

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

API 47-091-1285 County Taylor District BOOTH'S CREEK, COURT HOUSE
Quad ROSEMONT Pad Name DUNHAM Field/Pool Name _____
Farm name DUNHAM, MITCHELL., ET AL Well Number 2H
Operator (as registered with the OOG) Triana Energy LLC
Address 900 VIRGINIA STREET EAST City CHARLESTON State WV Zip 25301

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 14286288.81 Easting 1886522.67
Landing Point of Curve Northing 14286935.73 Easting 1886428.96
Bottom Hole Northing 14289093.82 Easting 1882139.34

Elevation (ft) 1420 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) Synthetic oil based mud with LCM when needed

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FEB 25 2015

Office of Oil and Gas
WV Dept. of Environmental Protection
Date permit issued 2/26/14 Date drilling commenced 4/24/14 Date drilling ceased 7/17/14
Date completion activities began 10/8/14 Date completion activities ceased 10/18/14 RECEIVED
Verbal plugging (Y/N) No Date permission granted NA Granted by Office of Oil and Gas

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

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Freshwater depth(s) ft 678 Open mine(s) (Y/N) depths _____
Salt water depth(s) ft none reported Void(s) encountered (Y/N) depths N
Coal depth(s) ft 293-294,555-556,574-576, 652-653,678-683 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
A.L. 5/19/15
11/06/2015

API 47-091 - 1285 Farm name DUNHAM, MITCHELL., ET AL Well number 2H

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	n/a	20"	53'	New	n/a	n/a	No
Surface	17.5"	13.375"	1420'	New	H-40 (48/ft)	n/a	Yes
Coal	-	-	-	-	-	-	-
Intermediate 1	12.25"	9.625"	5605'	New	J-55 (40/ft)	n/a	Yes
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	8.75"	5.5"	1332'	New	P110 (20/ft)	n/a	No
Tubing							
Packer type and depth set							

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	125	15.6	1.2	150	Surface	1344
Surface	Type 1	706	15.6	1.18	833.08	Surface	8
Coal	-	-	-	-	-	-	-
Intermediate 1	Type 1 (lead)/ Type 1 (tail)	643 (lead) / 150 (tail)	15.0 (lead) / 15.6 (tail)	1.2 (lead) / 1.18 (tail)	771.6 (lead) / 177 (tail)	Surface	8
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	50:50 Type 1 / Fly Ash	211 (lead) / 1782 (tail)	14.5 (lead) / 14.7 (tail)	1.2 (lead) / 1.16 (tail)	253.2 (L) / 2067.12 (T)	5718'	28.75
Tubing							

Drillers TD (ft) 13,331 Loggers TD (ft) ran shallow coal logs only
 Deepest formation penetrated Marcellus Plug back to (ft) n/a
 Plug back procedure n/a

Kick off depth (ft) 5622'

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 _____

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WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS RECEIVED FEB 25 2015

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS Office of Oil and Gas

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

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API 47-091 - 1285

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	10/8/14	13242	13064	60	Marcellus
2	10/9/14	13011	12823	60	Marcellus
3	10/9/14	12770	12582	60	Marcellus
4	10/9/14	12529	12340	60	Marcellus
5	10/9/14	12287	12109	60	Marcellus
6	10/10/14	12046	11858	60	Marcellus
7	10/10/14	11805	11623	60	Marcellus
8	10/11/14	11560	11376	60	Marcellus
9	10/11/14	11323	11135	60	Marcellus
10	10/12/14	11082	10894	60	Marcellus
11	10/13/14	10841	10653	60	Marcellus
12	10/13/14	10600	10411	60	Marcellus
13	10/14/14	10358	10170	60	Marcellus
14	10/14/14	10117	9929	60	Marcellus
15	10/14/14	9876	9688	60	Marcellus
16	10/15/14	9635	9447	60	Marcellus

Please insert additional pages as applicable.

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STIMULATION INFORMATION PER STAGE

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Complete a separate record for each stimulation stage.

Stage No.	Stimulations 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 (units)
1	10/8/14	63	9097	7633/9337	7131	54159	7704	0
2	10/9/14	85	8592	6641/8995	5517	411060	9157	0
3	10/9/14	85.8	8648	6812/9013	5625	408620	9234	0
4	10/9/14	84.9	8543	6378/9259	5912	409380	9090	0
5	10/9/14	85.9	8556	6528/9081	5830	413100	9320	0
6	10/10/14	85.6	8250	6500/8831	5956	409100	10992	0
7	10/10/14	85	8321	6842/8627	5386	407820	9211	0
8	10/11/14	85	8189	6746/8655	5548	416000	9132	0
9	10/11/14	85.4	8396	7105/9236	5876	413620	9146	0
10	10/12/14	85.7	8190	6606/8461	5716	401600	9545	0
11	10/13/14	85.1	8255	7352/8695	5902	412840	9207	0
12	10/13/14	85.6	8356	6672/8899	5981	419200	9104	0
13	10/14/14	86.1	8467	6750/9140	5446	410500	9155	0
14	10/14/14	86	8226	7169/8779	5755	407300	9145	0
15	10/14/14	85.9	8471	6874/8776	5966	415350	9307	0
16	10/15/14	86.1	8289	6969/8617	8295	415100	9071	0

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Please insert additional pages as applicable.

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
Marcellus	7,499-7,371	TVD	8,000-13,242 MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs
 OPEN FLOW Gas _____ Oil _____ NGL _____ Water _____ GAS MEASURED BY
 _____ mcfpd _____ bpd _____ bpd _____ bpd Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	0		0		
Lower Kittanning	678	683	678	683	Coal, FW @ 678'
Little Lime	1225	1269	1225	1269	
Big Lime	1269	1405	1269	1405	
Big Injun	1405	1437	1405	1437	
Gantz/50-Foot	1807	1890	1807	1890	
5th Sand	2334	2381	2334	2381	
Benson	4323	4373	4323	4373	
Sycamore	6552	6640	6717	6844	
Tully	7242	7302	7523	7602	
Marcellus	7429	7370	7800	13331 (MTD)	

Please insert additional pages as applicable.

Drilling Contractor Pioneer Energy Resources
 Address 5205 North O'Connor Blvd City Irvin State Texas Zip 75039
 Logging Company Cardno (shallow coal log)
 Address 534 Industrial Park Road City Bluefield State VA Zip 24605
 Cementing Company Universal Well Services
 Address Route 5 Hall Road City Buckhannon State WV Zip 26201
 Stimulating Company Universal Well Services
 Address 124 Industrial Drive City Bradford State PA Zip 16701

Please insert additional pages as applicable.

Completed by Rachelle A King Telephone 304-205-8560
 Signature [Handwritten Signature] Title Director of Regulatory Affairs Date 2/19/15

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

91-01285

Hydraulic Fracturing Fluid Product Component Information Disclosure



Job Start Date:	10/8/2014
Job End Date:	10/18/2014
State:	West Virginia
County:	Taylor
API Number:	47-091-01285-00-00
Operator Name:	Triana Energy
Well Name and Number:	Dunham 2H
Longitude:	-80.12978000
Latitude:	39.33631000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	7,439
Total Base Water Volume (gal):	8,676,780
Total Base Non Water Volume:	

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Service Abstract Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Triana Energy	Carrier/Base Fluid	Water	7732-18-5	100.00000	88.63396	
Sand (Proppant)	Universal Well Services	Proppant	Crystalline Silica in the form of Quartz	14808-60-7	99.90000	10.60245	
Hydrochloric Acid (7.5%)	Universal Well Services	Acidizing	Other - (non-hazardous)	NA	92.50000	0.63749	
			Hydrochloric Acid	7647-01-0	7.50000	0.05169	
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.							
Unistlick ST-50	Universal Well Services	Friction Reducer					
			Other - (non-hazardous)	na	70.00000	0.03851	
			Petroleum Distillates, Hydrotreated Light	64742-47-8	30.00000	0.01651	
			Glutaraldehyde	111-30-8	27.00000	0.00970	
			Didecyl Dimethyl Ammonium Chloride	7173-51-5	8.00000	0.00288	
			n-Alkyl Dimethyl Benzyl Ammonium Chloride	68424-85-1	5.50000	0.00199	
			Ethanol	64-17-5	4.00000	0.00144	

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TS-30	XChem	Scale Inhibitor							
Unihib G	Universal Well Services	Acid Inhibitor	Sodium Polyacrylate	9003-04-7	30.00000	0.00276			
			Short Chained Glycol Ether	112-34-5	60.00000	0.00037			
			Ethoxylated Alcohol	68002-97-1	35.00000	0.00022			
			Methanol	67-56-1	5.00000	0.00003			
			Thiourea	62-56-6	1.00000	0.00001			
			Acetophenone	98-86-2	1.00000	0.00001			
			Formaldehyde	50-00-0	1.00000	0.00001			

* 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)

Received

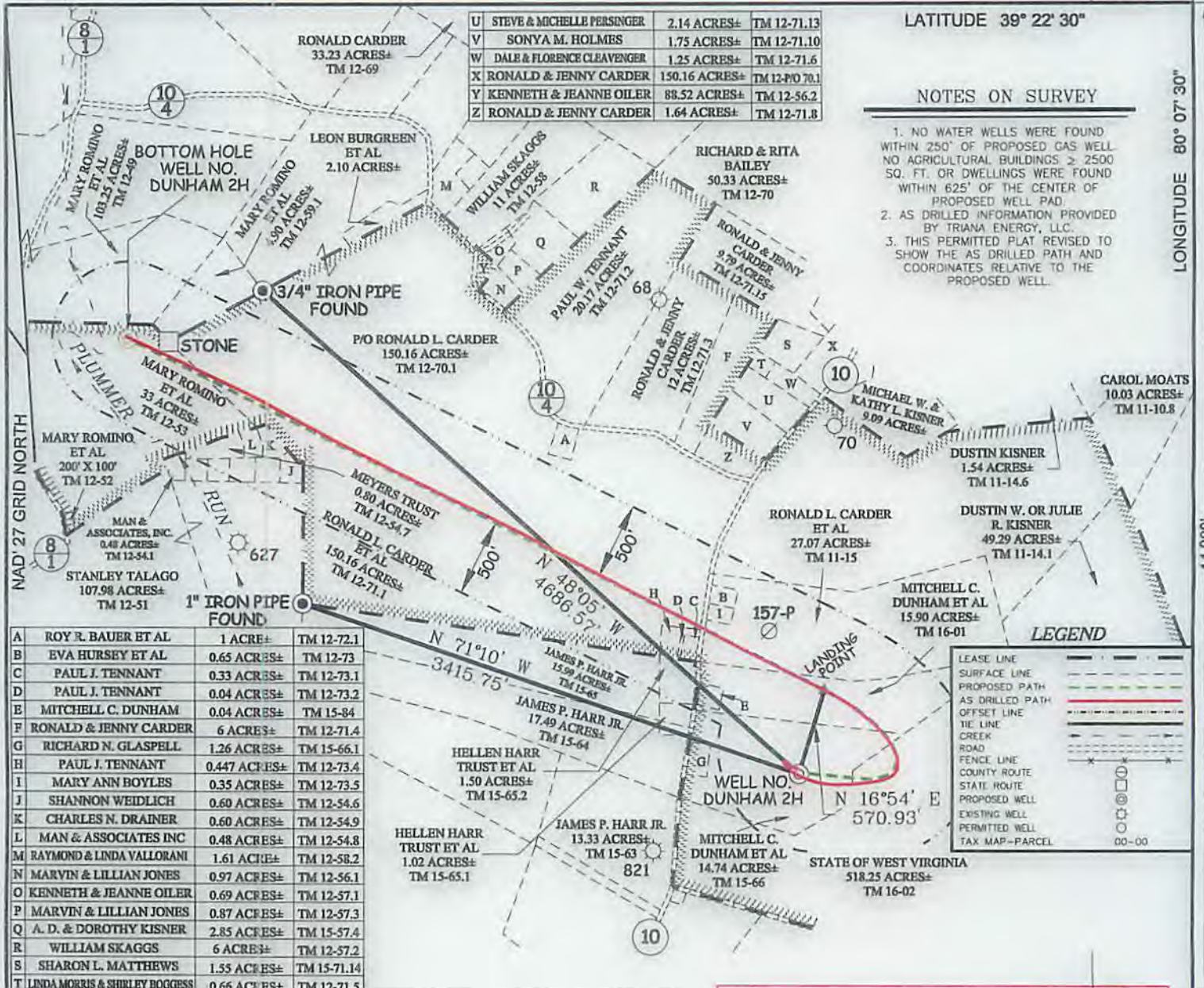
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U	STEVE & MICHELLE PERSINGER	2.14 ACRES±	TM 12-71.13
V	SONYA M. HOLMES	1.75 ACRES±	TM 12-71.10
W	DALE & FLORENCE CLEAVENGER	1.25 ACRES±	TM 12-71.6
X	RONALD & JENNY CARDER	150.16 ACRES±	TM 12-70.1
Y	KENNETH & JEANNE OILER	88.52 ACRES±	TM 12-56.2
Z	RONALD & JENNY CARDER	1.64 ACRES±	TM 12-71.8

LATITUDE 39° 22' 30"

NOTES ON SURVEY

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS > 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
2. AS DRILLED INFORMATION PROVIDED BY TRIANA ENERGY, L.L.C.
3. THIS PERMITTED PLAT REVISED TO SHOW THE AS DRILLED PATH AND COORDINATES RELATIVE TO THE PROPOSED WELL.

A	ROY R. BAUER ET AL	1 ACRE±	TM 12-72.1
B	EVA HURSEY ET AL	0.65 ACRES±	TM 12-73
C	PAUL J. TENNANT	0.33 ACRES±	TM 12-73.1
D	PAUL J. TENNANT	0.04 ACRES±	TM 12-73.2
E	MITCHELL C. DUNHAM	0.04 ACRES±	TM 15-84
F	RONALD & JENNY CARDER	6 ACRES±	TM 12-71.4
G	RICHARD N. GLASPELL	1.26 ACRES±	TM 15-66.1
H	PAUL J. TENNANT	0.447 ACRES±	TM 12-73.4
I	MARY ANN BOYLES	0.35 ACRES±	TM 12-73.5
J	SHANNON WEIDLICH	0.60 ACRES±	TM 12-54.6
K	CHARLES N. DRAINER	0.60 ACRES±	TM 12-54.9
L	MAN & ASSOCIATES INC	0.48 ACRES±	TM 12-54.8
M	RAYMOND & LINDA VALLORANI	1.61 ACRES±	TM 12-58.2
N	MARVIN & LILLIAN JONES	0.97 ACRES±	TM 12-56.1
O	KENNETH & JEANNE OILER	0.69 ACRES±	TM 12-57.1
P	MARVIN & LILLIAN JONES	0.87 ACRES±	TM 12-57.3
Q	A. D. & DOROTHY KISNER	2.85 ACRES±	TM 15-57.4
R	WILLIAM SKAGGS	6 ACRES±	TM 12-57.2
S	SHARON L. MATTHEWS	1.55 ACRES±	TM 15-71.14
T	LINDA MORRIS & SHIRLEY BOGGS	0.66 ACRES±	TM 12-71.5

LEGEND

- LEASE LINE
- SURFACE LINE
- PROPOSED PATH
- AS DRILLED PATH
- OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- FENCE LINE
- COUNTY ROUTE
- STATE ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- TAX MAP - PARCEL

DUNHAM LEASE
DUNHAM 2H
 711.55 ACRES± LEASE
 (S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD27 S.P.C.(FT)	N. 305,226	E. 1,821,868
NAD27 GEO.	LAT-(N) 39.33631	LONG-(W) 80.12978
NAD83 UTM (M)	N. 4,354,470	E. 575,013

LANDING POINT

NAD27 S.P.C.(FT)	N. 305,773	E. 1,822,034
NAD27 GEO.	LAT-(N) 39.33782	LONG-(W) 80.12921
NAD83 UTM (M)	N. 4,354,637	E. 575,081

BOTTOM HOLE

NAD27 S.P.C.(FT)	N. 308,047	E. 1,817,502
NAD27 GEO.	LAT-(N) 39.34397	LONG-(W) 80.14529
NAD83 UTM (M)	N. 4,355,307	E. 573,669

AS DRILLED COORDINATES
FOR WELL NO. DUNHAM 2H
 (S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD27 S.P.C.(FT)	N. 305,257	E. 1,821,867
NAD27 GEO.	LAT-(N) 39.33640	LONG-(W) 80.12978
NAD83 UTM (M)	N. 4,354,478	E. 575,013

BOTTOM HOLE

NAD27 S.P.C.(FT)	N. 308,082	E. 1,817,484
NAD27 GEO.	LAT-(N) 39.34401	LONG-(W) 80.14535
NAD83 UTM (M)	N. 4,355,312	E. 573,663



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 THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 2294 *Matthew J. Hilton, Jr.*

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
 DATE DECEMBER 17, 20 13
 REVISED 06/13/14 & 07/29/15
 OPERATORS WELL NO. DUNHAM 2H
 API WELL NO. 47 - 091 - 01285H
 STATE STATE COUNTY COUNTY PERMIT PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 7754AD2H
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 1000'

STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: ELEVATION 1,420' WATERSHED TRIBUTARY OF LOST RUN
 DISTRICT BOOTH'S CREEK COUNTY TAYLOR QUADRANGLE ROSEMONT 7.5'
 SURFACE OWNER MITCHELL DUNHAM ET AL ACREAGE 14.74±
 ROYALTY OWNER SEE ATTACHED WW-6A1 ACREAGE 711.55± LEASE NO. 11/06/2015

PROPOSED WORK:
 DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD
 FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER
 PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION MARCELLUS
 ESTIMATED DEPTH TVD 7,800' / TMD 13,251'

WELL OPERATOR TRIANA ENERGY, L.L.C. DESIGNATED AGENT RACHELLE A. KING
 ADDRESS 900 VIRGINIA STREET EAST, SUITE 400 ADDRESS 900 VIRGINIA STREET EAST, SUITE 400
CHARLESTON, WV 25301 CHARLESTON, WV 25301