slight) indicate that air (and its accompanying oxygen) is being drawn in to the Landfill, and that portions of the Landfill under vacuum would not allow sustainable collection of landfill gas. Oxygen degrades the organic content in solid waste, reducing its potential methane production. Oxygen also reacts with methane, reducing its concentration in LFG. Oxygen is toxic to methanogens (methane-producing microorganisms), thereby not only consuming methane, but further limiting methane generation rates.

APPENDIX G

LABORATORY REPORTS FOR SOIL SAMPLES

IAS Laboratories

2515 East University Drive
Phoenix, Arizona 85034
(602) 273-7248

SOIL ANALYSIS REPORT

Today's Date: 4/6/2015
Grower: Rio Nuevo A mountian LF
Submitted By: Mike Barden
Send Report To: Mike Barden
Report Number: 6649875
Crop: Landscape
Date Received: 4/1/2015

VL = Very Low
L = Low
M = Medium
H = High
VH = Very High

Sender Sample Id	Depth	Lab #	pH	Calcium (Ca) PPM	Magnesium (Mg) PPM	Sodium (Na) PPM	Potash (K) PPM	Iron (Fe) PPM	Zinc (Zn) PPM	Manganese (Mn) PPM	Copper (Cu) PPM	Salinity (EC x K) dS/m	Nitrate Nitrogen (NO3-N) PPM	Phosphorus (Bicarb - Soluble P) PPM	Computed % Sodium (ESP)	Sulfur (SO4-S) PPM	Boron (B) PPM	Free Lime Level
AMVP-1		428	8.8	5900 VH	530 VH	230 H	280 VH	11.0 VH	3.1 VH	4.6 VH	3.7 VH	.8 L	13.0 M	6.6 L	2.8	3.9 VL	.17 VL	High
AMVP-3		429	7.7	5600 VH	470 VH	440 VH	320 VH	12.0 VH	7.3 VH	9.7 VH	12.0 VH	7.2 VH	3.1 VL	9.9 L	5.5	180 VH	.65 L	High
AMVP-4		430	8.6	5800 VH	280 VH	230 H	190 H	4.4 M	2.4 H	3.4 H	2.7 VH	6.0 VH	220.0 VH	5.2 L	3.0	8.9 L	.33 L	High
AMVP-2		431	8.4	5700 VH	300 VH	230 H	130 M	3.3 M	2.7 H	3.7 VH	1.2 VH	1.8 L	3.5 VL	2.6 VL	3.1	83 VH	.81 L	High
AMVP-9		432	8.3	6000 VH	300 VH	230 H	240 H	5.6 H	2.7 H	3.2 H	2.7 VH	1.5 L	12.0 M	10.0 M	2.9	93 VH	.38 L	High
AMVP-10		433	8.3	6000 VH	670 VH	870 VH	280 VH	4.1 M	1.6 H	4.7 VH	3.0 VH	8.2 VH	70.0 VH	3.9 VL	9.4	570 VH	.76 L	High
AMVP-7		434	8.6	5600 VH	410 VH	400 VH	260 VH	16.0 VH	2.7 H	6.6 VH	5.8 VH	2.1 M	10.0 L	8.6 L	5.1	61 VH	.50 L	High
AMVP-8		435	7.8	5600 VH	440 VH	540 VH	460 VH	5.5 H	8.0 VH	9.5 VH	4.3 VH	8.0 VH	250.0 VH	12.0 M	6.7	140 VH	.60 L	High
AMVP-5		436	8.6	5600 VH	400 VH	230 H	250 H	7.0 H	8.2 VH	3.9 VH	4.8 VH	.9 L	17.0 M	6.9 L	3.0	9.0 L	.33 L	High
AMVP-6		437	7.5	5200 VH	420 VH	270 H	230 H	29.0 VH	1.9 H	15.0 VH	6.2 VH	5.8 VH	200.0 VH	11.0 M	3.8	230 VH	.40 L	High

IAS Laboratories

2515 East University Drive
Phoenix, Arizona 85034
(602) 273-7248

SOIL FERTILITY RECOMMENDATIONS

Lb/1000 Sq Ft

Grower: Rio Nuevo A mountian LF Send To: Mike Barden

Report No: 6649875 Date: 4/1/2015 Page: 2

											AMENDMENTS				
Sender Number	Crop	Nitrogen N	Phosphate P2O5	Potash K2O	Magnesium Mg	Sulfur S	Iron Fe	Zinc Zn	Manganese Mn	Copper Cu	Boron B	Elemental Sulfur	Gypsum	Lime	Leaching of Excess Salts
AMVP-1	Landscape	1 a	2 b					.05 g			.02 h	20 *			
AMVP-3	Landscape	2.5 a	2 b					.1 g	.1 i		.02 h				Yes
AMVP-4	Landscape		2 b		.5 d			.05 g			.02 h	15 *			Yes
AMVP-2	Landscape	2.5 a	2.5 b				.1 f				.02 h	10 *			
AMVP-9	Landscape	1 a	2 b								.02 h	10 *			
AMVP-10	Landscape		2.5 b				.1 f	.1 g			.02 h	10 *			Yes
AMVP-7	Landscape	2 a	2 b					.1 g			.02 h	15 *			Yes
AMVP-8	Landscape		1 b				.2 f				.02 h				Yes
AMVP-5	Landscape	1 a	2 b				.1 f		.05 i		.02 h	15 *			
AMVP-6	Landscape		2 b					.2 g			.02 h				Yes

Landscape

*) Till sulfur into the soil to reduce pH. Disper/sul or SSP are sulfur product that should dissolves and can be used if you can't till.

a) Broadcast nitrogen and water into soil. Apply the nitrogen after leaching the excess salts out of the root zone.

b) Broadcast phosphate and till into soil where possible.

d) Apply magnesium to narrow the calcium to magnesium ratio. Landscape plants grow best with a calcium to magnesium ratio of 10:1 to 20:1.

f) Apply iron to balance the micro nutrients. There should be more iron than manganese and zinc available in the soil.

g) Apply zinc to balance the micro nutrients. There should be more zinc than copper available in the soil. Do not over apply.

i) Apply manganese to balance the micro nutrients. There should be more manganese available in the soil than zinc and copper.

h) Apply boron by dissolving it in water and they spray it over the soil. If you cannot find a boron fertilizer you can use 20 mule team borax located in the laundry isle. If you use borax, mix 1 tbsp into 5 gallons of water. Then apply 2 gallons of solution per 1000 sqft.

Yes) Irrigate with extra water to flush the salts out of the root zone. Landscape plants grow best with a sodium below 300 ppm and salinity below 3 dS/m. Leaching will also help reduce the nitrate nitrogen concentration. Nitrogen values above 80 ppm can cause plant burn.

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Date: April 14, 2015
Submitted by: Hydro Geo Chem, Inc.
Report to: Mike Barden
Project: Rio Nuevo A-Mnt
Report #: 6649875
Date Received: April 6, 2015

Soil Analysis

Sender ID	IAS Lab #	*Water Holding Capacity Moisture %			**Organic Matter	***Bulk Density	
		1/3 Bar	15 Bar	Field Capacity	%	g/cc	lb/cu.yd.
AMVP-1	428	20.0	9.0	10.9	3.2	1.16	1947
AMVP-3	429	14.4	6.8	7.6	3.3	1.24	2095
AMVP-4	430	13.3	6.8	6.5	1.9	1.32	2220
AMVP-2	431	14.3	7.2	7.1	1.8	1.23	2073
AMVP-9	432	16.3	7.9	8.4	2.2	1.23	2065
AMVP-10	433	22.0	9.8	12.2	2.8	1.20	2023
AMVP-7	434	17.6	8.4	9.2	2.5	1.22	2058
AMVP-8	435	16.3	7.3	8.9	2.7	1.23	2072
AMVP-5	436	16.3	7.6	8.7	3.0	1.23	2071
AMVP-6	437	18.9	8.9	10.1	3.0	1.18	1982

*Analysis modified ASTM D3152 and ASTM D2325

**AASHTO:T267-86

***The Nature and Properties of Soils Brady , Nyle. 8th Ed. Ch.3.7 p. 50-51