

Newman Road
Tax ID = 56-39-89, 10.6 ac, Tax ID = 56-39-88, 10.5 ac
Warren Township, Bradford County, PA

Geologic Summary

Zaengle Geoscience LLC

Don Zaengle
Geologist

P.O. Box 242
14 Chase St.
Worcester N.Y. 12197

DISCLAIMER

Information on the subject property set forth herein was originally compiled by Zaengle Geoscience LLC ("Zaengle") for Manzek Land Company ("MLC") c/o of Drake D. Nicholas, Esq., Receiver ("Receiver") to Manzek Land Company. The geologic information contained herein is a compilation of certain available geologic data for the subject property, Newman Road, Tax ID = 56-39-89, 10.6 ac, Tax ID = 56-39-88, 10.5 ac, Warren Township, Bradford County, PA. owned by MLC. Any party interested in purchasing the subject property must make their own evaluation of the subject property and is responsible for performing their own due diligence on the subject property.

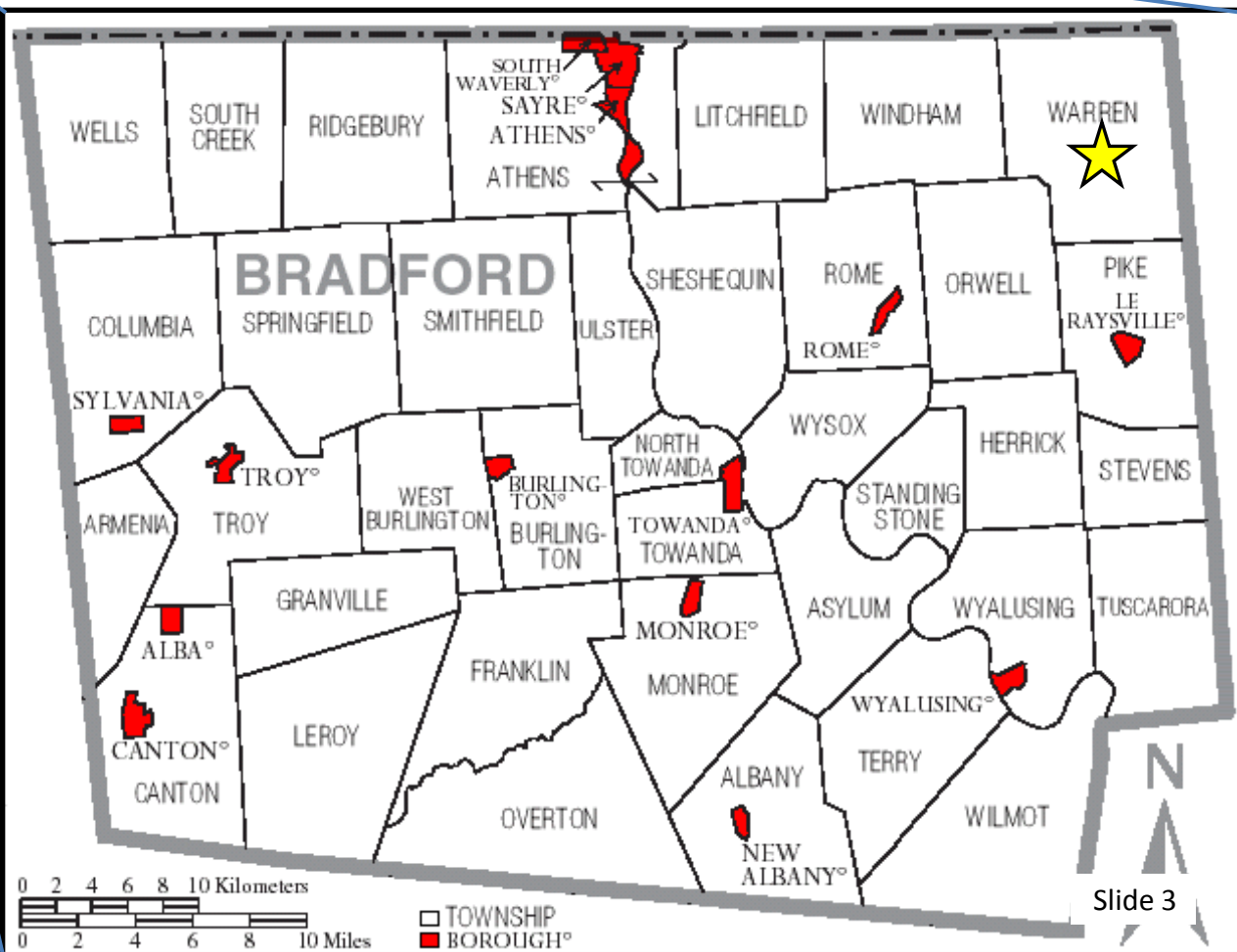
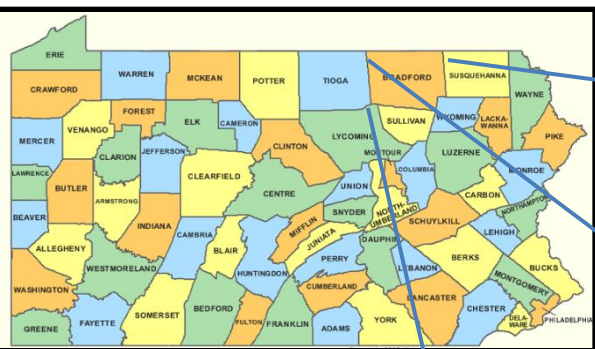
Zaengle, the Receiver and MLC disclaim any and all liability for information and/or statements contained herein and make no representation or warranty as to the completeness or accuracy of the enclosed presentation or the information contained herein, including any representation or warranty of any kind as to the amount of "in place" or recoverable oil and gas reserves (proved, probable or otherwise) attributable to the subject property, as to geological and engineering interpretations related thereto or as to process which will be received for production.

Any party interested in purchasing the subject property should understand that purchases of properties with potential "in place" or recoverable oil and gas reserves is making an investment which is subject to risks and uncertainties and is a highly speculative investment.

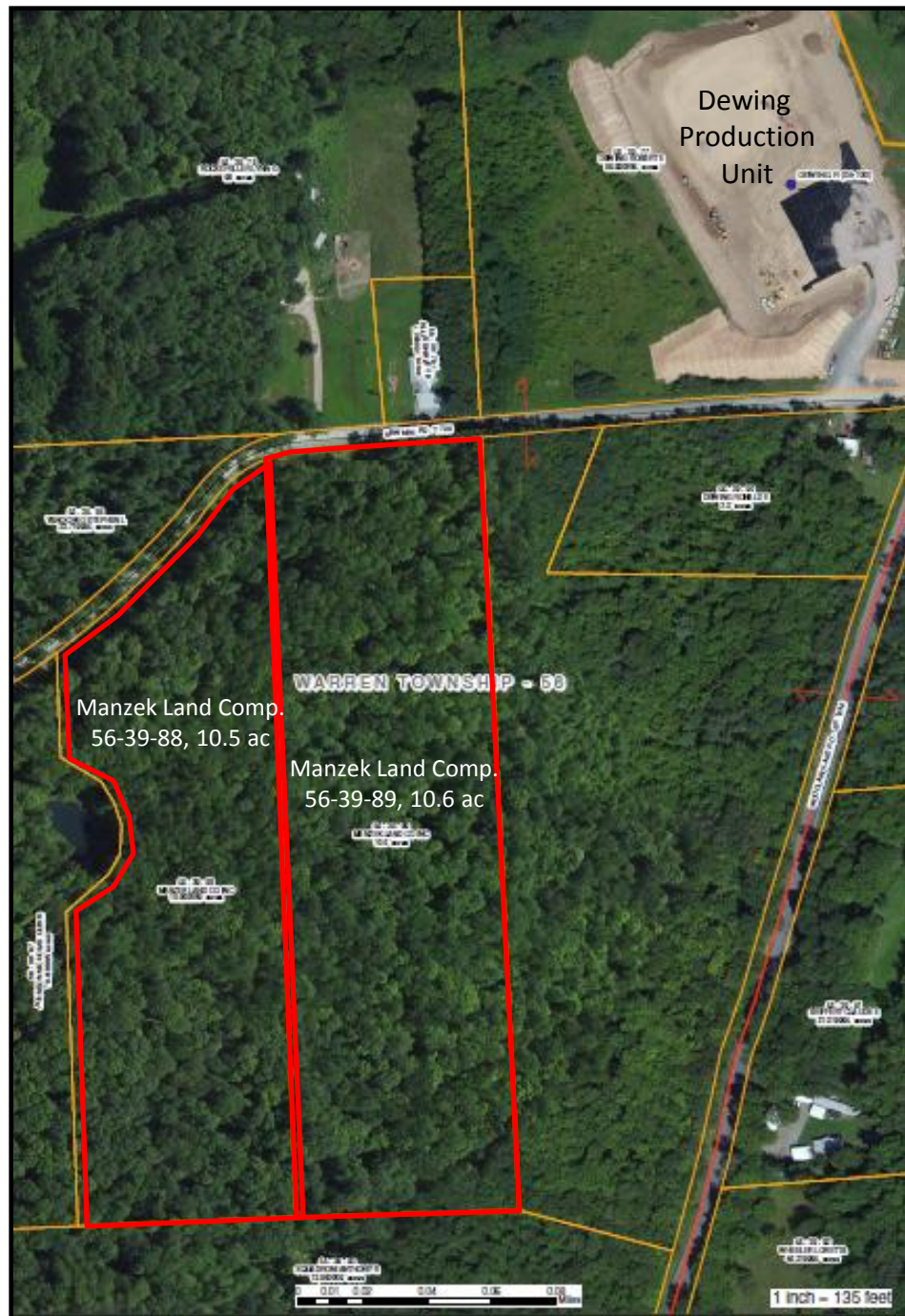
Subject Property Location Map, Bradford County, PA



Newman Road, Tax ID = 56-39-89, 10.6 ac, Tax ID = 56-39-88, 10.5 ac
Warren Township, Bradford County, PA

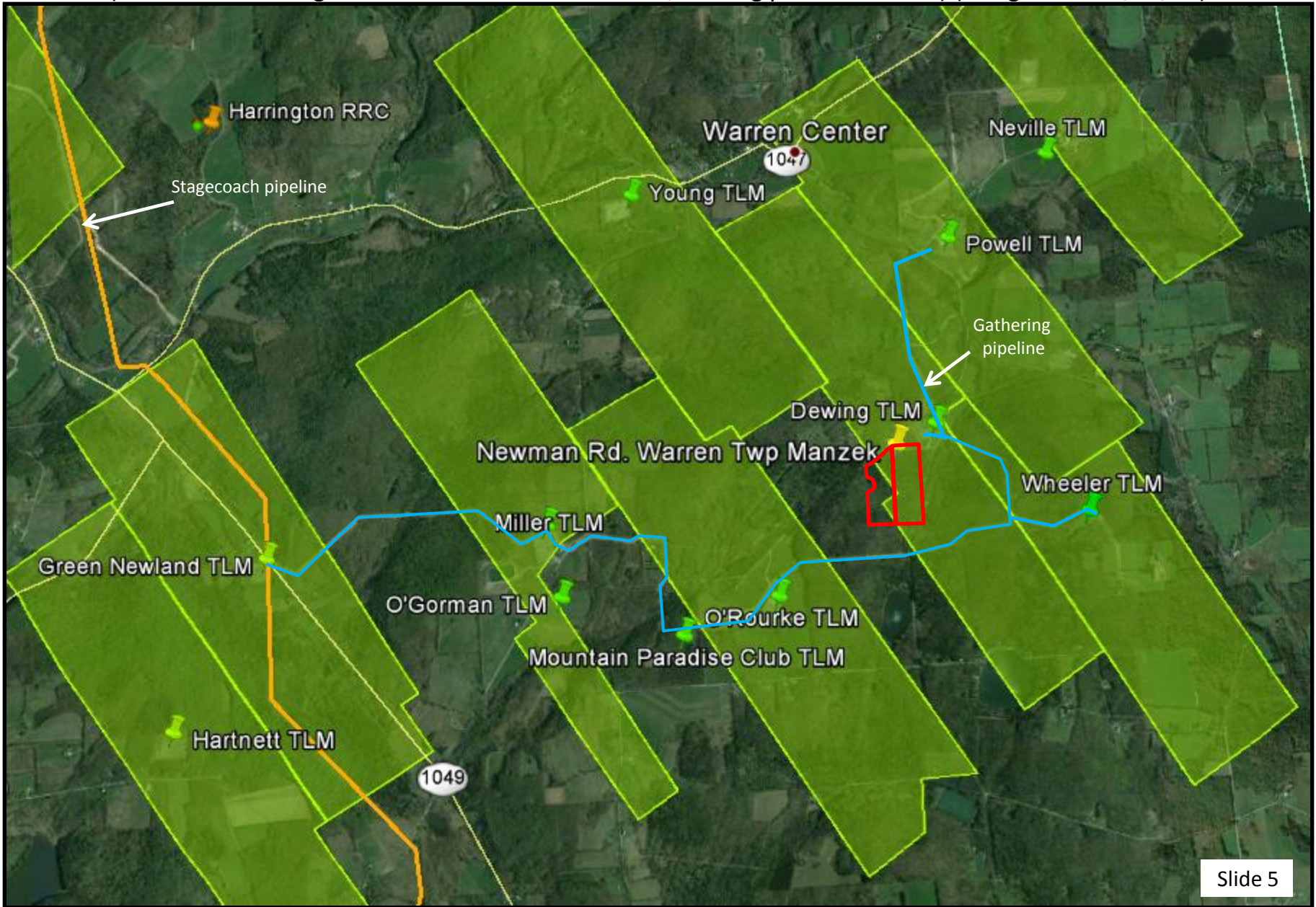


Tax Map,
Subject Property
Tax ID = 56-39-89, 10.6 ac
Tax ID = 56-39-88, 10.5 ac
Warren Township
Bradford County, PA

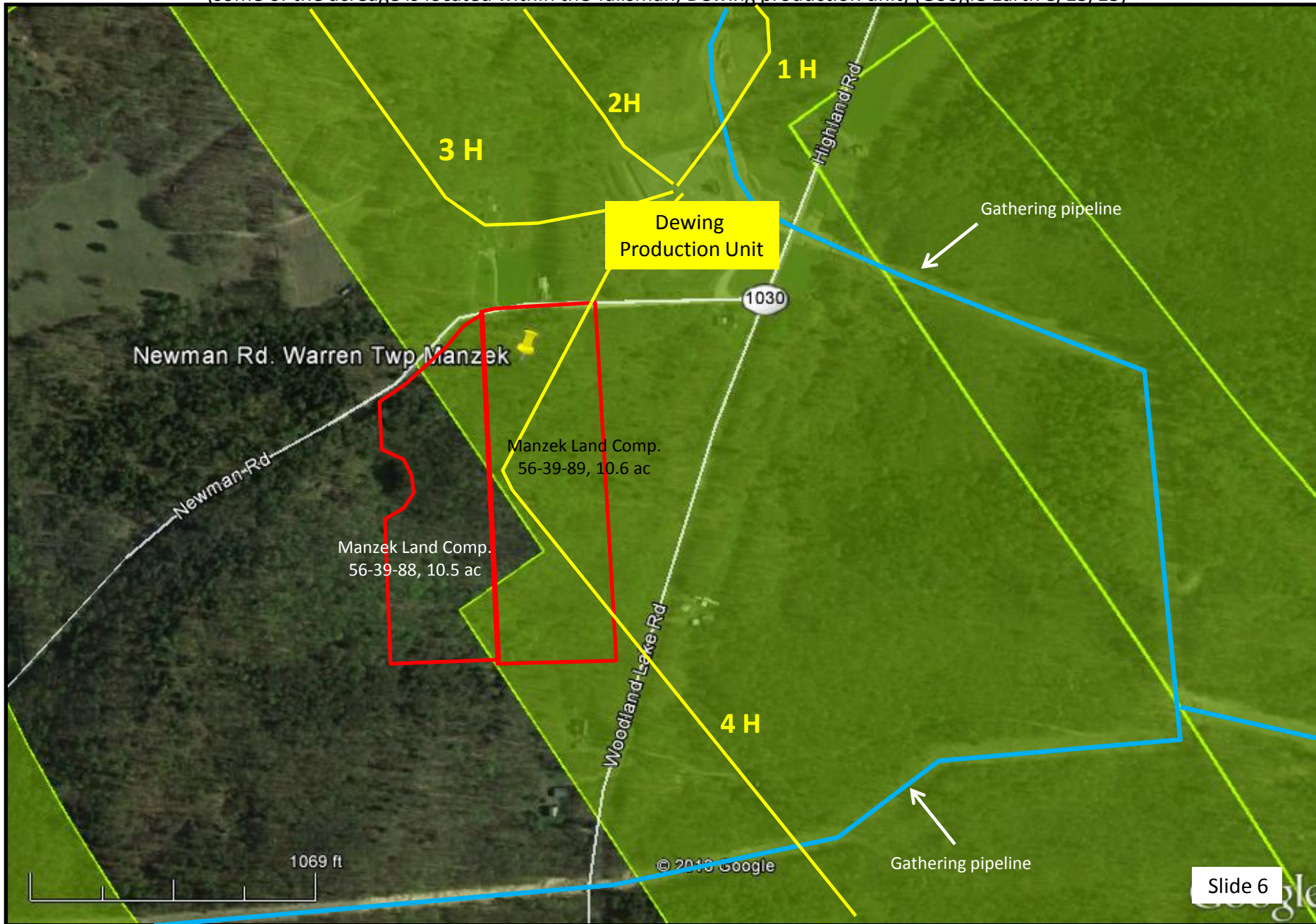


Regional Production Unit Map (green), Subject Property (red)

Newman Road, Tax ID = 56-39-88, 10.5 ac, Tax ID = 56-39-89, 10.6 ac, Warren Township, Bradford County, PA
(some of the acreage is located within the Talisman, Dewing production unit) (Google Earth 8/15/13)



Dewing Production Unit Map with Well Locations (yellow), Subject Property (red)
Newman Road, Tax ID = 56-39-88, 10.5 ac, Tax ID = 56-39-89, 10.6 ac Warren Township, Bradford County, PA
(some of the acreage is located within the Talisman, Dewing production unit) (Google Earth 8/15/13)



Dewing Production Unit, Talisman Energy USA, Warren Township, Bradford County, PA (Google Earth 8/15/13)



3701521606	TALISMAN	DEWING 05 100 01 R	DEWING 05 100 01 R 1H	1H	12492	Active Producing	0	GF	N	41.920906	-76.172081
3701521607	TALISMAN	DEWING 05 100 02 R	DEWING 05 100 02 R 2H	2H	12268	Active Producing	0	GF	N	41.920834	-76.172028
3701521608	TALISMAN	DEWING 05 100 03 R	DEWING 05 100 03 R 3H	3H	12560	Active Producing	0	GF	N	41.920761	-76.171974
3701521609	TALISMAN	DEWING (05-100-04) R	DEWING 05 100 04 R 4H	4H	13093	Active Producing	0	GF	N	41.9207	-76.171898
3701521610	TALISMAN	DEWING (05-100-05) R	DEWING 05 100 05 R 5H	5H	6566	Active Producing	0		Y	41.920601	-76.171898

182 ft

Dewing 1H , 59 days of production = 123,922,000 cf, 2.1 mmcf/day, 8/19/13
No other production reported.

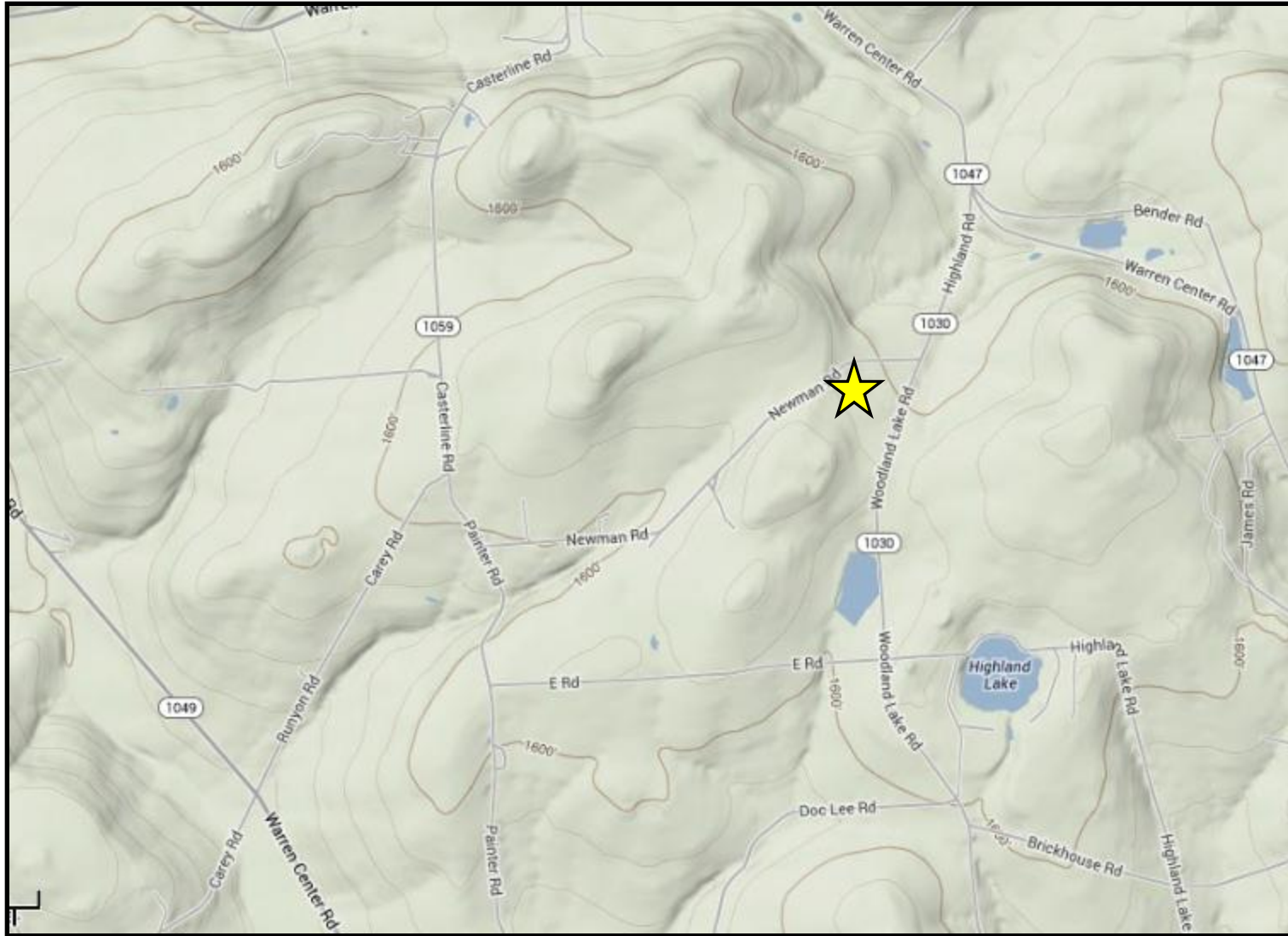


Topographic Map, Subject Property

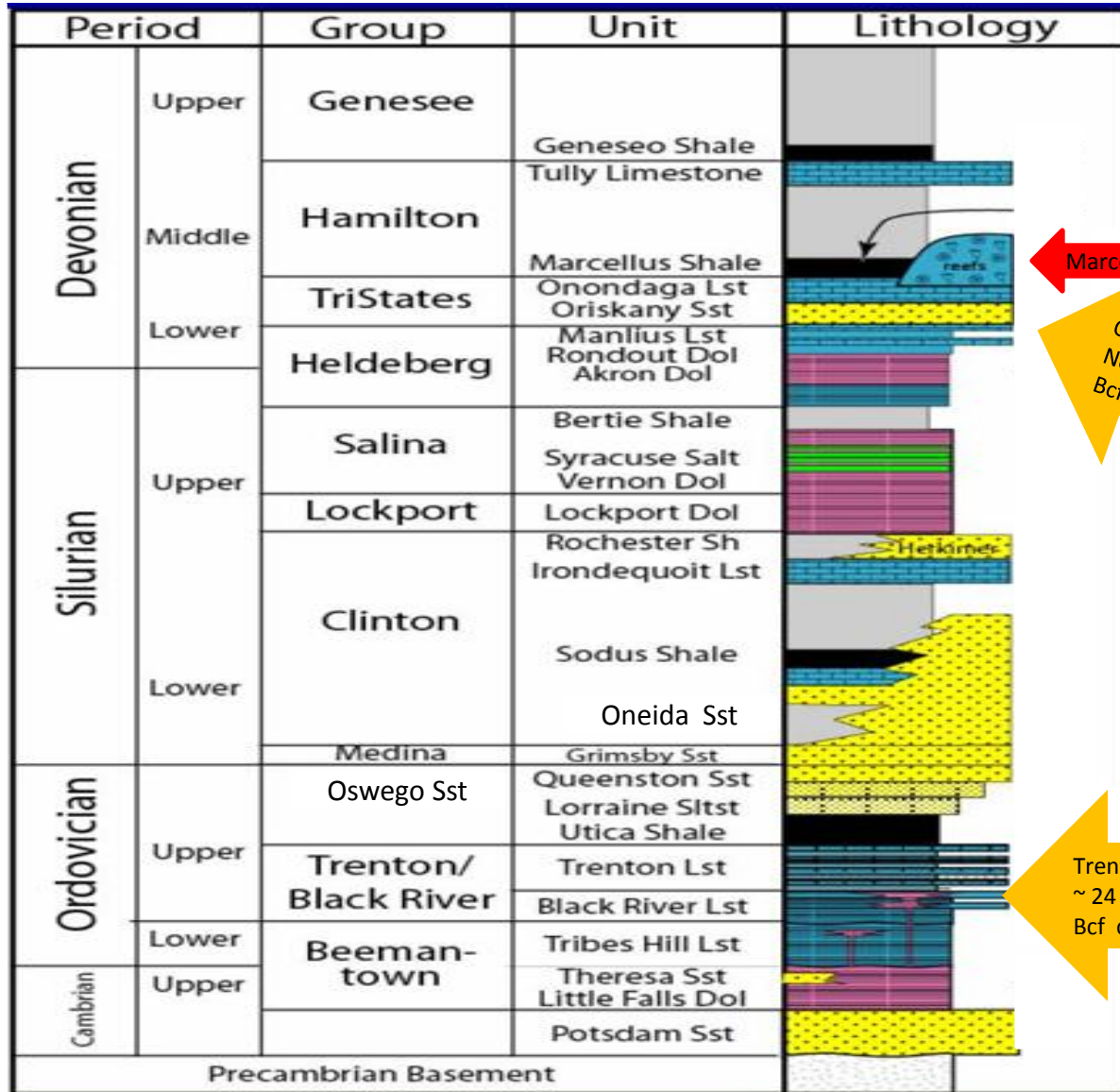
Newman Road, Tax ID = 56-39-89, 10.6 ac, Tax ID = 56-39-88, 10.5 ac

Warren Township, Bradford County, PA

(Google Earth 8/15/13)



Geologic Section / Historic Production
 Subject Property
 Newman Road, Tax ID = 56-39-89, 10.6 ac, Tax ID = 56-39-88, 10.5 ac
 Warren Township, Bradford County, PA



Marcellus Shale

Oriskany Production ~ 9.0 miles Northwest Stagecoach field 1985 ~14 Bcf, Currently used as gas storage field

Trenton Black River Langdon Field NY ~ 24 miles northwest, produced ~ 15.5 Bcf currently producing.

(R. Nyahay, J. Leone, L. Smith, J. Martin, D. Jarvie, 2007)
 Modified D. Zaengle 10/2008

Marcellus: 4-5 %



Marcellus: ~ 2.4 Dry Gas Window



Marcellus: (High TOC) = 180'



Summary
Key Geologic Factors
Subject Property

Newman Road, Tax ID = 56-39-89, 10.6 ac,
Tax ID = 56-39-88, 10.5 ac
Warren Township, Bradford County, PA

* Public data unavailable

Marcellus: *



Marcellus: ~ 5,230'



Marcellus: ~ 70 Bcf/sq mile



Marcellus: *



Marcellus: *

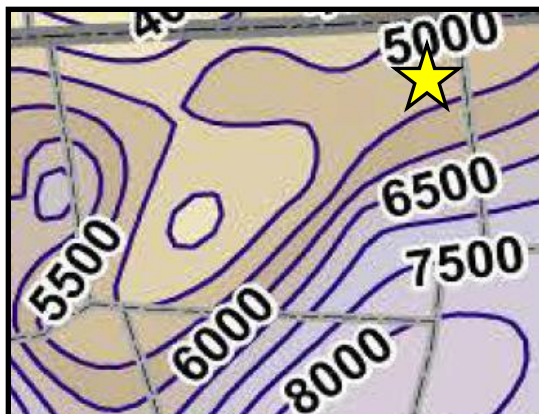


Regional Geologic Maps

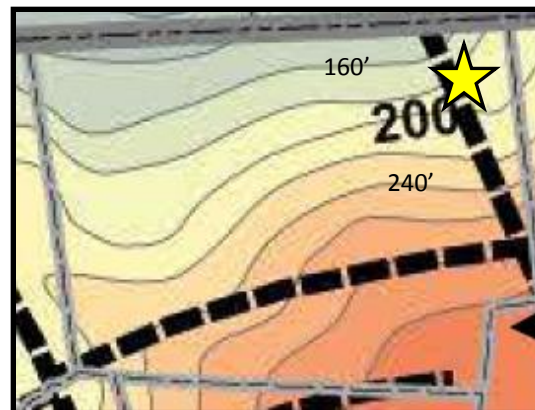
Subject Property

★ Newman Road, Tax ID = 56-39-89, 10.6 ac, Tax ID = 56-39-88, 10.5 ac
Warren Township, Bradford County, PA

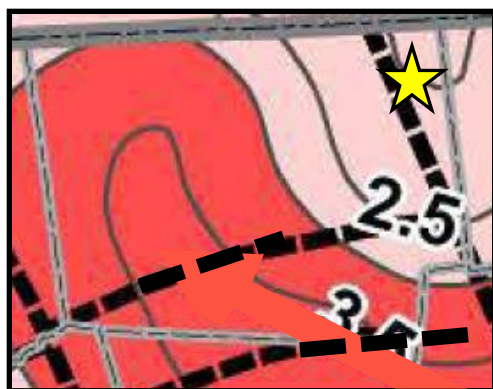
Regional Depth to base of Marcellus Shale
~ 5,300', Upper Marcellus @ 5,230'



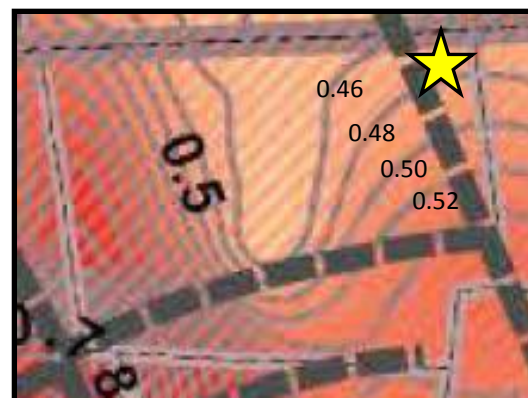
Gross Thickness
~ 180'



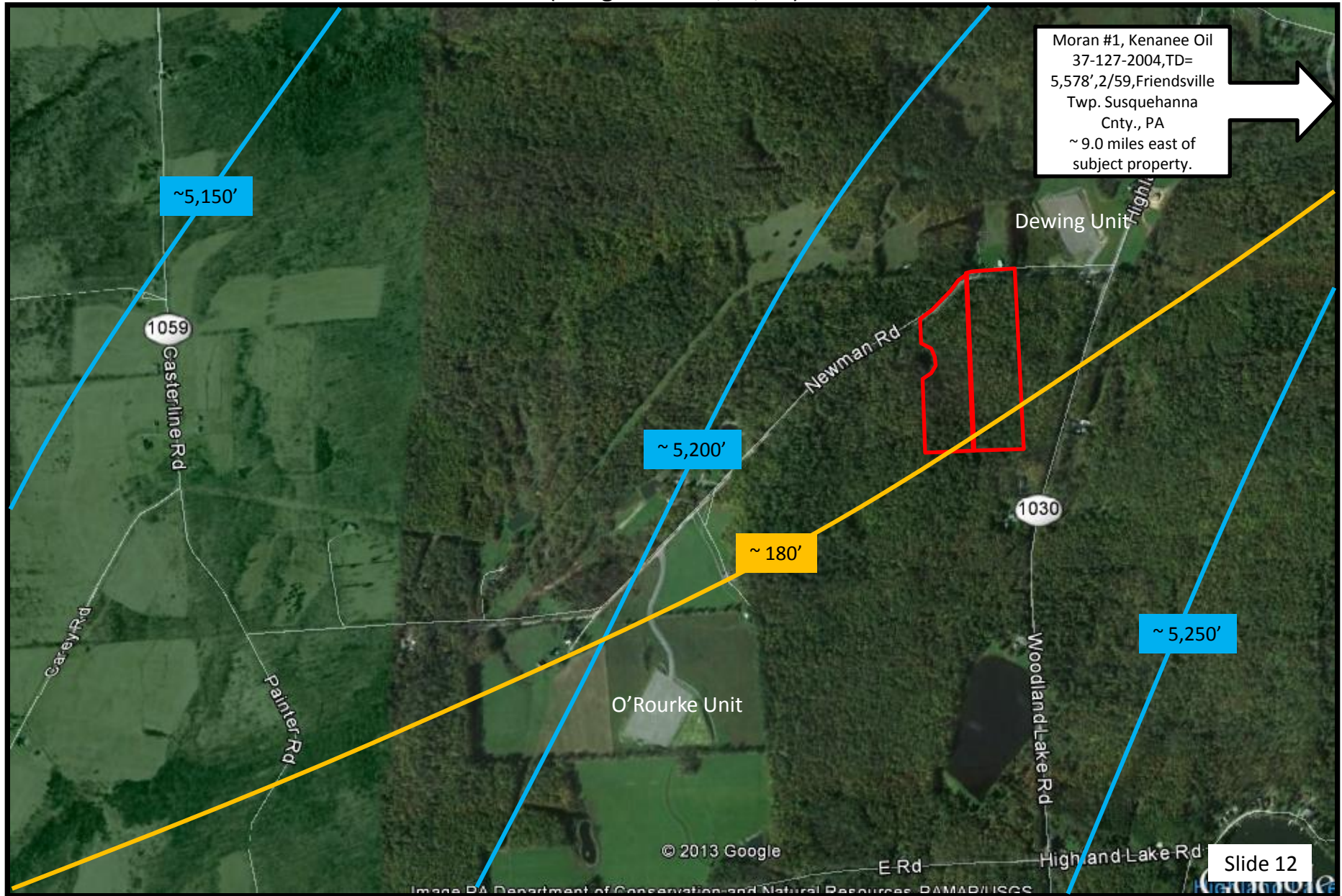
Thermal Maturation (Ro)
Marcellus: ~ 2.4
Dry Gas Window



Pressure gradient (PSI/ft)
0.47 PSI/ft



Subject Property, Newman Road, Tax ID = 56-39-89, 10.6 ac, Tax ID = 56-39-88, 10.5 ac
Warren Township, Bradford County, PA, Marcellus Shale Depth = — Thickness = —
(Google Earth 8/15/13)



Moran #1, Kenanee Oil
37-127-2004, TD=
5,578', 2/59, Friendsville
Twp. Susquehanna
Cnty., PA
~ 9.0 miles east of
subject property.

~5,150'

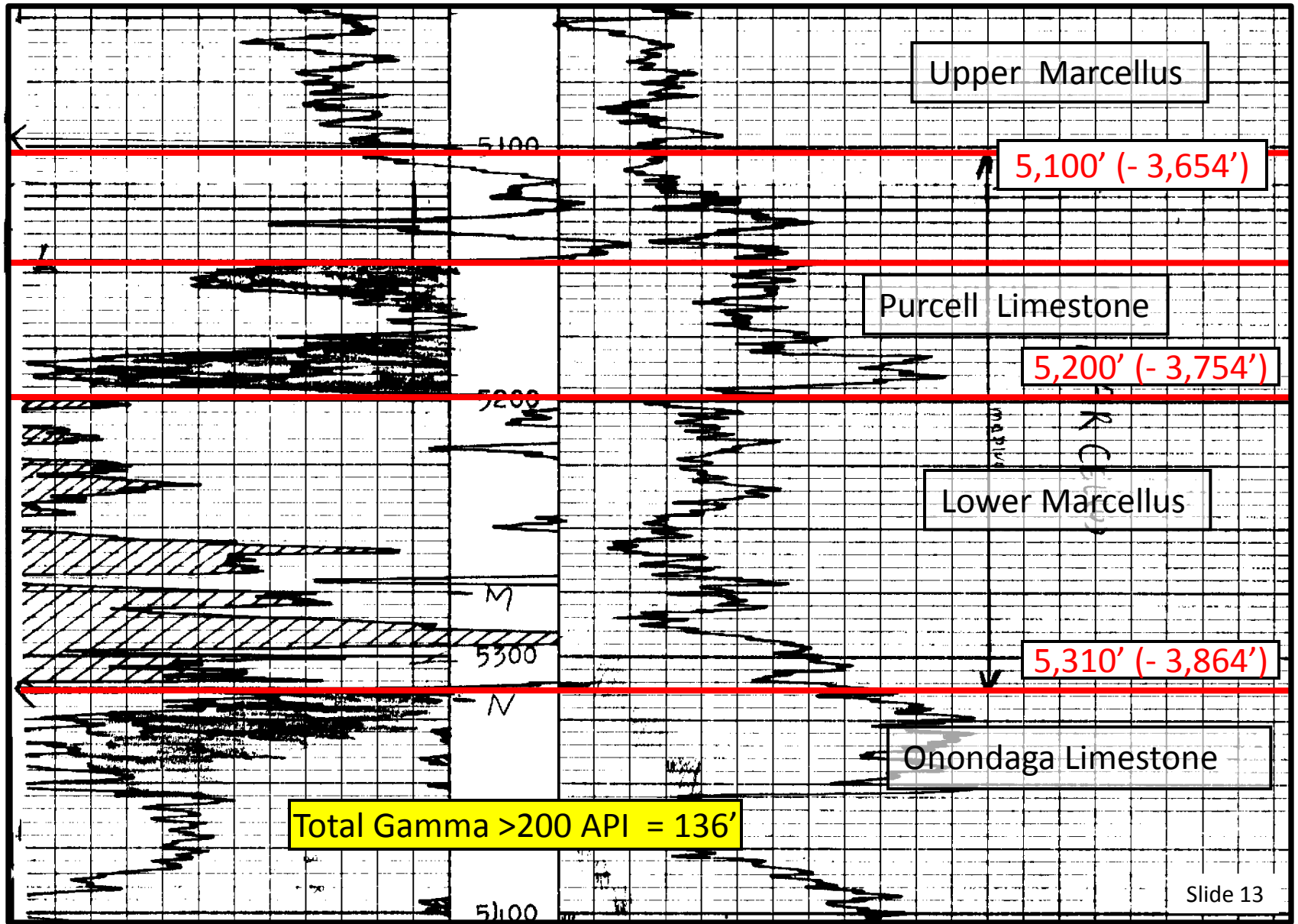
~ 5,200'

~ 180'

~ 5,250'

Slide 12

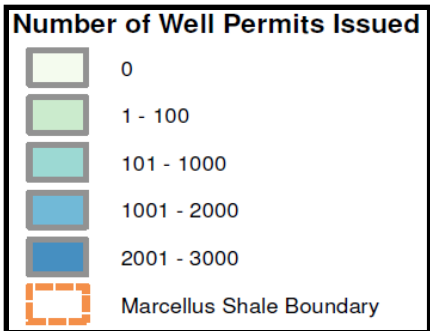
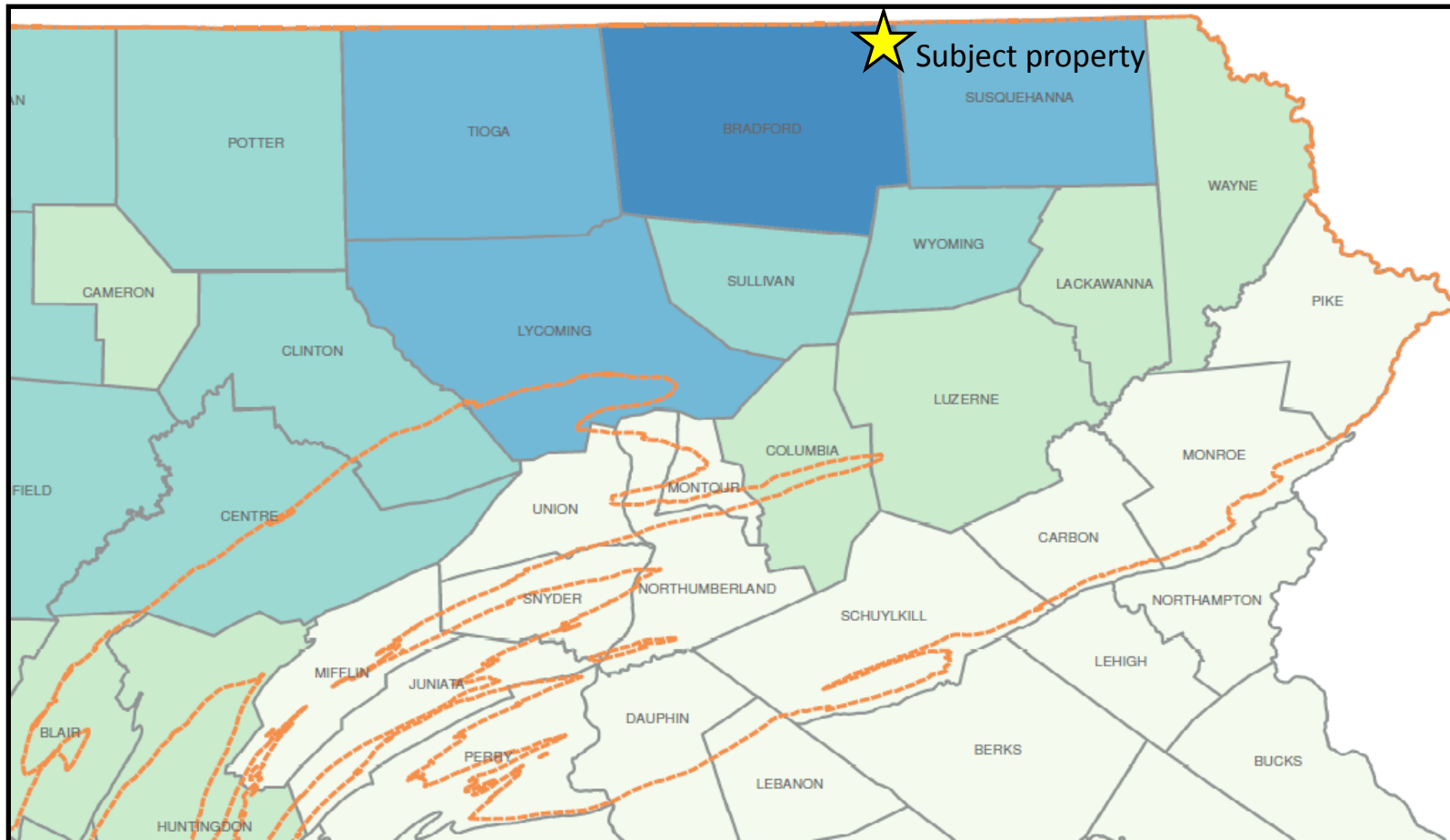
Type Log
Moran #1, Kenanee Oil Company, 37-127-2004, TD= 5,578'
Friendsville Township, Susquehanna County, PA
~ 9.5 miles east of Subject Property



Northeast PA, Number of Marcellus Shale Well Permits by County

(from Bradford County Office of Planning & Grants, "Primer on Natural gas development in Bradford County, PA", 1/21/13)

(Data from DEP Oil and Gas Reports Website 1/21/13, http://www.portal.state.pa.us/portal/server.pt/community/oil_and_gas_reports/20297)



Number of Well Permits by County

2544, BRADFORD	197, SULLIVAN	23, CAMBRIA	0, CARBON	0, MONTGOMERY
1601, TIOGA	189, CENTRE	16, COLUMBIA	0, CHESTER	0, MONTOUR
1248, WASHINGTON	165, CLINTON	15, LUZERNE	0, CUMBERLAND	0, NORTHAMPTON
1171, SUSQUEHANNA	140, MCKEAN	10, VENANGO	0, DELAWARE	0, NORTHUMBERLAND
1160, LYCOMING	105, JEFFERSON	9, BLAIR	0, DAUPHIN	0, PERRY
835, GREENE	85, CLARION	9, MERCER	0, ERIE	0, PHILADELPHIA
435, WESTMORELAND	82, INDIANA	9, WARREN	0, FRANKLIN	0, PIKE
400, BUTLER	80, BEAVER	4, WAYNE	0, FULTON	0, SCHUYLKILL
400, CLEARFIELD	51, SOMERSET	3, CRAWFORD	0, JUNIATA	0, SNYDER
339, FAYETTE	46, ALLEGHENY	2, HUNTINGDON	0, LANCASTER	0, UNION
254, ARMSTRONG	38, CAMERON	2, BEDFORD	0, LEBANON	0, YORK
250, WYOMING	37, LAWRENCE	0, ADAMS	0, LEHIGH	
231, POTTER	33, FOREST	0, BERKS	0, MIFFLIN	
200, ELK	29, LACKAWANNA	0, BUCKS	0, MONROE	

Warren Township & surrounding townships Active Drilling Rig Count, Bradford County PA

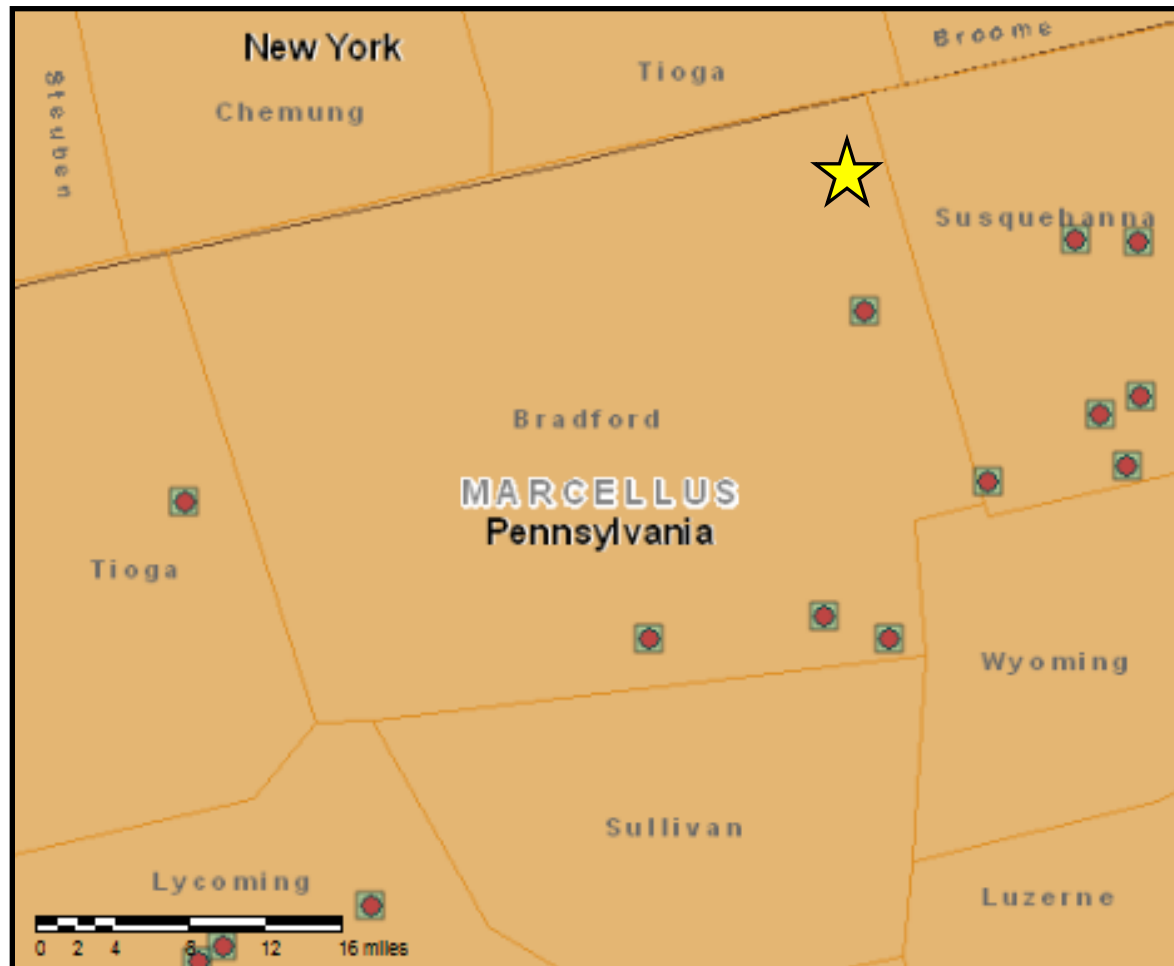


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Warren Township, Bradford County, PA

(from Bradford County Office of Planning & Grants, "Primer on Natural gas development in Bradford County, PA", 1/21/13)

(Baker Hughes <http://gis.bakerhughesdirect.com/RigCounts>, July 12, 2013), 4 Rigs Drilling in Bradford County, PA



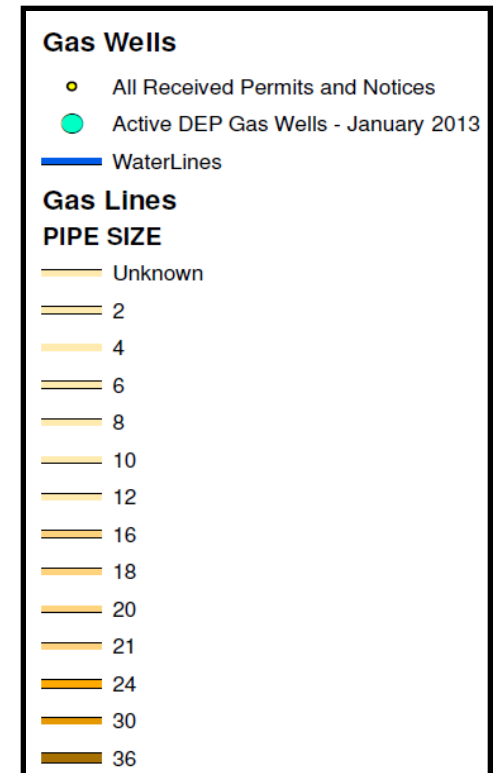
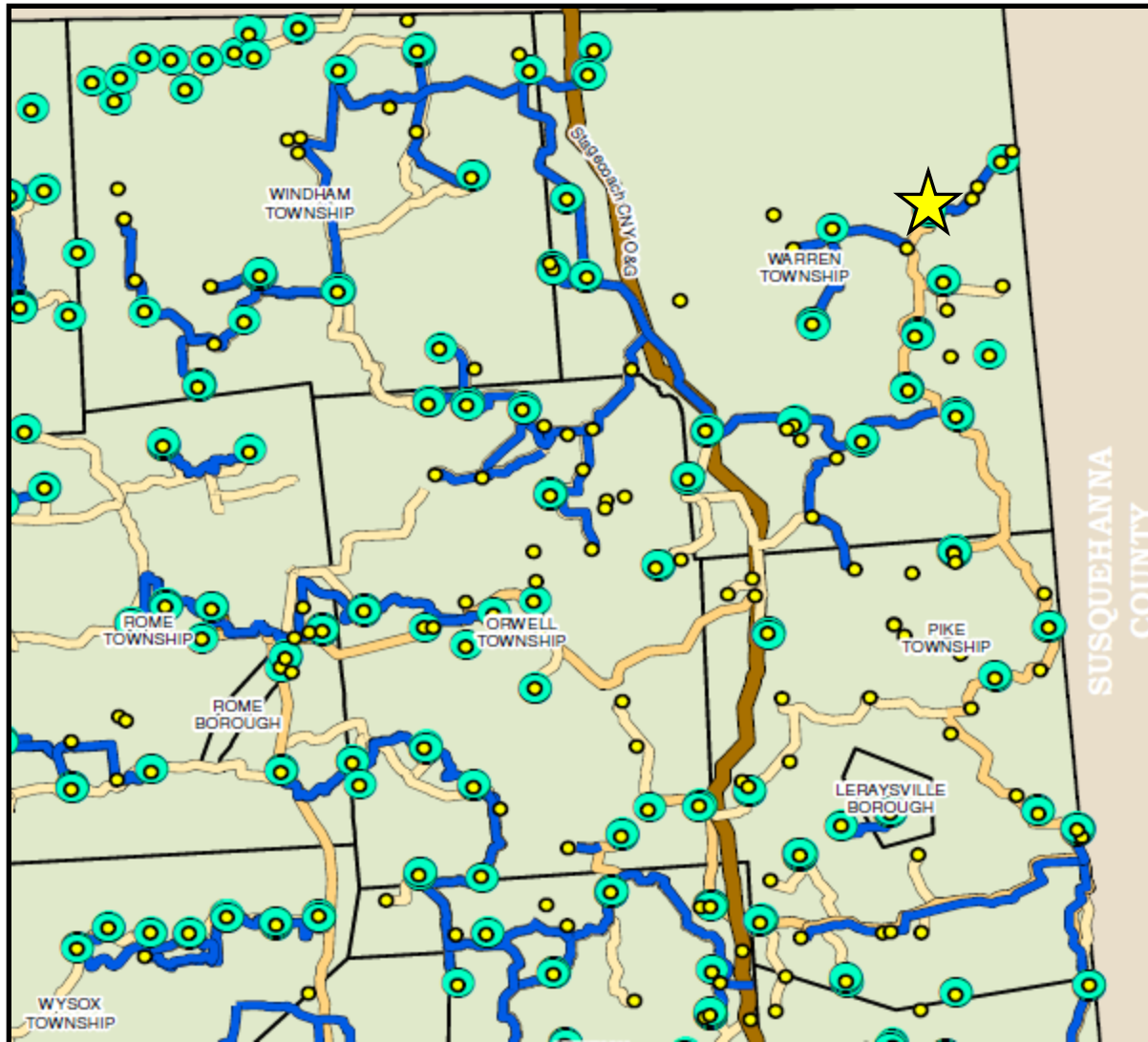
Warren Township & Surrounding townships Gas Well Activity Map, Bradford County PA



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Warren Township, Bradford County, PA

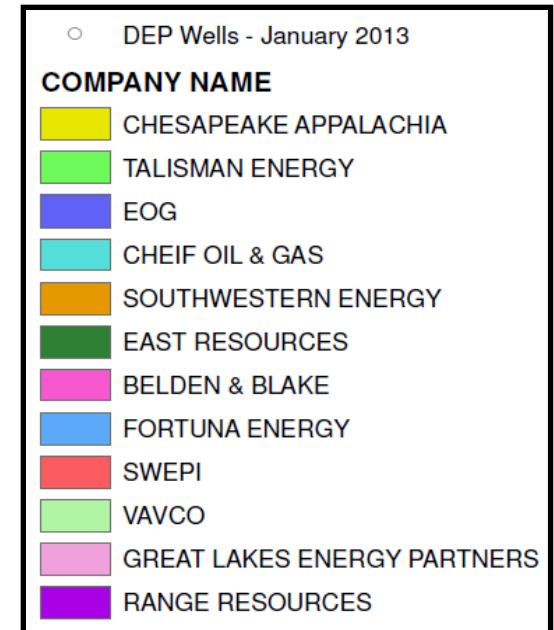
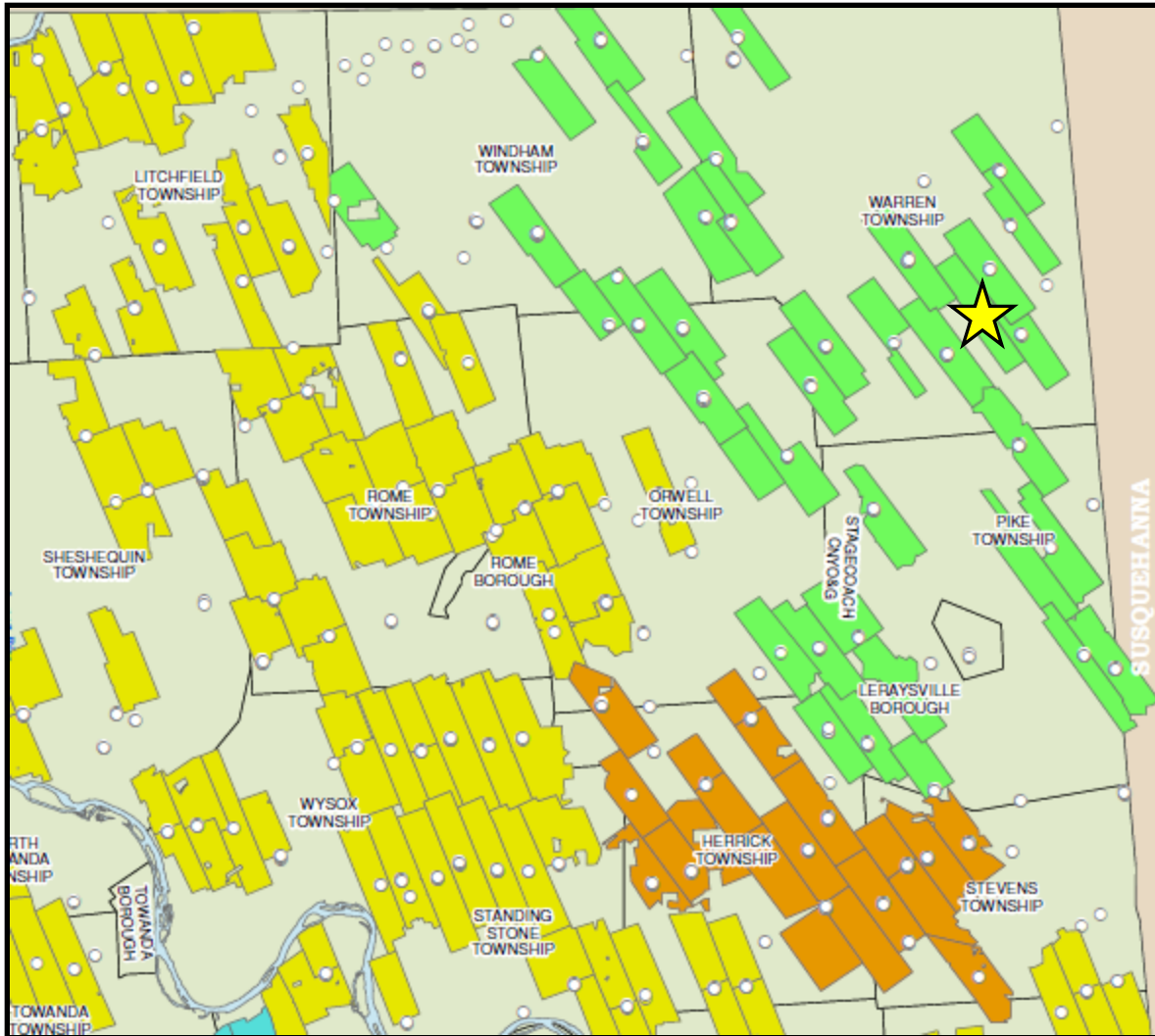
(from Bradford County Office of Planning & Grants, "Primer on Natural gas development in Bradford County, PA", 1/21/13)



Warren Township & Surrounding townships Production Units, Bradford County PA

★ Subject Property, Newman Road, Tax ID = 56-39-89, 10.6 ac, Tax ID = 56-39-88, 10.5 ac,
Warren Township, Bradford County, PA

(from Bradford County Office of Planning & Grants, "Primer on Natural gas development in Bradford County, PA", 1/21/13)

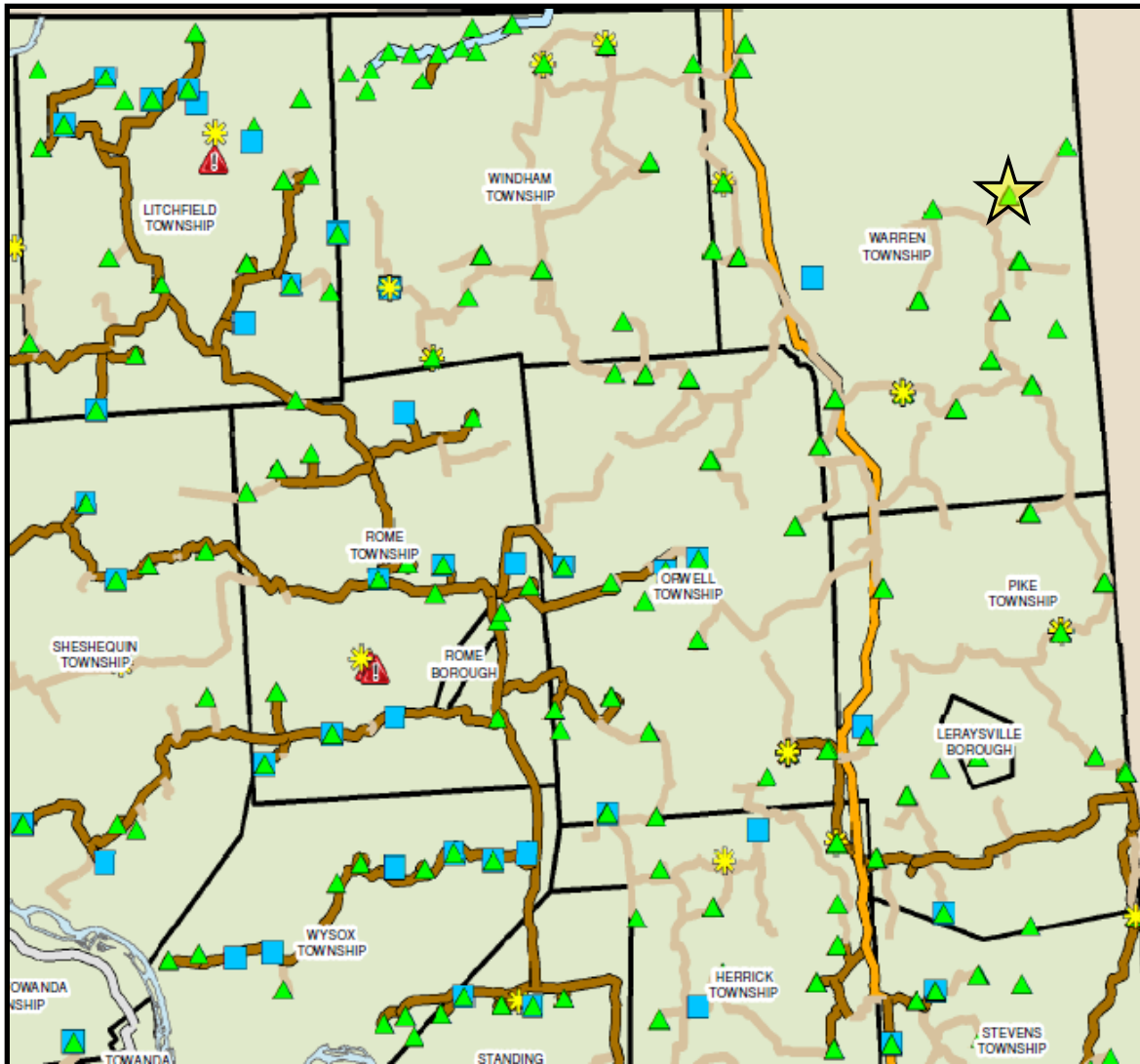


Warren Township & Surrounding townships Pipeline map, Bradford County PA

★ Subject Property, Newman Road, Tax ID = 56-39-89, 10.6 ac, Tax ID = 56-39-88, 10.5 ac

Warren Township, Bradford County, PA

(from Bradford County Office of Planning & Grants, "Primer on Natural gas development in Bradford County, PA", 1/21/13)



SITE STATUS

- ▲ ACTIVE
- ☀ INACTIVE
- ▲ ABANDONED
- PROPOSED, NEVER MATERIALIZED

Gas Lines

LINE TYPE

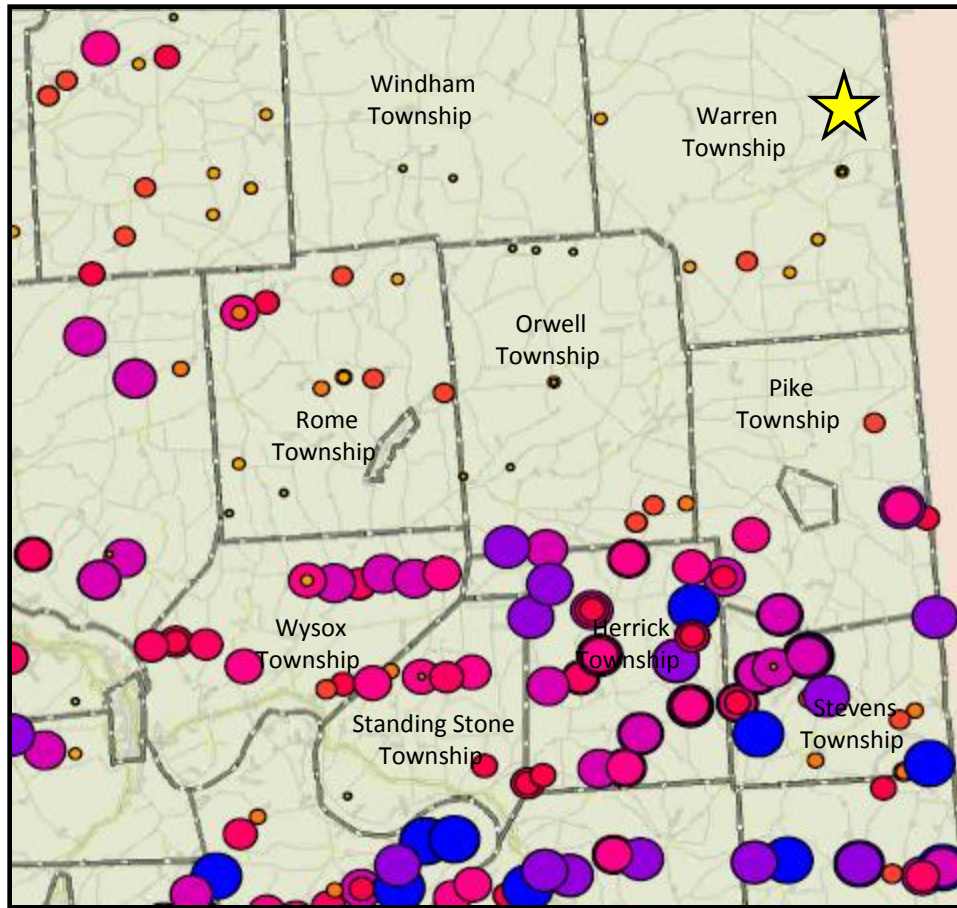
- GATHERING - BUILT
- GATHERING - PROPOSED
- SERVICE - BUILT
- STORAGE - BUILT
- TRANSPORT - BUILT
- TRANSPORT - PROPOSED

Warren Township & surrounding townships Production map, Bradford County PA

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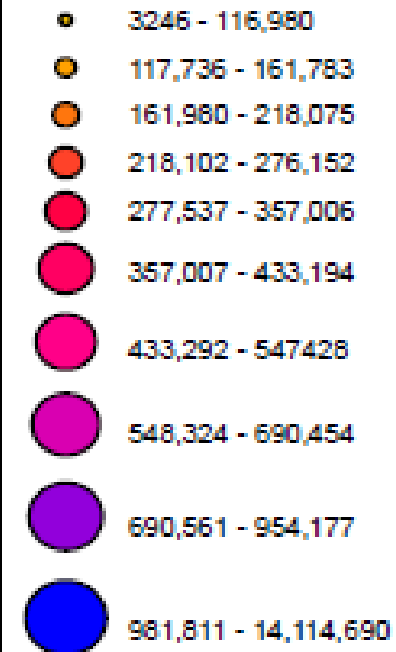
Warren Township, Bradford County, PA

(from Bradford County office of Planning & Grants, "Primer on Natural gas development in Bradford County, PA", 7/1/13)



Jan-July 2013 Producing Wells

Gas Quantity (Mcf)



Summary

Subject Property, Newman Road,

Tax ID = 56-39-89, 10.6 ac, Tax ID = 56-39-88, 10.5 ac, Warren Township, Bradford County, PA

- Within Marcellus Shale production fairway.
- Marcellus > 200 API gamma ~ 180' thick, depth ~ 5,230'.
- High Marcellus Shale Total Organic Carbon (TOC) content 4.0 – 5.0 %.
- Within dry gas window $R_o = 2.4$, little if any processing required, high BTU value.
- Gas- in –place estimate for area (~70 Bcf/square mile).
- Some of the property (nearly all of Tax ID = 56-39-88, 10.5 ac), is located within the Talisman Energy USA, Dewing Production Unit where 5 horizontal wells have been drilled and pipeline is in place. Wells are designated as active.
- Dewing 1H , 59 days of production = 123,922,000 cf, ~2.1 mmcf/day, 8/19/13.
- Bradford County, PA highest Marcellus Shale gas producing county in PA.
- Chesapeake & Talisman aggressively drilling in the region.
- Excellent Economics relative to other dry gas shale plays. 2020 Near high-demand northeastern natural gas markets.
- Excellent Infrastructure (Railways, Roads) and access.
- Rural area, sparsely populated, with pro-drilling landowners.
- Abundant Water Resources near property. Within Susquehanna River Basin.



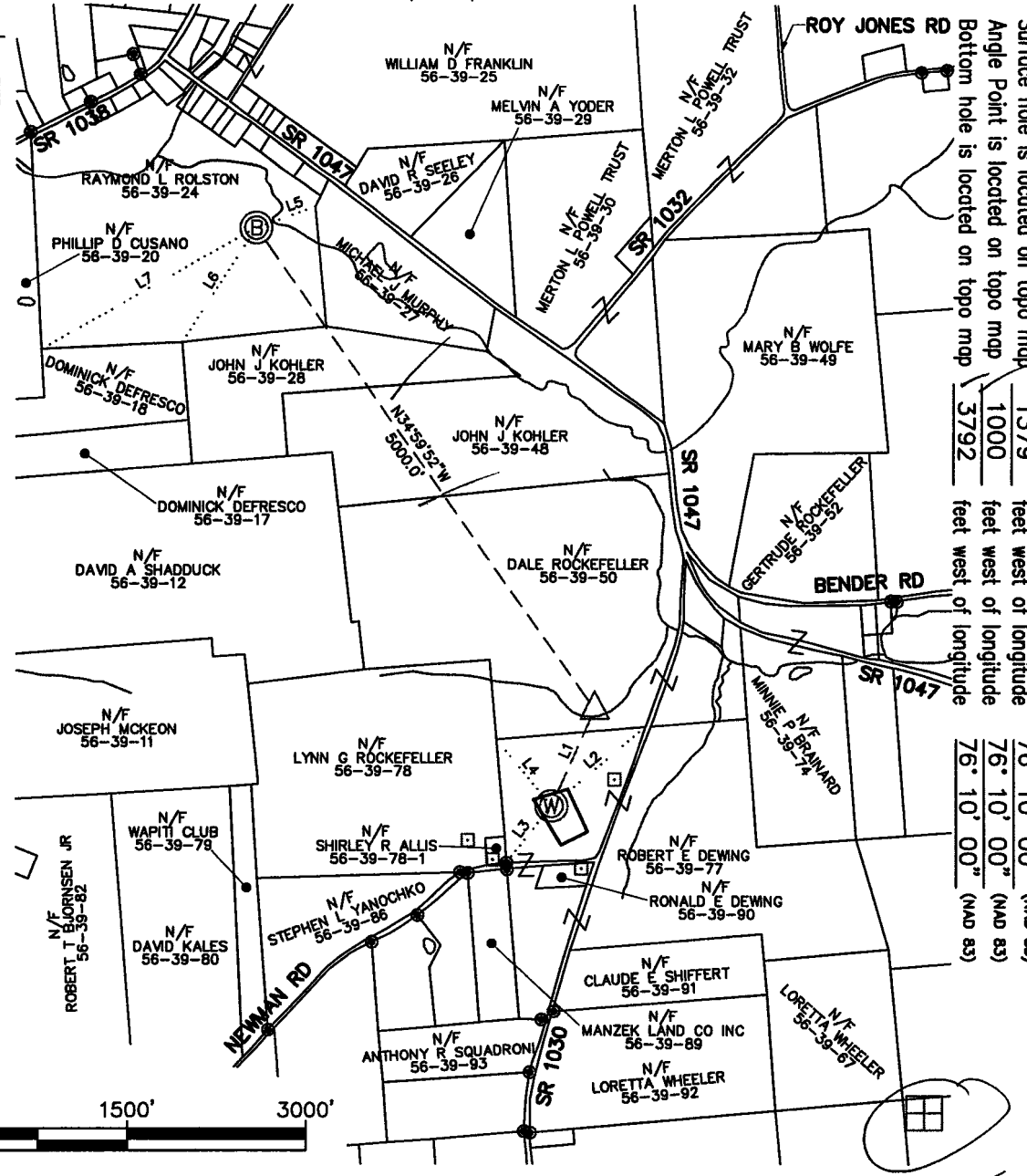
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Oil and Gas Management Program
WELL LOCATION PLAT

DEP Application Tracking #
Permit # **D15-2100b**
Project #

- Denotes location of well on topo map.
- Denotes surface location of well on plat
- NAD 83
True Latitude: NORTH 41° 55' 15.53"
True Longitude: WEST 76° 10' 18.25"
- NAD 27
True Latitude: NORTH 41.920805°
True Longitude: WEST 76.172084°
- Denotes directional drill angle point on plat
- NAD 83
True Latitude: NORTH 41° 55' 23.63"
True Longitude: WEST 76° 10' 13.23"
- NAD 27
True Latitude: NORTH 41.923155°
True Longitude: WEST 76.170891°
- Denotes location of bottom hole on plat
- NAD 83
True Latitude: NORTH 41° 56' 04.60"
True Longitude: WEST 76° 10' 50.18"
- NAD 27
True Latitude: NORTH 41.934536°
True Longitude: WEST 76.180953°



Surface hole is located on topo map 13611 feet south of latitude 41° 57' 30" (NAD 83)
 Angle Point is located on topo map 12791 feet south of latitude 41° 57' 30" (NAD 83)
 Bottom hole is located on topo map 8644 feet south of latitude 41° 57' 30" (NAD 83)

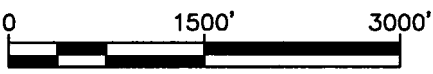


Surface hole is located on topo map 1379 feet west of longitude 76° 10' 00" (NAD 83)
 Angle Point is located on topo map 1000 feet west of longitude 76° 10' 00" (NAD 83)
 Bottom hole is located on topo map 3792 feet west of longitude 76° 10' 00" (NAD 83)

- LEGEND**
- PROPERTY CORNER FOUND
 - WATER WELL

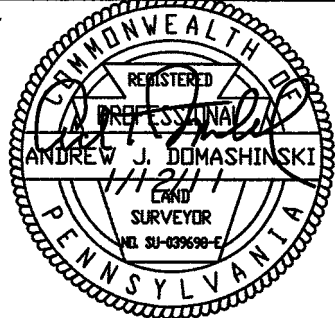
LINE	BEARING	LENGTH
L1	N23°46'12"E	903.3'
L2	N48°27'16"E	1044.2'
L3	S38°02'49"W	613.3'
L4	N39°00'57"W	733.4'
L5	N70°14'52"E	528.8'
L6	S32°36'41"W	1150.5'
L7	S60°20'09"W	2076.5'

NOTES
 THIS PLAT IS FOR WELL LOCATION PURPOSES ONLY AND DOES NOT REPRESENT A COMPLETE BOUNDARY SURVEY ON ALL PARCELS SHOWN. PROPERTY LINES AND OWNER INFORMATION WERE OBTAINED FROM VARIOUS FIELD EVIDENCE, TAX RECORDS, DEED PLOTS AND AERIAL MAPPING.



Surveyor or **ANDREW J. DOMASHINSKI** Phone # 570-323-6603 Dwg. # 6436-015-069 Date JAN 12, 2011 Scale 1" = 1500' Tract Acreage 99±

Lat. & Long Metadata Method TRIMBLE MAPPING GPS Accuracy 3'±(PPS) ft. Datum NAD 83	Elevation Metadata Method TRIMBLE MAPPING GPS Accuracy 6'±(PPS) ft. Datum NAVD 88	Survey Date NOV. 18, 2010
Applicant / Well Operator Name TALISMAN ENERGY USA INC.	Well(Farm) Name DEWING (05-100-01) R	Well # 1H
Address 50 PENNWOOD PLACE, WARRENDALE, PA. 15086	County - Code BRADFORD 08	Municipality WARREN TWP
Surface Landowner / Lessor ROBERT E. & MARTHA A. DEWING	USGS 7 1/2 Quadrangle Map Name LITTLE MEADOWS	
Target Formation(s) MARCELLUS SHALE	Angle & Course of Deviation (Drilling) N23°46'12"E 903.3' N34°59'52"W 5000.0'	
	Anticipated Total Depth TVD 6566' TMD 12095'	
ROBERT E. & MARTHA A. DEWING N66°55'51"E 579'	Surface Elevation 1566ft.	Well Type GAS
RONALD E. DEWING S25°21'54"E 589'	Map Section 5	
SHIRLEY R. ALLIS & MICHAEL A. VINSON S47°16'20"W 673'		
LYNN G. & DENNIS ROCKEFELLER S67°32'17"W 764'		



TALISMAN

ENERGY



Weatherford

Dewing (05-100-01)R 1H

Plan data for Dewing (05-100-01)R 1H

Formation Point Information:
 Name TVD Sub Sea MD
 Union Springs 6505.50 -4923.00 6978.30

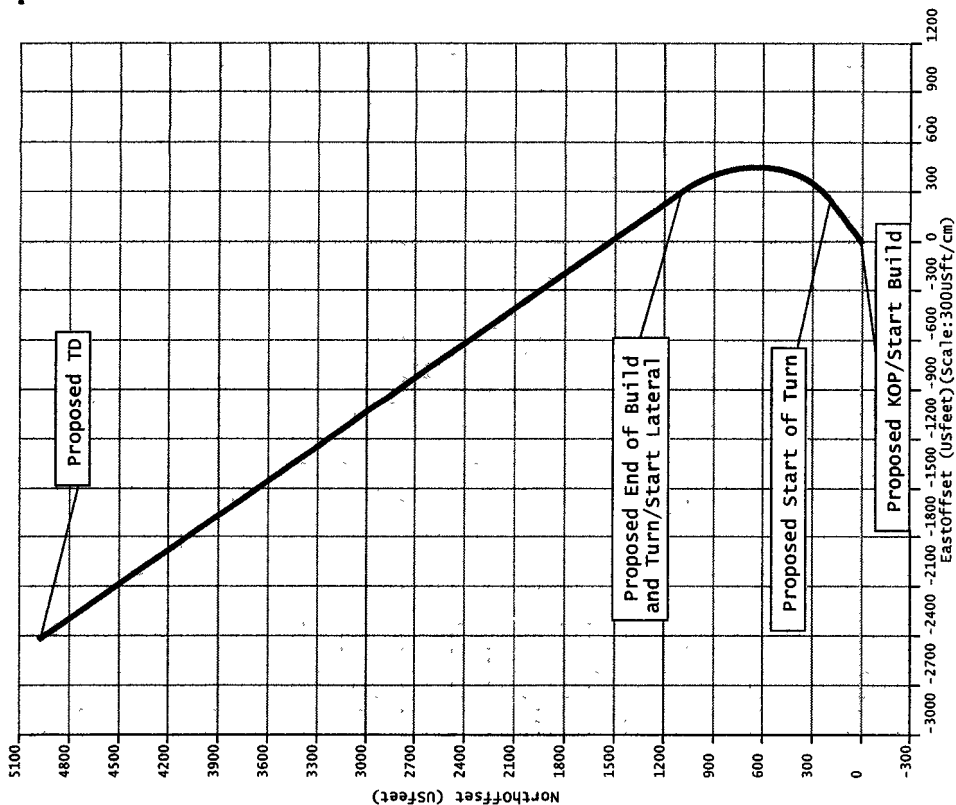
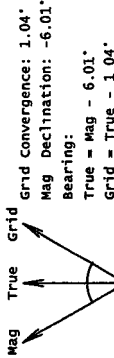
Plan data for Dewing (05-100-01)R 1H

Slot: Dewing (05-100-01)R 1H
 Position: Offset is from site centre
 +N/-S: 0.00USft Northing: 643112.06USft Latitude: 41°55'15.5"
 +E/-W: 0.00USft Easting: 2398007.88USft Longitude: -76°10'18.2"
 Elevation Above VMD: 1565.50USft
 Comment: Pad Centre

Plan data for Dewing (05-100-01)R 1H

Plan Point Information:
 Dogleg severity unit: /100.00ft

Station	Curvature (C)	Turn (T)	Sub Sea (USft)	DNS Build (OLSU)	Turn (OLSU)
0.00	0.00	0.00	1582.50	0.00	0.00
5581.67	0.00	0.00	3999.17	0.00	0.00
6269.33	55.01	52.65	6168.43	8.00	8.00
7340.22	90.00	325.00	6565.50	3.18	-7.96
12095.72	90.00	325.00	6565.50	0.00	0.00

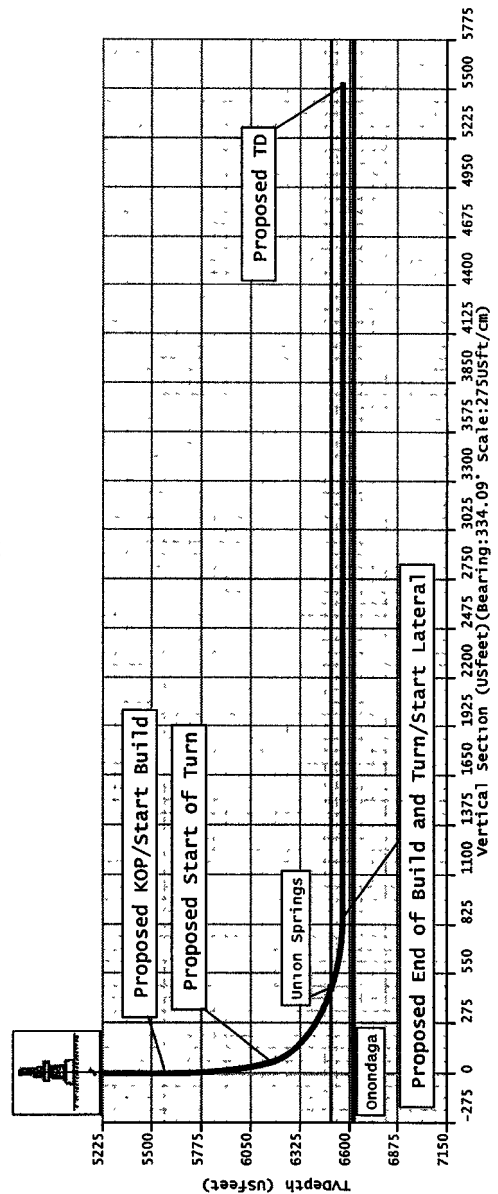


Plan data for Dewing (05-100-01)R 1H

Site: Dewing (05-100)R Pad
 Unit: USFeet TVD Reference:
 Company Name: Talisman Energy USA Inc. Latitude: 41°55'15.5"
 Position: Northing: 643112.06USft Longitude: -76°10'18.2"
 Easting: 2398007.88USft
 North Reference: True Grid Convergence: 1.04°
 Elevation Above VRD: 0.00USft
 Comment: Site Centre - Well 1

Well: Dewing (05-100-01)R 1H
 Type: Main-Well
 File Number:
 Vertical Section: Position offset of origin from Slot centre:
 +N/-S: 0.00USft Azimuth: 334.09°
 +E/-W: 0.00USft
 Magnetic Parameters:
 Model: Field Strength: Declination: Dip: Date:
 BGM: 31706(NT) -6.01° -29.25° 2010-09-29

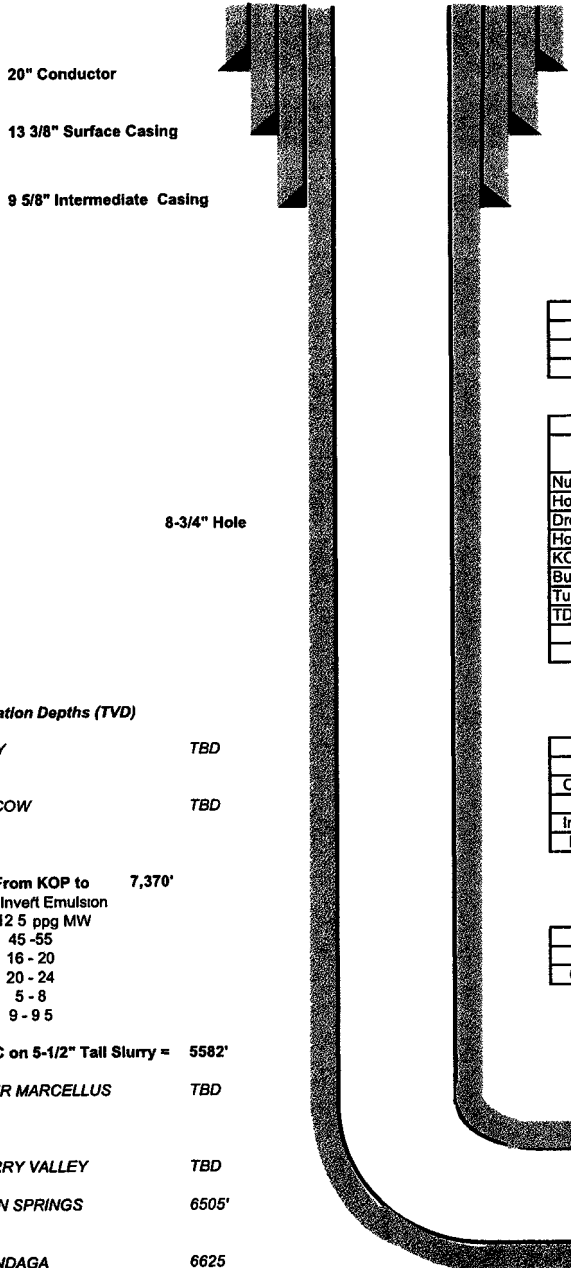
RECEIVED
 FEB 18 2011
 ENVIRONMENTAL PROTECTION
 NORTHWEST REGIONAL OFFICE



015-21606

Well Name: Dewing (05-100-01) R 1H
Formation: Marcellus Shale
AFE Number: 0
API Number: 0
Drilling Engineer: 0
Geologist: 0
Date: 11/18/10

County, State: Bradford Co., PA
Surf. Location: 41.920980 Lat and -76.171735 Long
BH Location: 41.934611 Lat and -76.180605 Long
Build Location: 41.921489 Lat and -76.170843 Long
Build/Turn Location: 41.923990 Lat and -76.170645 Long
KB Elevation: 1582'
Ground Elevation: 1565'



SET COND. IN BED ROCK - GROUT

Formation Depths (TVD)

FRESH WATER	TBD
COAL	TBD
FRESH WATER	TBD

TOC on 13 3/8" @ Surface

TOC on 9 5/8" @ Surface

##

Wellhead Details	
Casing Spool	13 3/8" x 16 3/4" 3K
Casing Spool	9 5/8" 5K x 11" 5K
Tubing Spool	11" 5K x 4 1/16" 10K

Directional Drilling Details								
Section	TMD	Inc.	Azimuth	TVD	BUR	DLS	+N/-S	+E/-W
Nudge	0 0'	0 0'	0 0'	0 0'	0 0'	0 0'	0 0'	0 0'
Hold	0 0'	0 0'	0 0'	0 0'	####	####	0 0'	0 0'
Drop	0 0'	0 0'	0 0'	0 0'	####	####	0 0'	0 0'
Hold	0 0'	0 0'	0 0'	0 0'	####	####	0 0'	0 0'
KOP	5,582'	0 0'	0 0'	5,582'	0 0'	0 0'	0 0'	0 0'
Build	6,269'	55 0'	52 7'	6,168'	8 0'	8 0'	185 4'	242 9'
Turn/Land	7,370'	90 0'	325 0'	6,566'	3 2'	8 0'	1,096 8'	296 7'
TD	12,095'	90 0'	325 0'	6,566'	0 0'	0 0'	4,967 3'	-2,413 5'
VS Plane			325 0	VS Length			5453 3'	
				Lateral Length			4725 0'	

Formation Depths (TVD)

TULLY TBD

MOSCOW TBD

Mud From KOP to 7,370'
 80/20 Invert Emulsion
 10 0 -12 5 ppg MW
 Vis 45 -55
 PV 16 -20
 YP 20 -24
 FL 5 -8
 pH. 9 -9.5

TOC on 5-1/2" Tall Slurry = 5582'

UPPER MARCELLUS TBD

CHERRY VALLEY TBD

UNION SPRINGS 6505'

ONONDAGA 6625

Mud From 7,370' to TD
 80/20 Invert Emulsion
 12 5 - 13.0 ppg MW
 Vis 45 -55
 PV 18 -22
 YP 22 -26
 FL 4 -6
 pH. 9 -9.5

Gas Gradient (0.67 psi/ft)							
1,000'	2,000'	3,000'	4,000'	5,000'	6,000'	7,000'	8,000'
670 psi	1340 psi	2010 psi	2680 psi	3350 psi	4020 psi	4690 psi	5360 psi

Run marker jt 100' above KOP

PBHL
 TMD. 12,095'
 TVD. 6,565'
 Inclination 90 degrees
 Azimuth: 325 00 deg

Geologic Target: 6565' TVD @ 0' VS w/ 90.00 degrees updip

Target Range: -30.00 ft TVD above lateral line 100 00 ft TVD left of lateral line
 30 00 ft TVD below lateral line 100 00 ft TVD right of lateral line

Drilling Rig: Saxon 173
Dir. Drilling: Weatherford
Drilling Mud: MI Swaco
Prod Cement: Halliburton

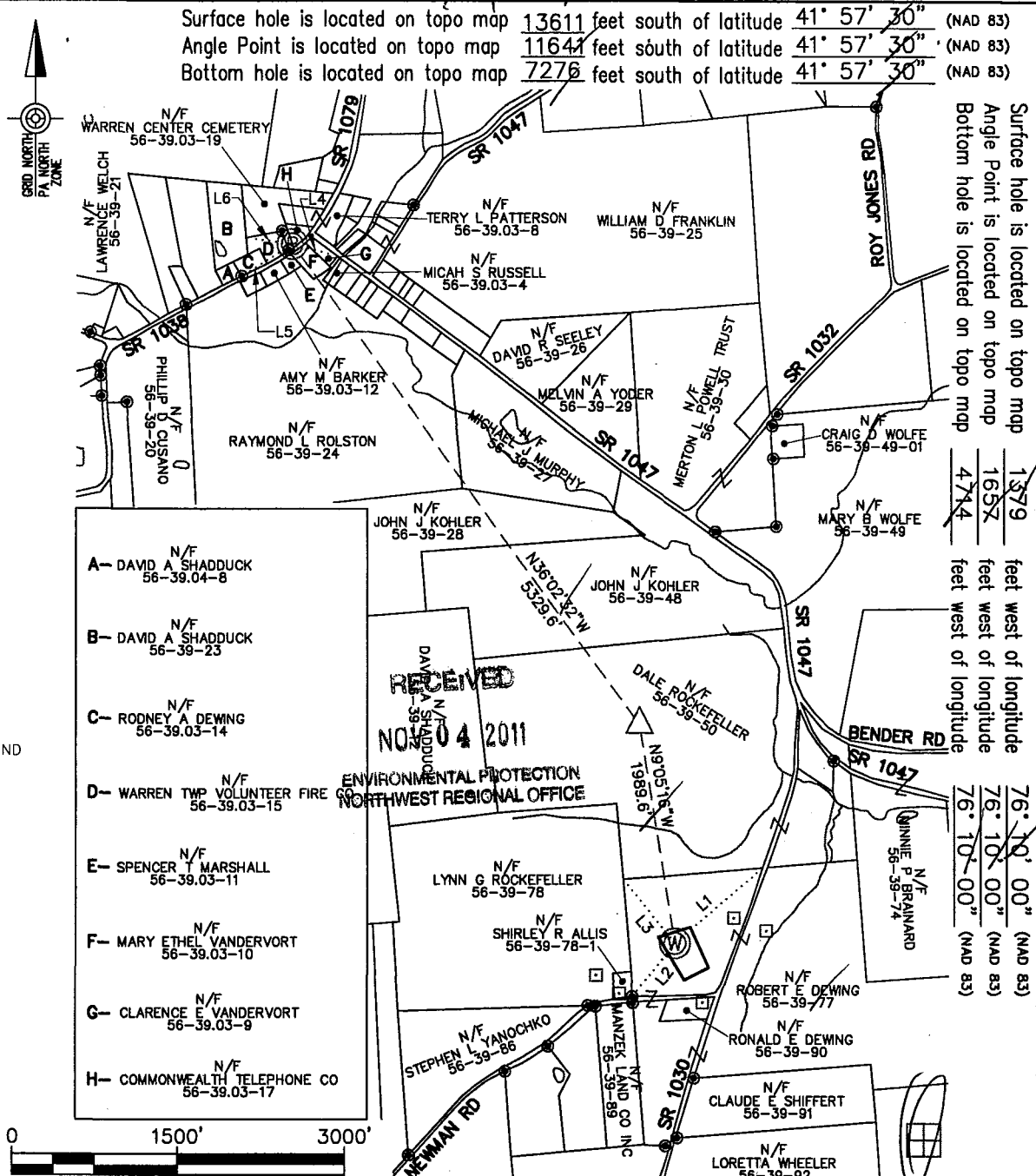
Wellhead: Weatherford
Air Package: Precision
Mud Logging: RPS
Surf Cement: Universal



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Oil and Gas Management Program
WELL LOCATION PLAT

DEP USE ONLY	DEP Application Tracking #	G: <i>[Signature]</i>
	Permit #	
	Project #	
	<i>015-21606</i>	

	Denotes location of well on topo map.
	Denotes surface location of well on plat
NAD 83 True Latitude: NORTH 41° 55' 15.53"	
True Longitude: WEST 76° 10' 18.25"	
NAD 27 True Latitude: NORTH 41.920905°	
True Longitude: WEST 76.172084°	
	Denotes directional drill angle point on plat
NAD 83 True Latitude: NORTH 41° 55' 34.99"	
True Longitude: WEST 76° 10' 21.93"	
NAD 27 True Latitude: NORTH 41.926311°	
True Longitude: WEST 76.173107°	
	Denotes location of bottom hole on plat
NAD 83 True Latitude: NORTH 41° 56' 18.12"	
True Longitude: WEST 76° 11' 02.37"	
NAD 27 True Latitude: NORTH 41.936291°	
True Longitude: WEST 76.184341°	



Surveyor or Engineer **ANDREW J. DOMASHINSKI** Phone # 570-323-6603 Dwg. # 6436-015-069 Date **JAN. 12, 2011** Scale 1" = 1500' Tract Acreage 99±
 Larson Design Group Revised OCT. 19, 2011

Lat. & Long. Metadata Method TRIMBLE MAPPING GPS Accuracy 3'±(PPS) ft. Datum NAD 83	Elevation Metadata Method TRIMBLE MAPPING GPS Accuracy 6'±(PPS) ft. Datum NAVD 88	Survey Date NOV. 18, 2010
Applicant / Well Operator Name TALISMAN ENERGY USA INC.	Well(Farm) Name DEWING (05-100-01) R	Well # 1H Serial #
Address 50 PENNWOOD PLACE, WARRENDALE, PA. 15086	County - Code BRADFORD	Municipality WARREN TWP
Surface Landowner / Lessor ROBERT E. & MARTHA A. DEWING	USGS 71/2 Quadrangle Map Name LITTLE MEADOWS <i>01336</i>	
Target Formation(s) MARCELLUS SHALE	Angle & Course of Deviation (Drilling) N09°05'16"W 1989.6' N36°02'32"W 5329.6'	
Surface Owner or Water Purveyor ROBERT E. & MARTHA A. DEWING	Anticipated Total Depth TVD 5427' TMD 12492'	
Approximate Course and Distance to Water Supply ROBERT E. DEWING	Surface Elevation 1566ft.	
RONALD E. DEWING	Map Section 5	
SHIRLEY R. ALLIS & MICHAEL A. VINSON		
LYNN G. & DENNIS ROCKEFELLER		

Project: Bradford County, PA (NAD 83)
Site: Little Meadows
Well: Dewing (05-100-01) R 1H
Wellbore: Wellbore #1
Plan: Plan #1
Rig: TBA

Surface Location:
US State Plane 1983
Pennsylvania Northern Zone
Elevation: GL 1565.5' + 15' KB @ 1580.50ft (TBA)
Northing 643112.06 **Easting** 2398007.88 **Latitude** 41° 55' 15.528 N **Longitude** 76° 10' 18.246 W

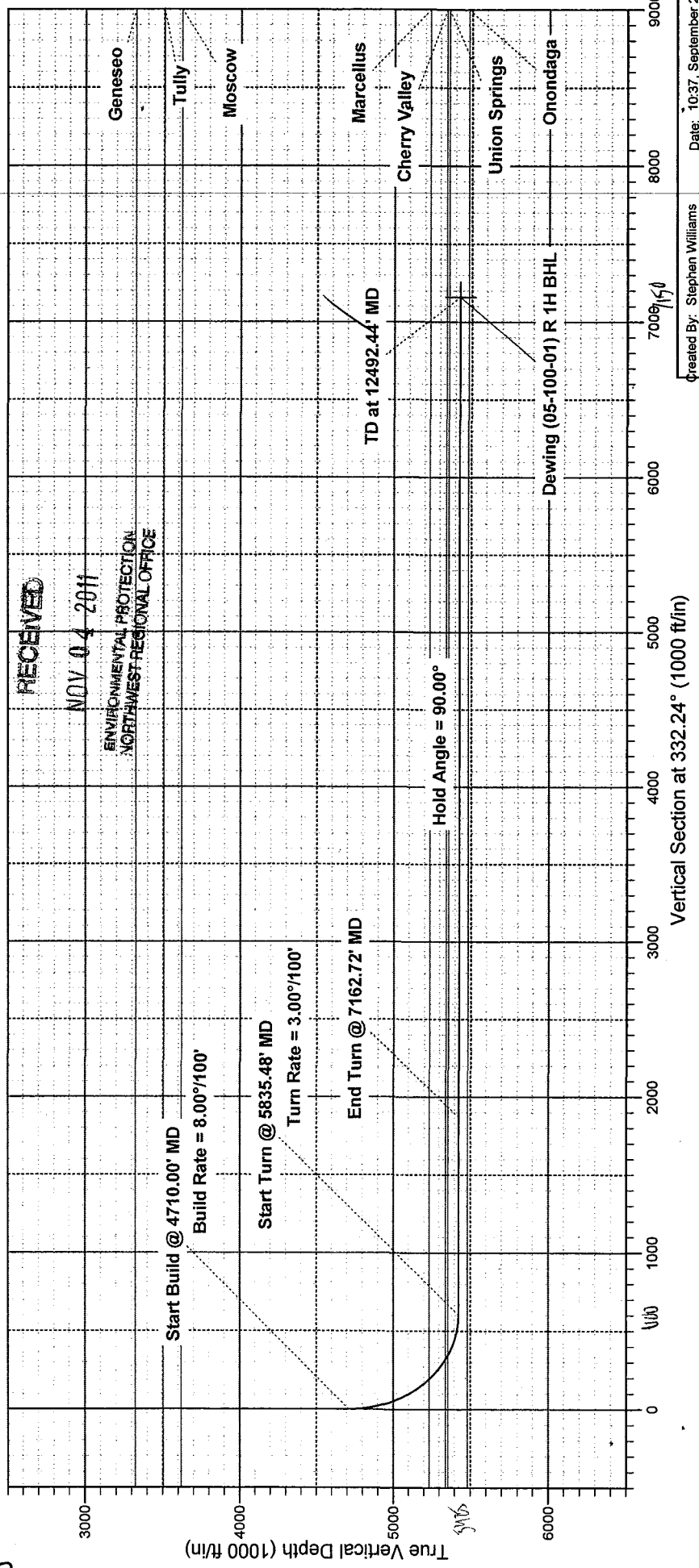
SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4710.00	0.00	0.00	4710.00	0.00	0.00	0.00	0.00	0.00	Start Build
5835.48	90.00	4.82	5426.50	713.97	60.20	8.00	4.82	603.74	Start Turn
7162.72	90.00	325.00	5426.50	1969.82	-278.38	3.00	-90.00	1872.74	End Turn
12492.44	90.00	325.00	5426.50	6335.82	-3335.17	0.00	0.00	7160.03	TD

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Dewing (05-100-01) R 1H BHL	5426.50	6335.82	-3335.17	649386.05	2394557.81	Point

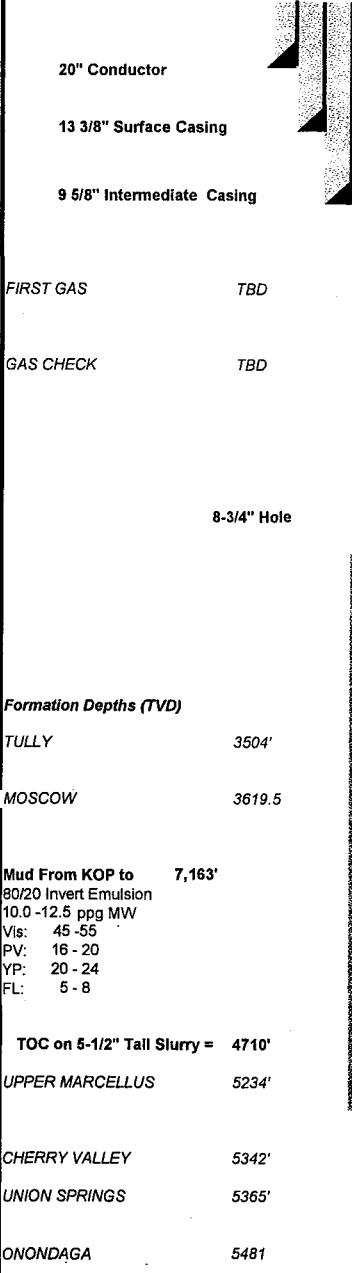
To convert a Magnetic Direction to a True Direction, Subtract 12.12°
Magnetic Model: BGGM2011 Date: 20-Sep-11
Azimuths to True North



015-21602

Well Name: Dewing (05-100-01) R 1H
 Formation: Marcellus Shale
 AFE Number: TBD
 API Number: TBD
 Drilling Engineer: Adam Litun
 Geologist: Kyle Barrie
 Date: 9/21/11

County, State: Bradford, PA
 Surf. Location: 41.920980 Lat and -76.171735 Long
 BH Location: 41.938366 Lat and -76.183993 Long
 Build Location: 41.922939 Lat and -76.171514 Long
 Build/Turn Location: 41.926386 Lat and -76.172758 Long
 KB Elevation: 1580'
 Ground Elevation: 1565'



SET COND. IN BED ROCK - GROUT

Formation Depths (TVD)

FRESH WATER	171
COAL	TBD
FRESH WATER	TBD

TOC on 13 3/8" @ Surface

TOC on 9 5/8" @ Surface

TOC on 5 1/2 Lead Slurry @ 2000'

Wellhead Details

Casing Spool	13 3/8" x 16 3/4" 3K
Casing Spool	9 5/8" 5K x 11" 5K
Tubing Spool	11" 5K x 4 1/16" 10K

Directional Drilling Details

Section	TMD	Inc.	Azimuth	TVD	BUR	DLS	+N/-S	+E/-W
Nudge	0.0'	0.0'	0.0'	0.0'	0.0'	0.0'	0.0'	0.0'
Hold	0.0'	0.0'	0.0'	0.0'	####	####	0.0'	0.0'
Drop	0.0'	0.0'	0.0'	0.0'	####	####	0.0'	0.0'
Hold	0.0'	0.0'	0.0'	0.0'	####	####	0.0'	0.0'
KOP	4,710'	0.0'	0.0'	4,710'	0.0'	0.0'	0.0'	0.0'
Build	5,835'	90.0'	4.8'	5,427'	8.0'	8.0'	714.0'	60.2'
Turn/Land	7,163'	90.0'	325.0'	5,427'	0.0'	3.0'	1,969.8'	-278.4'
TD	12,492'	90.0'	325.0'	5,427'	0.0'	0.0'	6,335.7'	-3,335.4'
VS Plane				325.0	VS Length		7103.0'	
					Lateral Length		5329.7'	

Tubular Details

String	Size	Bit Size	Weight	Grade	Connection	Depth
Conductor 1	20	20	78 ppf	LS	WELD	80'
Surface	13 3/8	17 1/2	54.5 ppf	J-55	STC	250'
Intermediate	9 5/8	12 1/4	36 ppf	J-55	LTC	650'
Production	5 1/2	8 3/4	20 ppf	P-110	LTC	12,492'

Gas Gradient (0.67 psi/ft)

1,000'	2,000'	3,000'	4,000'	5,000'	6,000'	7,000'	8,000'
670 psi	1340 psi	2010 psi	2680 psi	3350 psi	4020 psi	4690 psi	5360 psi

Run marker jt. 100' above KOP

PBHL
 TMD: 12,492'
 TVD: 5,426'
 Inclination: 90 degrees
 Azimuth: 325.00 deg

RECEIVED

NOV 04 2011

ENVIRONMENTAL PROTECTION
 NORTHWEST REGIONAL OFFICE

Geologic Target: 5425' TVD @ 0' VS w/ 90.00 degrees updip

Target Range: -30.00 ft TVD above lateral line 100.00 ft TVD left of lateral line
 30.00 ft TVD below lateral line 100.00 ft TVD right of lateral line

Drilling Rig: Saxon 170
 Dir. Drilling: Halliburton
 Drilling Mud: MiSwaco
 Prod Cement: Schlumberger

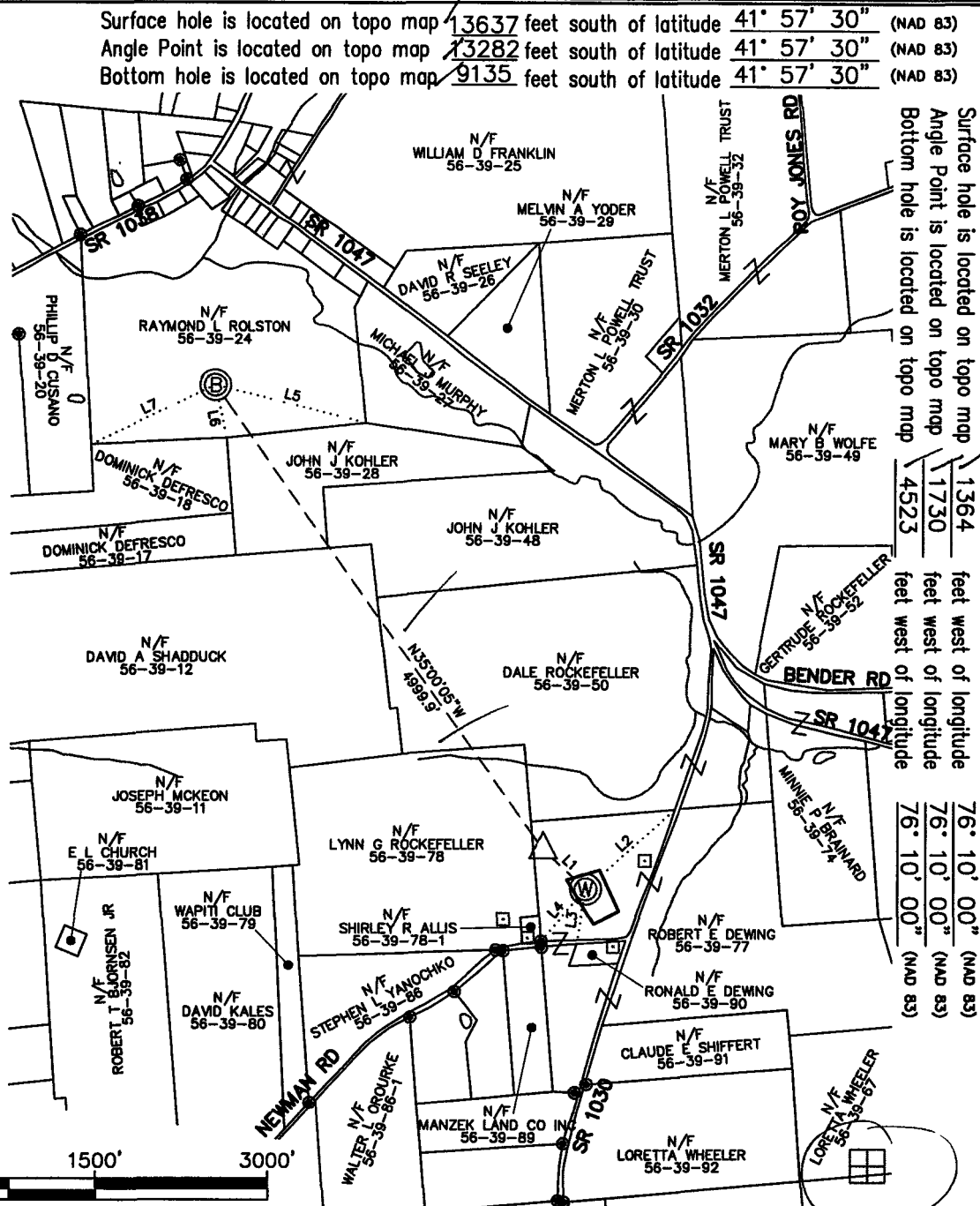
Wellhead: Weatherford
 Air Package: AirComp
 Mud Logging: RPS
 Surf Cement: Universal



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Oil and Gas Management Program
WELL LOCATION PLAT

DEP USE ONLY	DEP Application Tracking #	C: ACU 4/23/11 C:
	Permit # 015-21607	
	Project #	

- Denotes location of well on topo map.
- Denotes surface location of well on plat
- NAD 83
True Latitude: NORTH 41° 55' 15.27"
True Longitude: WEST 76° 10' 18.05"
- NAD 27
True Latitude: NORTH 41.920833°
True Longitude: WEST 76.172030°
- Denotes directional drill angle point on plat
- NAD 83
True Latitude: NORTH 41° 55' 18.78"
True Longitude: WEST 76° 10' 22.89"
- NAD 27
True Latitude: NORTH 41.921807°
True Longitude: WEST 76.173373°
- Denotes location of bottom hole on plat
- NAD 83
True Latitude: NORTH 41° 55' 59.74"
True Longitude: WEST 76° 10' 59.84"
- NAD 27
True Latitude: NORTH 41.933187°
True Longitude: WEST 76.183636°



Surface hole is located on topo map 1364 feet west of longitude
 Angle Point is located on topo map 1730 feet west of longitude
 Bottom hole is located on topo map 4523 feet west of longitude

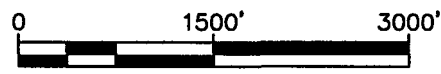
76° 10' 00" (NAD 83)
 76° 10' 00" (NAD 83)
 76° 10' 00" (NAD 83)

- LEGEND**
- PROPERTY CORNER FOUND
 - WATER WELL

LINE	BEARING	LENGTH
L1	N46°53'03"W	509.5'
L2	N47°50'22"E	1050.0'
L3	S09°38'04"W	489.2'
L4	S40°42'15"W	602.9'
L5	S75°52'09"E	1357.1'
L6	S12°18'05"E	475.2'
L7	S64°13'54"W	1203.0'

NOTES

THIS PLAT IS FOR WELL LOCATION PURPOSES ONLY AND DOES NOT REPRESENT A COMPLETE BOUNDARY SURVEY ON ALL PARCELS SHOWN. PROPERTY LINES AND OWNER INFORMATION WERE OBTAINED FROM VARIOUS FIELD EVIDENCE, TAX RECORDS, DEED PLOTS AND AERIAL MAPPING.



Surveyor or Engineer **ANDREW J. DOMASHINSKI** Phone # 570-323-6603 Dwg. # 6436-015-069 Date JAN 12, 2011 Scale 1" = 1500' Tract Acreage 99±

Lat. & Long Metadata Method TRIMBLE MAPPING GPS Accuracy 3±(PPS) ft. Datum NAD 83	Elevation Metadata Method TRIMBLE MAPPING GPS Accuracy 6±(PPS) ft. Datum NAVD 88	Survey Date NOV. 18, 2010
Applicant / Well Operator Name TALISMAN ENERGY USA INC.	Well(Farm) Name DEWING (05-100-02) R	Well # 2H
Address 50 PENWOOD PLACE, WARRENDALE, PA. 15086	County - Code BRADFORD 08	Municipality WARREN TWP
Surface Landowner / Lessor ROBERT E. & MARTHA A. DEWING	USCS 71/2 Quadrangle Map Name LITTLE MEADOWS	
Target Formation(s) MARCELLUS SHALE	Angle & Course of Deviation (Drilling) N46°53'03"W 509.5' N35°00'05"W 4999.9'	
Approximate Course and Distance	Anticipated Total Depth TVD 6566' TMD 11758'	
ROBERT E. & MARTHA A. DEWING N63°57'36"E 576'	Surface Elevation 1566ft. Well Type GAS	
RONALD E. DEWING S25°05'59"E 559'	Map Section 5	
SHIRLEY R. ALLIS & MICHAEL A. VINSON S49°47'43"W 667'		
LYNN G. & DENNIS ROCKEFELLER S69°45'32"W 769'		

Well Name: Dewing (05-100-02) R 2H
Formation: Marcellus Shale
AFE Number: 0
API Number: 0
Drilling Engineer: 0
Geologist: 0
Date: 11/18/10

County, State: Bradford Co., PA
Surf. Location: 41.920908 Lat and -76.171681 Long
BH Location: 41.933262 Lat and -76.183288 Long
Build Location: 41.920908 Lat and -76.171681 Long
Build/Turn Location: 41.922517 Lat and -76.173192 Long
KB Elevation: 1582'
Ground Elevation: 1565'

20" Conductor
 13 3/8" Surface Casing
 9 5/8" Intermediate Casing

SET COND IN BED ROCK - GROUT
 TOC on 13 3/8" @ Surface
 TOC on 9 5/8" @ Surface

Formation Depths (TVD)

FRESH WATER TBD
 COAL TBD
 FRESH WATER TBD

##

Wellhead Details

Casing Spool	13 3/8" x 16 3/4" 3K
Casing Spool	9 5/8" 5K x 11" 5K
Tubing Spool	11" 5K x 4 1/16" 10K

Directional Drilling Details

Section	TMD	Inc.	Azimuth	TVD	BUR	DLS	+N/-S	+E/-W
Nudge	0 0'	0 0'	0 0'	0 0'	0 0'	0 0'	0 0'	0 0'
Hold	0 0'	0 0'	0 0'	0 0'	#####	#####	0 0'	0 0'
Drop	0 0'	0 0'	0 0'	0 0'	#####	#####	0 0'	0 0'
Hold	0 0'	0 0'	0 0'	0 0'	#####	#####	0 0'	0 0'
KOP	0'	0 0'	0 0'	0'	#####	#####	0 0'	0 0'
Build	5,849'	0 0'	0 0'	5,849'	0 0'	0 0'	0 0'	0 0'
Turn/Land	6,974'	90 0'	325 0'	6,565'	8 0'	8 0'	586.3'	-411.3'
TD	11,758'	90 0'	325 0'	6,565'	0 0'	0 0'	4,502.1'	-3,158.3'
VS Plane			325 0	VS Length			5499.4'	
				Lateral Length			4783.2'	

8-3/4" Hole

Formation Depths (TVD)

TULLY TBD
 MOSCOW TBD

Mud From KOP to 6,974'

80/20 Invert Emulsion
 10 0 -12.5 ppg MW
 Vis 45 -55
 PV 16 - 20
 YP 20 - 24
 FL 5 - 8
 pH 9 - 9.5

TOC on 5-1/2" Tail Slurry = 0'

UPPER MARCELLUS TBD

CHERRY VALLEY TBD

UNION SPRINGS 6505'

ONONDAGA 6625

Mud From 6,974' to TD

80/20 Invert Emulsion
 12.5 - 13 0 ppg MW
 Vis. 45 - 55
 PV 18 - 22
 YP. 22 - 26
 FL 4 - 6
 pH 9 - 9.5

8-3/4" Hole

Geologic Target: 6565' TVD @ 0' VS w/ 90.00 degrees updip

Target Range -30.00 ft TVD above lateral line 100 00 ft TVD left of lateral line
 30 00 ft TVD below lateral line 100 00 ft TVD right of lateral line

Tubular Details

String	Size	Bit Size	Weight	Grade	Connection	Depth
Conductor 1	20	20	78 ppf	LS	WELD	120'
Surface	13 3/8	17 1/2	54.5 ppf	J-55	STC	200'
Intermediate	9 5/8	12 1/4	36 ppf	J-55	STC	1,050'
Production	5 1/2	8 3/4	20 ppf	P-110	LTC	11,758'

Gas Gradient (0.67 psi/ft)

1,000'	2,000'	3,000'	4,000'	5,000'	6,000'	7,000'	8,000'
670 psi	1340 psi	2010 psi	2680 psi	3350 psi	4020 psi	4690 psi	5360 psi

Run marker jt 100' above KOP

PBHL
 TMD. 11,758'
 TVD 6,565'
 Inclination 90 degrees
 Azimuth 324 95 deg

Drilling Rig: Saxon 173
Dir. Drilling: Weatherford
Drilling Mud: MI Swaco
Prod Cement: Halliburton

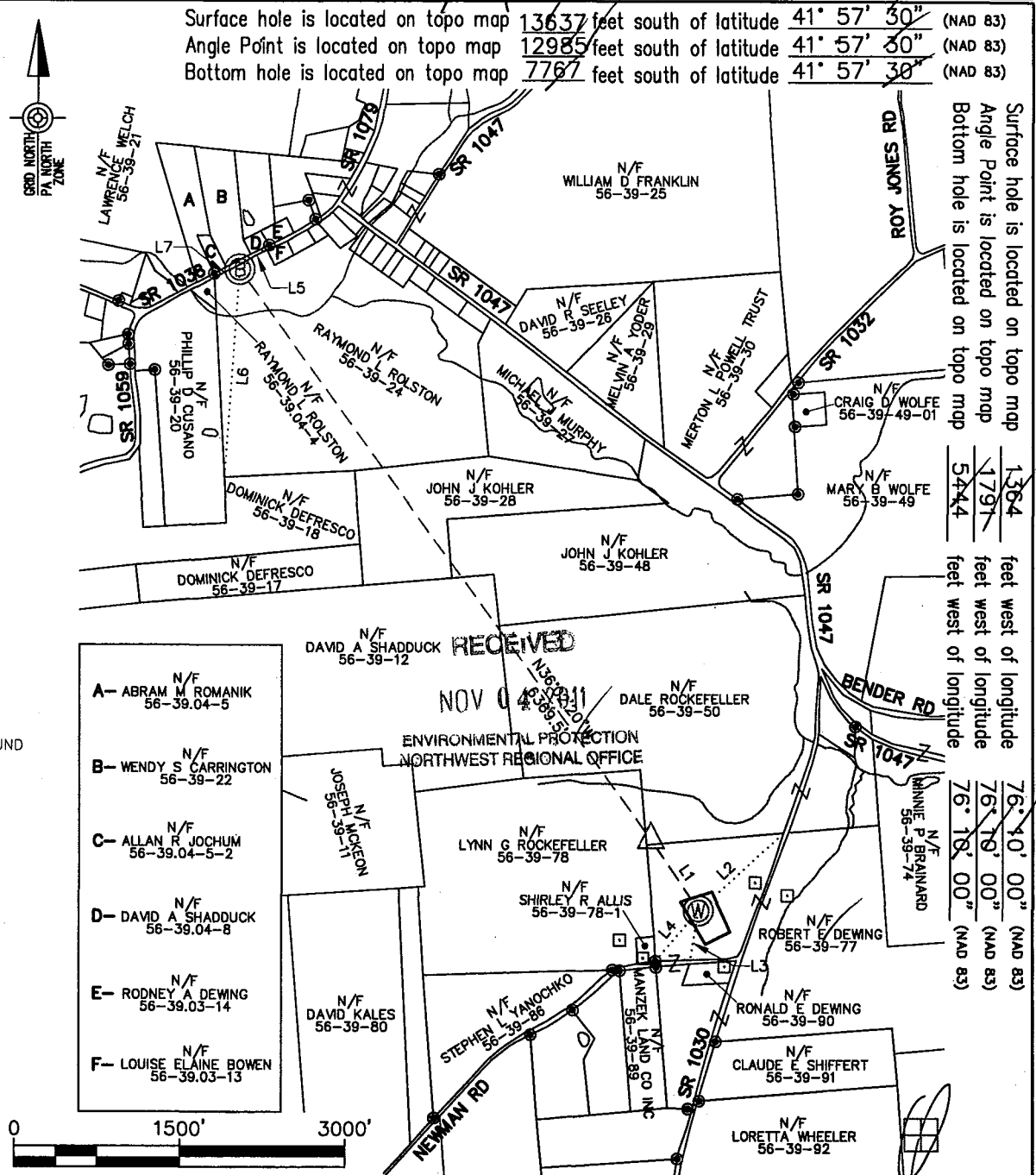
Wellhead: Weatherford
Air Package: Precision
Mud Logging: RPS
Surf Cement: Universal



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Oil and Gas Management Program
WELL LOCATION PLAT

DEP USE ONLY	DEP Application Tracking #	G: <i>[Signature]</i> C: <i>[Signature]</i>
	Permit #	
	Project #	

	Denotes location of well on topo map.
	Denotes surface location of well on plat
NAD 83 True Latitude: NORTH 41° 55' 15.27"	
True Longitude: WEST 76° 10' 18.05"	
NAD 27 True Latitude: NORTH 41.920833°	
True Longitude: WEST 76.172030°	
	Denotes directional drill angle point on plat
NAD 83 True Latitude: NORTH 41° 55' 21.72"	
True Longitude: WEST 76° 10' 23.70"	
NAD 27 True Latitude: NORTH 41.922624°	
True Longitude: WEST 76.173598°	
	Denotes location of bottom hole on plat
NAD 83 True Latitude: NORTH 41° 56' 13.26"	
True Longitude: WEST 76° 11' 12.03"	
NAD 27 True Latitude: NORTH 41.936942°	
True Longitude: WEST 76.187023°	



LEGEND

- PROPERTY CORNER FOUND
- WATER WELL

LINE TABLE

LINE	BEARING	LENGTH
L1	N34°13'19"W	779.8'
L2	N47°50'22"E	1050'
L3	S09°38'04"W	489'
L4	S40°42'15"W	603'
L5	N50°47'03"E	345'
L6	S04°11'09"W	1880'
L7	S81°06'33"W	238'

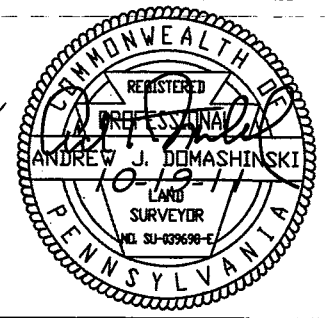
NOTES

THIS PLAT IS FOR WELL LOCATION PURPOSES ONLY AND DOES NOT REPRESENT A COMPLETE BOUNDARY SURVEY ON ALL PARCELS SHOWN. PROPERTY LINES AND OWNER INFORMATION WERE OBTAINED FROM VARIOUS FIELD EVIDENCE, TAX RECORDS, DEED PLOTS AND AERIAL MAPPING

- A- ABRAM N/F ROMANIK 56-39.04-5
- B- WENDY S CARRINGTON N/F 56-39-22
- C- ALLAN R JOCHUM N/F 56-39.04-5-2
- D- DAVID A SHADDUCK N/F 56-39.04-8
- E- RODNEY A DEWING N/F 56-39.03-14
- F- LOUISE ELAINE BOWEN N/F 56-39.03-13

Surveyor or **ANDREW J. DOMASHINSKI** Phone # 570-323-6603 Dwg. # 6436-015-069 Date **JAN. 12, 2011** Scale 1" = 1500' Tract Acreage 99±
 Engineer **LARSON DESIGN GROUP** Revised OCT. 19, 2011

Lat. & Long Metadata Method TRIMBLE MAPPING GPS Accuracy 3±(PPS) ft. Datum NAD 83	Elevation Metadata Method TRIMBLE MAPPING GPS Accuracy 6±(PPS) ft. Datum NAVD 88	Survey Date NOV. 18, 2010
Applicant / Well Operator Name TALISMAN ENERGY USA INC.	Well(Farm) Name DEWING (05-100-02) R	Well # 2H
Address 50 PENNWOOD PLACE, WARRENDALE, PA. 15086	County - Code BRADFORD	Municipality WARREN TWP
Surface Landowner / Lessor ROBERT E. & MARTHA A. DEWING	USGS 71/2 Quadrangle Map Name LITTLE MEADOWS 1336	
Target Formation(s) MARCELLUS SHALE	Angle & Course of Deviation (Drilling) N34°13'19"W 779.8' N36°02'20"W 6369.6'	
Surface Owner of Water Surveyed with a Water Supply within 1,000 ft. ROBERT E. DEWING Ronald E. Dewing	Anticipated Total Depth TVD 5427' TMD 12268'	
ROBERT E. & MARTHA A. DEWING	Surface Elevation 1566ft.	Well Type GAS
SHIRLEY R. ALLIS & MICHAEL A. VINSON	Map Section 5	
LYNN G. & DENNIS ROCKEFELLER		



Handwritten notes:
 YES
 11/18/10
 for
 WITH
 APPROV

Project: Bradford County, PA (NAD 83)
 Site: Little Meadows
 Well: Dewing (05-100-02) R 2H
 Wellbore: Wellbore #1
 Plan: Plan #1
 Rig: TBA

Surface Location:
 US State Plane 1983
 Pennsylvania Northern Zone
 Elevation: GL 1565.5' + 15' KB @ 1580.50ft (TBA)
 Northing 643086.09 Easting 2398023.05
 Longitude 76° 10' 18.052 W
 Latitude 41° 55' 15.269 N

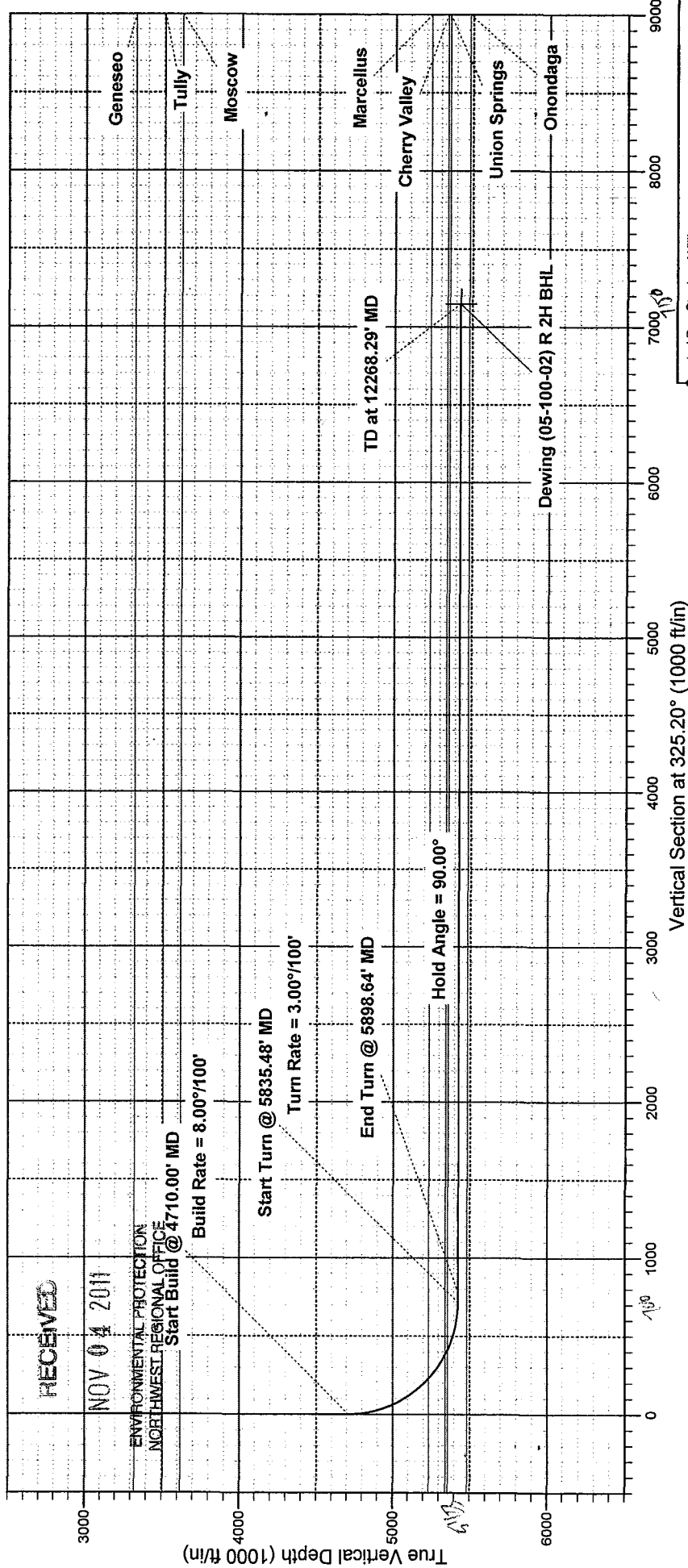
SECTION DETAILS

MD	Inc	Azi	TVD	+N-S	+E-W	DLeg	TFace	VSec	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4710.00	0.00	0.00	4710.00	0.00	0.00	0.00	0.00	0.00	Start Build
5835.48	90.00	326.90	5426.50	600.23	-391.28	8.00	326.90	716.19	Start Turn
5898.64	90.00	325.00	5426.50	652.56	-426.65	3.00	-90.00	779.34	End Turn
12268.29	90.00	325.00	5426.50	5870.59	-4079.67	0.00	0.00	7148.95	TD

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVp	+N-S	+E-W	Northing	Easting	Shape
Dewing (05-100-02) R 2H BHL	5426.50	5870.59	-4079.67	648881.36	2393837.08	Point

To convert a Magnetic Direction to a True Direction, Subtract 12.12°
 Magnetic Model: BGGM2011 Date: 20-Sep-11
 Azimuths to True North

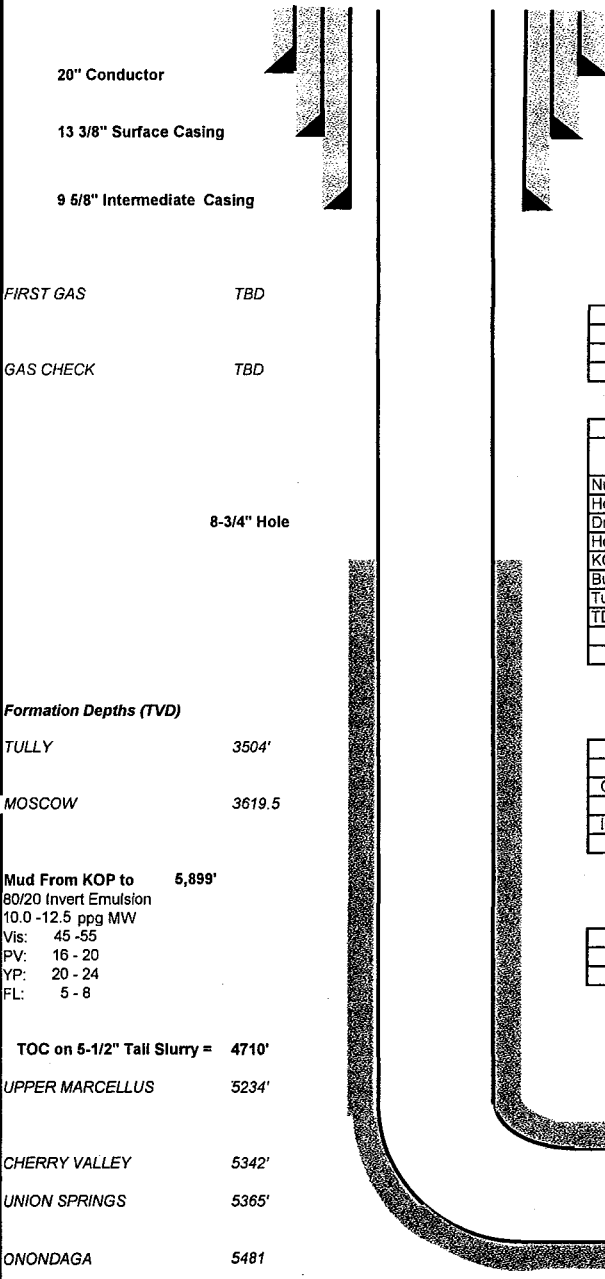


Vertical Section at 325.20° (1000 ft/in)

015-21607

Well Name: Dewing (05-100-02) R 2H
Formation: Marcellus Shale
AFE Number: TBD
API Number: TBD
Drilling Engineer: Adam Litun
Geologist: Kyle Barrie
Date: 9/21/11

County, State: Bradford, PA
Surf. Location: 41.920908 Lat and -76.171681 Long
BH Location: 41.937017 Lat and -76.186675 Long
Build Location: 41.922555 Lat and -76.173119 Long
Build/Turn Location: 41.922699 Lat and -76.173249 Long
KB Elevation: 1580'
Ground Elevation: 1565'



SET COND. IN BED ROCK - GROUT

Formation Depths (TVD)
FRESH WATER 171
COAL TBD
FRESH WATER TBD

TOC on 13 3/8" @ Surface
TOC on 9 5/8" @ Surface
TOC on 5 1/2 Lead Slurry @ 2000'

Wellhead Details	
Casing Spool	13 3/8" x 16 3/4" 3K
Casing Spool	9 5/8" 5K x 11" 5K
Tubing Spool	11" 5K x 4 1/16" 10K

Directional Drilling Details								
Section	TMD	Inc.	Azimuth	TVD	BUR	DLS	+N-S	+E-W
Nudge	0.0'	0.0'	0.0'	0.0'	0.0'	0.0'	0.0'	0.0'
Hold	0.0'	0.0'	0.0'	0.0'	####	####	0.0'	0.0'
Drop	0.0'	0.0'	0.0'	0.0'	####	####	0.0'	0.0'
Hold	0.0'	0.0'	0.0'	0.0'	####	####	0.0'	0.0'
KOP	4,710'	0.0'	0.0'	4,710'	0.0'	0.0'	0.0'	0.0'
Build	5,835'	90.0'	326.9'	5,427'	8.0'	8.0'	600.2'	-391.3'
Turn/Land	5,899'	90.0'	325.0'	5,427'	0.0'	3.0'	652.6'	-426.6'
TD	12,268'	90.0'	325.0'	5,427'	0.0'	0.0'	5,870.3'	-4,080.1'
VS Plane			325.0	VS Length			7,148.9'	
				Lateral Length			6,369.7'	

Tubular Details						
String	Size	Bit Size	Weight	Grade	Connection	Depth
Conductor 1	20	20	78 ppf	LS	WELD	80'
Surface	13 3/8	17 1/2	54.5 ppf	J-55	STC	250'
Intermediate	9 5/8	12 1/4	36 ppf	J-55	LTC	650'
Production	5 1/2	8 3/4	20 ppf	P-110	LTC	12,268'

Gas Gradient (0.67 psi/ft)							
1,000'	2,000'	3,000'	4,000'	5,000'	6,000'	7,000'	8,000'
670 psi	1340 psi	2010 psi	2680 psi	3350 psi	4020 psi	4690 psi	5360 psi

Run marker jt. 100' above KOP

PBHL
TMD: 12,268'
TVD: 5,426'
Inclination: 90 degrees
Azimuth: 325.00 deg

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ENVIRONMENTAL PROTECTION
NORTHWEST REGIONAL OFFICE

Geologic Target: 5426' TVD @ 0' VS w/ 90.00 degrees updip

Target Range: -30.00 ft TVD above lateral line 100.00 ft TVD left of lateral line
30.00 ft TVD below lateral line 100.00 ft TVD right of lateral line

Drilling Rig: Saxon 170
Dir. Drilling: Halliburton
Drilling Mud: MiSwaco
Prod Cement: Schlumberger

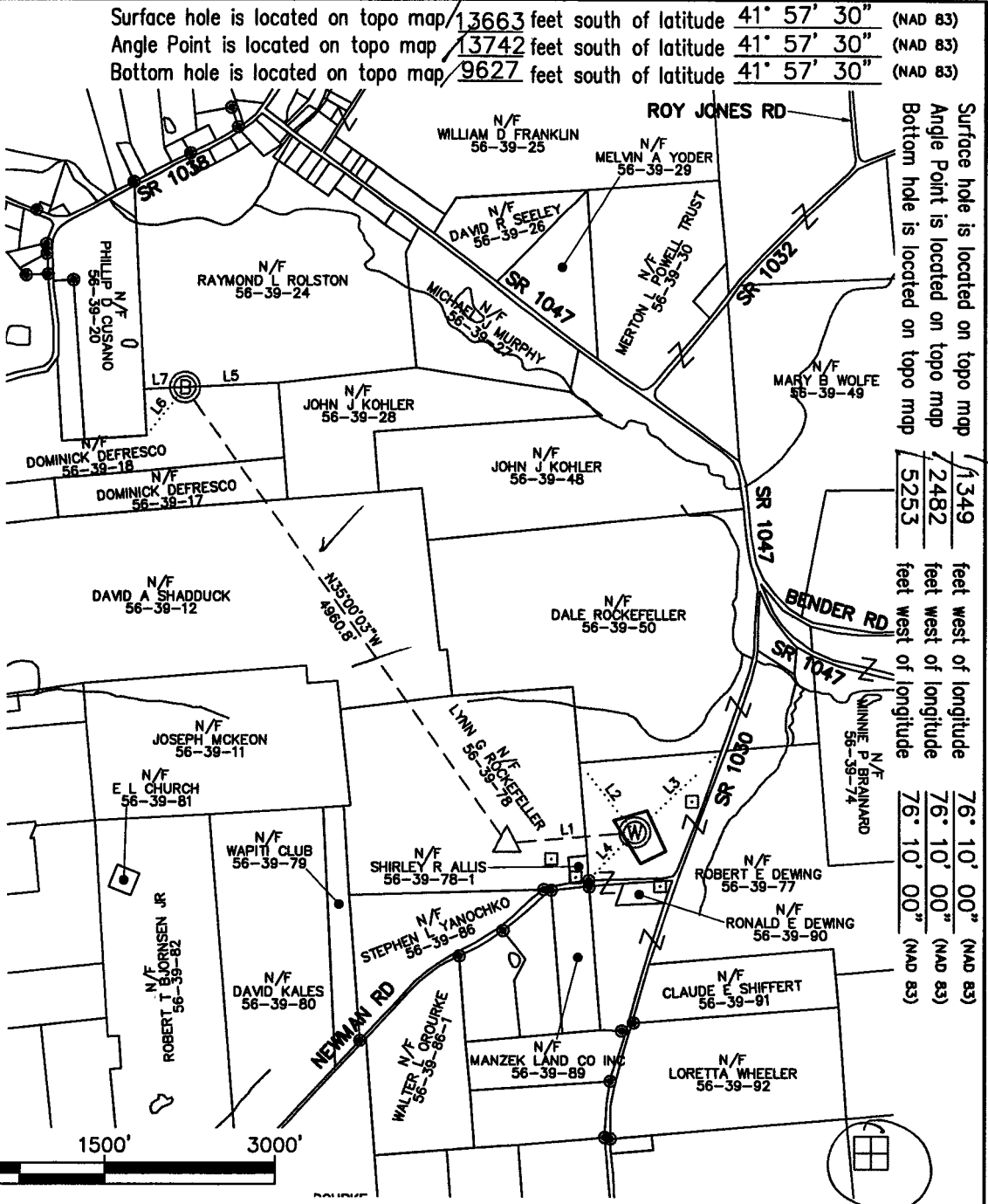
Wellhead: Weatherford
Air Package: AirComp
Mud Logging: RPS
Surf Cement: Universal



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Oil and Gas Management Program
WELL LOCATION PLAT

DEP USE ONLY	DEP Application Tracking #	G: 4157 F: 21608 C:
	Permit #	
	Project #	

- Denotes location of well on topo map.
- Denotes surface location of well on plat
- NAD 83
True Latitude: NORTH 41° 55' 15.01"
True Longitude: WEST 76° 10' 17.85"
- NAD 27
True Latitude: NORTH 41.920762°
True Longitude: WEST 76.171975°
- Denotes directional drill angle point on plat
- NAD 83
True Latitude: NORTH 41° 55' 14.24"
True Longitude: WEST 76° 10' 32.83"
- NAD 27
True Latitude: NORTH 41.920547°
True Longitude: WEST 76.176134°
- Denotes location of bottom hole on plat
- NAD 83
True Latitude: NORTH 41° 55' 54.89"
True Longitude: WEST 76° 11' 09.49"
- NAD 27
True Latitude: NORTH 41.931838°
True Longitude: WEST 76.186318°



Surveyor or Engineer **ANDREW J. DOMASHINSKI** Phone # 570-323-6603 Dwg # 6436-015-069 Date JAN 12, 2011 Scale 1" = 1500' Tract Acreage 99±

Lat. & Long Metadata Method TRIMBLE MAPPING GPS Accuracy 3±(PPS) ft. Datum NAD 83	Elevation Metadata Method TRIMBLE MAPPING GPS Accuracy 6±(PPS) ft. Datum NAVD 88	Survey Date NOV. 18, 2010	
Applicant / Well Operator Name TALISMAN ENERGY USA INC.	Well(Farm) Name DEWING (05-100-03) R	Well # 3H	
Address 50 PENNWOOD PLACE, WARRENDALE, PA. 15086	County - Code BRADFORD 08	Municipality WARREN TWP	
Surface Landowner / Lessor ROBERT E. & MARTHA A. DEWING	USGS 71/2 Quadrangle Map Name LITTLE MEADOWS		
Target Formation(s) MARCELLUS SHALE	Angle & Course of Deviation (Drilling) S84°59'55"W 1134.9' N35°00'03"W 4960.8'		
	Anticipated Total Depth TVD 6566' TMD 12197'		
ROBERT E. & MARTHA A. DEWING	Surface Elevation 1566ft.		Well Type GAS
RONALD E. DEWING	Map Section 5		
SHIRLEY R. ALLIS & MICHAEL A. VINSON			
LYNN G. & DENNIS ROCKEFELLER			

TALISMAN

E N E R G Y



Weatherford

Dewing (05-100-03)R 3H

Plan Data for Dewing (05-100-03)R 3H

Formation Point Information:
Name TVD Sub Sea MD
(USft) (USft) (USft)
Union Springs 6505.50 -4923.00 6983.75

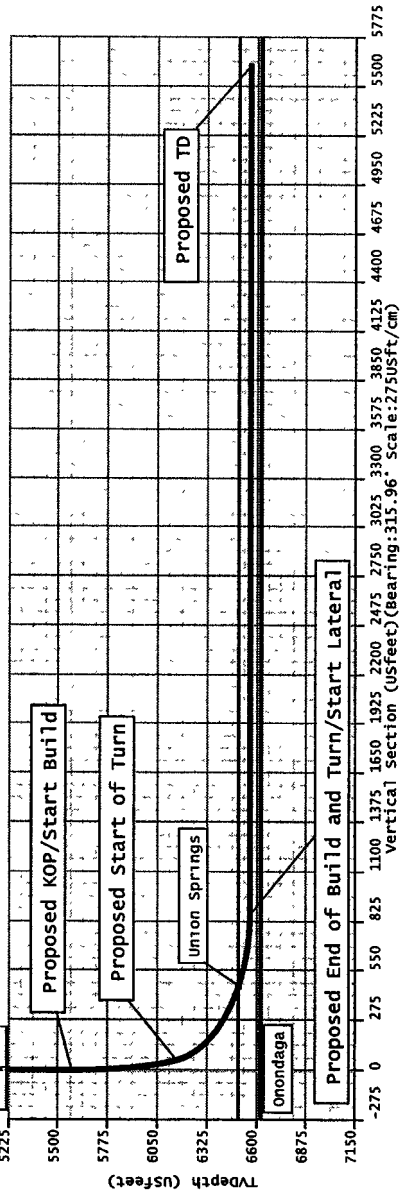
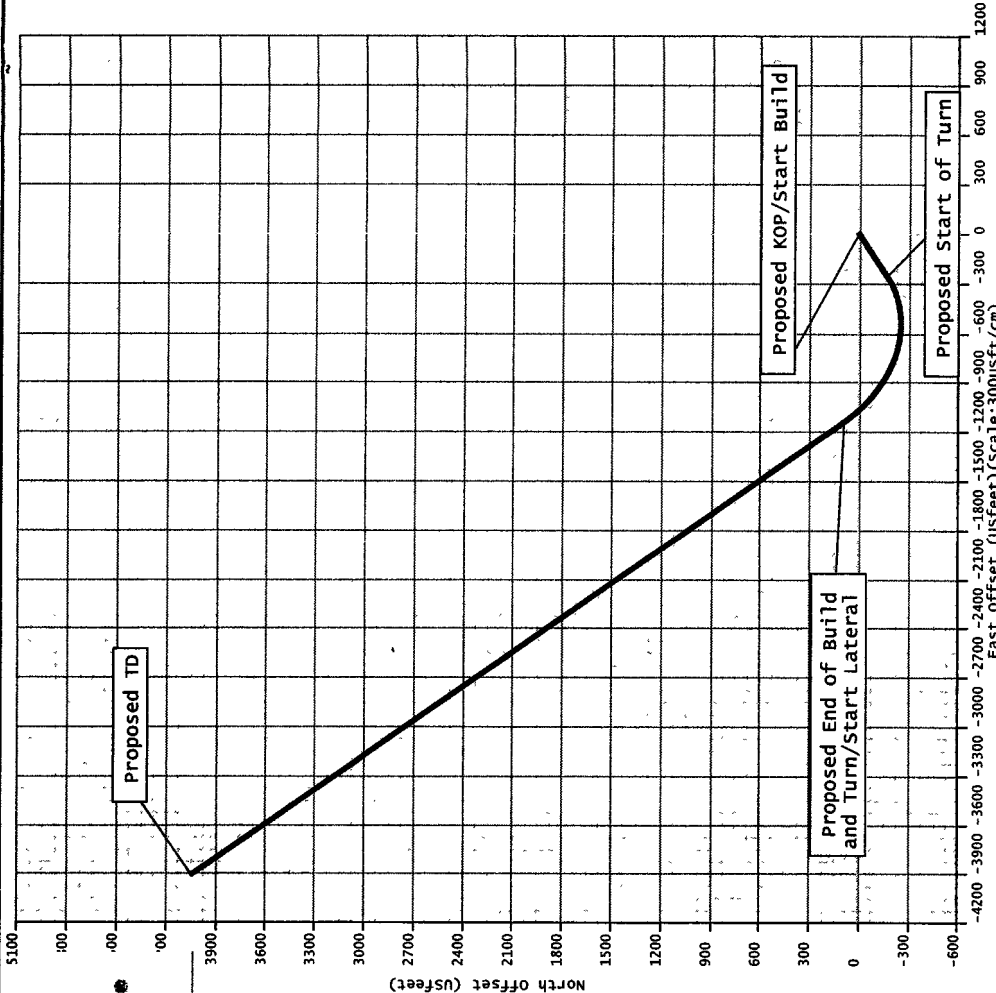
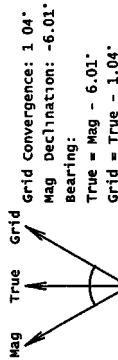
Plan Data for Dewing (05-100-03)R 3H

Slot: Dewing (05-100-03)R 3H
Position: is from site centre
Offset: +N/-S: -52.11USft Northing: 643060.50USft Latitude: 41°55'15.5"
+E/-W: 29.68USft Easting: 2398038.49USft Longitude: -76°10'17.9"
Elevation Above VRD: 1565.50USft

Plan Data for Dewing (05-100-03)R 3H

Plan Point Information:
Dogleg Severity Unit: /100.00ft

MD	Inc	Az	TVD	Sub Sea	DLS	Build	Turn
(USft)	(°)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)
0.00	0.00	0.00	1565.50	0.00	0.00	0.00	0.00
5578.82	0.00	0.00	5578.82	-3896.33	0.00	0.00	0.00
6269.70	55.27	236.72	6167.43	-4584.83	8.00	8.00	0.00
7377.02	90.00	325.00	6565.50	-4983.00	8.00	3.14	7.97
12197.02	90.00	325.00	6565.50	-4983.00	0.00	0.00	0.00



Plan Data for Dewing (05-100-03)R 3H
 Site: Dewing (05-100)R Pad
 Unit: USfeet TVD Reference:
 Company Name: Talisman Energy USA Inc.
 Position: Northing: 643112.06USft Latitude: 41°55'15.5"
 Easting: 2398007.88USft Longitude: -76°10'18.2"
 North Reference: True
 Elevation Above VRD: 0.00USft
 Comment: Site centre - Well 1

Well: Dewing (05-100-03)R 3H
 Type: Main-Well
 File Number:
 Vertical Section: Position offset of origin from slot centre.
 +N/-S: 0.00USft
 +E/-W: 0.00USft
 Azimuth: 324.95
 Magnetic Parameters:
 Mode: Field Strength: Declination: Dip: Date:
 BGM: 31706(MT) -6.01° -29.25° 2010-09-29

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 FEB 18 2011
 ENVIRONMENTAL PROTECTION
 NORTHWEST REGIONAL OFFICE

D15-21608

Well Name: Dewing (05-100-03) R 3H
Formation: Marcellus Shale
AFE Number: 0
API Number: 0
Drilling Engineer: 0
Geologist: 0
Date: 11/18/10

County, State: Bradford Co., PA
Surf. Location: 41.920837 Lat and -76.171626 Long
BH Location: 41.931913 Lat and -76.185970 Long
Build/Turn Location: 41.920837 Lat and -76.171626 Long
Build/Turn Location: 41.920373 Lat and -76.172573 Long
KB Elevation: 1582'
Ground Elevation: 1565'

20" Conductor
 13 3/8" Surface Casing
 9 5/8" Intermediate Casing

SET COND IN BED ROCK - GROUT

Formation Depths (TVD)

FRESH WATER TBD
 COAL TBD
 FRESH WATER TBD

TOC on 13 3/8" @ Surface

TOC on 9 5/8" @ Surface

##

Wellhead Details

Casing Spool	13 3/8" x 16 3/4" 3K
Casing Spool	9 5/8" 5K x 11" 5K
Tubing Spool	11" 5K x 4 1/16" 10K

Directional Drilling Details

Section	TMD	Inc.	Azimuth	TVD	BUR	DLS	+N-S	+E-W
Nudge	0.0'	0.0'	0.0'	0.0'	0.0'	0.0'	0.0'	0.0'
Hold	0.0'	0.0'	0.0'	0.0'	####	####	0.0'	0.0'
Drop	0.0'	0.0'	0.0'	0.0'	####	####	0.0'	0.0'
Hold	0.0'	0.0'	0.0'	0.0'	####	####	0.0'	0.0'
KOP	5,579'	0.0'	0.0'	5,579'	0.0'	0.0'	0.0'	0.0'
Build	6,270'	55.3'	236.7'	6,167'	8.0'	8.0'	-169.1'	-257.6'
Turn/Land	7,377'	80.0'	325.0'	6,566'	3.1'	8.0'	88.2'	-1,138.5'
TD	12,197'	90.0'	325.0'	6,566'	0.0'	0.0'	4,036.5'	-3,903.1'
VS Plane			325.0	VS Length			5545.2'	
				Lateral Length			4820.0'	

8-3/4" Hole

Formation Depths (TVD)

TULLY TBD
 MOSCOW TBD

Mud From KOP to 7,377'
 80/20 Invert Emulsion
 10.0 - 12.5 ppg MW
 Vis. 45-55
 PV 16-20
 YP 20-24
 FL 5-8
 pH 9-9.5

TOC on 5-1/2" Tail Slurry = 5579'

UPPER MARCELLUS TBD

CHERRY VALLEY TBD

UNION SPRINGS 6505'

ONONDAGA 6625'

Mud From 7,377' to TD
 80/20 Invert Emulsion
 12.5 - 13.0 ppg MW
 Vis. 45-55
 PV. 18-22
 YP. 22-26
 FL 4-6
 pH: 9-9.5

Run marker jt. 100' above KOP

8-3/4" Hole

Geologic Target: 6565' TVD @ 0° VS w/ 90.00 degrees updip

Target Range: -30.00 ft TVD above lateral line 100.00 ft TVD left of lateral line
 30.00 ft TVD below lateral line 100.00 ft TVD right of lateral line

Tubular Details

String	Size	Bit Size	Weight	Grade	Connection	Depth
Conductor 1	20	20	78 ppf	LS	WELD	120'
Surface	13 3/8	17 1/2	54.5 ppf	J-55	STC	200'
Intermediate	9 5/8	12 1/4	36 ppf	J-55	STC	1,050'
Production	5 1/2	8 3/4	20 ppf	P-110	LTC	12,197'

Gas Gradient (0.67 psi/ft)

1,000'	2,000'	3,000'	4,000'	5,000'	6,000'	7,000'	8,000'
670 psi	1340 psi	2010 psi	2680 psi	3350 psi	4020 psi	4690 psi	5360 psi

PBHL
 TMD 12,197'
 TVD 6,565'
 Azimuth 325 degrees
 Azimuth 325.00 deg

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 FEB 18 2011

ENVIRONMENTAL PROTECTION
 NORTHWEST REGIONAL OFFICE

Drilling Rig: Saxon 173
Dir. Drilling: Weatherford
Drilling Mud: MI Swaco
Prod Cement: Halliburton

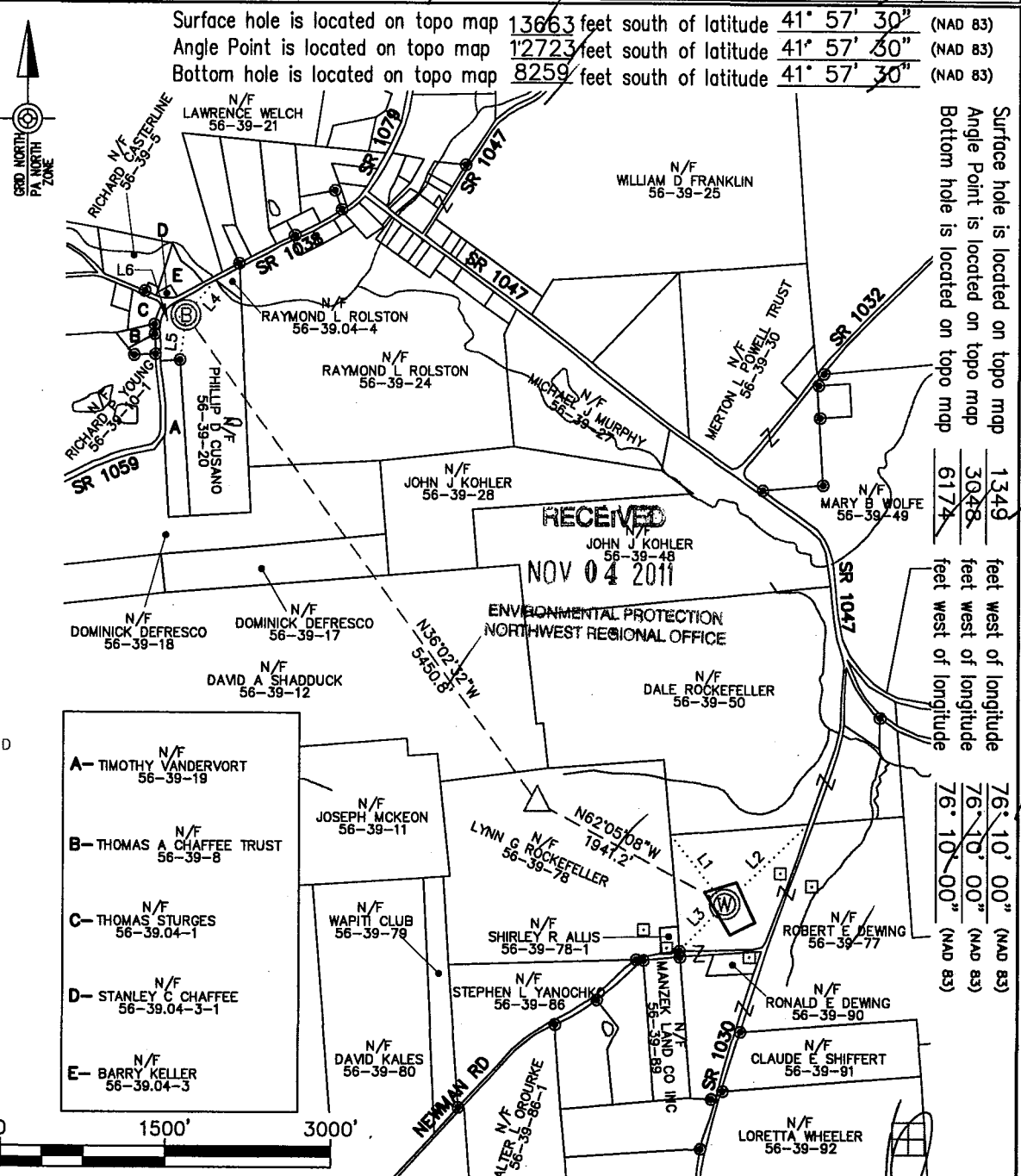
Wellhead: Weatherford
Air Package: Precision
Mud Logging: RPS
Surf Cement: Universal



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Oil and Gas Management Program
WELL LOCATION PLAT

DEP USE ONLY	DEP Application Tracking #	G: <i>11/29/2011</i>
	Permit # <i>015-21608</i>	
	Project #	

	Denotes location of well on topo map.
	Denotes surface location of well on plat
NAD 83 True Latitude: NORTH 41° 55' 15.01"	
True Longitude: WEST 76° 10' 17.85"	
NAD 27 True Latitude: NORTH 41.920762°	
True Longitude: WEST 76.171975°	
	Denotes directional drill angle point on plat
NAD 83 True Latitude: NORTH 41° 55' 24.30"	
True Longitude: WEST 76° 10' 40.32"	
NAD 27 True Latitude: NORTH 41.923341°	
True Longitude: WEST 76.178215°	
	Denotes location of bottom hole on plat
NAD 83 True Latitude: NORTH 41° 56' 08.40"	
True Longitude: WEST 76° 11' 21.69"	
NAD 27 True Latitude: NORTH 41.935593°	
True Longitude: WEST 76.189706°	



Surface hole is located on topo map 1349 feet west of longitude
 Angle Point is located on topo map 3048 feet west of longitude
 Bottom hole is located on topo map 6174 feet west of longitude

76° 10' 00" (NAD 83)
 76° 10' 00" (NAD 83)
 76° 10' 00" (NAD 83)

LEGEND

- PROPERTY CORNER FOUND
- WATER WELL

LINE TABLE

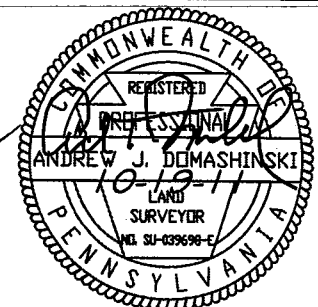
LINE	BEARING	LENGTH
L1	N38°23'20"W	793'
L2	N46°14'52"E	1056'
L3	S43°26'35"W	594'
L4	N40°28'42"E	414'
L5	S06°40'14"W	406'
L6	S73°29'21"W	301'

NOTES

THIS PLAT IS FOR WELL LOCATION PURPOSES ONLY AND DOES NOT REPRESENT A COMPLETE BOUNDARY SURVEY ON ALL PARCELS SHOWN. PROPERTY LINES AND OWNER INFORMATION WERE OBTAINED FROM VARIOUS FIELD EVIDENCE, TAX RECORDS, DEED PLOTS AND AERIAL MAPPING

Surveyor or **ANDREW J. DOMASHINSKI** Phone # 570-323-6603 Dwg. # 6436-015-069 Date **JAN. 12, 2011** Scale 1" = 1500'
 Engineer **LARSON DESIGN GROUP** Revised **OCT. 19, 2011** Tract Acreage 99±

Lat. & Long Metadata Method TRIMBLE MAPPING GPS Accuracy 3'±(PPS) ft. Datum NAD 83	Elevation Metadata Method TRIMBLE MAPPING GPS Accuracy 6'±(PPS) ft. Datum NAVD 88	Survey Date NOV. 18, 2010
Applicant / Well Operator Name TALISMAN ENERGY USA INC.	Well(Farm) Name DEWING (05-100-03) R	Well # 3H Serial #
Address 50 PENNWOOD PLACE, WARRENDALE, PA. 15086	County - Code BRADFORD	Municipality WARREN TWP
Surface Landowner / Lessor ROBERT E. & MARTHA A. DEWING	USGS 7 1/2 Quadrangle Map Name LITTLE MEADOWS 1336	
Target Formation(s) MARCELLUS SHALE	Angle & Course of Deviation (Drilling) N62°05'08"W 1941.2' N36°02'32"W 5450.8'	
Surface Owner or Well Purchaser with a Water Supply within 1,000 ft	Approximate Course and Distance to Water Supply	Anticipated Total Depth TVD 5427' TMD 12560'
ROBERT E. DEWING - Ronald E. Dewing	S24°45'43"E 529'	Surface Elevation 1566ft.
ROBERT E. & MARTHA A. DEWING	N60°59'07"E 574'	Well Type GAS
SHIRLEY R. ALLIS & MICHAEL A. VINSON	S52°20'47"W 663'	Map Section 5
LYNN G. & DENNIS ROCKEFELLER	S71°55'46"W 775'	



*11/29/2011
11/29/2011*

Project: Bradford County, PA (NAD 83)
 Site: Little Meadows
 Well: Dewing (05-100-03) R 3H /
 Wellbore: Wellbore #1
 Plan: Plan #1
 Rig: TBA

Surface Location:

US State Plane 1983
 Pennsylvania Northern Zone
 Elevation: GL 1565.5' + 15' KB @ 1580.50ft (TBA)
 Northing 643060.50 2398038.49 41° 55' 15.013" N 76° 10' 17.854" W
 Easting Longitude
 Latitude

SECTION DETAILS

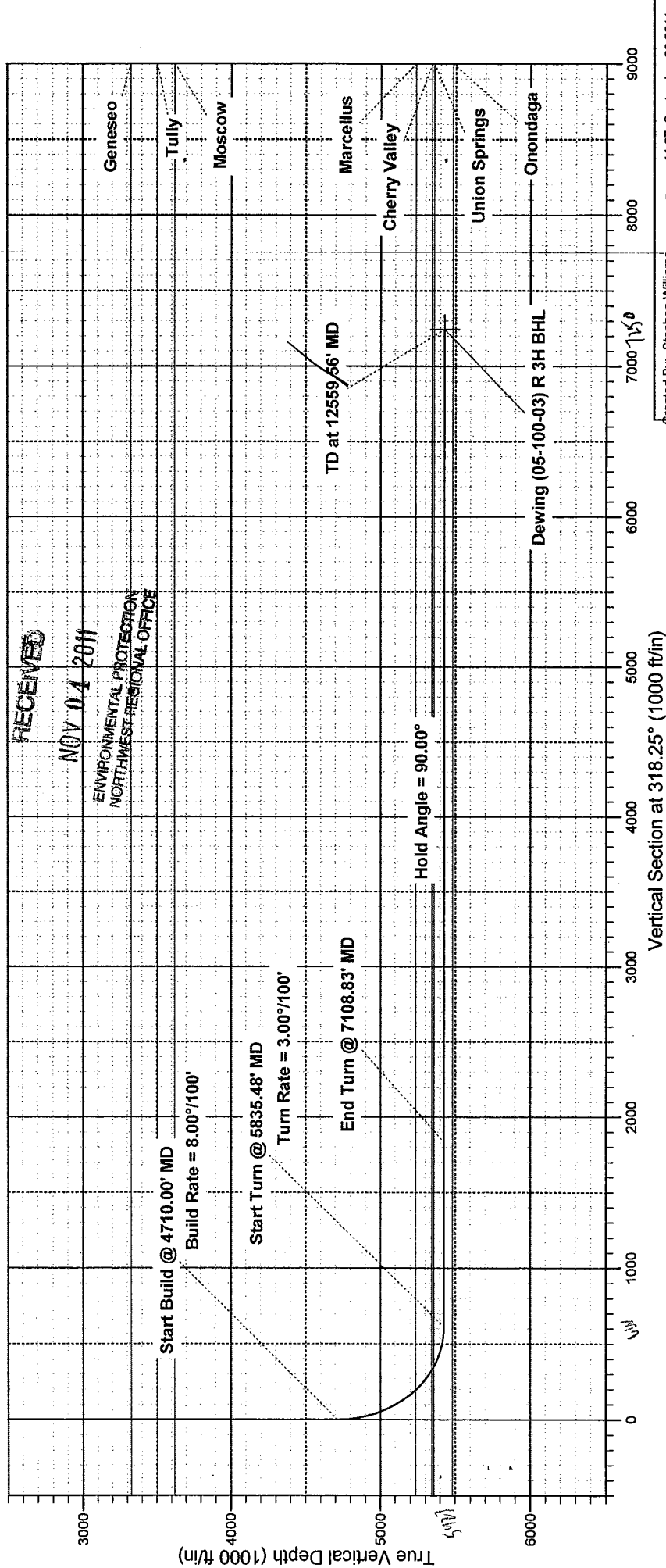
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0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4710.00	0.00	0.00	4710.00	0.00	0.00	0.00	0.00	0.00	Start Build
5835.48	90.00	286.80	5426.50	207.09	-685.92	8.00	286.80	611.27	Start Turn
7108.83	90.00	325.00	5426.50	940.00	-1698.39	3.00	90.00	1832.26	End Turn
12559.56	90.00	325.00	5426.50	5405.02	-4824.74	0.00	0.00	7245.16	TD

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Dewing (05-100-03) R 3H BHL	5426.50	5405.02	-4824.74	648376.69	2393116.05	Point

To convert a Magnetic Direction to a True Direction, Subtract 12.12°

Magnetic Model: BGGM2011 Date: 20-Sep-11
 Azimuths to True North

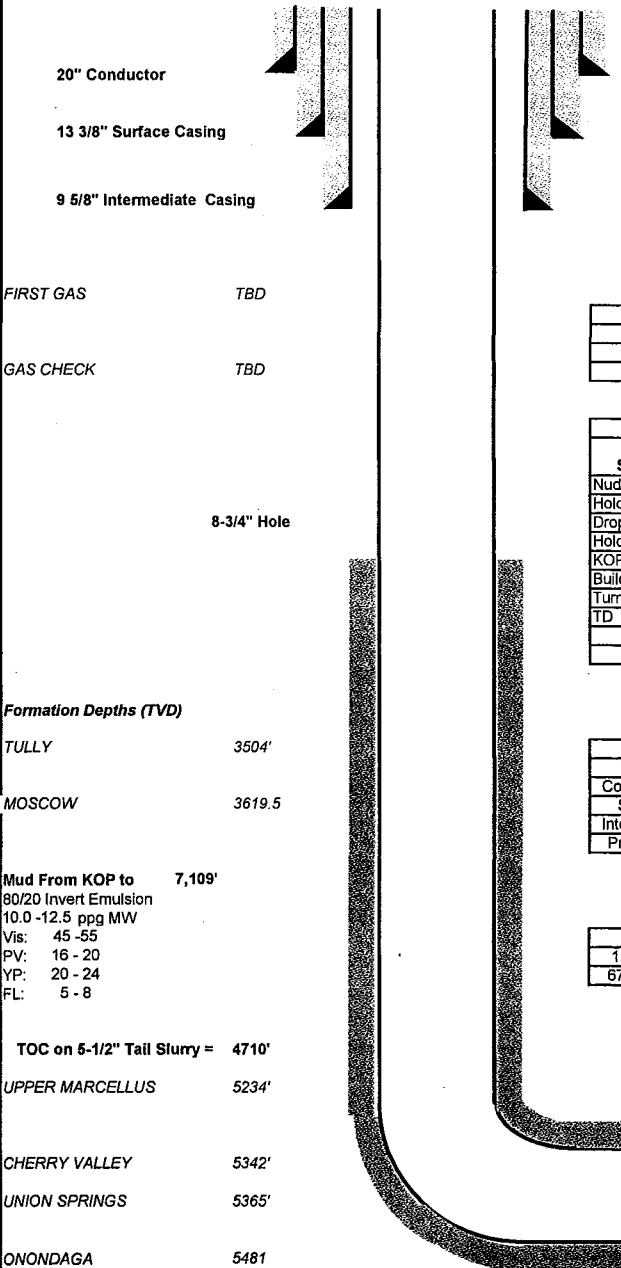


01521608

015-21608

Well Name: Dewing (05-100-03) R 3H
 Formation: Marcellus Shale
 AFE Number: TBD
 API Number: TBD
 Drilling Engineer: Adam Litun
 Geologist: Kyle Barrie
 Date: 9/21/11

County, State: Bradford, PA
 Surf. Location: 41.920837 Lat and -76.171626 Long
 BH Location: 41.935668 Lat and -76.189358 Long
 Build Location: 41.921405 Lat and -76.174146 Long
 Build/Turn Location: 41.923416 Lat and -76.177867 Long
 KB Elevation: 1580'
 Ground Elevation: 1565'



SET COND. IN BED ROCK - GROUT

Formation Depths (TVD)

FRESH WATER	171
COAL	TBD
FRESH WATER	TBD

TOC on 13 3/8" @ Surface

TOC on 9 5/8" @ Surface

TOC on 5 1/2 Lead Slurry @ 2000'

Wellhead Details	
Casing Spool	13 3/8" x 16 3/4" 3K
Casing Spool	9 5/8" 5K x 11" 5K
Tubing Spool	11" 5K x 4 1/16" 10K

Directional Drilling Details								
Section	TMD	Inc.	Azimuth	TVD	BUR	DLS	+N-S	+E-W
Nudge	0.0'	0.0'	0.0'	0.0'	0.0'	0.0'	0.0'	0.0'
Hold	0.0'	0.0'	0.0'	0.0'	####	####	0.0'	0.0'
Drop	0.0'	0.0'	0.0'	0.0'	####	####	0.0'	0.0'
Hold	0.0'	0.0'	0.0'	0.0'	####	####	0.0'	0.0'
KOP	4,710'	0.0'	0.0'	4,710'	0.0'	0.0'	0.0'	0.0'
Build	5,825'	90.0'	286.8'	5,427'	8.0'	8.0'	207.1'	-685.9'
Turn/Land	7,109'	90.0'	325.0'	5,427'	0.0'	3.0'	940.0'	-1,698.4'
TD	12,560'	90.0'	325.0'	5,427'	0.0'	0.0'	5,405.0'	-4,824.8'
VS Plane			325.0	VS Length			7194.9'	
				Lateral Length			5450.7'	

Tubular Details						
String	Size	Bit Size	Weight	Grade	Connection	Depth
Conductor 1	20	20	78 ppf	LS	WELD	80'
Surface	13 3/8	17 1/2	54.5 ppf	J-55	STC	250'
Intermediate	9 5/8	12 1/4	36 ppf	J-55	LTC	650'
Production	5 1/2	6 3/4	20 ppf	P-110	LTC	12,560'

Gas Gradient (0.67 psi/ft)							
1,000'	2,000'	3,000'	4,000'	5,000'	6,000'	7,000'	8,000'
670 psi	1340 psi	2010 psi	2680 psi	3350 psi	4020 psi	4690 psi	5360 psi

Run marker jt. 100' above KOP

PBHL
 TMD: 12,560'
 W: 5426'
 Inclination: 90 degrees
 Azimuth: 325.00 deg

RECEIVED
 NOV 04 2011

ENVIRONMENTAL PROTECTION
 NORTHWEST REGIONAL OFFICE

Geologic Target: 5426' TVD @ 0' VS w/ 90.00 degrees updlp

Target Range: -30.00 ft TVD above lateral line 100.00 ft TVD left of lateral line
 30.00 ft TVD below lateral line 100.00 ft TVD right of lateral line

Drilling Rig: Saxon 170
 Dir. Drilling: Halliburton
 Drilling Mud: MiSwaco
 Prod Cement: Schlumberger

Wellhead: Weatherford
 Air Package: AirComp
 Mud Logging: RPS
 Surf Cement: Universal



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Oil and Gas Management Program
WELL LOCATION PLAT

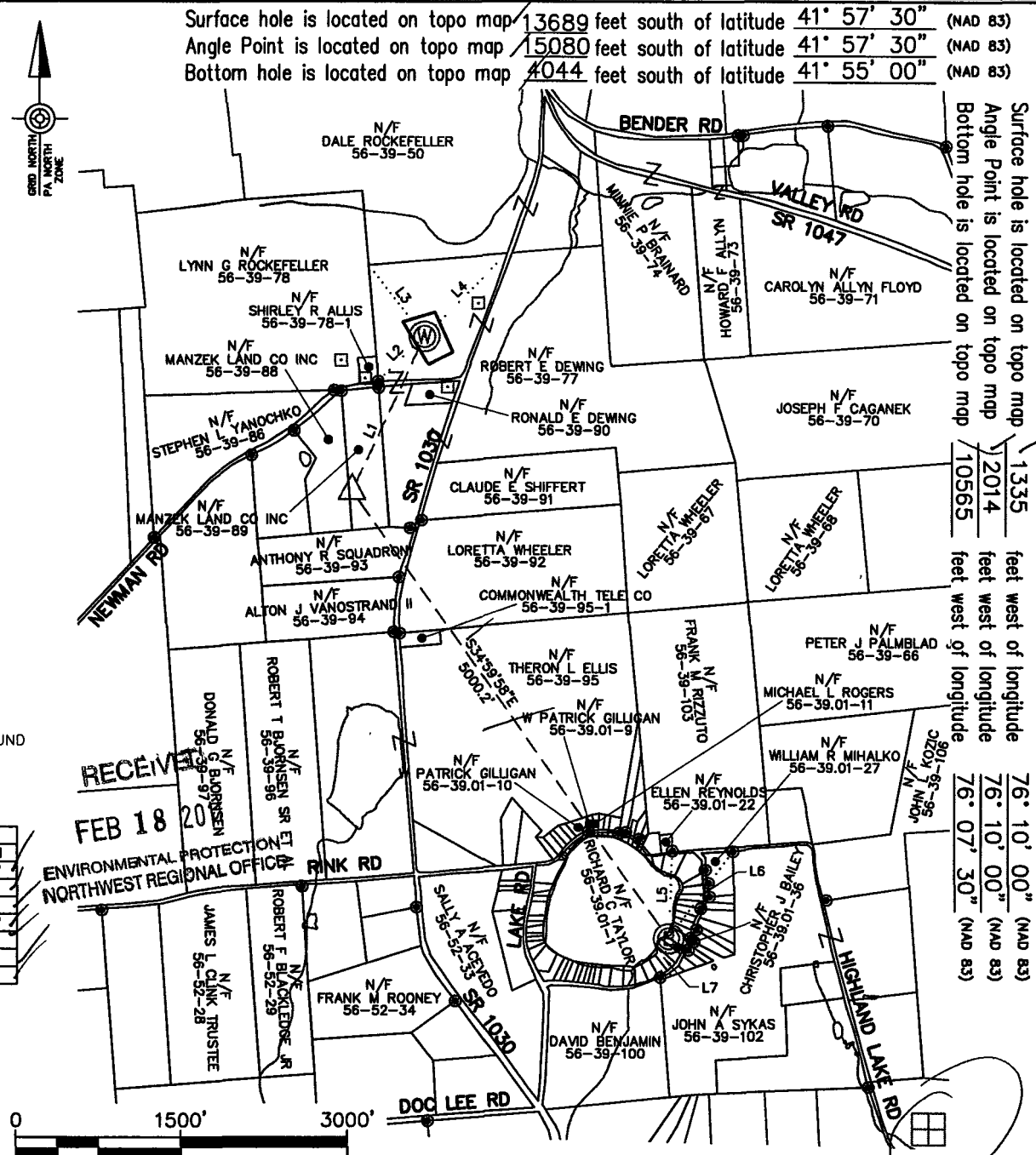
DEP USE ONLY	DEP Application Tracking #	C. 120 1/18/11
	Permit #	
	Project #	

	Denotes location of well on topo map.
	Denotes surface location of well on plat
NAD 83 True Latitude: NORTH 41° 55' 14.75"	
True Longitude: WEST 76° 10' 17.66"	
NAD 27 True Latitude: NORTH 41.920690°	
True Longitude: WEST 76.171921°	
	Denotes directional drill angle point on plat
NAD 83 True Latitude: NORTH 41° 55' 01.02"	
True Longitude: WEST 76° 10' 26.65"	
NAD 27 True Latitude: NORTH 41.916874°	
True Longitude: WEST 76.174417°	
	Denotes location of bottom hole on plat
NAD 83 True Latitude: NORTH 41° 54' 20.04"	
True Longitude: WEST 76° 09' 49.71"	
NAD 27 True Latitude: NORTH 41.905492°	
True Longitude: WEST 76.164158°	

LEGEND
 - PROPERTY CORNER FOUND
 - WATER WELL

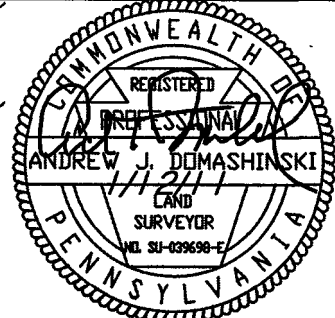
LINE	BEARING	LENGTH
L1	S25°00'07"W	1547.8'
L2	S46°15'52"W	586.5'
L3	N58°05'38"W	822.8'
L4	N44°40'19"E	1063.5'
L5	N02°41'10"E	807.0'
L6	N35°51'34"E	989.0'
L7	S12°03'55"W	361.1'

NOTES
 THIS PLAT IS FOR WELL LOCATION PURPOSES ONLY AND DOES NOT REPRESENT A COMPLETE BOUNDARY SURVEY ON ALL PARCELS SHOWN. PROPERTY LINES AND OWNER INFORMATION WERE OBTAINED FROM VARIOUS FIELD EVIDENCE, TAX RECORDS, DEED PLOTS AND AERIAL MAPPING.



Surveyor or Engineer **ANDREW J. DOMASHINSKI** Phone # 570-323-6603 Dwg. # 6436-015-069 Date JAN 12, 2011 Scale 1" = 1500' Tract Acreage 99±

Lat. & Long Metadata Method TRIMBLE MAPPING GPS Accuracy 3'±(PPS) ft. Datum NAD 83	Elevation Metadata Method TRIMBLE MAPPING GPS Accuracy 6'±(PPS) ft. Datum NAVD 88	Survey Date NOV. 18, 2010
Applicant / Well Operator Name TALISMAN ENERGY USA INC.	Well(Farm) Name DEWING (05-100-04) R	Well # 4H
Address 50 PENWOOD PLACE, WARRENDALE, PA. 15086	County - Code BRADFORD 08	Municipality WARREN TWP
Surface Landowner / Lessor ROBERT E. & MARTHA A. DEWING	USGS 71/2 Quadrangle Map Name LITTLE MEADOWS	
Target Formation(s) MARCELLUS SHALE	Angle & Course of Deviation (Drilling) S25°00'07"W 1547.8' S34°59'58"E 5000.2'	
ROBERT E. & MARTHA A. DEWING	Anticipated Total Depth TVD 6566' TMD 13093'	
RONALD E. DEWING	Surface Elevation 1566ft.	Well Type GAS
SHIRLEY R. ALLIS & MICHAEL A. VINSON	Map Section 5 (SURF & AP), 9 (BHL)	
LYNN G. & DENNIS ROCKEFELLER		



TALISMAN ENERGY



Weatherford

Dewing (05-100-04)R 4H

Plan Data for Dewing (05-100-04)R 4H

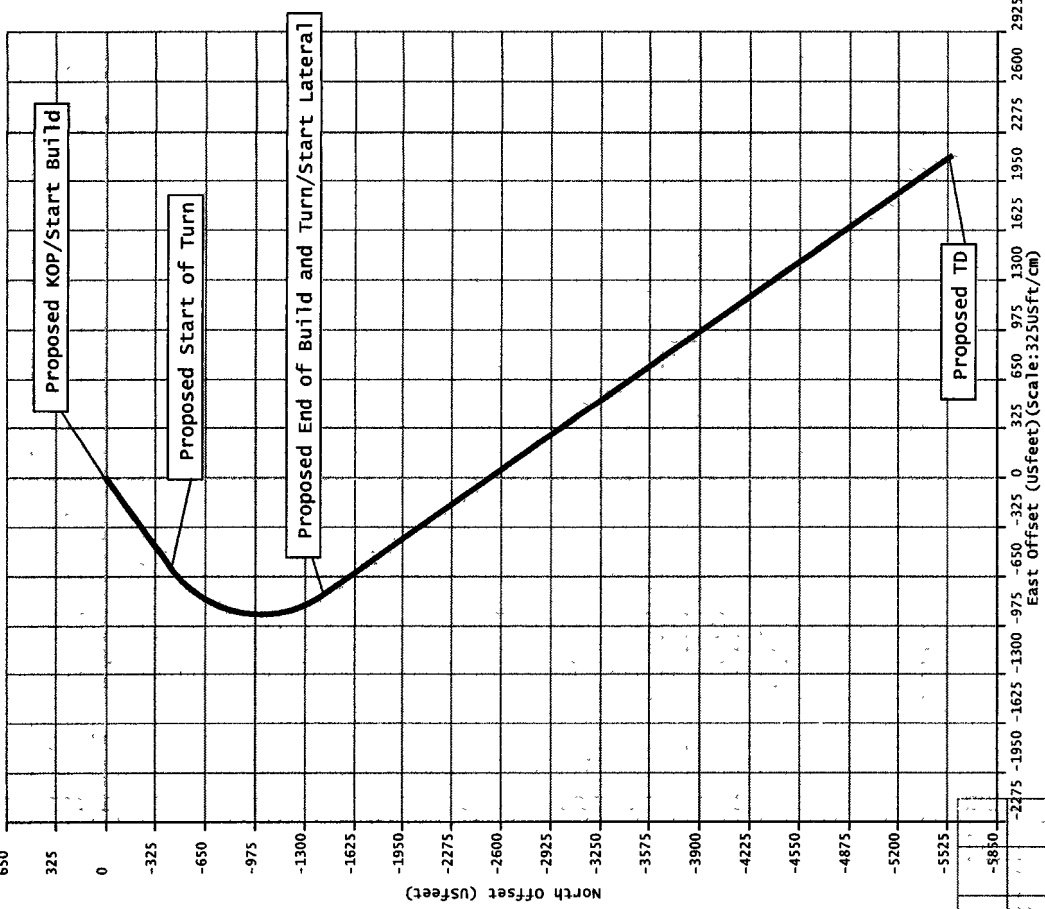
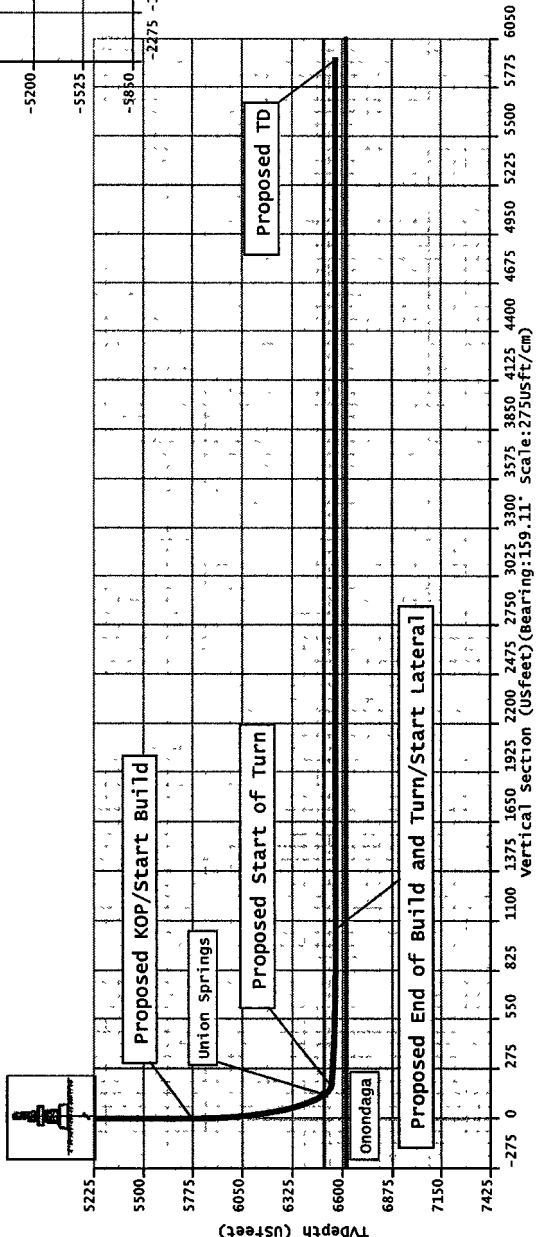
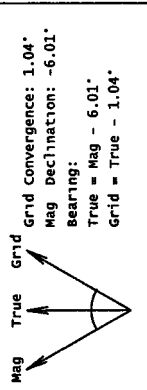
Formation Point Information:
 Name: Union Springs
 TVD (USFT): 6505.50
 Sub Sea (USFT): -4923.00
 MD (USFT): 6743.19

Plan Data for Dewing (05-100-04)R 4H

Slot: Dewing (05-100-04)R 4H
 Position: Offset is from Site centre
 +N/-S: -78.35USft Northing: 643034.53USft Latitude: 41°55'14.8"
 +E/-W: 44.36USft Easting: 2398033.66USft Longitude: -76°10'17.7"
 Elevation Above VRD: 1565.50USft

Plan Data for Dewing (05-100-04)R 4H

Logleg	Severity	Unit:	Inc	TV	Sub	OLS	Build	Turn
(USFT)	(%)	(USFT)	(USFT)	(USFT)	(USFT)	(OLSU)	(OLSU)	(OLSU)
0.00	0.00	0.00	0.00	1582.50	0.00	0.00	0.00	0.00
5777.08	0.00	0.00	5777.08	-4194.58	0.00	0.00	0.00	0.00
6950.19	87.98	234.42	6540.55	4958.05	7.50	7.50	0.18	-8.00
8067.89	90.00	145.00	6565.50	4983.00	8.00	8.00	0.00	0.00
13092.89	90.00	145.00	6565.50	4983.00	0.00	0.00	0.00	0.00



Plan Data for Dewing (05-100-04)R 4H
 Site: Dewing (05-100)R Pad
 Unit: USfeet TVD Reference:
 Company Name: Talisman Energy USA Inc.
 Position: Northing: 643112.06USft Latitude: 41°55'15.5"
 Easting: 2398007.88USft Longitude: -76°10'18.2"
 North Reference: True Grid Convergence: 1.04°
 Elevation Above VRD: 0.00USft
 Comment: Site Centre - well 1
 Well: Dewing (05-100-04)R 4H
 Type: Main-well
 File Number:
 Vertical Section: Position offset of origin from slot centre:
 +N/-S: 0.00USft Azimuth: 315.96°
 +E/-W: 0.00USft
 Magnetic Parameters:
 Model: Field strength: Declination Dip: Date:
 BGGM 31706(mT) -6.01' -29.25' 2010-09-29

RECEIVED
 FEB 18 2011
 ENVIRONMENTAL PROTECTION
 NORTHWEST REGIONAL OFFICE

Well Name: Dewing (05-100-04) R 4H
Formation: Marcellus Shale
AFE Number: 0
API Number: 0
Drilling Engineer: 0
Geologist: 0
Date: 11/18/10

County, State: Bradford Co., PA
Surf. Location: 41.920765 Lat and -76.171572 Long
BH Location: 41.905567 Lat and -76.163809 Long
Build Location: 41.920765 Lat and -76.171572 Long
Build/Turn Location: 41.919588 Lat and -76.173774 Long
KB Elevation: 1582'
Ground Elevation: 1565'

20" Conductor
 13 3/8" Surface Casing
 9 5/8" Intermediate Casing

SET COND IN BED ROCK - GROUT

Formation Depths (TVD)

FRESH WATER TBD
 COAL TBD
 FRESH WATER TBD

TOC on 13 3/8" @ Surface

TOC on 9 5/8" @ Surface

##

Wellhead Details

Casing Spool	13 3/8" x 16 3/4" 3K
Casing Spool	9 5/8" 5K x 11" 5K
Tubing Spool	11" 5K x 4 1/16" 10K

Directional Drilling Details

Section	TMD	Inc.	Azimuth	TVD	BUR	DLS	+N-S	+E-W
Nudge	0 0'	0 0'	0 0'	0 0'	0 0'	0 0'	0 0'	0 0'
Hold	0 0'	0 0'	0 0'	0 0'	####	####	0 0'	0 0'
Drop	0 0'	0 0'	0 0'	0 0'	####	####	0 0'	0 0'
Hold	0 0'	0 0'	0 0'	0 0'	####	####	0 0'	0 0'
KOP	5,777'	0 0'	0 0'	5,777'	0 0'	0 0'	0 0'	0 0'
Build	6,950'	88 0'	234.4'	6,541'	7.5'	7.5'	-428 8'	-599 4'
Turn/Land	8,068'	90 0'	145.0'	6,566'	0.2'	8 0'	-1,421 8'	-769 0'
TD	13,093'	90 0'	145 0'	6,566'	0 0'	0 0'	-5,538 1'	2,113 2'
VS Plane				145 0	VS Length			-5748 6'
					Lateral Length			5025 0'

8-3/4" Hole

Formation Depths (TVD)

TULLY TBD

MOSCOW TBD

Mud From KOP to 8,068'

80/20 Invert Emulsion
 10.0 - 12.5 ppg MW
 Vis. 45 - 55
 PV 16 - 20
 YP. 20 - 24
 FL. 5 - 8
 pH. 9 - 9.5

TOC on 5-1/2" Tall Slurry = 5777'

UPPER MARCELLUS TBD

CHERRY VALLEY TBD

UNION SPRINGS 6505'

ONONDAGA 6625'

Mud From 8,068' to TD

80/20 Invert Emulsion
 12.5 - 13.0 ppg MW
 Vis. 45 - 55
 PV 18 - 22
 YP. 22 - 26
 FL. 4 - 6
 pH. 9 - 9.5

Tubular Details

String	Size	Bit Size	Weight	Grade	Connection	Depth
Conductor 1	20	20	78 ppf	LS	WELD	120'
Surface	13 3/8	17 1/2	54 5 ppf	J-55	STC	200'
Intermediate	9 5/8	12 1/4	36 ppf	J-55	STC	1,050'
Production	5 1/2	8 3/4	20 ppf	P-110	LTC	13,093'

Gas Gradient (0.67 psi/ft)

1,000'	2,000'	3,000'	4,000'	5,000'	6,000'	7,000'	8,000'
670 psi	1340 psi	2010 psi	2680 psi	3350 psi	4020 psi	4690 psi	5360 psi

Run marker jt. 100' above KOP

PBHL
 TMD. 13,093'
 TVD: 6,565'
 Inclination 90 degrees
 Azimuth: 145.00 deg

8-3/4" Hole

Geologic Target: 6565' TVD @ 0' VS w/ 90.00 degrees updip

Target Range -30 00 ft TVD above lateral line 100.00 ft TVD left of lateral line
 30 00 ft TVD below lateral line 100 00 ft TVD right of lateral line

Drilling Rig: Saxon 173
Dir. Drilling: Weatherford
Drilling Mud: MI Swaco
Prod Cement: Halliburton

Wellhead: Weatherford
Air Package: Precision
Mud Logging: RPS
Surf Cement: Universal