

2018 Marcellus Shale and Utica-Point Pleasant Production Summary

Prepared by Philip A Dinterman
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This summary was prepared by the West Virginia Geological and Economic Survey (WVGES). The data summarized herein were reported by operators to the West Virginia Department of Environmental Protection (WVDEP) Office of Oil and Gas for calendar year 2018.



West Virginia Geological and Economic Survey
1 Mont Chateau Road
Morgantown, WV 26508-8079
304-594-2331
www.wvgs.wvnet.edu

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<http://www.wvgs.wvnet.edu/www/datostat/Marcellus/WVGES2018MarcellusandUticaPtPleasantProductionSummary.pdf>

2018 Marcellus Production Summary

Wells included in this overview all report production from the Marcellus, but volumes may also include gas or liquids produced from commingled formations in vertical wells. Beginning in 2013, WVDEP Office of Oil and Gas reporting requirements stated that natural gas liquids (NGLs) were to be reported separately from oil production. However, the reporting requirements and definition of the NGLs to be reported has changed several times. The current reporting for NGLs as stated in HB4270 (effective for 2018 production reporting) requires that downstream natural gas liquids accounted to a well will be reported as NGL to that well API while wellhead oil and lease condensate will be reported together as crude oil.

Selected 2017 data are shown in blue for comparison.

Number of horizontal Marcellus wells reporting production: 2,456 (2017: 2,145 wells)

Average measured depth reported: 13,844 ft.

Longest/Deepest measured depth reported: 21,638 ft.

Number of vertical Marcellus wells reporting production: 1,410 (2017: 1,421 wells)

Average vertical depth reported: 5,467 ft.

Deepest vertical depth reported: 8,790 ft.

Marcellus Gas

Total Marcellus Gas Production 2018: 1,605.5 Bcf (2017: 1,329.3 Bcf)

The 2018 volume of Marcellus gas reported represents 90.6% of the total gas volume reported for all wells in West Virginia. The total in 2017 was 87.8%.

Horizontal Well Marcellus Gas Production 2018: 1,592.6 Bcf

Vertical Well Marcellus Gas Production 2018: 10.2 Bcf

Top Gas Producing Counties 2018

1. Doddridge (424.7 Bcf)	2017: Doddridge (365.9 Bcf)
2. Tyler (262.4 Bcf)	2017: Wetzel (179.4 Bcf)
3. Ritchie (194.3 Bcf)	2017: Tyler (162.1 Bcf)
4. Wetzel (182.7 Bcf)	2017: Ritchie (149.0 Bcf)
5. Marshall (150.0 Bcf)	2017: Marshall (142.1 Bcf)
6. Harrison (117.6 Bcf)	2017: Harrison (118.2 Bcf)
7. Ohio (71.4 Bcf)	2017: Ohio (50.1 Bcf)
8. Monongalia (65.0 Bcf)	2017: Monongalia (41.3 Bcf)
9. Taylor (34.9 Bcf)	2017: Marion (36.9 Bcf)
10. Brooke (34.1 Bcf)	2017: Taylor (29.1 Bcf)

Top Operators for Gas Production 2018

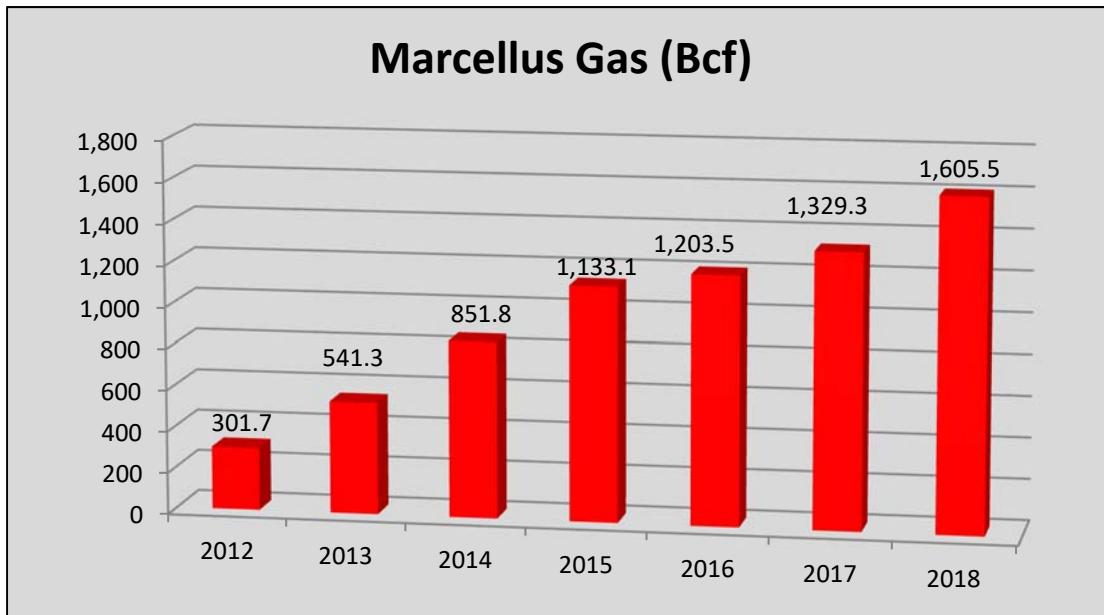
- | | |
|--|--|
| 1. Antero Resources Corp. (728.2 Bcf) | <i>2017: Antero Resources Corp. (543.6 Bcf)</i> |
| 2. EQT Production Co. (277.1 Bcf) | <i>2017: EQT Production Co. (292.9 Bcf)</i> |
| 3. Southwestern Prod Co. (201.1 Bcf) | <i>2017: Southwestern Prod Co. (149.9 Bcf)</i> |
| 4. HG Energy LLC (77.2 Bcf) | <i>2017: HG Energy LLC (82.9 Bcf)</i> |
| 5. Northeast Natural Energy (63.5 Bcf) | <i>2017: Northeast Natural Energy (39.5 Bcf)</i> |
| 6. Arsenal Resources (55.7 Bcf) | <i>2017: Jay-Bee Oil & Gas (38.8 Bcf)</i> |
| 7. CNX Gas (50.2 Bcf) | <i>2017: Arsenal Resources (33.8 Bcf)</i> |
| 8. Jay-Bee Oil & Gas (45.3 Bcf) | <i>2016: Ascent Resources (31.5 Bcf)</i> |
| 9. Tug Hill Operating (21.8 Bcf) | <i>2016: CNX Gas (28.2 Bcf)</i> |
| 10. XTO Energy (18.7 Bcf) | <i>2016: XTO Energy (21.4 Bcf)</i> |

Top Gas Wells In 2018*

*Some of these wells are located in the Marcellus region from which natural gas liquids are produced. Due to differences in operator reporting, some of these wells may include NGLs.

1. **4709502264**, WV 514461 (5.22 Bcf; EQT Production Co.; Tyler County, Completed November, 2017)
2. **4710303189**, BIG177H5 (3.94 Bcf; EQT Production Co.; Wetzel County, Completed March, 2018)
3. **4701706792**, Hawk Unit 1H (3.62 Bcf; Antero Resources Corp.; Doddridge County, Completed March, 2018)
4. **4701706796**, California Unit 1H (3.58 Bcf; Antero Resources Corp.; Doddridge County, Completed April, 2018)
5. **4709502167**, Prudense Unit 2H (3.34 Bcf; Antero Resources Corp.; Tyler County, Completed January, 2017)

Annual Comparison of Marcellus Gas Production



2018 Marcellus Shale Reported Production

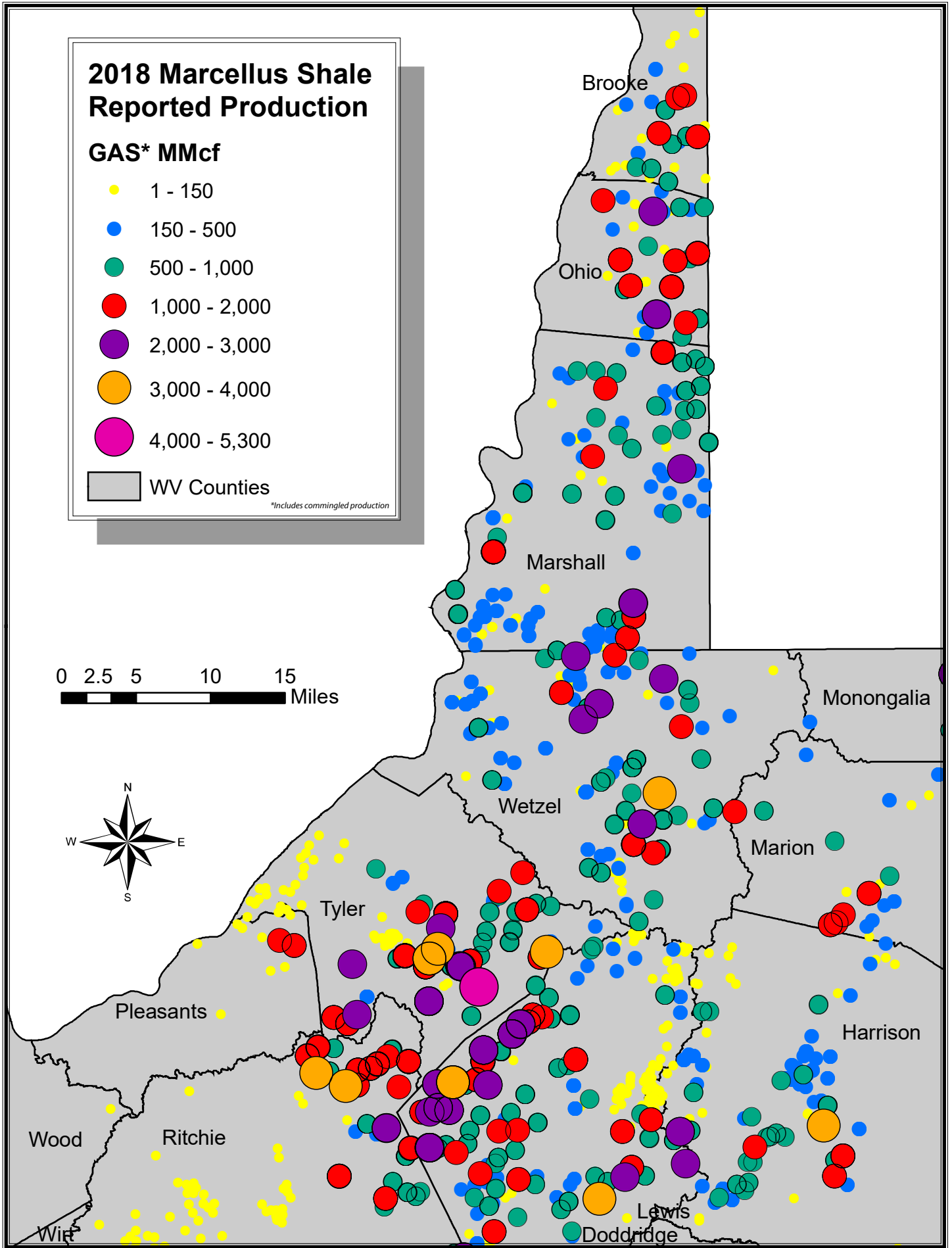
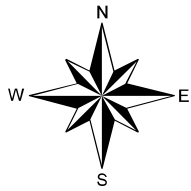
GAS* MMcf

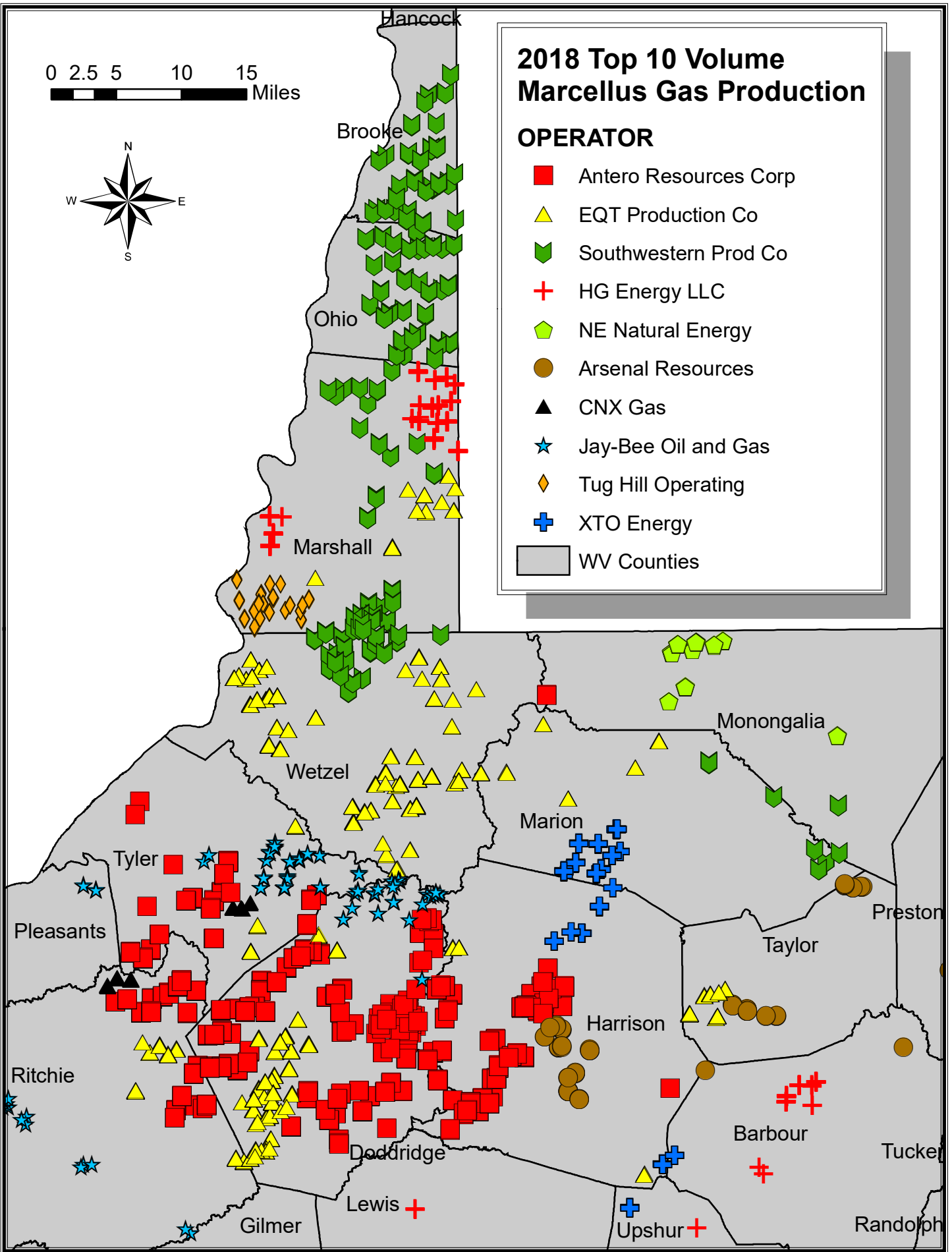
- 1 - 150
- 150 - 500
- 500 - 1,000
- 1,000 - 2,000
- 2,000 - 3,000
- 3,000 - 4,000
- 4,000 - 5,300

WV Counties

*Includes commingled production

0 2.5 5 10 15 Miles





Marcellus Natural Gas Liquids (NGLs)

Total 2018 Marcellus Natural Gas Liquids Production*: 64,233,908 bbl

HB4270 (effective for 2018 production reporting) requires that downstream natural gas liquids accounted to a well will be reported as NGL to that well API while wellhead oil and lease condensate will be reported together as crude oil. Previously, a 2016 legislative rule change in West Virginia required that condensate (lease condensate) data rather than NGL data are to be reported to WVDEP. The volumes reported are to be liquid condensate at the wellhead, not NGL volumes extracted downstream at processing plants. Therefore, 2018 NGL values are not readily comparable to NGL values reported before 2018 (2012-2017). Due to inconsistencies in operator reporting, these numbers are subject to modification.

Top Natural Gas Liquids Producing Counties 2018

1. Tyler (14,529,560 bbl)
2. Doddridge (14,064,008 bbl)
3. Ohio (9,581,629 bbl)
4. Marshall (9,088,547 bbl)
5. Ritchie (8,744,746 bbl)
6. Brooke (5,043,295 bbl)
7. Wetzell (2,896,124 bbl)

Top Operators for Natural Gas Liquids Production 2018*

1. Antero Resources Corp. (31,580,262 bbl)
2. Southwestern Production Co. (19,087,381 bbl)
3. HG Energy LLC (3,564,359 bbl)
4. CNX Gas (2,969,568 bbl)
5. Jay-Bee Oil & Gas (2,954,904 bbl)
6. Tug Hill Operating (1,744,506 bbl)
7. Chevron Appalachia (1,020,464 bbl)
8. Ascent Resources (528,101 bbl)
9. Tribune Resources (518,510 bbl)
10. Triad Hunter (265,583 bbl)

Top Natural Gas Liquids Wells In 2018

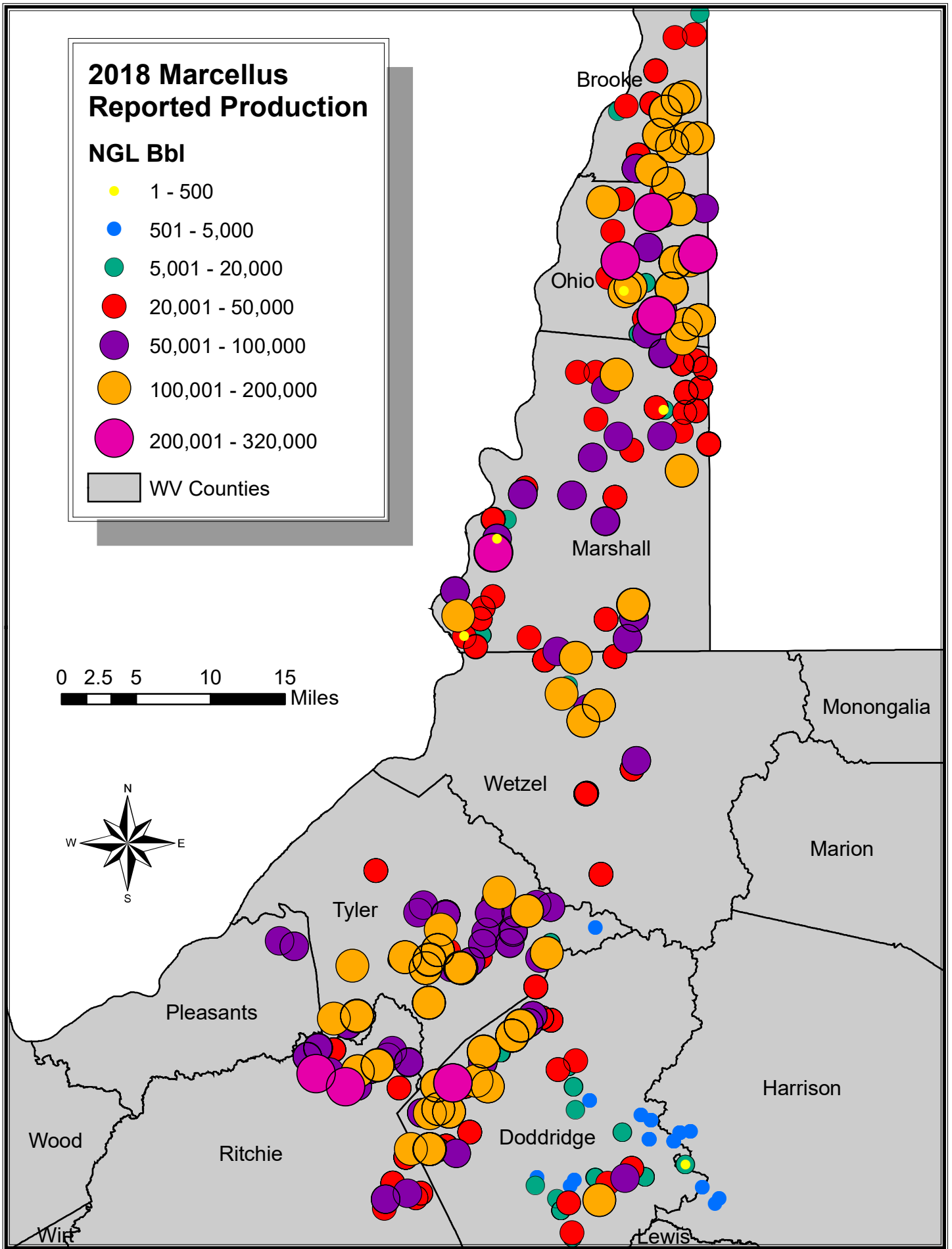
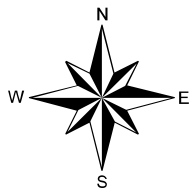
1. **4706900212**, Deborah Craig OHI 10H (316,838 bbl; Southwestern Production Co.; Ohio County, 12 months of production)
2. **4706900211**, Deborah Craig OHI 8H (313,739 bbl; Southwestern Production Co.; Ohio County, 12 months of production)
3. **4706900206**, Shawn Couch OHI 10H (293,895 bbl Southwestern Production Co.; Ohio County, 12 months of production)
4. **4706900200**, William Rogers OHI 5H (281,588 bbl Southwestern Production Co.; Ohio County, 11 months of production)
5. **4706900214**, Deborah Craig OHI 1H (256,824 bbl Southwestern Production Co.; Ohio County, 12 months of production)

2018 Marcellus Reported Production

NGL Bbl

- 1 - 500
- 501 - 5,000
- 5,001 - 20,000
- 20,001 - 50,000
- 50,001 - 100,000
- 100,001 - 200,000
- 200,001 - 320,000
- WV Counties

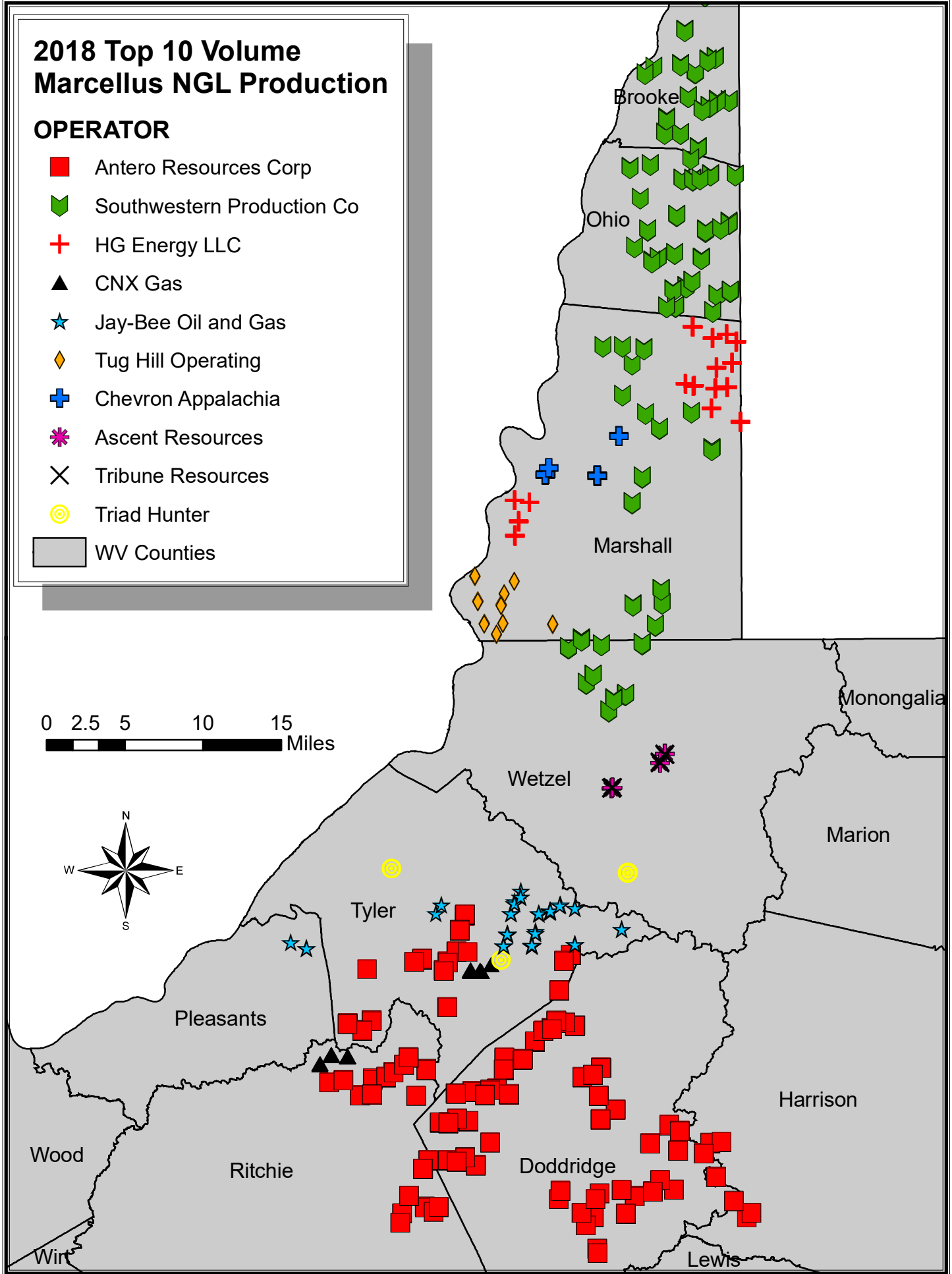
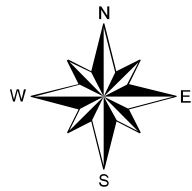
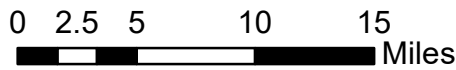
0 2.5 5 10 15 Miles



2018 Top 10 Volume Marcellus NGL Production

OPERATOR

- Antero Resources Corp
- ▼ Southwestern Production Co
- + HG Energy LLC
- ▲ CNX Gas
- ★ Jay-Bee Oil and Gas
- ◆ Tug Hill Operating
- + Chevron Appalachia
- ✱ Ascent Resources
- × Tribune Resources
- ◎ Triad Hunter
- WV Counties



2018 Activity in Utica-Point Pleasant Play

Development of the Utica-Point Pleasant natural gas play in West Virginia is continuing. Records currently on file with WVDEP and/or WVGES indicate that 21 wells have reported 2018 production. One hundred sixty-one wells have been permitted, remain in the permitting process or are in various stages of completion. Other wells targeting/testing the Utica-Point Pleasant interval may be in the permitting process but may be completed and produced from the Marcellus. Several other wells that may have been completed will likely show production for 2019.

Total 2018 Utica-Point Pleasant Gas Production: 22.5 Bcf *(2017: 18.8 Bcf)*

Individual Utica-Point Pleasant Well Production In 2018

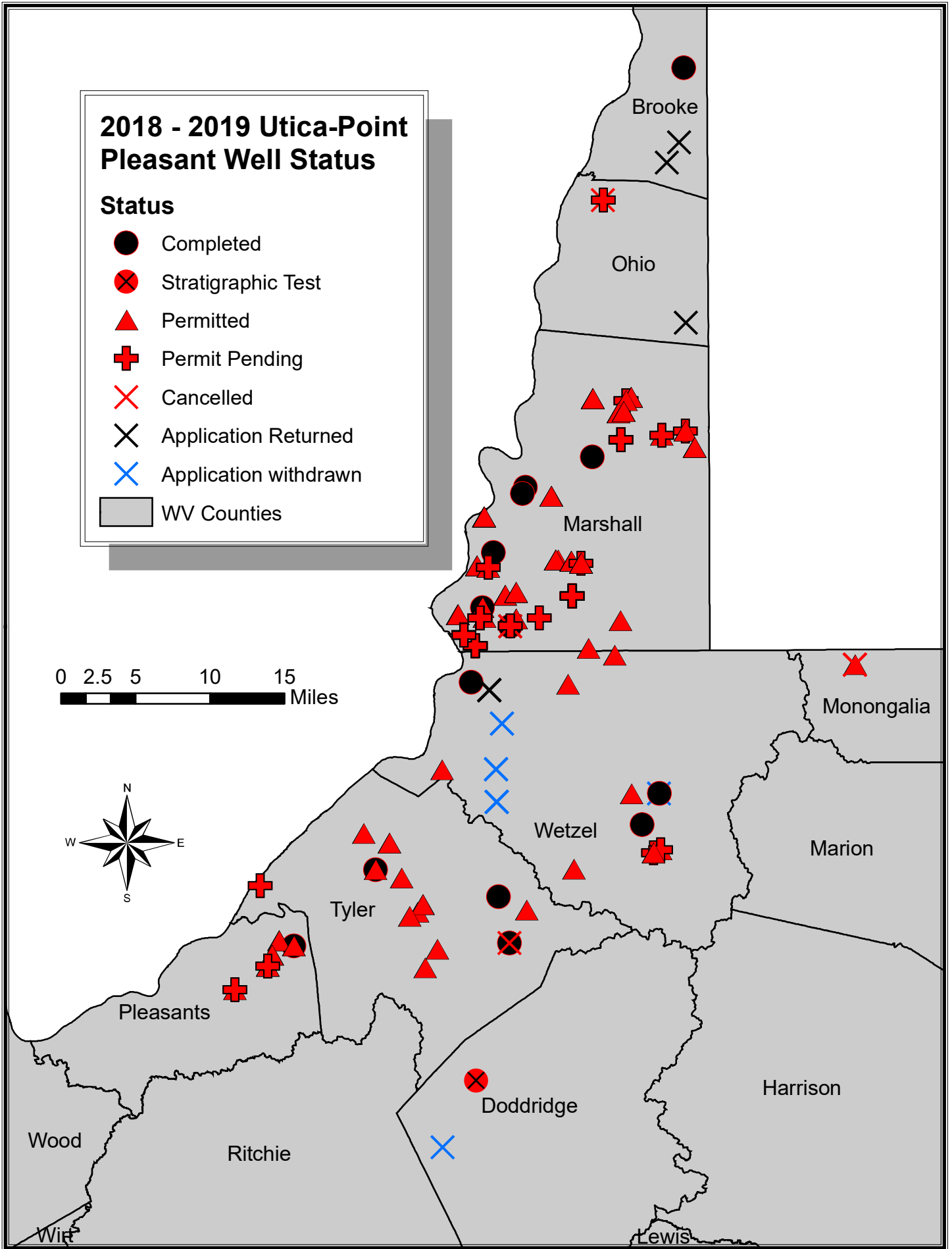
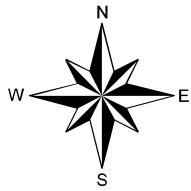
1. **4705101732**, MND6HHS, HG Energy; 4,628 MMcf Gas
2. **4705101784**, J E Curry 8H, Chevron Appalachia, 2,740 MMcf Gas, 22 bbl Oil
3. **4705101853**, O E Burge U MSH 501H, Southwestern Production Co.; 2,132 MMcf Gas
4. **4707302563**, P3S2U, Jay-Bee Oil & Gas, 1,818 MMcf Gas
5. **4707302560**, P3N2U, Jay-Bee Oil & Gas, 1,498 MMcf Gas
6. **4707302561**, P2S6U, Jay-Bee Oil & Gas, 1,400 MMcf Gas
7. **4709502330**, Larry 3U, Jay-Bee Oil & Gas; 1,176 MMcf Gas
8. **4709502273**, Rymer Unit 4HD, Antero Resources Corp.; 1,269 MMcf Gas, 960 bbl Oil
9. **4707302565**, P2N2U, Jay-Bee Oil & Gas, 873 MMcf Gas
10. **4710303151**, 513845, EQT Production; 698 MMcf Gas
11. **4709502334**, RPT8-4U, Jay-Bee Oil & Gas; 680 MMcf Gas
12. **4705101766**, Blake U-7H, Tug Hill Operating; 612 MMcf Gas
13. **4709502321**, Moe 3U, Jay-Bee Oil & Gas; 586 MMcf Gas
14. **4710303109**, Big190, 513926, EQT Production; 486 MMcf Gas
15. **4705101731**, Simms U-5H, Tug Hill Operating; 475 MMcf Gas
16. **4705101599**, Conner 6H, Chevron Appalachia; 445 MMcf Gas
17. **4709502128**, Stew-Win 1300, Triad Hunter; 439 MMcf Gas, 12,390 bbl NGLs, 391 bbl Oil
18. **4710302973**, Messenger WTZ 3H U, Southwestern Production Co.; 330 MMcf Gas
19. **4710302976**, Pribble 6HU, EQT Production; 256 MMcf Gas
20. **4709502311**, Dopey 7U, Jay-Bee Oil & Gas; 127 MMcf Gas
21. **4700900106**, Samuel Hubbard BRK 3H, Southwestern Production Co.; 87 MMcf Gas, 542 bbl Oil

2018 - 2019 Utica-Point Pleasant Well Status

Status

- Completed
- ⊗ Stratigraphic Test
- ▲ Permitted
- + Permit Pending
- × Cancelled
- × Application Returned
- × Application withdrawn
- WV Counties

0 2.5 5 10 15 Miles

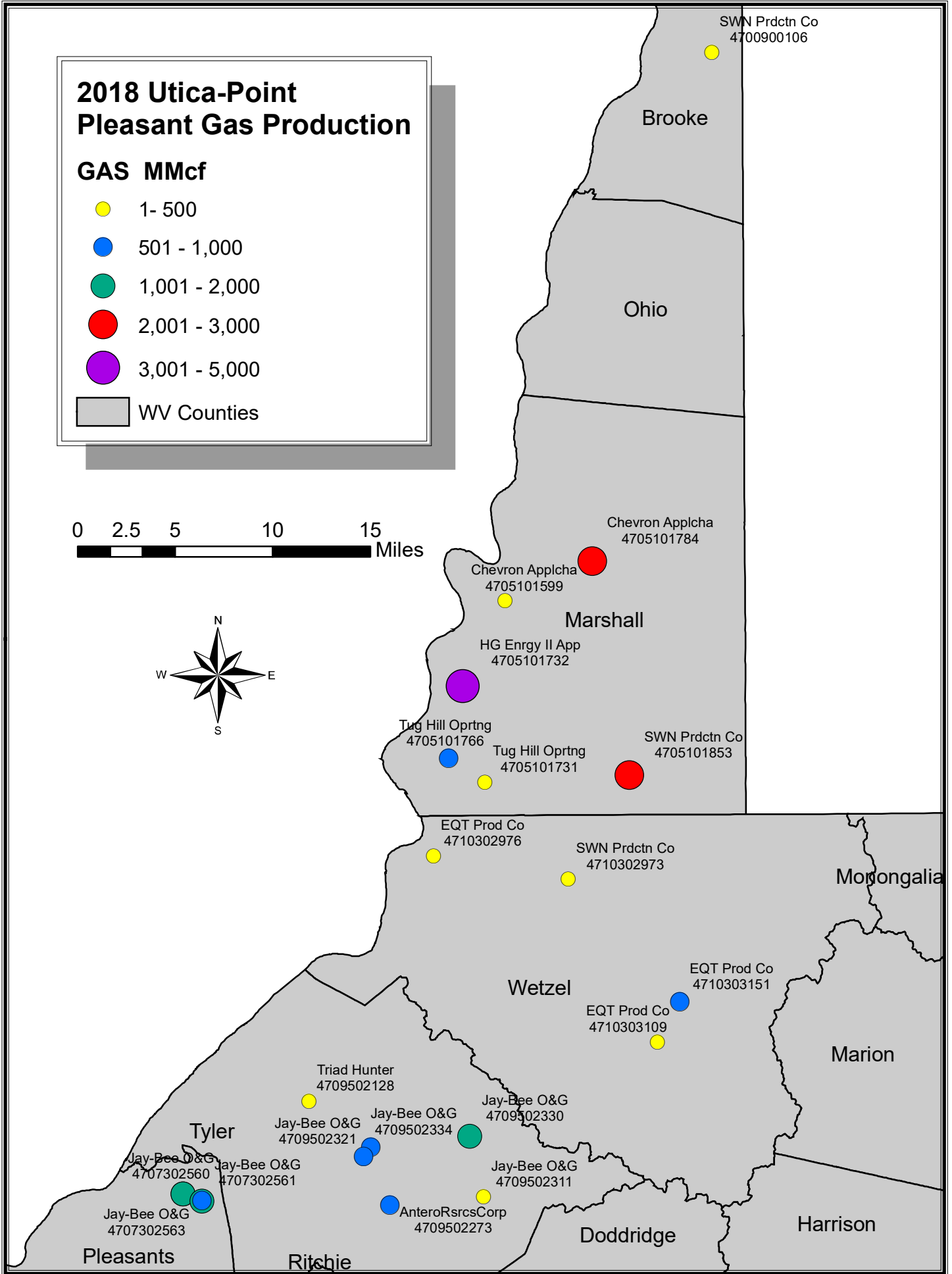
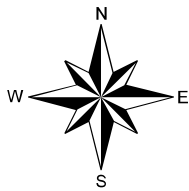
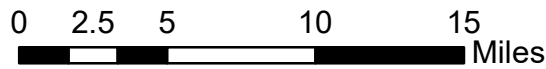


2018 Utica-Point Pleasant Gas Production

GAS MMcf

- 1- 500
- 501 - 1,000
- 1,001 - 2,000
- 2,001 - 3,000
- 3,001 - 5,000

WV Counties



Disclaimer:

These production volumes represent data acquired by WVGES as of August 21, 2019. This dataset uses the data posted by WVDEP as of 6/17/2019. Data from several operators reporting Marcellus and Utica-Point Pleasant production in 2018 may not have been available at the time of this report; therefore, the values listed above may change as more data become available. Additionally, these volumes represent the total production from a given well and may be commingled in vertical wells from multiple formations, including the Marcellus Formation.

Glossary

bbl-barrel

Bcf-billion cubic feet

Mcf-thousand cubic feet

MMcf-million cubic feet

NGL-natural gas liquids