

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

API 47-091-1292 County Taylor District BOOTH'S CREEK
Quad ROSEMONT Pad Name DUNHAM Field/Pool Name _____
Farm name DUNHAM, MITCHELL., ET AL Well Number 5H
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 14286386.38 Easting 1886445.38
Landing Point of Curve Northing 14287165.99 Easting 1887500.91
Bottom Hole Northing 14289731.58 Easting 1883803.7

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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Date permit issued 2/26/14 Date drilling commenced 6/3/14 Date drilling ceased 9/17/14
Date completion activities began 10/10/14 Date completion activities ceased 10/19/14
Verbal plugging (Y/N) No Date permission granted NA Granted by NA

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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug AUG 05 2015

Freshwater depth(s) ft none reported Open mine(s) (Y/N) depths N WV Department of
Salt water depth(s) ft none reported Void(s) encountered (Y/N) depths Environmental Protection
Coal depth(s) ft 293-294,555-556,574-576, 652-653,678-683(from 2H coal log) Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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

API 47-091 - 1292 Farm name DUNHAM, MITCHELL., ET AL Well number 5H

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"	49'	New	n/a	n/a	No
Surface	17.5"	13.375"	1010'	New	H-40 (48/ft)	n/a	Yes
Coal	-	-	-	-	-	-	-
Intermediate 1	12.25"	9.625"	2601'	New	J-55 (40/ft)	n/a	Yes
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	8.75"	5.5"	13171'	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	1488
Surface	Type 1	706	15.6	1.18	833.08	Surface	8
Coal	-	-	-	-	-	-	-
Intermediate 1	Type 1 (lead) / Type 1 (tail)	646 (lead) / 150 (tail)	15.2 (lead) / 15.6 (tail)	1.2 (lead) / 1.18 (tail)	775.2 (lead) / 177 (tail)	Surface	8
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	50:50 Type 1 / Fly Ash	211 (lead) / 1751 (tail)	14.5 (lead) / 14.7 (tail)	1.2 (lead) / 1.16 (tail)	253.2 (L) / 2067.12 (T)	4636'	16
Tubing							

Drillers TD (ft) 13,171 Loggers TD (ft) n/a

Deepest formation penetrated Marcellus Plug back to (ft) n/a

Plug back procedure n/a

Kick off depth (ft) 5604'

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 _____

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WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft	Perforated to MD ft	Number of Perforations	Formation(s)
1	10/10/14	12884	13037	60	Marcellus
2	10/11/14	12642	12831	60	Marcellus
3	10/11/14	12400	12589	60	Marcellus
4	10/12/14	12152	12347	60	Marcellus
5	10/12/14	11917	12105	60	Marcellus
6	10/13/14	11675	11864	60	Marcellus
7	10/13/14	11433	11622	60	Marcellus
8	10/14/14	11188	11380	60	Marcellus
9	10/14/14	10949	11138	60	Marcellus
10	10/15/14	10707	10896	60	Marcellus
11	10/15/14	10465	10654	60	Marcellus
12	10/16/14	10223	10412	60	Marcellus
13	10/16/14	9981	10170	60	Marcellus
14	10/17/14	9739	9918	60	Marcellus
15	10/17/14	9498	9686	60	Marcellus
16	10/18/14	9256	9433	60	Marcellus

Please insert additional pages as applicable.

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STIMULATION INFORMATION PER STAGE

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	10/10/14	85.0	8678	7447/9145	5395	411200	9452	0
2	10/11/14	81.5	8531	6627/9355	6040	414300	10464	0
3	10/11/14	85.2	8557	6770/9081	5991	412960	9182	0
4	10/12/14	86.3	8552	6499/9060	5839	407740	9122	0
5	10/12/14	85.6	8273	6431/8768	6032	408060	9176	0
6	10/13/14	85.0	8524	6463/9180	5725	413700	9343	0
7	10/13/14	87.1	8425	7590/8906	5515	410800	9390	0
8	10/14/14	85.7	8465	6828/8863	5525	409900	9060	0
9	10/14/14	85.8	8576	6886/9095	5478	412700	9239	0
10	10/15/14	86.1	8321	7082/8801	5665	400700	9330	0
11	10/15/14	86.1	8628	7145/8999	5780	410540	9223	0
12	10/16/14	85.3	8504	5760/8829	5814	409400	9188	0
13	10/16/14	81.1	8640	7236/9319	5754	220600	11170	0
14	10/17/14	85.1	8582	7832/9112	5416	414500	9295	0
15	10/17/14	85.7	8413	7605/8938	5709	408460	8886	0
16	10/18/14	86.3	8308	7313/8681	5250	401240	9199	0

Please insert additional pages as applicable.

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API 47- 091 - 1292 Farm name DUNHAM, MITCHELL., ET AL Well number 5H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
Marcellus	7,542-7,357	TVD	8,530-13,037 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
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	6562	6655	6625	6777	
Tully	7248	7312	7809	7921	
Marcellus	7443	7353	8223	13171 (MTD)	GAS
					Office of Oil and Gas WV Dept. of Environmental Protection

Please insert additional pages as applicable.

Drilling Contractor Pioneer Energy Resources
 Address 5205 North O'Connor Blvd City Irving State Texas Zip 75039

Logging Company _____
 Address _____ City _____ State _____ Zip _____
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Cementing Company Universal Well Services, Inc.
 Address Route 5 Hall Road City Buckhannon State WV Zip 26201
 AUG 05 2015

Stimulating Company Universal Well Services, Inc.
 Address 124 Industrial Drive City Bradford State PA Zip 16701
 WV Department of Environmental Protection

Please insert additional pages as applicable.

Completed by Rachelle King Telephone 304-205-8560
 Signature Rachelle J. King Title Director of Regulatory Affairs Date 2/19/15

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

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/10/2014
Job End Date:	10/19/2014
State:	West Virginia
County:	Taylor
API Number:	47-091-01292-00-00
Operator Name:	Triana Energy
Well Name and Number:	Dunham 5H
Longitude:	-80.13005400
Latitude:	39.33658200
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	7,442
Total Base Water Volume (gal):	7,883,736
Total Base Non Water Volume:	

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Service 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	88.98061	
Sand (Proppant)	Universal Well Services	Proppant	Crystalline Silica in the form of Quartz	14808-60-7	99.90000	10.28326	
Hydrochloric Acid (7.5%)	Universal Well Services	Acidizing	Other - (non-hazardous)	NA	92.50000	0.61166	
			Hydrochloric Acid	7647-01-0	7.50000	0.04959	
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.							
Unislick ST-50	Universal Well Services	Friction Reducer	Other - (non-hazardous)	NA	70.00000	0.03918	
			Petroleum Distillates, Hydro-treated Light	64742-47-8	30.00000	0.01679	
B-84	XChem	Biocide	Glutaraldehyde	111-30-8	27.00000	0.00947	
			Didecyl Dimethyl Ammonium Chloride	7173-51-5	8.00000	0.00281	
			n-Alkyl Dimethyl Benzyl Ammonium Chloride	68424-85-1	5.50000	0.00193	
			Ethanol	64-17-5	4.00000	0.00140	

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TS-30	XChem	Scale Inhibitor	Sodium Polyacrylate	9003-04-7	30.00000	0.00268
Unhib G	Universal Well Services	Acid Inhibitor	Short Chained Glycol Ether	112-34-5	60.00000	0.00035
			Ethoxylated Alcohol	68002-97-1	35.00000	0.00021
			Methanol	67-56-1	5.00000	0.00003
			Formaldehyde	50-00-0	1.00000	0.00001
			Thiourea	62-56-6	1.00000	0.00001
			Acetophenone	98-86-2	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)

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DUNHAM LEASE DUNHAM 5H

**BOTTOM HOLE
DUNHAM 5H
STATE PLANE COORDINATES
NORTH ZONE (NAD 27)**

N. 308,646
E. 1,819,133
LAT=(N) 39.34565
LONG=(W) 80.13954
UTM (NAD'83)(METERS)
N. 4,355,498
E. 574,163

LATITUDE 39° 22' 30"

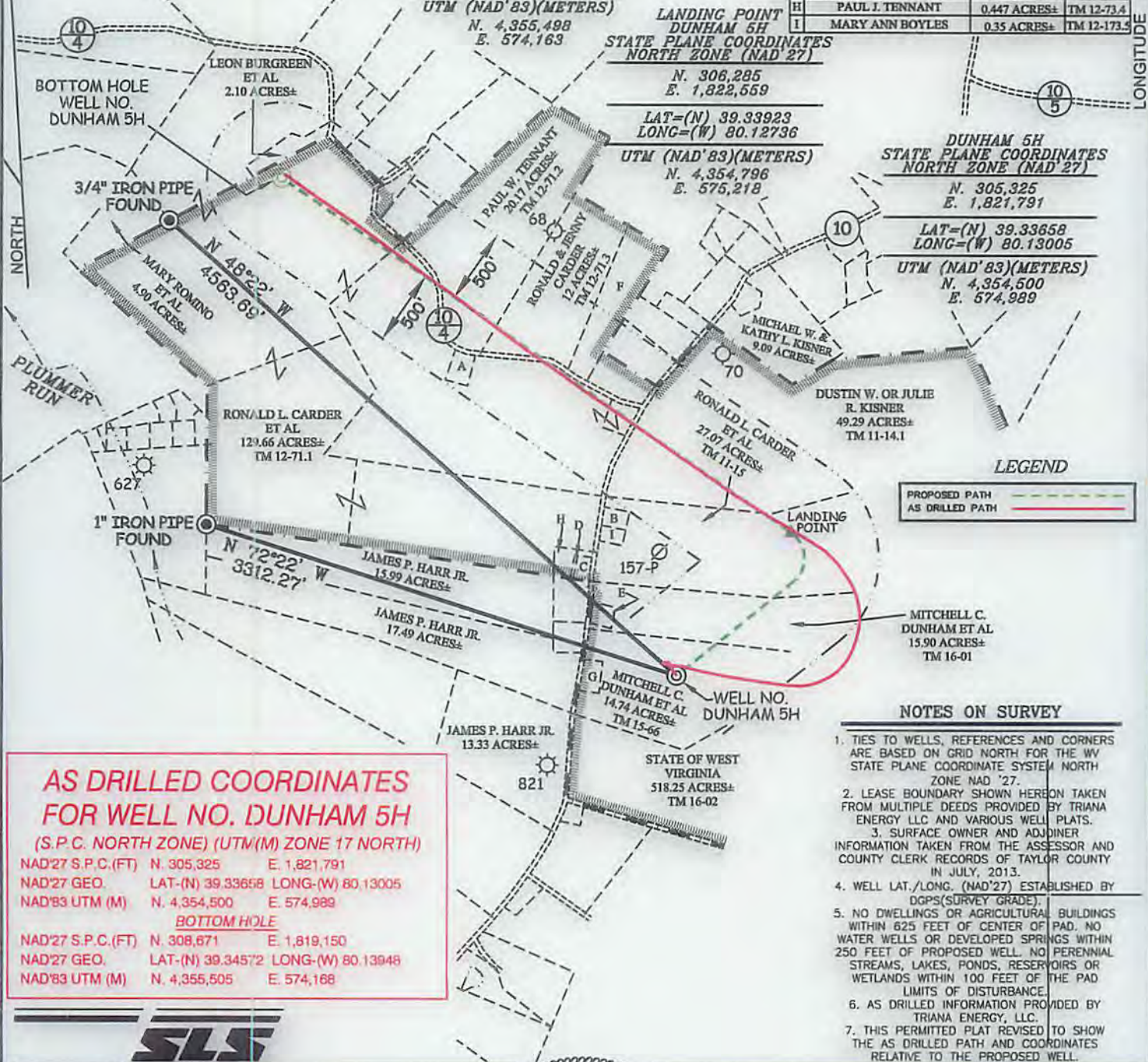
A	ROY R. BAUER ET AL	1 ACRE±	TM 12-72.1
B	EVA HURSEY ET AL	0.65 ACRES±	TM 12-73
C	PAUL J. TENNANT	0.33 ACRES±	TM 12-73.1
D	PAUL J. TENNANT	0.04 ACRES±	TM 12-73.2
E	MITCHELL C. DUNHAM	0.40 ACRES±	TM 15-84
F	RONALD & JENNY CARDER	6 ACRES±	TM 12-71.4
G	RICHARD N. GLASPELL	1.26 ACRES±	TM 15-66.1
H	PAUL J. TENNANT	0.447 ACRES±	TM 12-73.4
I	MARY ANN BOYLES	0.35 ACRES±	TM 12-173.5

**LANDING POINT
DUNHAM 5H
STATE PLANE COORDINATES
NORTH ZONE (NAD 27)**

N. 306,285
E. 1,822,659
LAT=(N) 39.33923
LONG=(W) 80.12736
UTM (NAD'83)(METERS)
N. 4,354,796
E. 575,218

**DUNHAM 5H
STATE PLANE COORDINATES
NORTH ZONE (NAD 27)**

N. 305,325
E. 1,821,791
LAT=(N) 39.33658
LONG=(W) 80.13005
UTM (NAD'83)(METERS)
N. 4,354,500
E. 574,989



**AS DRILLED COORDINATES
FOR WELL NO. DUNHAM 5H
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)**

NAD'27 S.P.C.(FT)	N. 305,325	E. 1,821,791
NAD'27 GEO.	LAT=(N) 39.33658	LONG=(W) 80.13005
NAD'83 UTM (M)	N. 4,354,500	E. 574,989

BOTTOM HOLE

NAD'27 S.P.C.(FT)	N. 308,671	E. 1,819,150
NAD'27 GEO.	LAT=(N) 39.34572	LONG=(W) 80.13948
NAD'83 UTM (M)	N. 4,355,505	E. 574,168

NOTES ON SURVEY

1. TIES TO WELLS, REFERENCES AND CORNERS ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD '27.
2. LEASE BOUNDARY SHOWN HEREON TAKEN FROM MULTIPLE DEEDS PROVIDED BY TRIANA ENERGY LLC AND VARIOUS WELL PLATS.
3. SURFACE OWNER AND ADJUDICATOR INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF TAYLOR COUNTY IN JULY, 2013.
4. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS(SURVEY GRADE).
5. NO DWELLINGS OR AGRICULTURAL BUILDINGS WITHIN 625 FEET OF CENTER OF PAD. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL. NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE PAD LIMITS OF DISTURBANCE.
6. AS DRILLED INFORMATION PROVIDED BY TRIANA ENERGY, LLC.
7. THIS PERMITTED PLAT REVISED TO SHOW THE AS DRILLED PATH AND COORDINATES RELATIVE TO THE PROPOSED WELL.



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. *Matthew J. Hilton*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE DECEMBER 17, 20 13

REVISED JULY 29, 20 15

OPERATORS WELL NO. DUNHAM 5H

API WELL NO. 47 - 091 - 01292H

STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 7754AD5H

PROVEN SOURCE OF ELEVATION DGPS (SURVEY GRADE GPS TIES TO COORS) 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 MITCHELL DUNHAM ET AL (14.74 & 15.90 AC.±) / RONALD L. CARDER (27.07, 0.04, 0.33, 129.66, 12 & 6 AC.±) / PAUL W. TENNANT (0.447 AC.±) / MARY ANN BOYLES (0.35 AC.±) / DUSTIN W. OR JULIE R. KISNER ET AL (49.29 AC.±) / PAUL J. TENNANT (0.447 AC.±) / MITCHELL CARL DUNHAM (0.4 AC.±)

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

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

LONGITUDE 80° 07' 30" COUNTY NAME PERMIT