WEST VIRGINIA DEPARTMENT OF COMMERCE
GEOLOGICAL & ECONOMIC SURVEY

2017 Marcellus Shale and Utica-Point Pleasant Production Summary

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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 2017.

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These production volumes represent data acquired by WVGES as of July 18, 2018. This dataset uses the data posted by WVDEP as of 6/6/2018. Data from several operators reporting Marcellus and Utica-Point Pleasant production in 2017 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 Shale.

Glossary

bbl-barrel
Bcf-billion cubic feet
Mcf-thousand cubic feet
MMcf-million cubic feet
NGL-natural gas liquids

2017 Marcellus Shale Production Summary

Wells included in this overview all report production from the Marcellus Shale, but volumes may also include gas or liquids produced from commingled formations. "Liquids" refer to all heavier-chain hydrocarbons produced and may include oil as well as the natural gas liquids ethane, pentane, butane, hexane, etc. 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. An examination of the numbers shows that some NGLs were included in oil production; therefore, reported oil and NGL numbers were combined and are referred to as "Liquids" in this report. A 2016 legislative rule changed the reporting requirements for NGL production volumes so that condensate collected at the wellhead is reported and downstream NGLs extracted at processing plants is not reported separately, but is instead included in the gas volume therefore increasing some of the Gas volumes reported in some areas/wells. Selected 2016 data are shown in blue for comparison.

Number of horizontal Marcellus wells reporting production: 2145 *(2016: 1862 wells)*

Average measured depth reported: 13,551 ft.
Longest/Deepest measured depth reported: 21,102 ft.

Number of vertical Marcellus wells reporting production: 1421 *(2016: 1425 wells)*

Average vertical depth reported: 5,476 ft.
Deepest vertical depth reported: 8,790 ft

Total Marcellus Gas Production 2017: 1,329.3 Bcf *(2016: 1,203.5 Bcf)*

The 2017 volume of Marcellus gas reported represents 87.8% of the total gas volume reported for all wells in West Virginia. The total in 2016 was 86.9%.

Horizontal Well Marcellus Gas Production 2017: 1,318.5 Bcf
Vertical Well Marcellus Gas Production 2017: 10.8 Bcf

Top Gas Producing Counties 2017

1. Doddridge (365.9 Bcf)	*2016: Doddridge (322.6 Bcf)*
2. Wetzel (179.4 Bcf)	*2016: Wetzel (193.3 Bcf)*
3. Tyler (162.1 Bcf)	*2016: Marshall (131.4 Bcf)*
4. Ritchie (149.0 Bcf)	*2016: Ritchie (125.2 Bcf)*
5. Marshall (142.1 Bcf)	*2016: Harrison (119.7 Bcf)*
6. Harrison (118.2 Bcf)	*2016: Tyler (115.5 Bcf)*
7. Ohio (50.1 Bcf)	*2016: Ohio (48.3 Bcf)*
8. Monongalia (41.3 Bcf)	*2016: Taylor (34.6 Bcf)*
9. Marion (36.9 Bcf)	*2016: Marion (30.0 Bcf)*
10. Taylor (29.1 Bcf)	*2016: Monongalia (26.6 Bcf)*

Top Operators for Gas Production 2017

1. Antero Resources Corp (543.6 Bcf)	*2016: Antero Resources Corp (472.7 Bcf)*
2. EQT Production Co (292.9 Bcf)	*2016: EQT Production (271.4 Bcf)*
3. Southwestern Prod Co (149.9 Bcf)	*2016: Southwestern Prod Co (111.8 Bcf)*
4. HG Energy (82.9Bcf)	*2016: HG Energy (93.7 Bcf)*

5. Northeast Natural Energy (39.5 Bcf)	*2016: Ascent Resources (41.7 Bcf)*
6. Jay-Bee Oil & Gas (38.8 Bcf)	*2016: Jay-Bee Oil & Gas (36.1 Bcf)*
7. Arsenal Resources (33.8 Bcf)	*2016: Arsenal Resources (35.7 Bcf)*
8. Ascent Resources (31.5 Bcf)	*2016: CNX Gas (25.6 Bcf)*
9. CNX Gas (28.2 Bcf)	*2016: Northeast Natural Energy (22.8 Bcf)*
10. XTO Energy (21.4 Bcf)	*2016: Triad Hunter (21.3 Bcf)*
11. Chevron Appalachia (18.7 Bcf)	*2016: Tug Hill Operating (21.2 Bcf)*

Top Gas Wells In 2017

*These wells are all located in the region of the Marcellus Shale from which natural gas liquids are produced. Due to the 2016 legislative rule change in West Virginia that removed requirements for separate natural gas liquids reporting, these volumes likely include NGLs.

1. **4709502167**, Prudense Unit 2H (4.92 Bcf; Antero Resources Corp; Tyler County, Completed January, 2017)
2. **4701706727**, Nova Unit 2H (4.50 Bcf; Antero Resources Corp; Doddridge County, Completed March, 2017)
3. **4709502166**, Prudence Unit 1H (4.46 Bcf; Antero Resources Corp; Tyler County, Completed January, 2017)
4. **4709502165**, Tabor Unit 2H (4.31 Bcf; Antero Resources Corp; Tyler County, Completed January, 2017)
5. **4709502163**, Banner Unit 2H (4.29 Bcf; Antero Resources Corp; Tyler County, Completed January, 2017)
6. **4701706726**, Nova Unit 1H (4.02 Bcf; Antero Resources Corp; Doddridge County, Completed March, 2017

Total 2017 Marcellus Liquids Production*: 11,651,945 bbl *(2016: 6,501,038 bbl, 2015: 10,210,805 bbl)*

The 2017 volume of Marcellus liquids reported represents 90.7% of the total liquids volume reported for all wells

Horizontal Well Marcellus Liquids Production 2017: 11,639,517 bbl

Vertical Well Marcellus Liquids Production 2017: 12,428 bbl

** 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.*

Top Liquids Producing Counties 2017*

1. Ritchie (3,398,621 bbl)	*2016: Ohio (1,727,892 bbl)*
2. Marshall (2,069,618 bbl)	*2016: Marshall (1,544,250 bbl)*
3. Tyler (2,056,778 bbl)	*2016: Ritchie (952,760 bbl)*
4. Ohio (1,587,719 bbl)	*2016: Brooke (703,033 bbl)*
5. Brooke (1,161,297 bbl)	*2016: Doddridge (608,913 bbl)*
6. Doddridge (852,614 bbl)	*2016: Tyler (544,899 bbl)*
7. Wetzel (511,167 bbl)	*2016: Wetzel (406,831 bbl)*

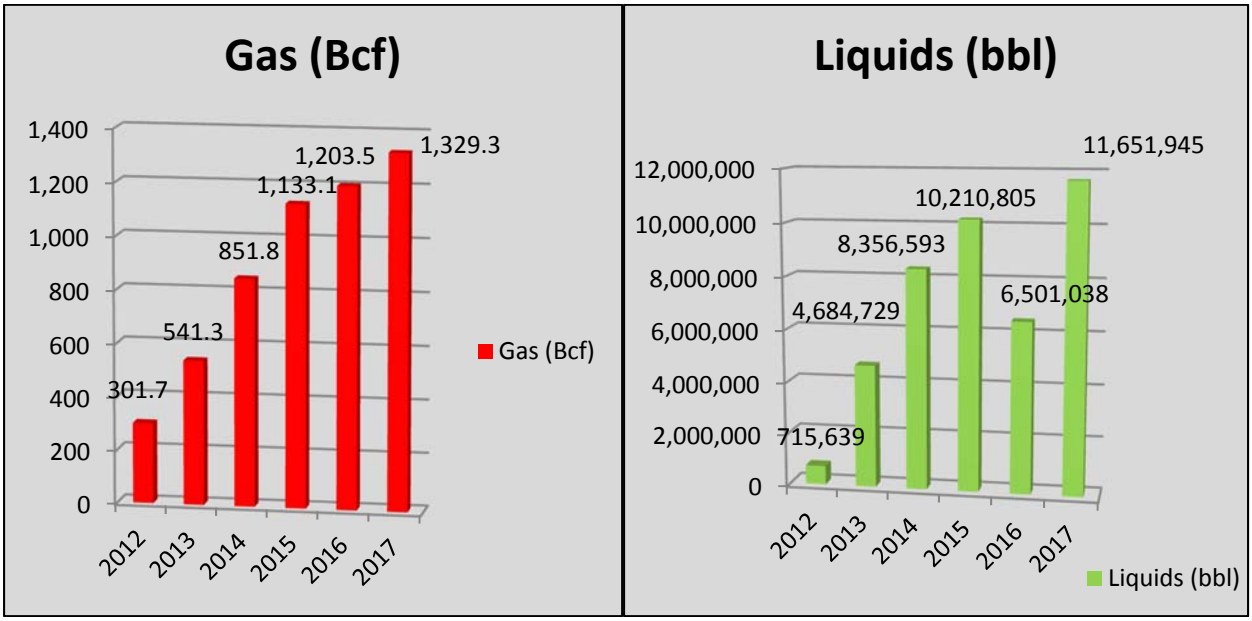
Top Operators for Liquids Production 2017*

1. CNX Gas LLC (3,627,760 bbl)	*2016: Southwestern Production Co (2,771,827 bbl)*
2. Southwestern Production Co (3,197,858 bbl)	*2016: Antero Resources Corp (1,399,813 bbl)*
3. Antero Resources Corp (2,043,798 bbl)	*2016: EQT Production Co (659,664 bbl)*
4. HG Energy LLC (1,006,739 bbl)	*2016: HG Energy LLC (536,403 bbl)*
5. EQT Production Co (720,504 bbl)	*2016: Chevron Appalachia (446,846 bbl)*
6. Chevron Appalachia (590,902 bbl)	*2016: Tug Hill Operating (277,513 bbl)*
7. Jay-Bee Oil & Gas (221,127 bbl)	*2016: Jay-Bee Oil & Gas (161,921 bbl)*
8. Tug Hill Operating (197,582 bbl)	*2016: CNX Gas LLC (135,651 bbl)*
9. Triad Hunter (21,221 bbl)	*2016: Triad Hunter (51,314 bbl)*
10. Ascent Resources (11,706 bbl)	*2016: Ascent Resources (45,634 bbl)*

Top Liquids Wells In 2017

1. **4708510068**, PEN 2 BHS (193,382 bbl; CNX Gas Co LLC; Ritchie County, 8 months of production)
2. **4708510067,** PEN 2 AHS (173,800 bbl; CNX Gas Co LLC; Ritchie County, 8 months of production)
3. **4708510075**, PEN 2 KHS (164,072 bbl CNX Gas Co LLC; Ritchie County, 8 months of production)
4. **4708510073**, PEN 2 HHS (148,666 bbl CNX Gas Co LLC; Ritchie County, 8 months of production)
5. **4708510074**, PEN 2 JHS (135,580 bbl CNX Gas Co LLC; Ritchie County, 8 months of production)

Yearly Comparison of Marcellus Production



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2017 Activity in Utica-Point Pleasant Play

Development of the Utica-Point Pleasant play in West Virginia is continuing. Using records currently on file with WVDEP and/or WVGES, fifteen wells have reported 2017 production. Eighty-two wells have been permitted, remain in the permitting process or are in various stages of completion. Other wells targeting the Utica-Point Pleasant interval may be in the permitting process but may include other geologic intervals. Several other wells that may have been completed will likely show production for 2018.

Total 2017 Utica-Point Pleasant Gas Production*: 18.8 Bcf *(2016: 16.3 Bcf)*

Total 2017 Utica-Point Pleasant Liquids Production*: 3,853 bbl *(2016: 5,581 bbl, 2015: 38,010 bbl)*

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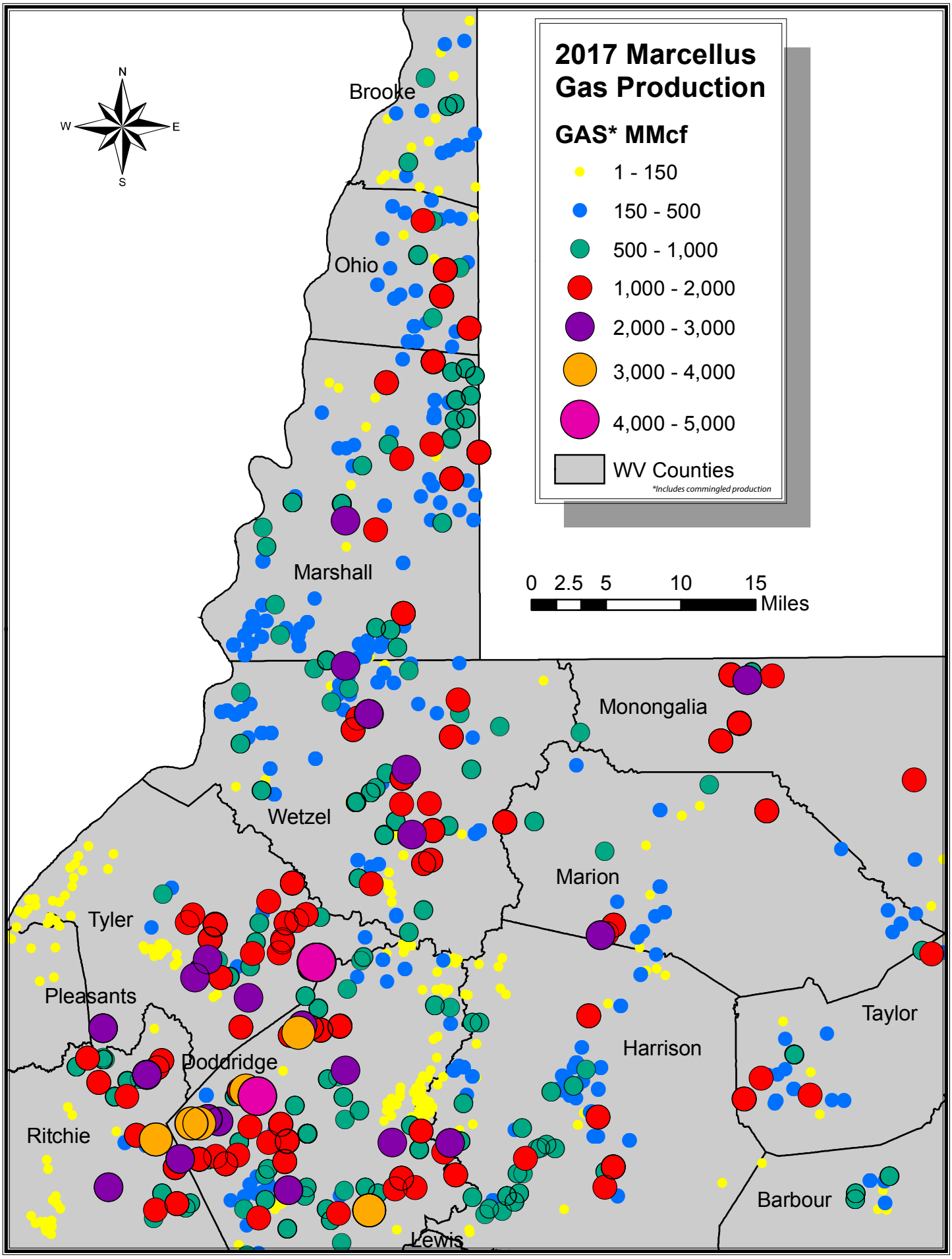
Individual Utica-Point Pleasant Well Production In 2017

1. **4705101853,** O E Burge U MSH 501H, Southwestern Production Co; 4,118 MMcf Gas
2. **4705101732**, MND6HHS, HG Energy; 3,889 MMcf Gas
3. **4710303151**, 513845, EQT Production; 1,919 MMcf Gas, 15 bbl Liquids
4. **4709502334**, RPT8-4U, Jay-Bee Oil & Gas; 1,450 MMcf Gas
5. **4709502273**, Rymer Unit 4HD, Antero Resources Corp; 1,269 MMcf Gas, 3,547 bbl Liquids
6. **4705101766**, Blake U-7H, Tug Hill Operating; 1,125 MMcf Gas
7. **4709502321**, Moe 3U, Jay-Bee Oil & Gas; 1,122 MMcf Gas, 19 bbl Liquids
8. **4709502330**, Larry 3U, Jay-Bee Oil & Gas; 1,046 MMcf Gas
9. **4709502311**, Dopey 7U, Jay-Bee Oil & Gas; 761 MMcf Gas, 196 bbl Liquids
10. **4710302973**, Messenger WTZ 3H U, Southwestern Production Co; 480 MMcf Gas
11. **4710303109**, Big190, 513926, EQT Production; 477 MMcf Gas
12. **4705101599**, Conner 6H, Chevron Appalachia; 445 MMcf Gas
13. **4710302976**, Pribble 6HU, EQT Production; 363 MMcf Gas
14. **4705101731**, Simms U-5H, Tug Hill Operating; 238 MMcf Gas
15. **4700900106**, Samuel Hubbard BRK 3H, Southwestern Production Co; 128 MMcf Gas



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Data Source: WVDEP
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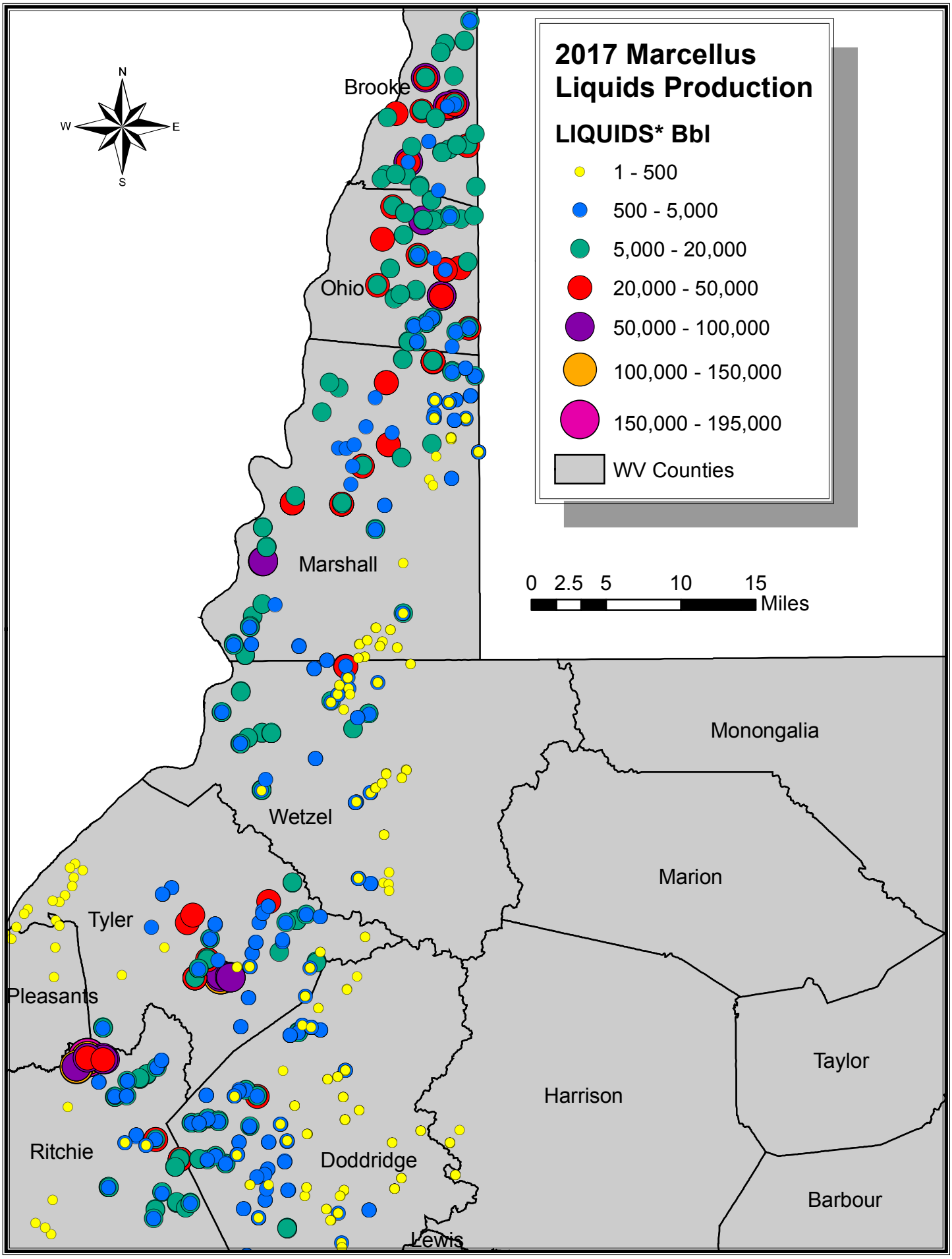

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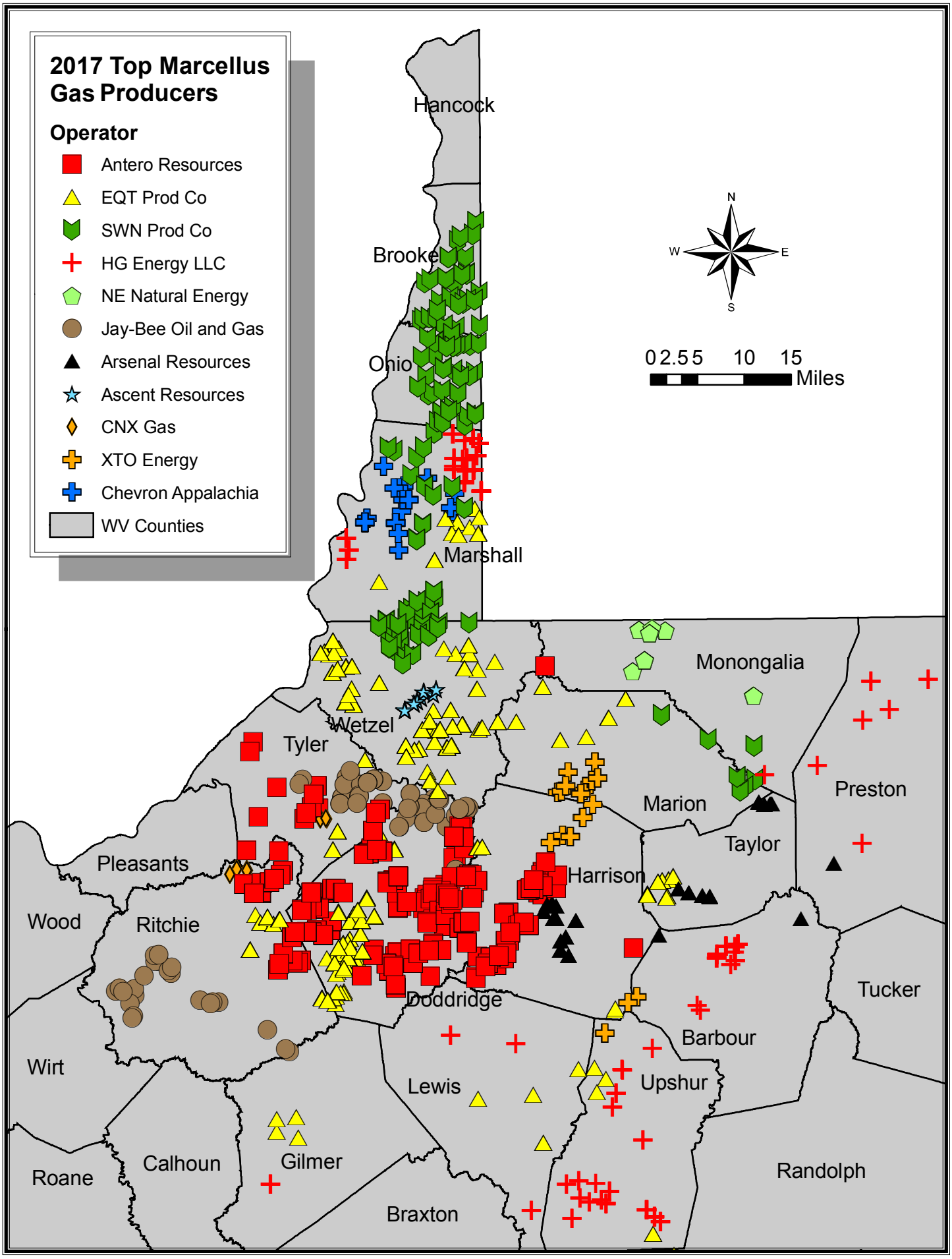

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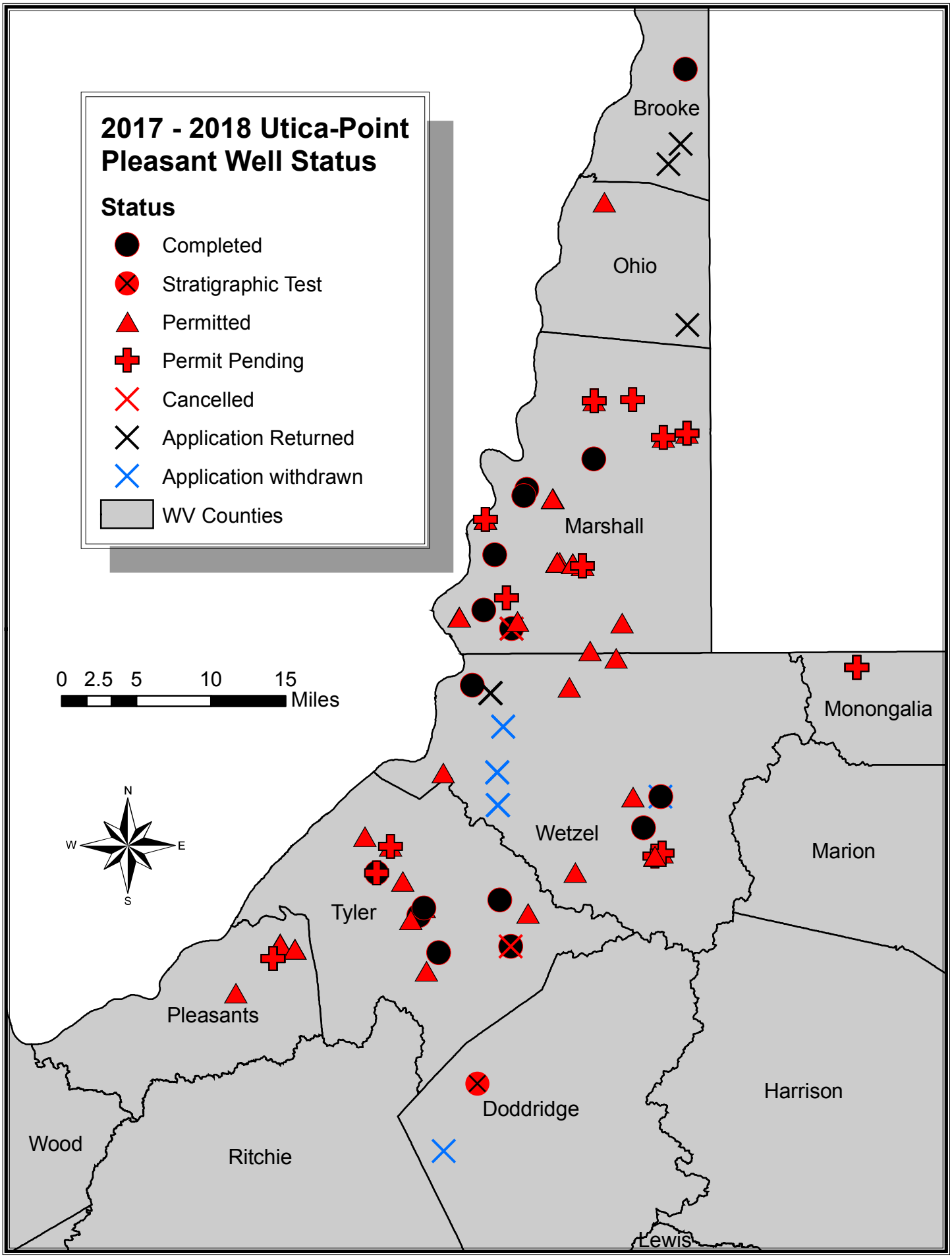

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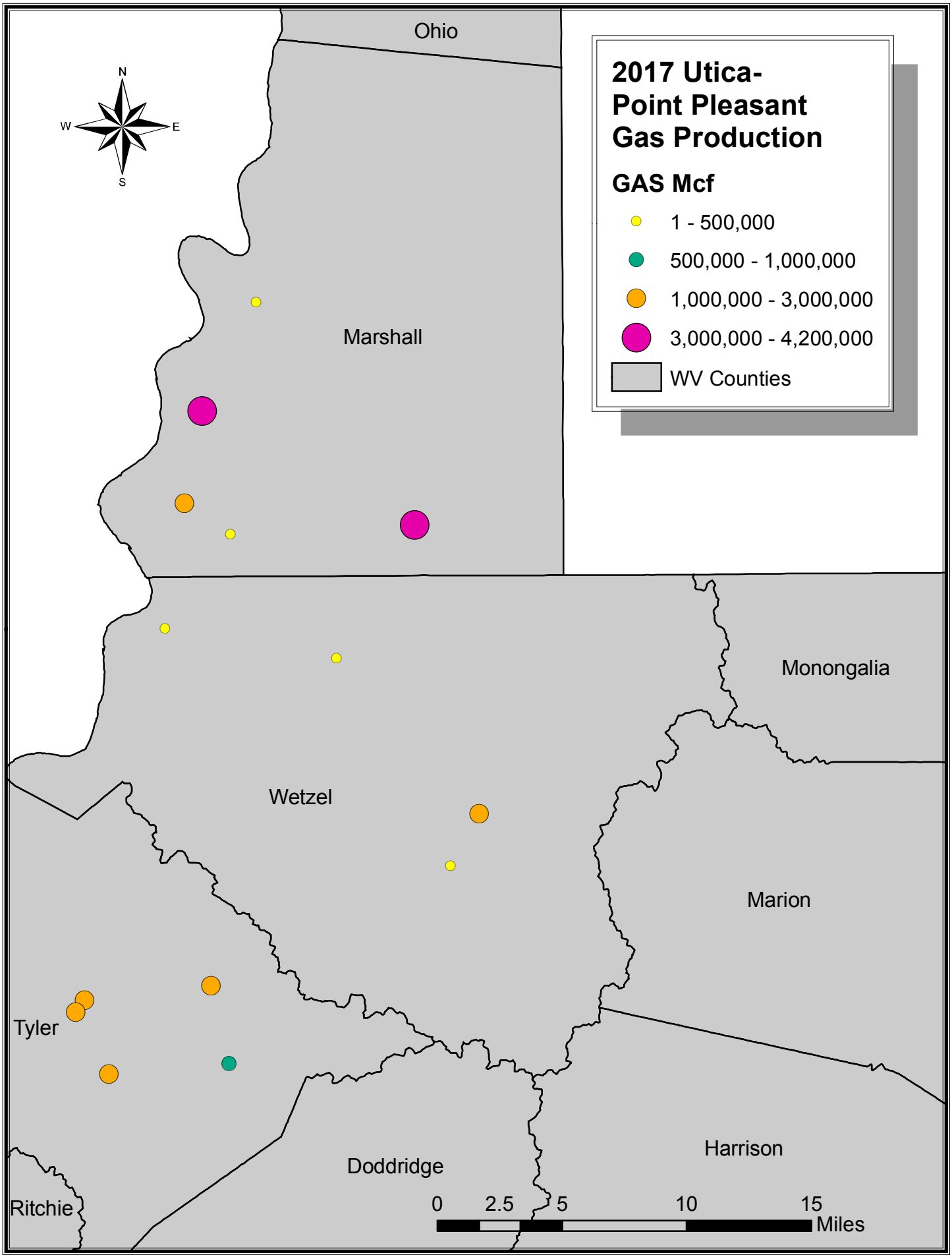

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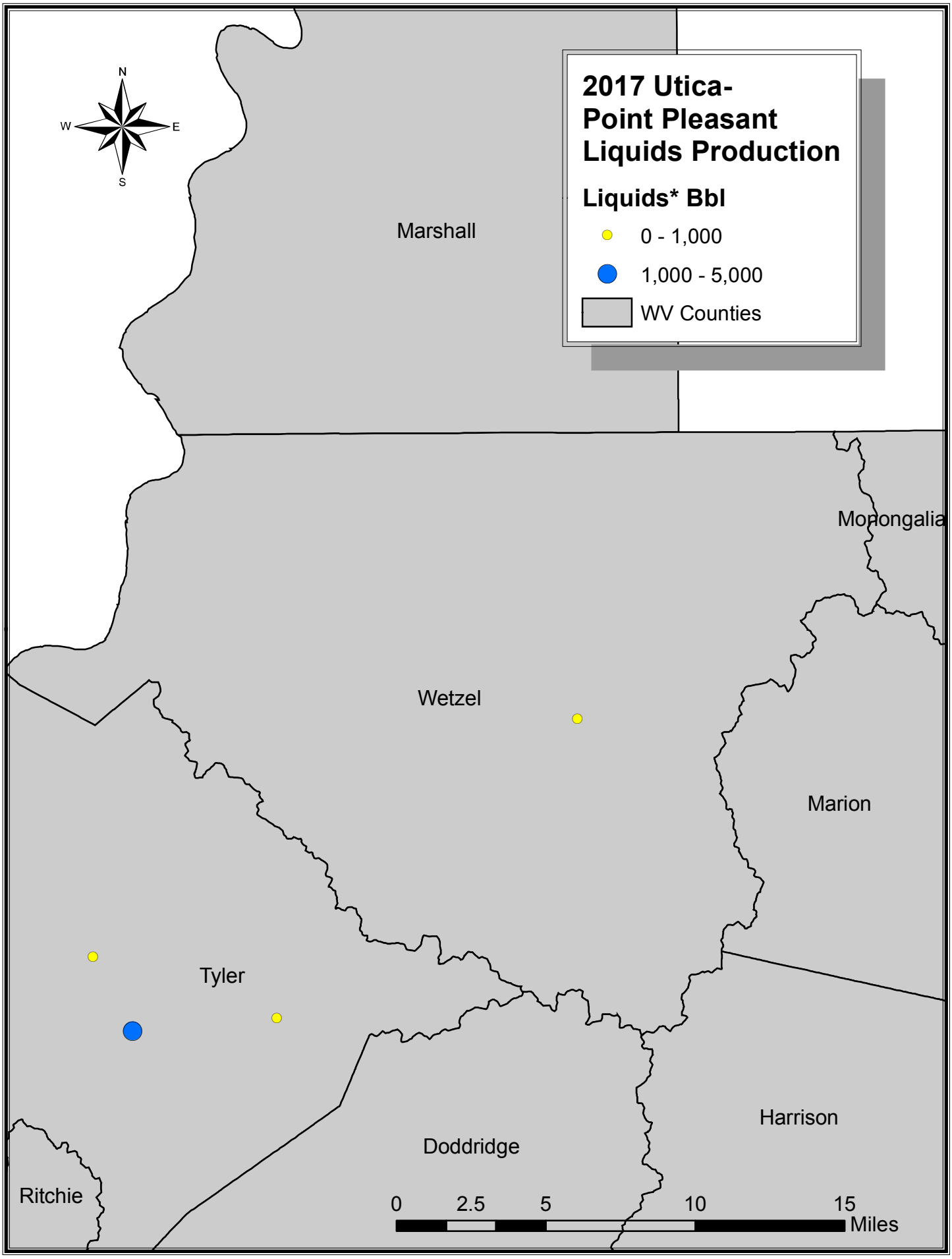

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