

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

PM

API 47-069-00161 County 69-Ohio District 7-Tridelpia
Quad 648- Valley Grove Pad Name CHARLE FRYE-OHI-PAD1 Field/Pool Name Panhandle Field
Farm name CHARLE FRYE-OHI Well Number 1
Operator (as registered with the OOG) SWN Production Company LLC
Address 10000 Energy Drive City Spring State TX Zip 77389

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4433736.673 Easting 536069.973
Landing Point of Curve Northing 4433710.018 Easting 535785.237
Bottom Hole Northing 4434994.878 Easting 535047.974

Elevation (ft) 1267.5' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
SOBM

Date permit issued 4/15/13 Date drilling commenced 2/15/15 Date drilling ceased 4/12/15
Date completion activities began 5/9/15 Date completion activities ceased 6/21/15
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 564' Open mine(s) (Y/N) depths _____
Salt water depth(s) ft 1135' Void(s) encountered (Y/N) depths _____
Coal depth(s) ft 627' Cavern(s) encountered (Y/N) depths _____
Is coal being mined in area (Y/N) N

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API 47-069 - 00161 Farm name CHARLE FRYE-OHI Well number 1

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	30	24	100	N	J-55/94 ppf		Y
Surface	17.5	13.375	727	N	J-55/54.5 ppf	602,612	Y
Coal	12.25	9.625	2227	N	J-55/40 ppf	Shoe @ 2253	Y
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	8.75 to 8.5	5.5	11,948	N	HCP-110	Shoe @ 11974	Y
Tubing		2.375	6790	N	L-80		N
Packer type and depth set		10K Arrowset AS1-X size 5.5 @ approximately 6,197'					

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	Grout	119.3	1.19	245	Surface	24
Surface	Class A	608	15.6	1.18	717.44	Surface	8
Coal	Class A	1314	15.6	1.19	1563.66	Surface	8
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	Class A	2551	15.6	1.19	3035.69	4674'	10
Tubing	NA	NA	NA	NA	NA	NA	NA

Drillers TD (ft) 11948' Loggers TD (ft) 11948'
 Deepest formation penetrated Marcellus Plug back to (ft) NA
 Plug back procedure NA

Kick off depth (ft) 5784'

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____
Surface: 1 bow spring centralizer every third joint TD to Surface Intermediate: 1 bow spring centralizer every third joint TD to Surface Production: 1 solid body centralizer from TD to 30 degrees in the curve, 1 bow spring every third joint from 30 degrees to surface

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

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Field:

Map Units:	usFt
Vertical Reference Datum (VRD):	Mean Sea Level
Projected Coordinate System:	Zone 17N (84 W to 78 W)

Section:

Company Name:	Southwestern Energy Company
Units:	Feet
TVD Reference:	Rotary Table

Position:

Northing:	14,546,367.140
Easting:	1,758,769.009

North Reference:	Grid	Grid Cor
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Comment :

Slot:

Position (Relative to SW Corner Of Section)

N/S	-15.609	Northing:	14,546,351.531
E/W	-12.535	Easting:	1,758,756.474

Ground Level Elevation (usft):	Ground Level:
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Comment :

Well:

Type:	Main well	
KB Elevation	RKB @ 1294.00usft (SDC 40)	
Closure Distance:	5318.15	Closure Azimut

Comment:

Vertical Section:

Position of Origin (Relative to Slot centre)	N/S
Vertical Section Azimuth:	320.91

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Survey

Name	Definitive Survey	Company	SWN
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Magnetic Parameters:

Model:	BGGM2014	Field Strength:	52,524	Declination:	-8.76	Dip:	
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Survey Tool Ranges:

Survey Tool	Start MD (ft)	End MD (ft)
VES	100.00	608.00
VES	608.00	1016.00
MWD	1075.00	6044.00
MWD	6091.00	6648.00
MWD	6694.00	11974.00

Survey Points: (Relative to Slot Centre, TVD Relative to Slot TVD Reference)

MD (Ft)	Inc	Az	TVD (Ft)	+N/-S (Ft)	+E/-W (Ft)	V Sec (Ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.45	276.86	100.00	0.05	-0.39	0.28
200.00	0.20	284.53	200.00	0.14	-0.95	0.71
300.00	0.30	278.18	300.00	0.22	-1.38	1.04
400.00	0.08	285.27	400.00	0.27	-1.70	1.29
500.00	0.19	297.49	500.00	0.37	-1.92	1.50
600.00	0.25	275.18	599.99	0.47	-2.28	1.80
608.00	0.26	276.42	607.99	0.47	-2.32	1.83
655.00	0.17	286.56	654.99	0.50	-2.49	1.96
737.00	0.25	280.51	736.99	0.57	-2.78	2.20
829.00	1.67	207.37	828.98	-0.59	-3.60	1.81
920.00	3.58	223.74	919.88	-3.82	-6.17	0.93
1016.00	5.12	223.12	1015.60	-9.11	-11.17	-0.03
1075.00	5.99	216.99	1074.32	-13.49	-14.82	-1.12
1168.00	6.07	207.82	1166.81	-21.71	-20.04	-4.22
1260.00	4.74	208.46	1258.40	-29.36	-24.12	-7.58
1353.00	5.32	208.54	1351.04	-36.52	-28.01	-10.69
1446.00	5.90	211.45	1443.60	-44.39	-32.56	-13.92
1539.00	5.56	202.82	1536.13	-52.62	-36.81	-17.63
1632.00	6.35	206.11	1628.63	-61.39	-40.82	-21.91
1724.00	6.84	208.82	1720.02	-70.76	-45.70	-26.11
1817.00	6.09	208.47	1812.43	-79.95	-50.72	-30.07
1910.00	5.62	212.74	1904.95	-88.12	-55.53	-33.38
2002.00	6.10	215.00	1996.46	-95.91	-60.77	-36.62
2095.00	6.31	207.29	2088.92	-104.50	-65.95	-39.82
2166.00	5.75	200.13	2159.53	-111.31	-68.96	-42.91
2282.00	4.40	191.77	2275.07	-121.12	-71.87	-46.09
2375.00	7.72	208.03	2367.55	-130.13	-75.53	-49.27

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2467.00	9.47	212.87	2458.51	-141.94	-82.55	-58.12
2560.00	10.24	207.79	2550.14	-155.68	-90.55	-63.73
2653.00	10.07	203.43	2641.68	-170.45	-97.64	-70.73
2746.00	10.70	204.22	2733.16	-185.79	-104.42	-78.36
2839.00	9.52	211.12	2824.72	-200.24	-111.93	-84.84
2932.00	10.00	206.80	2916.37	-214.04	-119.55	-90.75
3024.00	9.77	207.07	3007.01	-228.12	-126.70	-97.16
3117.00	10.24	206.12	3098.59	-242.57	-133.93	-103.82
3210.00	10.17	207.26	3190.12	-257.29	-141.33	-110.58
3303.00	10.43	208.61	3281.62	-271.97	-149.12	-117.07
3396.00	10.83	209.05	3373.03	-287.00	-157.40	-123.51
3488.00	10.76	210.43	3463.40	-301.96	-165.94	-129.74
3581.00	10.62	207.62	3554.79	-317.04	-174.31	-136.16
3674.00	10.73	206.52	3646.18	-332.38	-182.15	-143.13
3767.00	10.80	209.15	3737.54	-347.74	-190.26	-149.93
3859.00	9.99	205.80	3828.03	-362.45	-197.93	-156.51
3952.00	9.91	203.96	3919.63	-377.03	-204.70	-163.56
4045.00	10.47	204.29	4011.16	-392.04	-211.42	-170.98
4138.00	10.53	205.47	4102.61	-407.42	-218.55	-178.41
4230.00	10.10	210.32	4193.12	-421.97	-226.24	-184.86
4323.00	10.28	214.31	4284.66	-435.86	-235.03	-190.10
4416.00	11.03	215.09	4376.05	-450.00	-244.83	-194.90
4509.00	10.47	214.07	4467.42	-464.28	-254.67	-199.77
4601.00	11.48	221.15	4557.74	-478.10	-265.38	-203.74
4694.00	11.60	212.42	4648.87	-492.96	-276.49	-208.28
4787.00	11.04	207.46	4740.06	-508.75	-285.60	-214.79
4880.00	10.40	201.98	4831.44	-524.44	-292.85	-222.39
4973.00	11.08	204.46	4922.81	-540.36	-299.69	-230.43
5065.00	10.93	200.72	5013.12	-556.56	-306.44	-238.76
5158.00	10.55	206.49	5104.49	-572.43	-313.36	-246.71
5251.00	11.28	211.38	5195.81	-587.82	-321.89	-253.27
5344.00	10.56	208.25	5287.13	-603.09	-330.66	-259.59
5437.00	10.83	206.66	5378.51	-618.40	-338.62	-266.47
5529.00	11.50	204.74	5468.77	-634.46	-346.33	-274.06
5622.00	13.60	208.50	5559.54	-652.49	-355.43	-282.32
5715.00	14.75	202.23	5649.72	-673.06	-365.13	-292.17
5812.00	15.21	204.51	5743.42	-696.07	-375.08	-303.75
5815.00	15.18	205.62	5746.32	-696.78	-375.41	-304.10
5859.00	15.30	222.04	5788.79	-706.29	-381.79	-307.45
5905.00	14.60	236.80	5833.25	-713.97	-390.71	-307.78
5915.00	14.38	239.40	5842.93	-715.29	-392.83	-307.48
5952.00	13.81	249.62	5878.82	-719.17	-400.93	-305.29
5998.00	14.77	267.48	5923.42	-721.34	-411.94	-300.13
6015.00	15.37	274.73	5939.84	-721.25	-416.35	-297.28

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6044.00	16.88	285.63	5967.70	-719.80	-424.24	-291.18
6091.00	18.29	294.03	6012.51	-714.96	-437.55	-279.03
6137.00	21.10	299.87	6055.82	-707.89	-451.32	-264.86
6184.00	25.24	305.01	6099.02	-697.92	-466.88	-247.31
6230.00	28.75	309.19	6140.01	-685.30	-483.49	-227.04
6276.00	32.18	311.20	6179.65	-670.24	-501.29	-204.13
6323.00	35.53	313.09	6218.68	-652.66	-520.68	-178.25
6369.00	39.31	315.91	6255.21	-633.05	-540.59	-150.48
6416.00	43.18	317.04	6290.54	-610.58	-561.92	-119.60
6462.00	47.92	318.26	6322.75	-586.31	-584.02	-86.82
6509.00	53.73	318.31	6352.42	-559.13	-608.25	-50.44
6555.00	57.60	318.90	6378.37	-530.63	-633.36	-12.49
6601.00	61.38	319.35	6401.71	-500.67	-659.29	27.11
6648.00	66.21	320.61	6422.46	-468.38	-686.39	69.26
6694.00	70.26	321.43	6439.52	-435.18	-713.26	111.97
6741.00	73.86	323.63	6453.99	-399.69	-740.44	156.66
6787.00	76.50	324.73	6465.76	-363.63	-766.46	201.05
6833.00	79.76	325.68	6475.22	-326.67	-792.15	245.93
6880.00	83.80	327.12	6481.94	-287.93	-817.88	292.23
6926.00	86.97	329.33	6485.64	-248.96	-842.02	337.70
6973.00	88.55	330.32	6487.48	-208.36	-865.62	384.09
7019.00	89.34	330.47	6488.32	-168.37	-888.34	429.45
7112.00	89.69	330.48	6489.11	-87.45	-934.17	521.16
7205.00	90.92	330.69	6488.62	-6.45	-979.85	612.83
7298.00	89.96	330.55	6487.90	74.59	-1025.47	704.49
7390.00	89.08	328.84	6488.67	154.01	-1071.89	795.41
7483.00	89.69	330.23	6489.67	234.17	-1119.04	887.35
7576.00	89.16	329.64	6490.60	314.65	-1165.63	979.19
7669.00	91.63	334.10	6489.96	396.63	-1209.46	1070.46
7762.00	90.40	332.15	6488.31	479.57	-1251.49	1161.34
7854.00	90.84	330.62	6487.32	560.33	-1295.55	1251.80
7947.00	91.80	329.32	6485.18	640.82	-1342.08	1343.61
8040.00	91.36	328.49	6482.61	720.42	-1390.09	1435.67
8133.00	91.89	327.59	6479.98	799.29	-1439.29	1527.91
8226.00	91.98	328.56	6476.83	878.18	-1488.44	1620.13
8318.00	91.63	328.13	6473.94	956.45	-1536.70	1711.31
8411.00	90.57	328.78	6472.15	1035.70	-1585.35	1803.49
8504.00	91.19	327.96	6470.72	1114.87	-1634.11	1895.69
8597.00	91.28	329.07	6468.72	1194.16	-1682.67	1987.85
8689.00	92.33	329.58	6465.82	1273.25	-1729.58	2078.81
8782.00	91.54	330.17	6462.68	1353.64	-1776.23	2170.62
8875.00	91.01	330.62	6460.61	1434.48	-1822.16	2262.33
8968.00	90.40	330.97	6459.47	1515.65	-1867.54	2353.94
9061.00	91.10	332.05	6458.25	1597.38	-1911.90	2445.34

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9153.00	90.66	332.06	6456.84	1678.64	-1955.00	2535.59
9246.00	90.22	331.69	6456.12	1760.65	-1998.84	2626.89
9339.00	91.19	332.50	6454.98	1842.83	-2042.36	2718.12
9432.00	91.19	331.16	6453.05	1924.80	-2086.26	2809.41
9525.00	90.04	328.43	6452.05	2005.16	-2133.04	2901.28
9617.00	89.87	328.05	6452.12	2083.38	-2181.46	2992.53
9710.00	90.84	328.23	6451.54	2162.37	-2230.55	3084.79
9803.00	91.19	328.92	6449.90	2241.71	-2279.03	3176.94
9896.00	90.75	329.19	6448.32	2321.46	-2326.85	3268.99
9988.00	89.34	329.33	6448.25	2400.54	-2373.87	3360.01
10081.00	89.87	329.13	6448.89	2480.44	-2421.45	3452.03
10174.00	91.01	330.47	6448.18	2560.81	-2468.22	3543.91
10267.00	90.04	330.01	6447.33	2641.54	-2514.38	3635.67
10359.00	90.31	329.87	6447.04	2721.17	-2560.47	3726.53
10452.00	91.10	330.11	6445.90	2801.69	-2606.98	3818.36
10545.00	91.01	330.51	6444.19	2882.47	-2653.03	3910.09
10638.00	89.87	329.66	6443.47	2963.08	-2699.41	4001.90
10731.00	90.66	329.16	6443.04	3043.13	-2746.74	4093.87
10823.00	90.66	329.68	6441.98	3122.33	-2793.54	4184.86
10916.00	90.13	329.59	6441.34	3202.57	-2840.55	4276.78
11009.00	90.04	330.00	6441.20	3282.94	-2887.34	4368.66
11102.00	90.31	330.04	6440.92	3363.50	-2933.81	4460.49
11195.00	90.40	331.68	6440.34	3444.73	-2979.09	4552.08
11287.00	91.10	332.79	6439.14	3526.12	-3021.94	4642.28
11380.00	90.34	331.88	6437.97	3608.48	-3065.12	4733.43
11473.00	90.31	330.92	6437.44	3690.13	-3109.64	4824.87
11566.00	90.48	330.19	6436.80	3771.12	-3155.35	4916.56
11658.00	89.78	329.93	6436.59	3850.84	-3201.27	5007.38
11751.00	90.75	330.86	6436.16	3931.70	-3247.21	5099.11
11844.00	90.84	331.82	6434.87	4013.29	-3291.81	5190.56
11923.00	91.19	331.95	6433.47	4082.96	-3329.03	5268.11
11974.00	91.19	331.95	6432.41	4127.96	-3353.01	5318.15

Wellpath created using minimum curvature

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CHARLES FRYE OHI 1H

Ohio Co. WV

PANHANDLE (CHARLES FRYE)

Latitude: 40.0531456600

Longitude: -80.5770625600

Divergence: 0.27

CHARLES FRYE OHI 1H

Latitude: 40.0531029600

Longitude: -80.5771076200

CHARLES FRYE OHI 1H

Rig Height (Drill Floor): 26

h: 320.914

0.00 E/W 0.00

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67.37	Date:	2/22/2015
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Source Survey

Gyro/VES/SDC 40 (WB#1)

GYRO+MWD/SLB/SDC 40 (W

MWD/SLB/SDC40 (WB#1

MWD/SLB/DMAG/SDC40 (W

MWD/SLB2/SDC 40 (WB#

DLS (deg/ 100ft)	Build Rate (deg/ 100ft)	Turn Rate (deg/ 100ft)	
0.00	0.00	0.00	
0.45	0.45	0.00	G
0.25	-0.25	7.67	G
0.10	0.10	-6.35	G
0.22	-0.22	7.09	G
0.11	0.11	12.22	G
0.10	0.06	-22.31	G
0.14	0.13	15.50	G
0.21	-0.19	21.57	GYRC
0.10	0.10	-7.38	GYRC
1.76	1.54	-79.50	GYRC
2.23	2.10	17.99	GYRC
1.60	1.60	-0.65	GYRC
1.78	1.47	-10.39	N
1.04	0.09	-9.86	N
1.45	-1.45	0.70	N
0.62	0.62	0.09	N
0.69	0.62	3.13	N
0.99	-0.37	-9.28	N
0.93	0.85	3.54	N
0.63	0.53	2.95	N
0.81	-0.81	-0.38	N
0.69	-0.51	4.59	N
0.58	0.52	2.46	N
0.92	0.23	-8.29	N
1.32	-0.79	-10.08	N
1.32	-1.16	-7.21	N
3.98	3.57	17.48	N

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2.06	1.90	5.26	N
1.25	0.83	-5.46	N
0.85	-0.18	-4.69	N
0.69	0.68	0.85	N
1.82	-1.27	7.42	N
0.94	0.52	-4.65	N
0.26	-0.25	0.29	N
0.54	0.51	-1.02	N
0.23	-0.08	1.23	N
0.38	0.28	1.45	N
0.44	0.43	0.47	N
0.29	-0.08	1.50	N
0.58	-0.15	-3.02	N
0.25	0.12	-1.18	N
0.53	0.08	2.83	N
1.10	-0.88	-3.64	N
0.35	-0.09	-1.98	N
0.61	0.60	0.35	N
0.24	0.06	1.27	N
1.05	-0.47	5.27	N
0.78	0.19	4.29	N
0.82	0.81	0.84	N
0.64	-0.60	-1.10	N
1.83	1.10	7.70	N
1.88	0.13	-9.39	N
1.21	-0.60	-5.33	N
1.29	-0.69	-5.89	N
0.88	0.73	2.67	N
0.79	-0.16	-4.07	N
1.23	-0.41	6.20	N
1.27	0.78	5.26	N
1.00	-0.77	-3.37	N
0.43	0.29	-1.71	N
0.83	0.73	-2.09	N
2.42	2.26	4.04	N
2.06	1.24	-6.74	N
0.77	0.47	2.35	N
9.78	-1.16	37.06	N
9.78	0.28	37.31	N
8.39	-1.52	32.09	N
6.89	-2.24	26.03	N
6.89	-1.53	27.61	N
9.77	2.09	38.83	N
11.64	3.54	42.67	N

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11.64	5.20	37.57	N
6.17	3.00	17.87	MWC
7.45	6.11	12.70	MWC
9.80	8.81	10.94	MWC
8.67	7.63	9.09	MWC
7.78	7.46	4.37	MWC
7.47	7.13	4.02	MWC
9.02	8.22	6.13	MWC
8.38	8.23	2.40	MWC
10.48	10.30	2.65	MWC
12.36	12.36	0.11	MWC
8.48	8.41	1.28	MWC
8.26	8.22	0.98	MWC
10.55	10.28	2.68	MWC
8.96	8.80	1.78	M'
8.86	7.66	4.68	M'
6.19	5.74	2.39	M'
7.37	7.09	2.07	M'
9.11	8.60	3.06	M'
8.39	6.89	4.80	M'
3.97	3.36	2.11	M'
1.75	1.72	0.33	M'
0.38	0.38	0.01	M'
1.34	1.32	0.23	M'
1.04	-1.03	-0.15	M'
2.09	-0.96	-1.86	M'
1.63	0.66	1.49	M'
0.85	-0.57	-0.63	M'
5.48	2.66	4.80	M'
2.48	-1.32	-2.10	M'
1.73	0.48	-1.66	M'
1.74	1.03	-1.40	M'
1.01	-0.47	-0.89	M'
1.12	0.57	-0.97	M'
1.05	0.10	1.04	M'
0.60	-0.38	-0.47	M'
1.34	-1.14	0.70	M'
1.11	0.67	-0.88	M'
1.20	0.10	1.19	M'
1.27	1.14	0.55	M'
1.06	-0.85	0.63	M'
0.75	-0.57	0.48	M'
0.76	-0.66	0.38	M'
1.38	0.75	1.16	M'

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0.48	-0.48	0.01	M'
0.62	-0.47	-0.40	M'
1.36	1.04	0.87	M'
1.44	0.00	-1.44	M'
3.19	-1.24	-2.94	M'
0.45	-0.18	-0.41	M'
1.06	1.04	0.19	M'
0.83	0.38	0.74	M'
0.56	-0.47	0.29	M'
1.54	-1.53	0.15	M'
0.61	0.57	-0.22	M'
1.89	1.23	1.44	M'
1.15	-1.04	-0.49	M'
0.33	0.29	-0.15	M'
0.89	0.85	0.26	M'
0.44	-0.10	0.43	M'
1.53	-1.23	-0.91	M'
1.01	0.85	-0.54	M'
0.57	0.00	0.57	M'
0.58	-0.57	-0.10	M'
0.45	-0.10	0.44	M'
0.29	0.29	0.04	M'
1.77	0.10	1.76	M'
1.43	0.76	1.21	M'
1.27	-0.82	-0.98	M'
1.03	-0.03	-1.03	M'
0.81	0.18	-0.78	M'
0.81	-0.76	-0.28	M'
1.44	1.04	1.00	M'
1.04	0.10	1.03	M'
0.47	0.44	0.16	M'
0.00	0.00	0.00	

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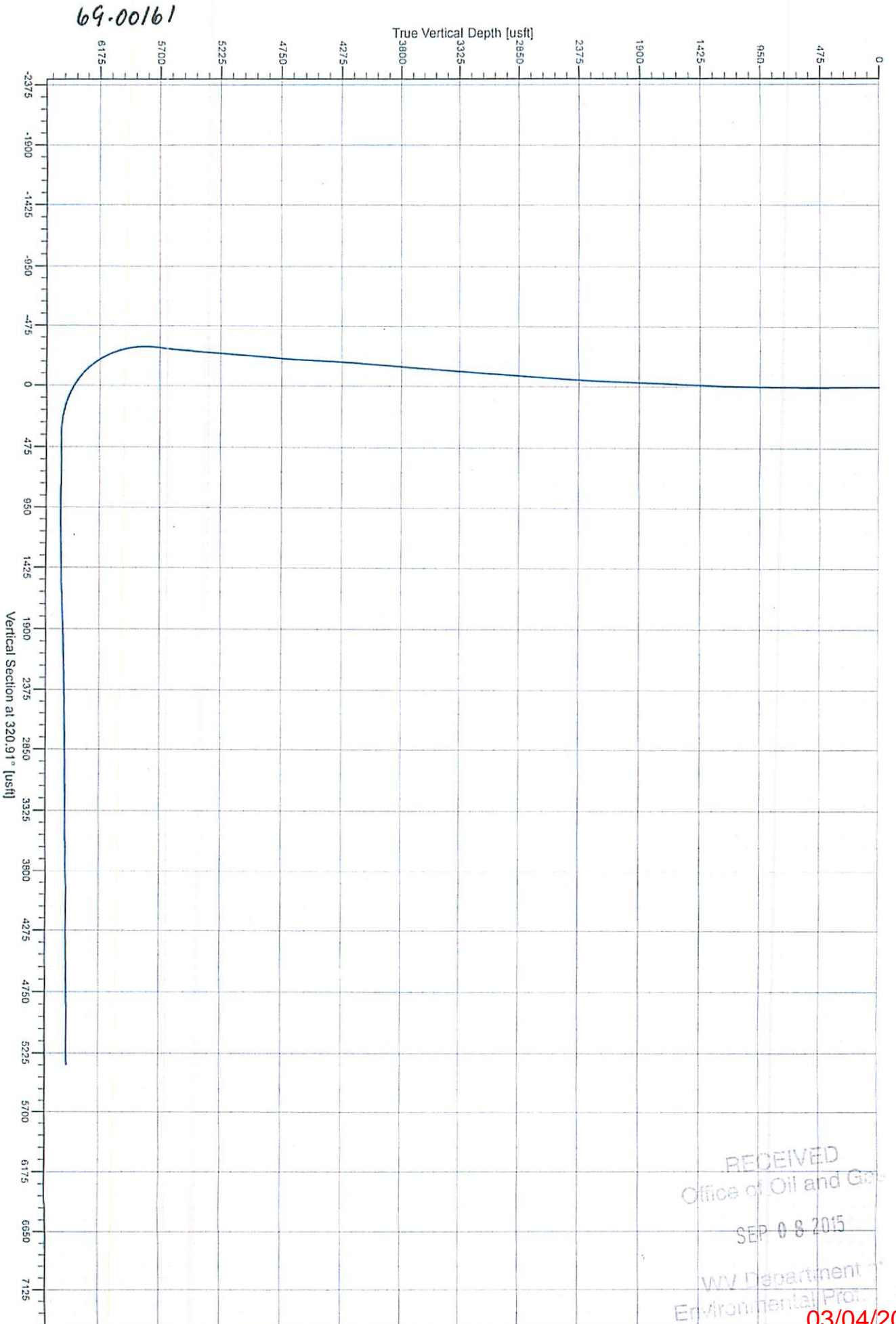
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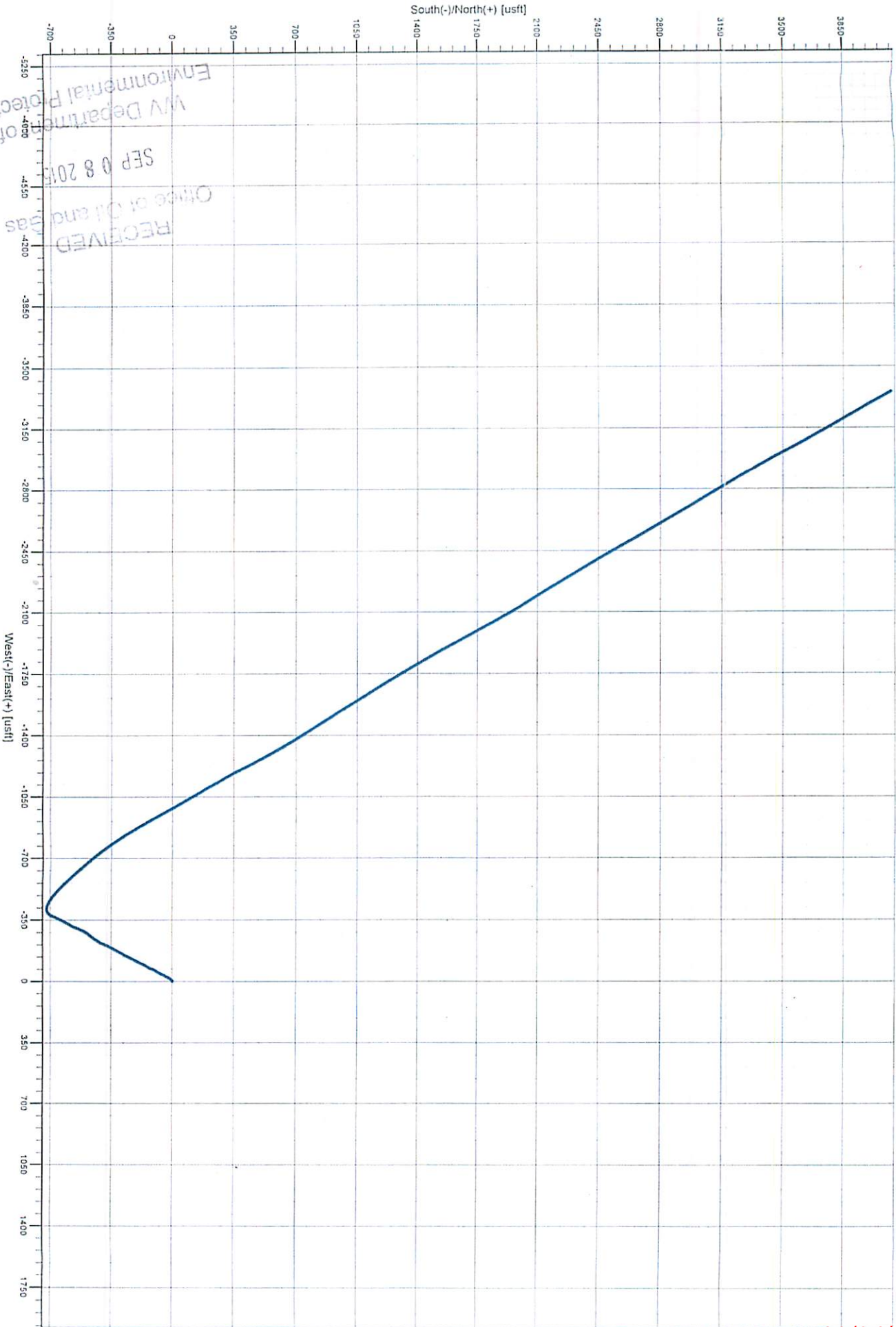
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Actual: Actual (CHARLES FRYE OHI 1H/WB#1)



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Actual: Actual (CHARLES FRYE OHI 1H/WB#1)



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API # 47069001610000		STIMULATION INFORMATION PER STAGE										
WELL NAME	STAGE NUM	Stim Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of water bbls	Amount of nitrogen/other			
CHARLES FRYE OHI 1	1	5/12/2015	100	7,710	8,165	4,480	505,327	7,464				
CHARLES FRYE OHI 1	2	5/13/2015	103	7,648	7,895	4,468	504,939	7,313				
CHARLES FRYE OHI 1	3	5/13/2015	103	7,655	8,145	4,400	481,365	7,563				
CHARLES FRYE OHI 1	4	5/13/2015	103	7,581	7,996	4,348	401,165	6,459				
CHARLES FRYE OHI 1	5	5/14/2015	103	7,718	9,311	4,584	462,168	7,575				
CHARLES FRYE OHI 1	6	5/14/2015	103	7,460	7,838	4,841	507,775	7,232				
CHARLES FRYE OHI 1	7	5/14/2015	103	7,581	8,415	4,874	479,387	7,024				
CHARLES FRYE OHI 1	8	5/15/2015	103	7,449	7,853	4,783	506,162	7,087				
CHARLES FRYE OHI 1	9	5/15/2015	102	7,276	7,782	4,588	501,178	6,529				
CHARLES FRYE OHI 1	10	5/15/2015	97	7,785	8,626	5,126	500,249	9,167				
CHARLES FRYE OHI 1	11	5/16/2015	101	7,261	7,792	5,160	504,581	7,064				
CHARLES FRYE OHI 1	12	5/16/2015	100	7,000	7,621	5,539	503,914	7,799				
CHARLES FRYE OHI 1	13	5/16/2015	101	6,945	7,338	5,238	504,028	7,033				
CHARLES FRYE OHI 1	14	5/16/2015	102	6,973	7,221	5,197	505,966	7,278				
CHARLES FRYE OHI 1	15	5/17/2015	102	7,134	7,379	4,521	503,638	7,929				
CHARLES FRYE OHI 1	16	5/17/2015	102	7,396	8,573	5,067	500,313	7,150				
CHARLES FRYE OHI 1	17	5/17/2015	102	7,074	7,341	5,127	503,854	7,178				
CHARLES FRYE OHI 1	18	5/18/2015	102	7,009	7,765	5,676	499,695	7,224				
CHARLES FRYE OHI 1	19	5/18/2015	102	6,852	7,228	4,692	500,678	6,939				
CHARLES FRYE OHI 1	20	5/18/2015	100	6,724	7,254	4,600	504,375	6,980				
CHARLES FRYE OHI 1	21	5/18/2015	102	6,912	7,434	4,673	500,879	7,344				

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Well API #: 47069001610000		PERFORATION RECORDS				
WELL NAME	STAGE NUM	# SHOTS PER STG	Perf Top MD	Perf Bottom MD	Perf Date	FORMATION
CHARLES FRYE OHI 1	1	42	11,650	11,804	5/12/2015	Marcellus
CHARLES FRYE OHI 1	2	42	11,392	11,571	5/13/2015	Marcellus
CHARLES FRYE OHI 1	3	42	11,148	11,304	5/13/2015	Marcellus
CHARLES FRYE OHI 1	4	42	10,940	11,091	5/13/2015	Marcellus
CHARLES FRYE OHI 1	5	42	10,669	10,851	5/14/2015	Marcellus
CHARLES FRYE OHI 1	6	42	10,429	10,594	5/14/2015	Marcellus
CHARLES FRYE OHI 1	7	42	10,192	10,367	5/14/2015	Marcellus
CHARLES FRYE OHI 1	8	42	9,946	10,146	5/15/2015	Marcellus
CHARLES FRYE OHI 1	9	42	9,719	9,894	5/15/2015	Marcellus
CHARLES FRYE OHI 1	10	42	9,469	9,650	5/15/2015	Marcellus
CHARLES FRYE OHI 1	11	42	9,229	9,407	5/16/2015	Marcellus
CHARLES FRYE OHI 1	12	42	8,977	9,171	5/16/2015	Marcellus
CHARLES FRYE OHI 1	13	42	8,752	8,931	5/16/2015	Marcellus
CHARLES FRYE OHI 1	14	42	8,509	8,694	5/16/2015	Marcellus
CHARLES FRYE OHI 1	15	42	8,274	8,451	5/17/2015	Marcellus
CHARLES FRYE OHI 1	16	42	8,029	8,211	5/17/2015	Marcellus
CHARLES FRYE OHI 1	17	42	7,789	7,968	5/17/2015	Marcellus
CHARLES FRYE OHI 1	18	42	7,549	7,731	5/18/2015	Marcellus
CHARLES FRYE OHI 1	19	42	7,306	7,491	5/18/2015	Marcellus
CHARLES FRYE OHI 1	20	42	7,069	7,251	5/18/2015	Marcellus
CHARLES FRYE OHI 1	21	42	6,823	7,011	5/18/2015	Marcellus

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CHARLES FRYE 1H					
LITHOLOGY/FORMATION	TOP DEPTH, TVD (FT)	BOTTOM DEPTH, TVD (FT)	TOP DEPTH, MD (FT)	BOTTOM DEPTH, MD (FT)	QUANTITY AND TYPE OF FLUID
Pittsburgh Coal	627	642	627	642	NA
Big Injun (ss)	1681	2006	1681	2006	100 bbl/hr water
Rhinestreet (shale)	5851	6145	5924	6236	NA
Cashaqua (shale)	6145	6218	6236	6321	NA
Middlesex (shale)	6218	6291	6321	6417	NA
Burket (shale)	6291	6323	6417	6462	NA
Tully (ls)	6323	6353	6462	6510	NA
Mahantango (shale)	6353	6476	6510	6851	NA
Marcellus (shale)	6476		6851		gas

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/12/2016
Job End Date:	5/19/2016
State:	West Virginia
County:	Ohio
API Number:	47-069-00161-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	OHI FRYE CHARLES 1H
Longitude:	-80.58922000
Latitude:	40.06442000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,432
Total Base Water Volume (gal):	6,439,902
Total Base Non Water Volume:	0



19100-69

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Operator	Carrier	Water	7732-18-5	100.00000	93.42152	
Sand, White, 40/70	Baker Hughes	Proppant	MSDS and Non-MSDS Ingredients Listed Below	N/A		3.61132	
Sand, White, 100 mesh	Baker Hughes	Proppant	MSDS and Non-MSDS Ingredients Listed Below	N/A		2.46526	
HCl, 10.1 - 15%	Baker Hughes	Acidizing	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.45093	SmartCare Product
MaxPerm-20A, 265 gallon tote	Baker Hughes	Friction Reducer	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.02763	SmartCare Product
Ferrotrol 300L	Baker Hughes	Iron Control	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00310	SmartCare Product
CI-39	Baker Hughes	Corrosion Inhibitor	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00090	
GBW-5	Baker Hughes	Breaker	MSDS and Non-MSDS Ingredients Listed Below	N/A			

Environmental Protection

			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00045	SmartCare Product
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
Ingredients in Additive (s) (MSDS and non- MSDS)	Baker Hughes	See Trade Name(s) List					
			Crystalline Silica (Quartz)	14808-60-7	100.00000	6.07539	
			Water	7732-18-5	85.00000	0.40142	
			Hydrochloric Acid	7647-01-0	15.00000	0.06763	
			1-Propanesulfonic acid, 2- methyl-2-[(1-oxo-2-propen-1-yl) amino]-, polymer with 2- propanamide, sodium salt	83446-68-8	60.00000	0.01658	
			Hydrotreated Light Distillate	64742-47-8	30.00000	0.00829	
			Citric Acid	77-92-9	60.00000	0.00186	
			Polyoxyethylene sorbitan monooleate	9005-65-6	5.00000	0.00138	
			Sorbitan, mono-(9Z)-9- octadecenoate	1338-43-8	5.00000	0.00138	
			Oxyalkylated alcohol	78330-21-9	5.00000	0.00138	
			Sodium Chloride	7647-14-5	5.00000	0.00138	
			Ammonium Persulphate	7727-54-0	100.00000	0.00045	
			Oxyalkylated Fatty Acid	51791-002	40.00000	0.00036	
			Formic Acid	64-18-6	30.00000	0.00027	
			Aldehyde	104-55-2	30.00000	0.00027	
			Tar Bases, Quinoline Derivs., Benzyl Chloride-Quaternized	72480-70-7	30.00000	0.00027	
			Isopropanol	67-63-0	5.00000	0.00005	
			Sulfurized polyolefin	68037-13-8	5.00000	0.00005	
			Quaternary Ammonium Compound	100765-57-9	5.00000	0.00005	
			Potassium Iodide	7681-11-0	2.00000	0.00002	
			Polyalkylene	7756-94-7	1.00000	0.00001	
			Potassium Acetate	127-08-2	0.50000	0.00000	

19100-69

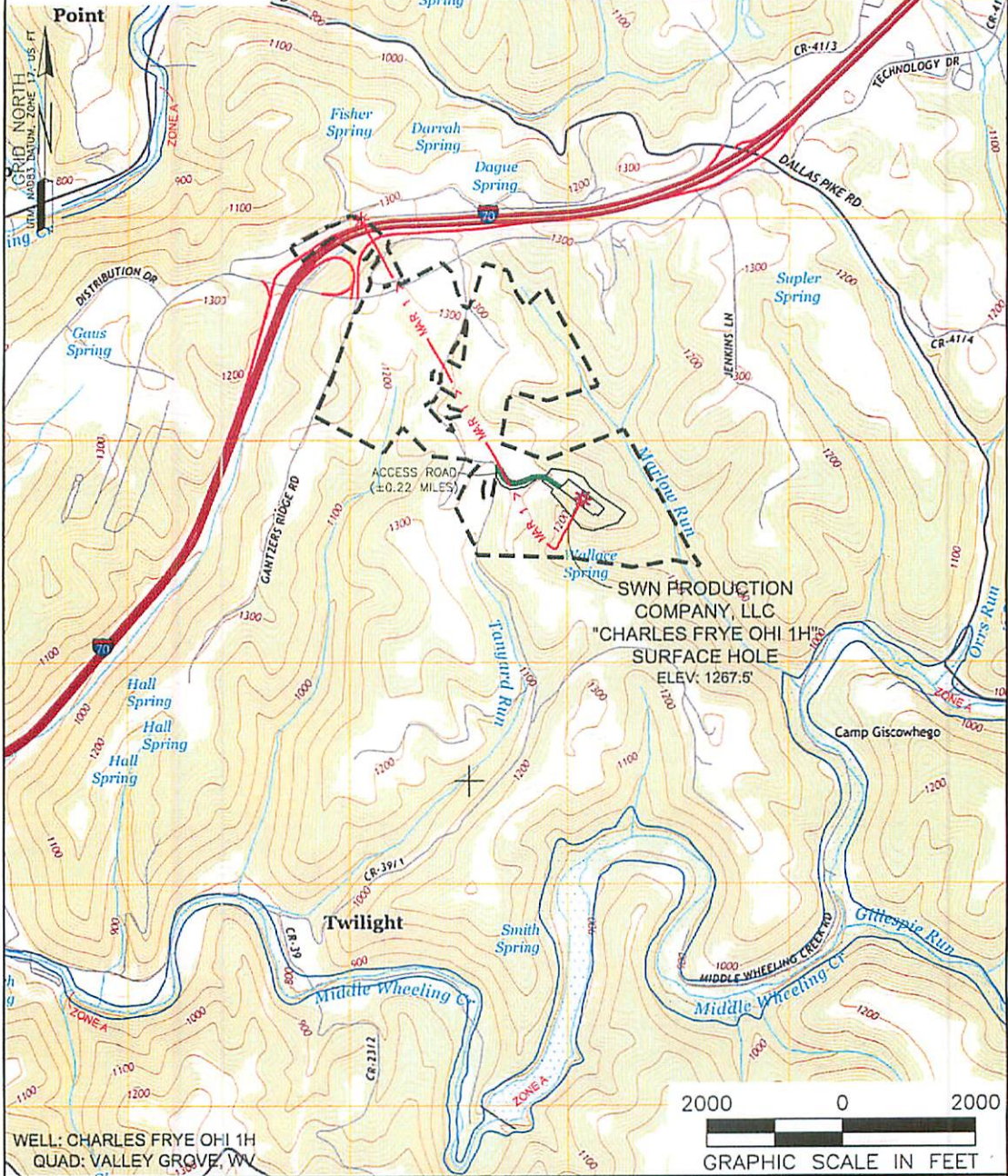
* Total Water Volume sources may include fresh water, produced water, and/or recycled water
 ** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
 Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

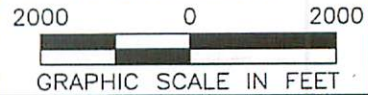
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WELL: CHARLES FRYE OHI 1H
 QUAD: VALLEY GROVE, WV



NAME AND DISTANCE TO THE NEAREST STREAM: MARLOW RUN IS LOCATED ±0.18 MILES NORTHEAST OF THE CENTER OF THE DRILL PAD.		STREAM CROSSING COORDINATES (NAD 83): NO NEW CROSSINGS.		COMPANY: SWN Production Company, LLC			
WELL RESTRICTIONS: WELL PAD, LOD, & E & S CONTROL FEATURES TO PERENNIAL STREAM, LAKE, POND, RESERVOIR OR WETLAND: >100 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO NATURALLY PRODUCING TROUT STREAM: >300 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY: >1000 FEET WELL SHL TO EXISTING WATER WELL OR DEVELOPED SPRING: >250 FEET CENTER OF PAD TO OCCUPIED DWELLING STRUCTURE: >625 FEET CENTER OF PAD TO AGRICULTURAL BUILDINGS LARGER THAN 2500 SQ FT: >625 FEET				OPERATOR'S: CHARLES FRYE OHI WELL #: 1H LOCATION: TRIDELPHIA DISTRICT, OHIO COUNTY, WEST VIRGINIA			
FEMA FLOOD INFORMATION: BY GRAPHIC PLOTTING ONLY FEMA FIRM INCORPORATED AREA OF OHIO COUNTY, WEST VIRGINIA; MAP NUMBER 54069C0078D, 54069C0095D, & 54069C0095D; EFFECTIVE DATE: JULY 17, 2006.				SURFACE HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.053102° LONGITUDE: -80.577108° BOTTOM HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.064481° LONGITUDE: -80.589022°			
LEGEND: ○ PROPOSED SURFACE HOLE / BOTTOM HOLE ✕ EXISTING / PRODUCING WELLHEAD ✕ ABANDONED WELL ✕ PLUGGED & ABANDONED WELL △ CUT CONDUCTOR		(S) EXISTING SPRING (W) EXISTING WATER WELL — ACCESS ROAD — ACCESS ROAD TO PREV. SITE — HIGHWAY/INTERSTATE — COUNTY ROAD		REVISIONS: DATE: 08-25-2015		DRAWN BY: S. HUTSON SCALE: 1" = 2000' DRAWING NO: 59059 TOPOGRAPHIC MAP	

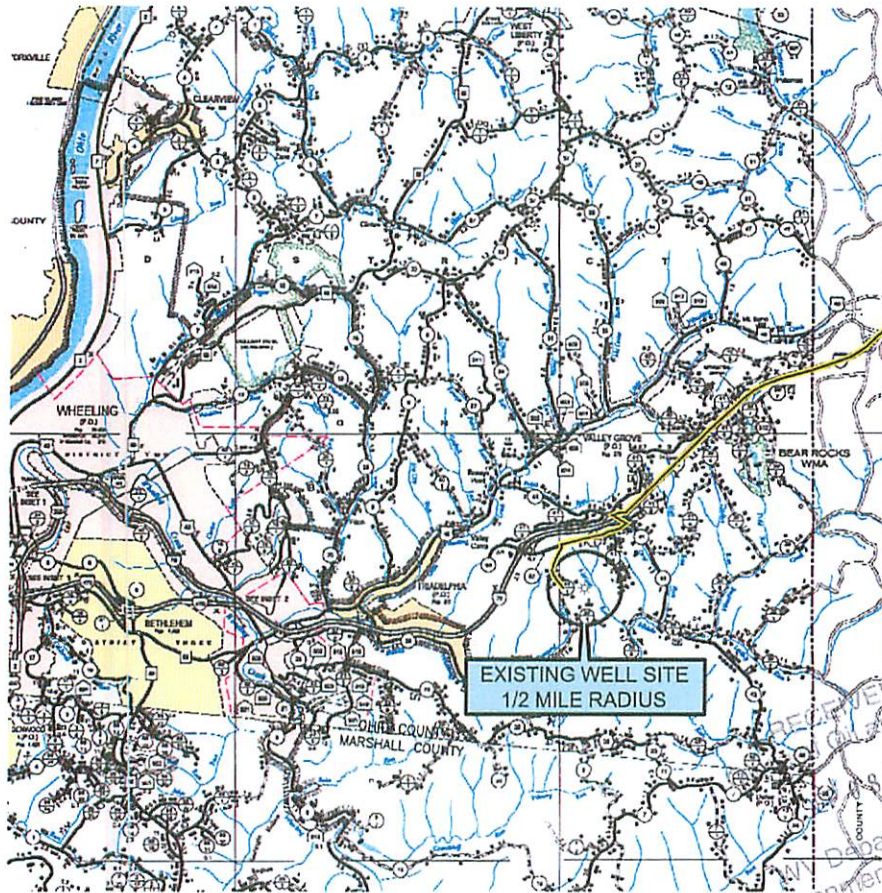
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GRID NORTH
 UTM, NAD83 DATUM, ZONE 17, US FT



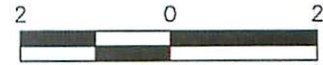
ACCESS ROAD COORDINATES (NAD 83):
 LEAVE PUBLIC ROAD LAT: 40.054421° / LONG: -80.581823°
 ENTER WELL SITE LAT: 40.053584° / LONG: -80.578284°



GENERAL COUNTY MAP
 OHIO COUNTY
 WEST VIRGINIA
 WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 PLANNING DIVISION
 & FORMERLY BY
 U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION



GENERAL COUNTY MAP
 MARSHALL COUNTY
 WEST VIRGINIA
 WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 PLANNING DIVISION
 & FORMERLY BY
 U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION



GRAPHIC SCALE IN MILES

DRIVING DIRECTIONS:
 FROM THE INTERSECTION OF HACKERS CREEK ROAD AND I-79N (EXIT 105) IN JANE LEW, WEST VIRGINIA; TRAVEL NORTH ON I-79 FOR ±92.4 MILES TO I-70W; BEAR LEFT ONTO I-70W AND TRAVEL ±20.9 MILES TO DALLAS PIKE (EXIT 11); TURN LEFT (EAST) ONTO DALLAS PIKE AND TRAVEL ±0.1 MILES TO MCCUTCHEON ROAD; TURN RIGHT (SOUTH-WEST) ONTO MCCUTCHEON ROAD AND TRAVEL ±1.0 MILES; TURN LEFT (SOUTH) ONTO MCCUTCHEON ROAD AND TRAVEL ±0.7 MILES TO EXISTING SWN PRODUCTION COMPANY, LLC "CHARLES FRYE OH" ACCESS ROAD; TURN LEFT (EAST) ONTO EXISTING ACCESS ROAD AND TRAVEL ±0.2 MILES TO EXISTING SWN PRODUCTION COMPANY, LLC "CHARLES FRYE OH" GAS WELL PAD.

DRIVING PRECAUTIONS:
 DRIVING DIRECTIONS NOT PROVIDED BY SWN.

DISTANCE / DIRECTION FROM NEAREST TOWN:
 ±1.7 MILES SOUTHEAST FROM VALLEY CAMP, WEST VIRGINIA 26059

LEGEND:
 ○ PROPOSED SURFACE HOLE / BOTTOM HOLE ——— DRIVING DIRECTION ROUTE
 * EXISTING / PRODUCING WELLHEAD
 X ABANDONED WELL
 ⊠ PLUGGED & ABANDONED WELL
 △ CUT CONDUCTOR

COMPANY:	SWN Production Company, LLC	SWN Production Company™
OPERATOR'S	CHARLES FRYE OH	
WELL #:	1H	
LOCATION:	TRIDELPHIA DISTRICT, OHIO COUNTY, WEST VIRGINIA	
SURFACE HOLE LOCATION:	RECEIVED Office of Environmental Protection	
GEOGRAPHIC (NAD83): LATITUDE: 40.053102° LONGITUDE: -80.577108°		
BOTTOM HOLE LOCATION:	SEP 01 2015	
GEOGRAPHIC (NAD83): LATITUDE: 40.064481° LONGITUDE: -80.589022°		
REVISIONS:	DATE: 08-25-2015	
	DRAWN BY: S. HUTSON	
	SCALE: 1" = 2 MILES	
	DRAWING NO: 59059	
	DRIVING DIRECTION MAP	

03/04/2016



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LINE	BEARING	DISTANCE	DESCRIPTION	MONUMENT
L1	N 28°59'07" E	1255'	SHL TO LANDMARK	PARCEL CORNER
L2	S 61°45'26" E	1922'	SHL TO LANDMARK	PARCEL CORNER
L3	N 51°36'06" W	13.29'	SHL TO REF. PNT.	CHARLES FRYE OHI 3H WELL HEAD (069-00079)
L4	N 73°33'31" E	24.44'	SHL TO REF. PNT.	CHARLES FRYE OHI 10H WELL HEAD (069-00091)
LINE	BEARING	DISTANCE	CURVE LENGTH	DESCRIPTION
L5	S 84°39'07" W	938.55'		SHL TO LP
L6	N 29°50'51" W	4860.09'		LP TO BHL

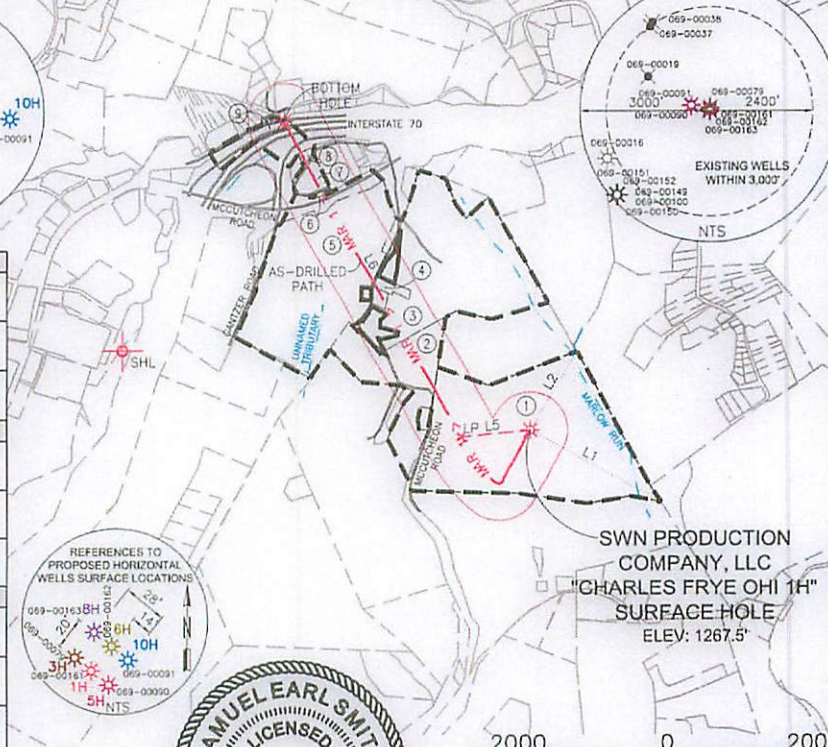
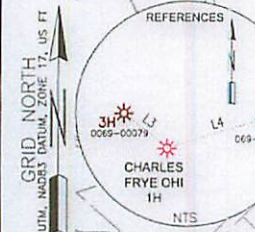
Latitude: 40°05'00"

Longitude: 80°32'30"

NOTES ON SURVEY

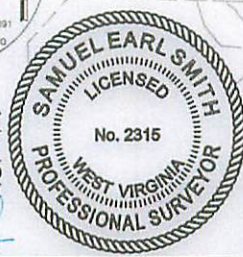
- COORDINATE SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- NO OCCUPIED DWELLINGS AND AGRICULTURE BUILDINGS GREATER THAN 2500 SQ FT, WITHIN 625 FEET OF PROPOSED FC OF CENTER OF PAD.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
- NO PERENNIAL STREAMS, LAKES, POADS, OR RESERVOIRS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.
- NO GROUND INTAKE OR PUBLIC WATER SUPPLY WITHIN 1000 FEET OF WELL PAD, LIMITS OF DISTURBANCE, E & S CONTROLS OR PUBLIC WATER SUPPLY.

TRACT	SURFACE OWNER(S) / ROYALTY OWNER(S)	TAX PARCEL	ACRES
1	CHARLES FRYE & DOROTHY FRYE (S) DOROTHY V FRYE (R)	06-114-01	105.00
2	KIMBETH W CRAIG & LINDA CRAIG (S/R)	06-18-53	57.89
3	REBECCA A JACK (S) LOIS J JACK (R)	06-18-47	65.13
4	BEVERLY E KNERIM (S) LOIS J JACK (R)	06-18-47B	1.00
5	JONATHAN P DUGGAN (S)	06-18-46	73.95
6	JONATHAN P DUGGAN & JAMES P DUGGAN (R)	06-18-64	0.19
7	THE OHIO COUNTY DEVELOPMENT AUTHORITY (R)	06-18-46.11	3.94
8	THE OHIO COUNTY DEVELOPMENT AUTHORITY (R)	06-18-45.6	0.57
9	THE OHIO COUNTY DEVELOPMENT AUTHORITY (R) BETH ANN STEPHEN ET AL (S) VICTORIA T SEAMON (R)	06-18-44	1.42



SURFACE HOLE LOCATION (SHL):	
GEOGRAPHIC (NAD83):	LATITUDE: 40.053102°
	LONGITUDE: -80.577108°
UTM (NAD83, ZONE 17, FEET):	NORTHING: 14,546,351.066
	EASTING: 1,758,756.236
UTM (NAD83, ZONE 17, METERS):	NORTHING: 4,433,736.673
	EASTING: 536,069.973
LANDING POINT LOCATION (LPL):	
GEOGRAPHIC (NAD83):	LATITUDE: 40.052874°
	LONGITUDE: -80.580448°
UTM (NAD83, ZONE 17, FEET):	NORTHING: 14,546,263.618
	EASTING: 1,757,822.066
UTM (NAD83, ZONE 17, METERS):	NORTHING: 4,433,710.018
	EASTING: 535,785.237
BOTTOM HOLE LOCATION (BHL):	
GEOGRAPHIC (NAD83):	LATITUDE: 40.064481°
	LONGITUDE: -80.589022°
UTM (NAD83, ZONE 17, FEET):	NORTHING: 14,550,479.028
	EASTING: 1,755,403.226
UTM (NAD83, ZONE 17, METERS):	NORTHING: 4,434,994.878
	EASTING: 535,047.974

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



COMPANY: **SWN** Production Company, LLC

 WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034	(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS MINIMUM DEGREE OF ACCURACY: 1/200 PROVEN SOURCE OF SURVEY GRADE GPS ELEVATION: (NAVD 88, US FT)	COMPANY: CHARLES FRYE OHI OPERATOR'S WELL #: 1H API WELL #: 47 69 00161H6A STATE COUNTY PERMIT
	WELL TYPE: OIL WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input checked="" type="checkbox"/> DEEP <input type="checkbox"/> GAS <input checked="" type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> STORAGE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/>	WATERSHED: MIDDLE WHEELING CREEK DISTRICT: TRIDELPHIA COUNTY: OHIO SURFACE OWNER: CHARLES FRYE & DOROTHY FRYE OIL & GAS ROYALTY OWNER: DOROTHY V FRYE

DRILL DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION
 CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY) AS-DRILLED
 TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,432' TVD 11,974' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: DEE SOUTHALL
 ADDRESS: P.O. BOX 1300 ADDRESS: P.O. BOX 1300
 CITY: JANE LEW STATE: WV ZIP CODE: 26378 CITY: JANE LEW STATE: WV ZIP CODE: 26378

LEGEND:	REVISIONS:	DATE: 08-25-2015
<ul style="list-style-type: none"> ○ PROPOSED SURFACE HOLE / BOTTOM HOLE ⊗ EXISTING / PRODUCING WELLHEAD ⊗ ABANDONED WELL ⊗ PLUGGED & ABANDONED WELL △ CUT CONDUCTOR --- LEASE BOUNDARY --- 500' DHP BUFFER - MAR 1 > - MARCELLUS DHP --- ABANDONED PATH 	DRAWN BY: S. HUTTON SCALE: 1" = 2000' DRAWING NO: 59059 WELL LOCATION PLAT	

03/04/2016

