

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

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Office of Oil and Gas

AUG 29 2017

WV Department of
Environmental Protection

API 47-035-03026 County Jackson District Ripley
Quad Sandyville Pad Name Adkins Field/Pool Name Ripley Storage
Farm name Adkins, Jacob Well Number 12598
Operator (as registered with the OOG) Columbia Gas Transmission, LLC
Address PO Box 1273 City Charleston State WV Zip 25314

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4302658.3 m Easting 438548.9 m
Landing Point of Curve Northing N/A Easting N/A
Bottom Hole Northing 4302494.8 m Easting 438141.2 m

Elevation (ft) 755 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 storage
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)
fresh water based w/ NaCl, KCl, polymer, starch, biocide, pH control, etc.

Date permit issued 3/2/17 Date drilling commenced 6/20/17 Date drilling ceased 7/11/17
Date completion activities began 7/17/17 Date completion activities ceased 8/10/17
Verbal plugging (Y/N) N/A Date permission granted _____ Granted by _____

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

Freshwater depth(s) ft none Open mine(s) (Y/N) depths N
Salt water depth(s) ft 657 (damp) Void(s) encountered (Y/N) depths N
Coal depth(s) ft none Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

APPROVED

NAME: Jamie Stevens
DATE: 10/26/2017

Reviewed by: _____
11/10/2017

API 47-035 - 03026 Farm name Adkins, Jacob Well number 12598

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade w/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24	20	24 GL	New	L/S 65.5	none	Y
Surface	17.5	13.375	518	New	J-55 54.5	none	Y
Coal							
Intermediate 1	12.25	9.625	2499	New	J-55 36	none	Y
Intermediate 2	8.75	7	5348	New	N-80 23	none	N
Intermediate 3							
Production	6.25	4.5	5507	New	P-110 11.6	none	N
Tubing							
Packer type and depth set							

Comment Details All depths in WR-35 referenced to rig floor (16 ft above GL), except where designated.

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	Type I	26	15	1.0	26	0 GL	3
Surface	Class A	420	15.6	1.20	504	0 GL	8
Coal							
Intermediate 1	Class A	490 lead / 350 tail	15.6 / 15.6	5.20 / 5.23	4378	0 GL	12
Intermediate 2	Class A	100 lead / 70 tail	15.6 / 15.6	5.26 / 5.36	901	4730	24
Intermediate 3							
Production	Pozmix / Class A	150 lead / 100 tail	13.1 / 15.6	1.71 / 1.23	379	2546	24
Tubing							

Drillers TD (ft) 5505 Loggers TD (ft) 5502

Deepest formation penetrated Helderberg Plug back to (ft) N/A

Plug back procedure _____ RECEIVED Office of Oil and Gas

Kick off depth (ft) 2580

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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 _____

13.375" casing: three (3) centralizers on jts 1, 2, and on top pt.

9.625" casing: eight (8) centralizers on jts 1, 2, 12, 22, 32, 42, 52, and 62.

7" casing: twelve (12) centralizers on jts 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12.

4.5" casing: ten (1) centralizers on jts 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10.

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

API 47- 035 - 03026 Farm name Adkins, Jacob Well number 12598

PRODUCING FORMATION(S)	DEPTHS		
Oriskany (natural gas storage)	4863	TVD	5383 MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 1262 psi Bottom Hole _____ psi DURATION OF TEST 0.75 hrs

OPEN FLOW Gas 5100 mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd
 GAS MEASURED BY 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		
Salt Sand			1801	1909	
Big Injun			1927	2060	
Berea			2431	2438	
Marcellus			5270	5281	
Onondaga			5281	5383	
Oriskany			5383	5418	storage gas
Helderberg			5418	5505	

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Please insert additional pages as applicable.

Drilling Contractor Yost Drilling, LLC
 Address 313 Steele Hill Road City Mt. Morris State PA Zip 15349

Logging Company Baker Hughes
 Address 106 Island Ave City Buckhannon State WV Zip 26201

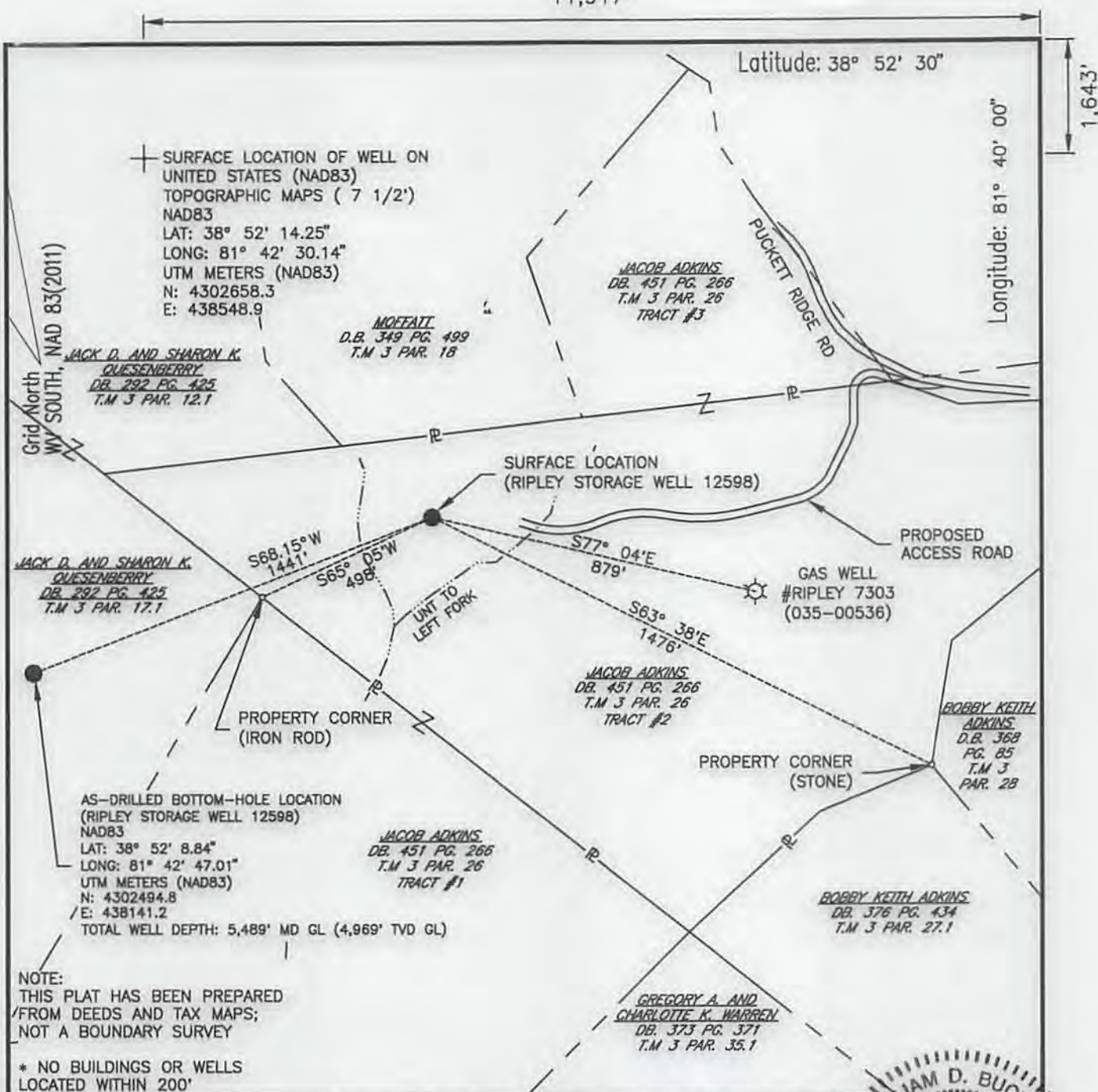
Cementing Company C&J Energy Services
 Address 1650 Hackers Creek Rd City Jane Lew State WV Zip 26378

Stimulating Company Reliance Well Services, LLC
 Address 1250 Tower Lane City Erie State PA Zip 16505

Please insert additional pages as applicable.

Completed by James Amos Telephone 304-483-0073
 Signature  Title Sr WET Engineer Date 8/28/17

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



NOTE:
THIS PLAT HAS BEEN PREPARED
FROM DEEDS AND TAX MAPS;
NOT A BOUNDARY SURVEY

* NO BUILDINGS OR WELLS
LOCATED WITHIN 200'

FILE # _____
DRAWING # 12598
SCALE: 1" = 400'
MINIMUM DEGREE OF ACCURACY: 1:2,500'
PROVEN SOURCE OF ELEVATION: STATIC GPS SURVEY WITH TIES TO NGS DATA

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 DEPARTMENT OF ENVIRONMENTAL PROTECTION.
Signed: William D. Buckel
R.P.E.: _____ L.L.S.: 1064



+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25304



DATE: AUGUST 1, 2017
OPERATOR'S WELL #: RIPLEY 12598
API WELL #: 47 035 03026
STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep Gas Liquid Injection Storage Shallow

WATERSHED: LEFT FORK ELEVATION: 755'
COUNTY/DISTRICT: JACKSON / RIPLEY QUADRANGLE: RIPLEY

SURFACE OWNER: JACOB ADKINS ACREAGE: 50
OIL & GAS ROYALTY OWNER: J.B. VAIL AND TINNIE VAIL LEASE NO. 1052730-000 (SURFACE) 51674 (BOTTOM HOLE) ACREAGE: 120

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
CLEAN OUT & REPLUG OTHER CHANGE SPECIFY: _____

TARGET FORMATION: ORISKANY SANDSTONE (STORAGE RESERVOIR) AS-DRILLED DEPTH: 5367 FT. MD GL 4847 FT. TVD GL

WELL OPERATOR COLUMBIA GAS TRANSMISSION DESIGNATED AGENT PAUL AMICK
Address 1700 MACCORKLE AVE. SE PO BOX 1273 Address 1700 MACCORKLE AVE. SE PO BOX 1273
City CHARLESTON State WV Zip Code 25325-1273 City CHARLESTON State WV Zip Code 25325-1273

11/10/2017

11/10/2017

City CHARLESTON State WV Zip Code 25225-1273 City CHARLESTON State WV Zip Code 25225-1273
 Address 1700 MACCORRIE AVE SE PO BOX 1273 Address 1700 MACCORRIE AVE SE PO BOX 1273
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 CLEAN OUT & REPLUG OTHER CHANGE SPECIFY):
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
 DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 OIL & GAS ROYALTY OWNER: LEASE NO. 105230-000 (SURFACE) 21874 (BOTTOM HOLE) ACREAGE: 150
 SURFACE OWNER: JACOB ADKINS 1.B. VAIL AND TINNIE VAIL ACREAGE: 50
 COUNTY/DISTRICT: JACKSON \ RIPLEY QUADRANGLE: RIPLEY ELEVATION: 755'
 WATERSHED: LEFT FORK
 Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

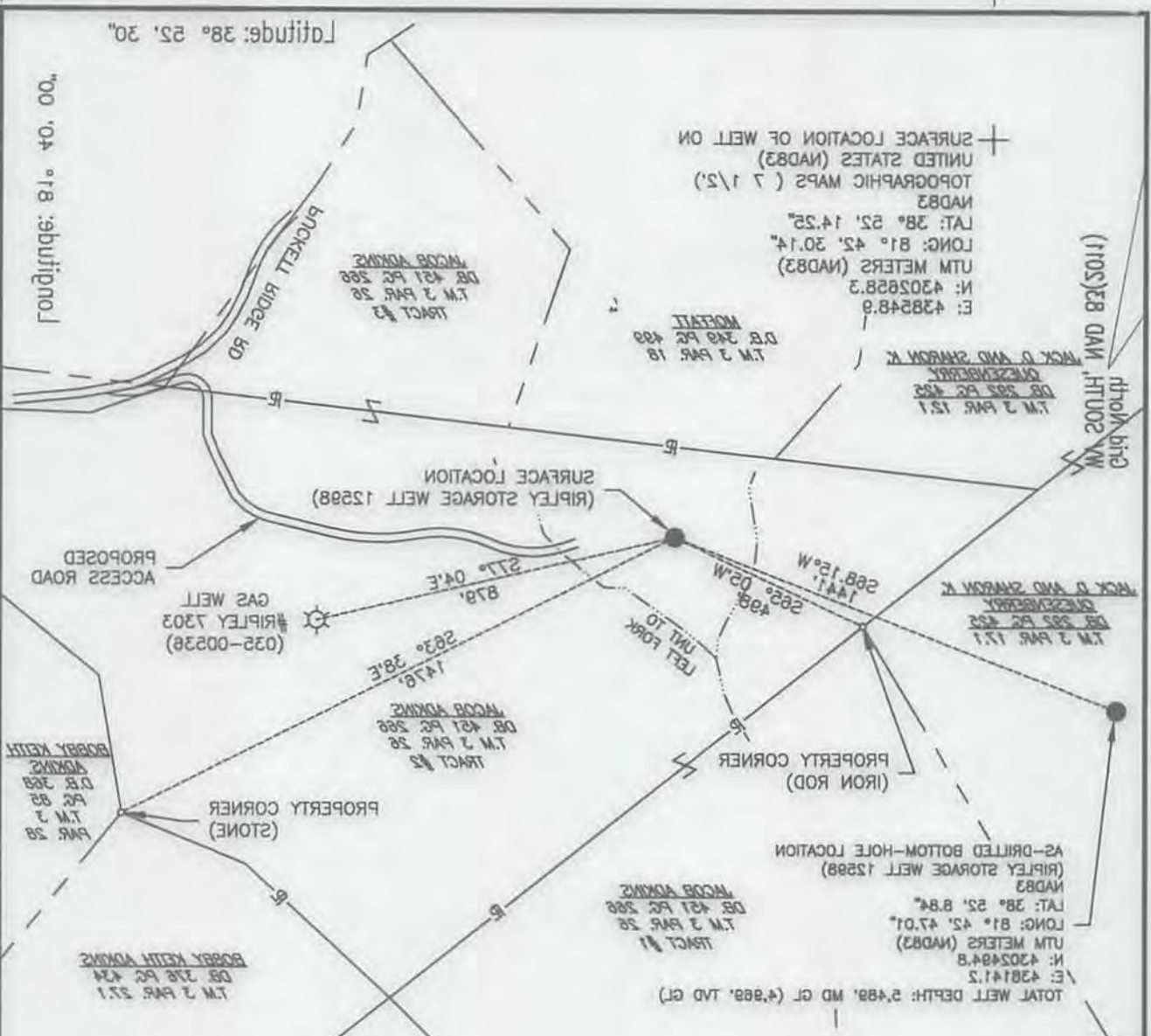
CHARLESTON, WV 25304
 801 27TH STREET
 OFFICE OF OIL & GAS
 WVDEP
 UNITED STATES TOPOGRAPHIC MAPS
 (+) DENOTES LOCATION OF WELL ON
 OF ELEVATION: PROVEN SOURCE STATIC GPS SURVEY WITH TIES TO NGS DATA
 OF ACCURACY: 1:2,500'
 MINIMUM DEGREE
 SCALE: 1" = 400'
 DRAWING # 12598
 FILE #

R.P.E.: L.L.S.: 1064
 Signed: _____
 THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
 LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY
 BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY
 PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND
 I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS



DATE: AUGUST 1, 2017
 OPERATOR'S WELL #: RIPLEY 12598
 API WELL #: 47
 STATE COUNTY PERMIT 032 03026

NOTE: THIS PLAT HAS BEEN PREPARED FROM DEEDS AND TAX MAPS; NOT A BOUNDARY SURVEY.
 * NO BUILDINGS OR WELLS LOCATED WITHIN 200'.
 TOTAL WELL DEPTH: 2,489'. MD GL (4,889'. TVD GL)
 E: 438141.2 N: 430248.8 UTM METERS (NAD83) LONG: 81° 42'. 47.07" LAT: 38° 52'. 8.84" NAD83
 AS-DRIILLED BOTTOM-HOLE LOCATION (RIPLEY STORAGE WELL 12598)
 JACOB ADKINS TRACT #1 DR. 431 PC. 288 T.M. 2 PAR. 28
 PROPERTY CORNER (IRON ROD)
 LEFT FORK
 288.15' W 144.1' N 285.49' W
 285.05' W 285.05' W
 277.04' E 878.04' E
 GAS WELL #RIPLEY 1203 (032-00238)
 PROPOSED ACCESS ROAD
 SURFACE STORAGE WELL 12598
 SURFACE LOCATION
 JACOB ADKINS TRACT #2 DR. 431 PC. 288 T.M. 2 PAR. 28
 JACOB ADKINS TRACT #3 DR. 431 PC. 288 T.M. 2 PAR. 28
 MORFITT DR. 249 PC. 498 T.M. 2 PAR. 18
 JACK D. AND SHARON K. QUINNEMAN DR. 282 PC. 422 T.M. 2 PAR. 12.1
 JACK D. AND SHARON K. QUINNEMAN DR. 282 PC. 422 T.M. 2 PAR. 12.1
 HUNTER (1105) DAN



1,194.1'

11,917'

Latitude: 38° 52'. 30"

Longitude: 81° 42'. 00"