

RRH: SOM-2

LRH: SAPUTRA ET AL.

Forecast of Economic Gas production in the Marcellus

Supporting Online Materials-2: Probability of Survival Plots, Maps of Probability of Success and Maps of Infill Potentials

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SUPPORTING ONLINE MATERIALS-2(A): PROBABILITY OF SURVIVAL PLOTS OF MARCELLUS

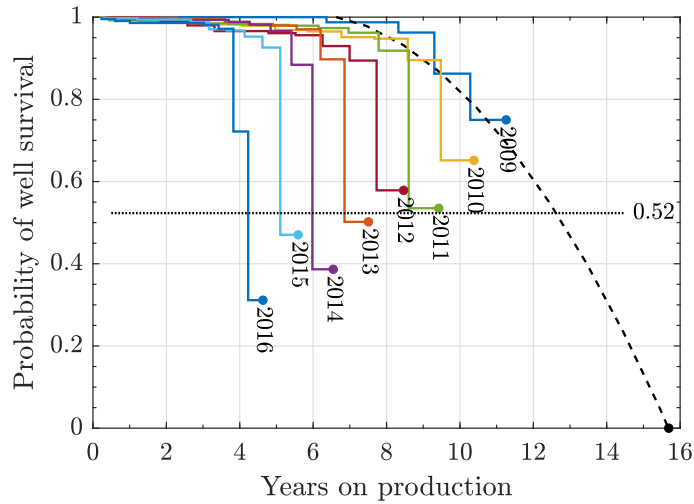


Figure 1. Probability of well survival for Northeast Core. The projected time of survival is 15.7 years.

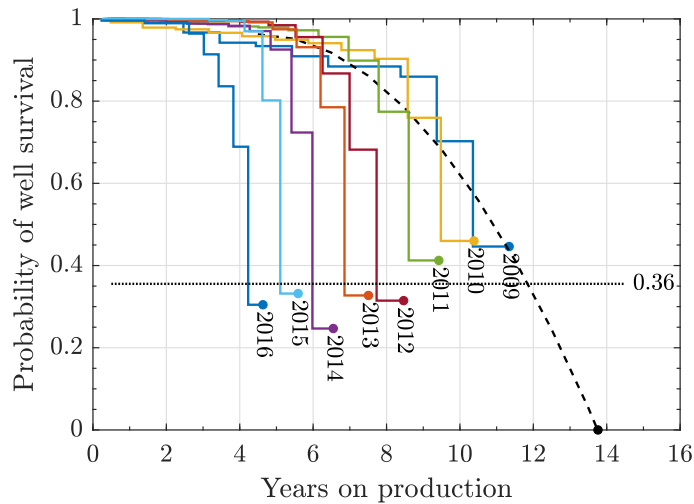


Figure 2. Probability of well survival for Southwest Core. The projected time of survival is 13.8 years.

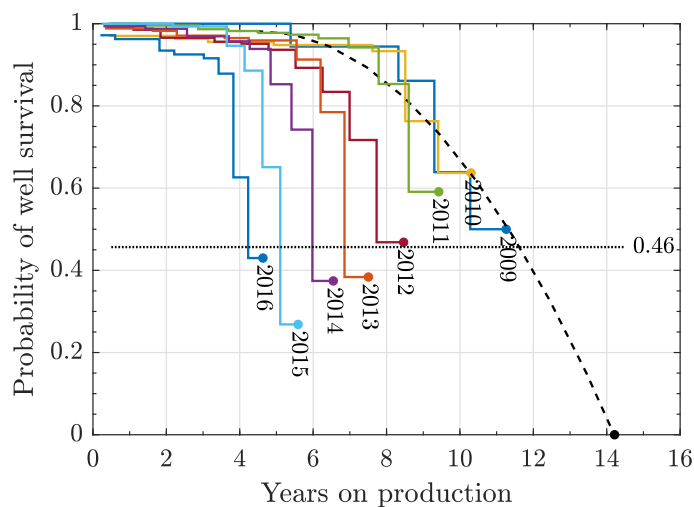


Figure 3. Probability of well survival for Marcellus Noncore. The projected time of survival is 14.2 years.

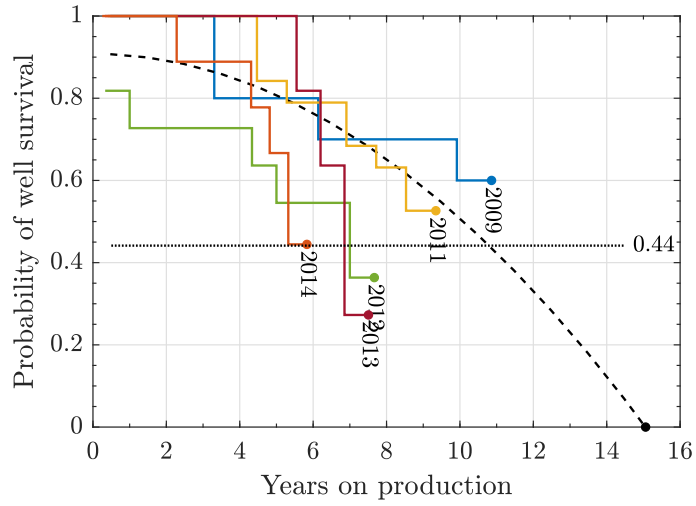


Figure 4. Probability of well survival for Marcellus Outer. The projected time of survival is 15.1 years.

Table 1. Maximum time of survival for Marcellus Region.

Reservoir Quality	Average Survival Probability	Max. Time of Survival (years)
Northeast Core	0.52	15.7
Southwest Core	0.36	13.8
Marcellus Noncore	0.46	14.2
Marcellus Outer	0.44	15.1

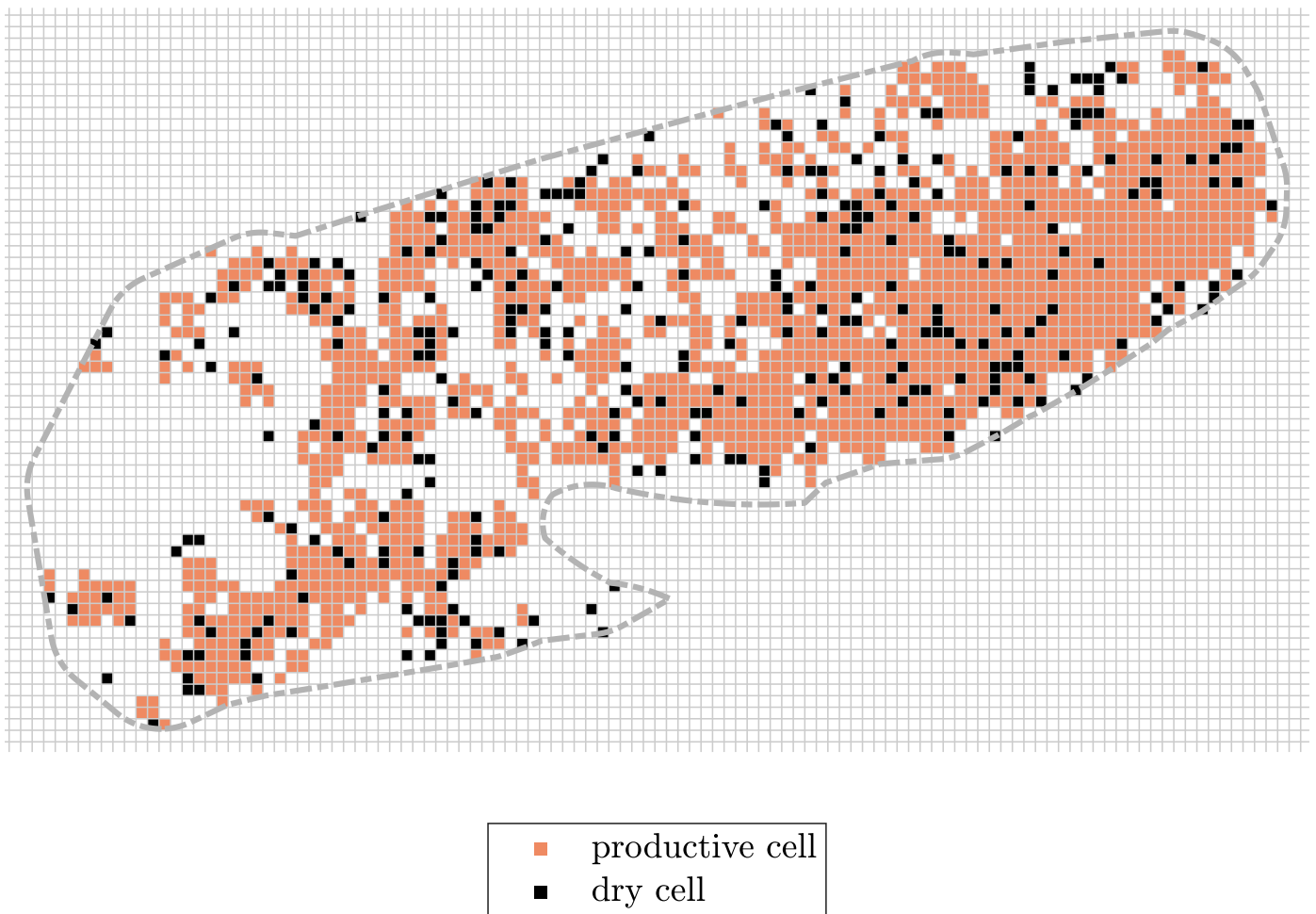


Figure 5. Maps of tested cells for Haynesville Formation in the Northeast Core.

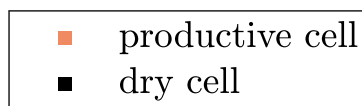
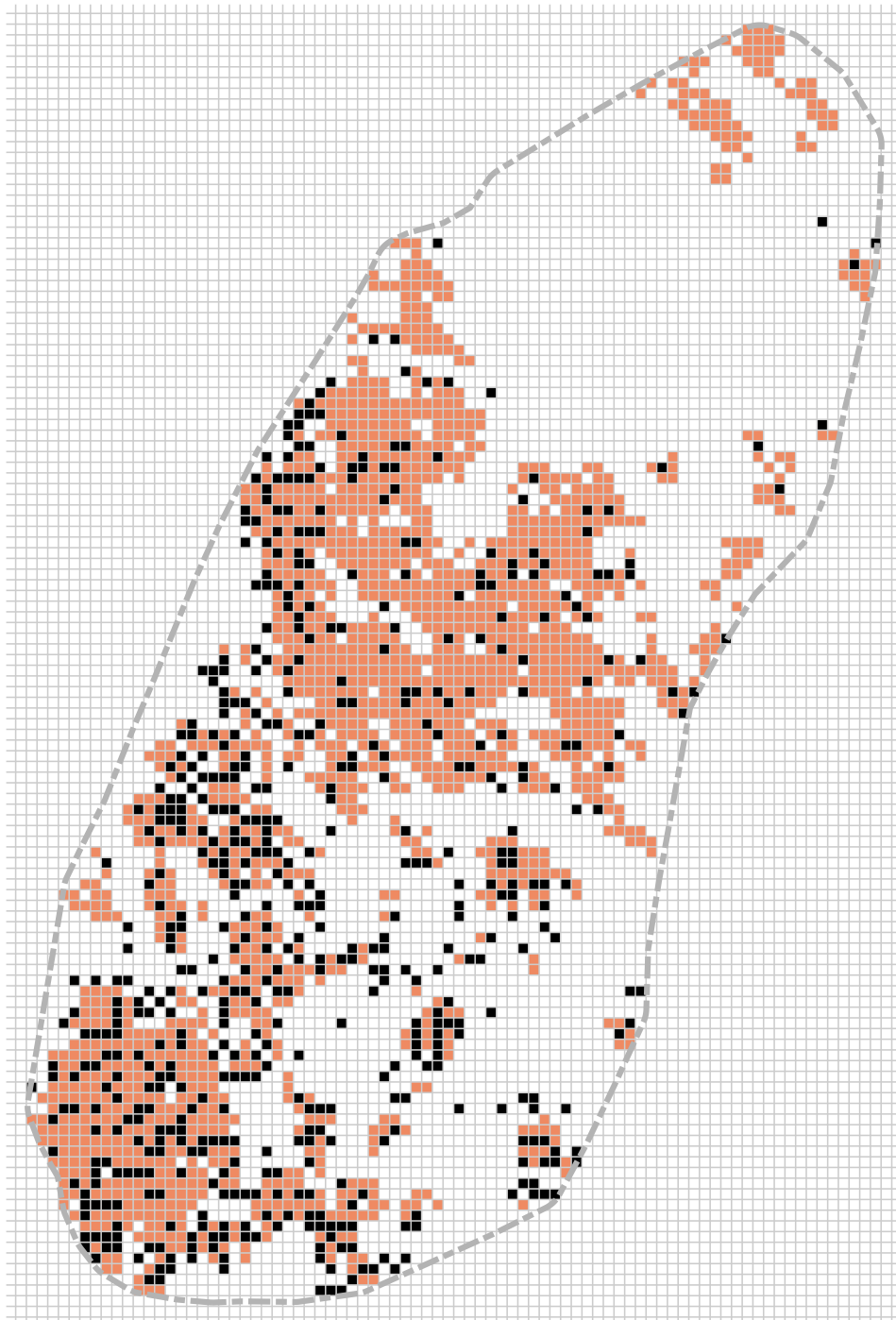


Figure 6. Maps of tested cells for Haynesville Formation in the Southwest Core.

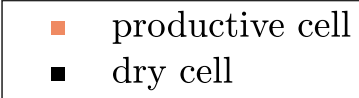
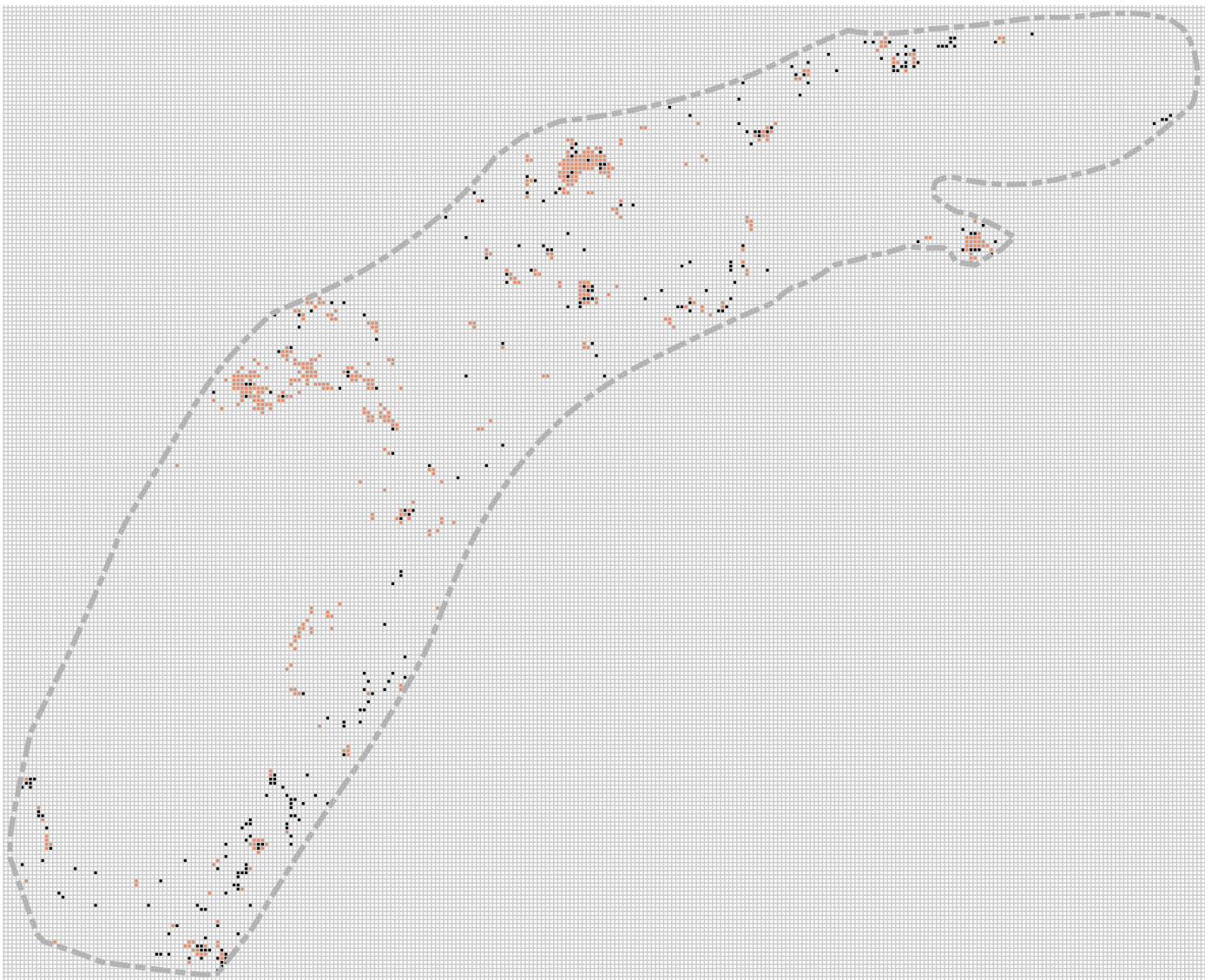


Figure 7. Maps of tested cells for Haynesville Formation in the Marcellus Noncore.

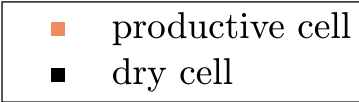
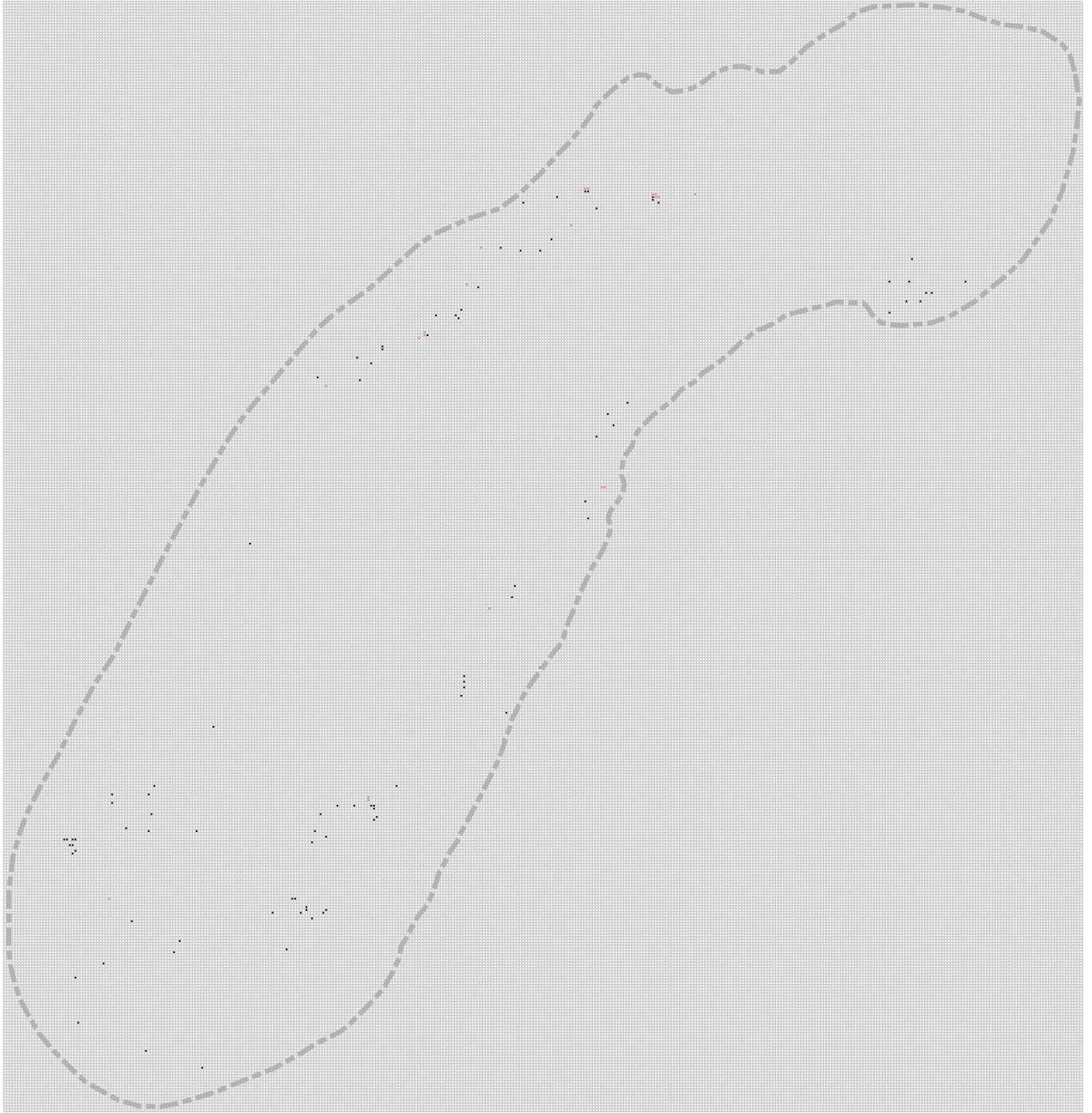


Figure 8. Maps of tested cells for Haynesville Formation in the Marcellus Outer.

Table 2. Probability of success for Marcellus region.

Reservoir Quality	Number of productive cells	Number of dry cells	Probability of Success
Northeast Core	1,118	674	0.62
Southwest Core	952	2,194	0.30
Marcellus Noncore	417	770	0.35
Marcellus Outer	50	171	0.23

SUPPORTING ONLINE MATERIALS-2(C): BOTTOM-HOLE LOCATION, WELL DENSITY, AND INFILL POTENTIAL MAPS OF MARCELLUS

Table 3. Infill potentials for Marcellus region.

Reservoir Quality	Total Area sq miles	Existing Wells	Infill Potential
Northeast Core	3,606	4,803	2,406
Southwest Core	4,007	6,087	1,278
Marcellus Noncore	11,800	1,448	7,896
Marcellus Outer	33,176	68	*14,996
TOTAL	52,589	12,406	*26,576

*Given the low reservoir quality in Marcellus outer; this number is probably too high.

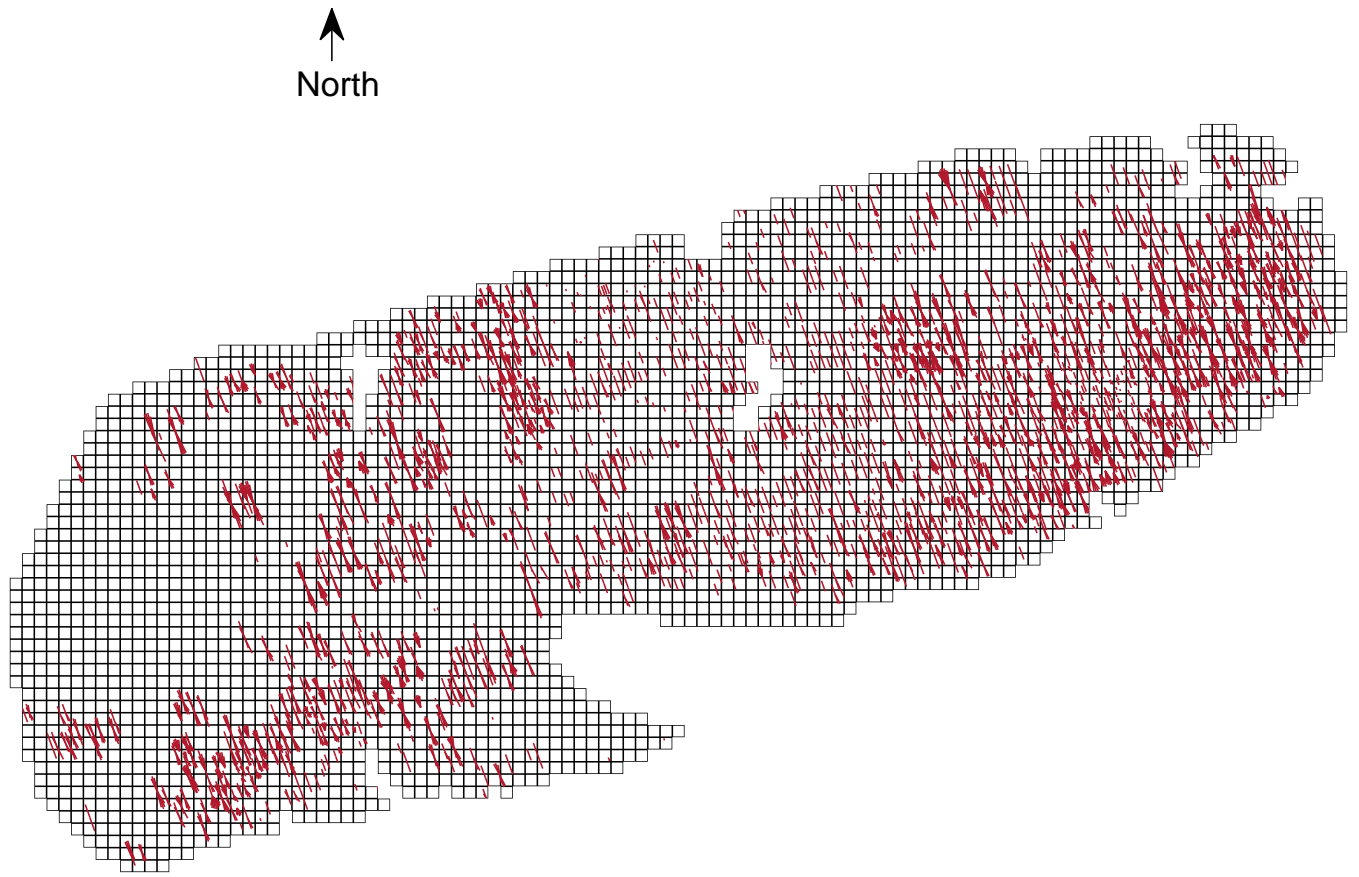


Figure 9. Bottom-hole location map of 4,803 existing horizontal gas wells in Northeast Core

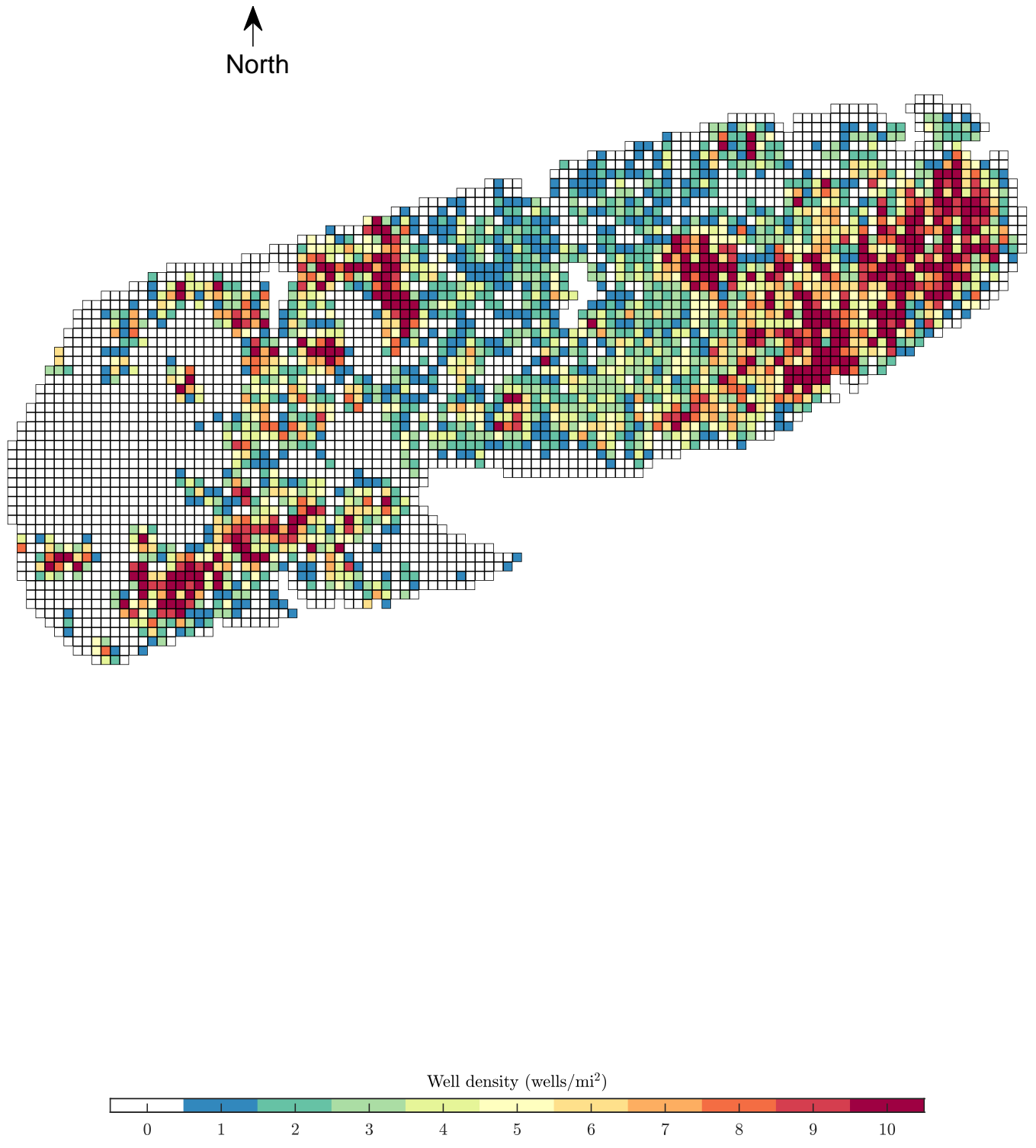


Figure 10. Well density map of Northeast Core

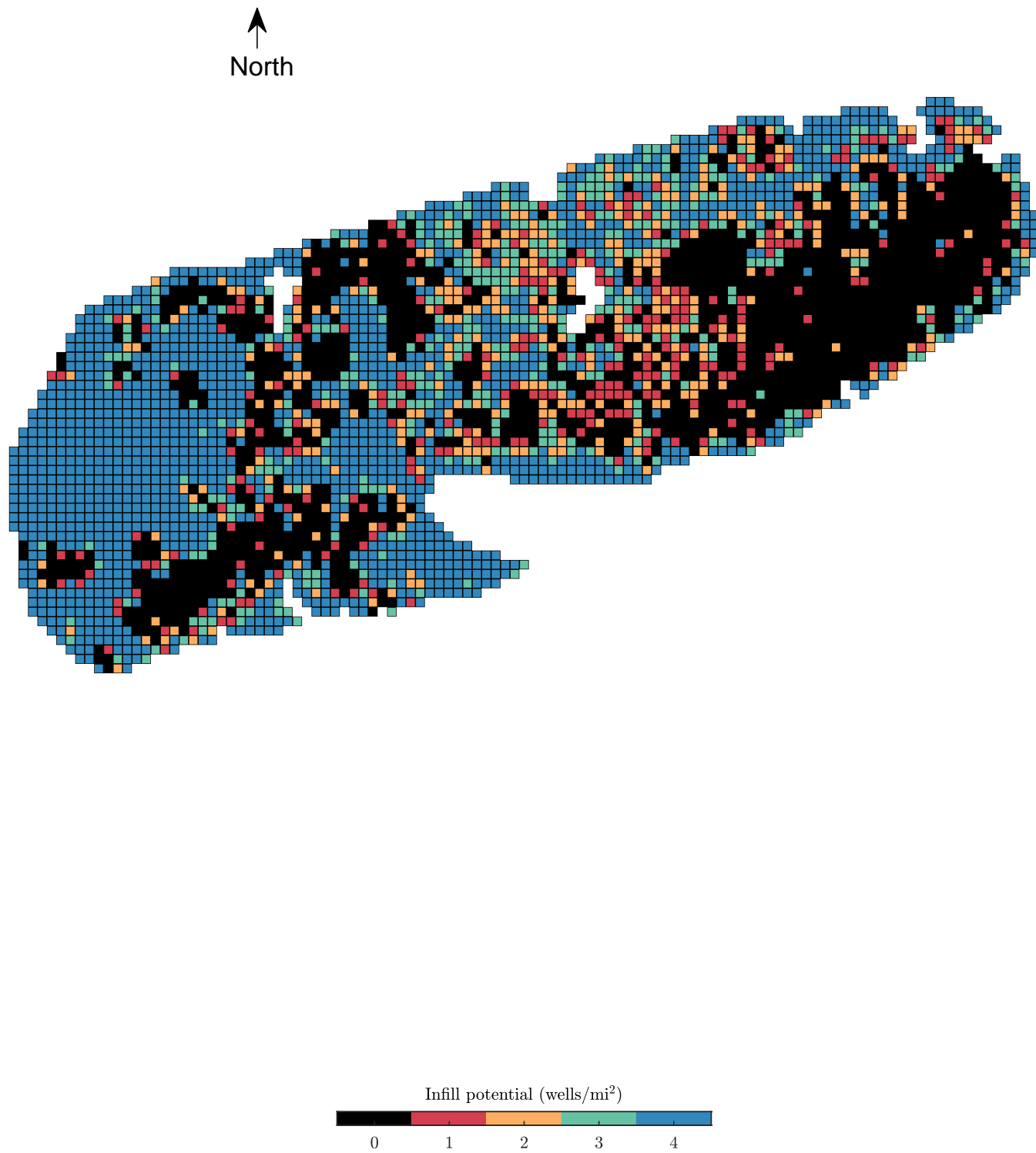


Figure 11. Infill potential map of Northeast Core

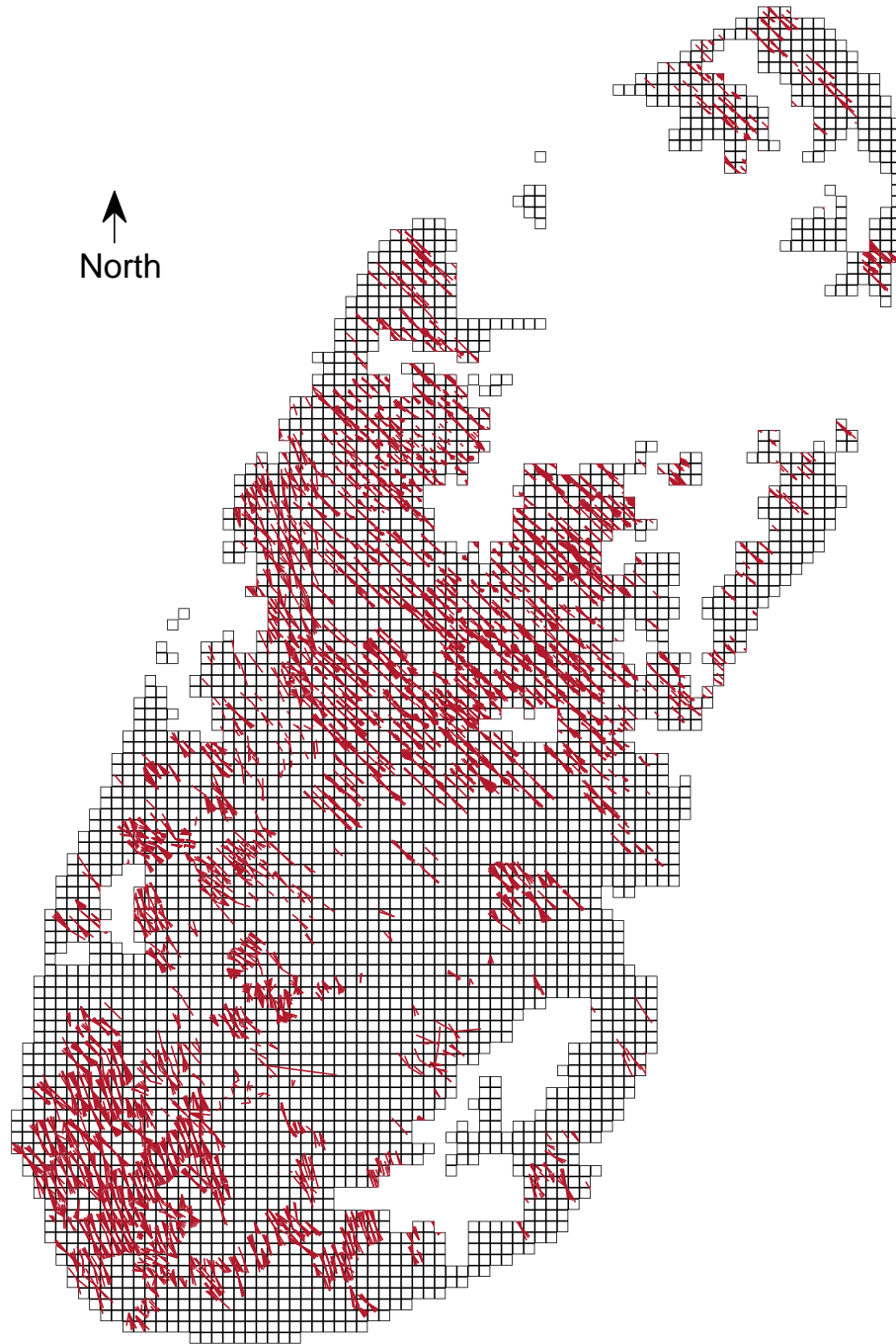


Figure 12. Bottom-hole location map of 6,087 existing horizontal gas wells in Southwest Core

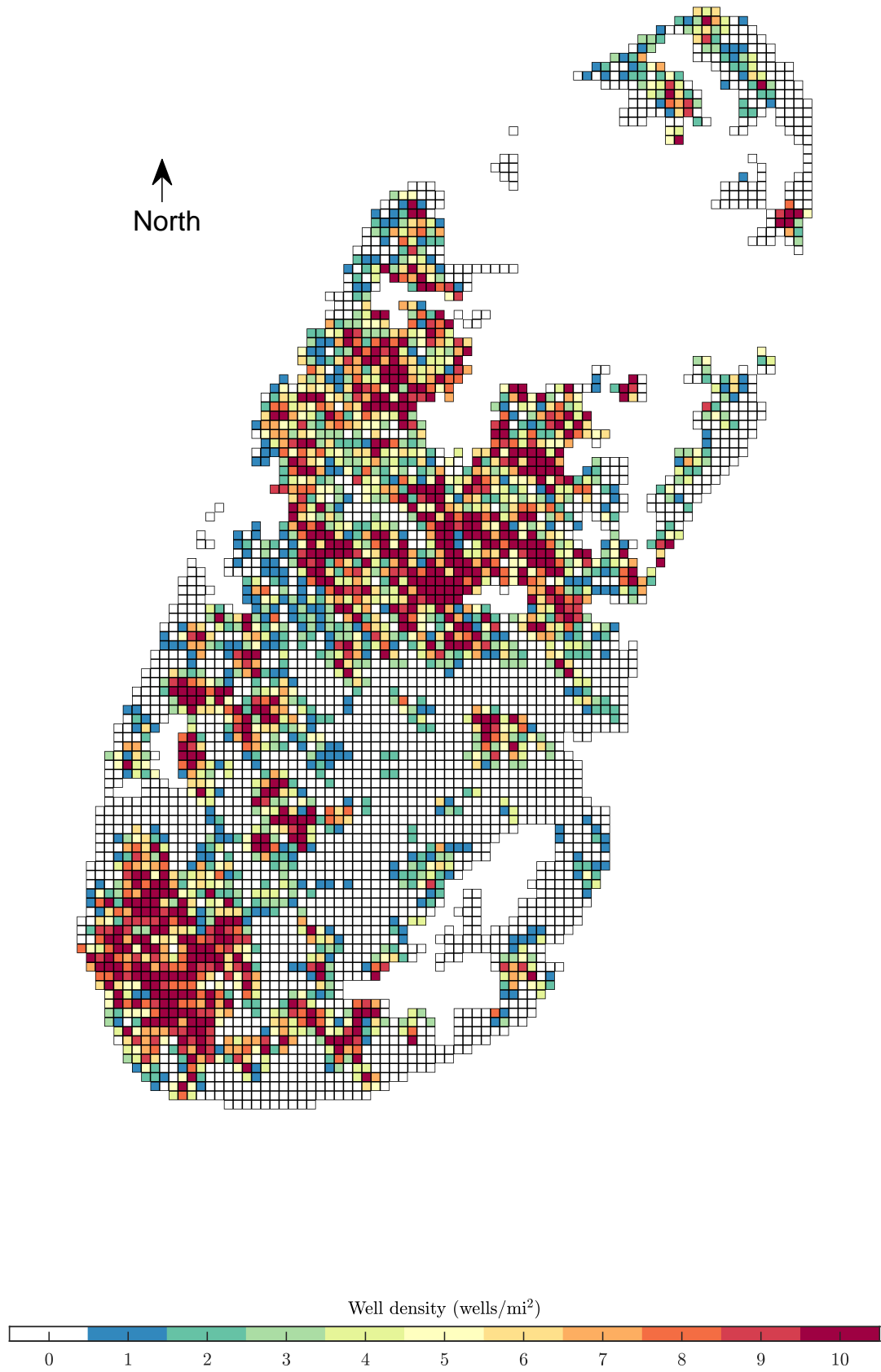


Figure 13. Well density map of Southwest Core

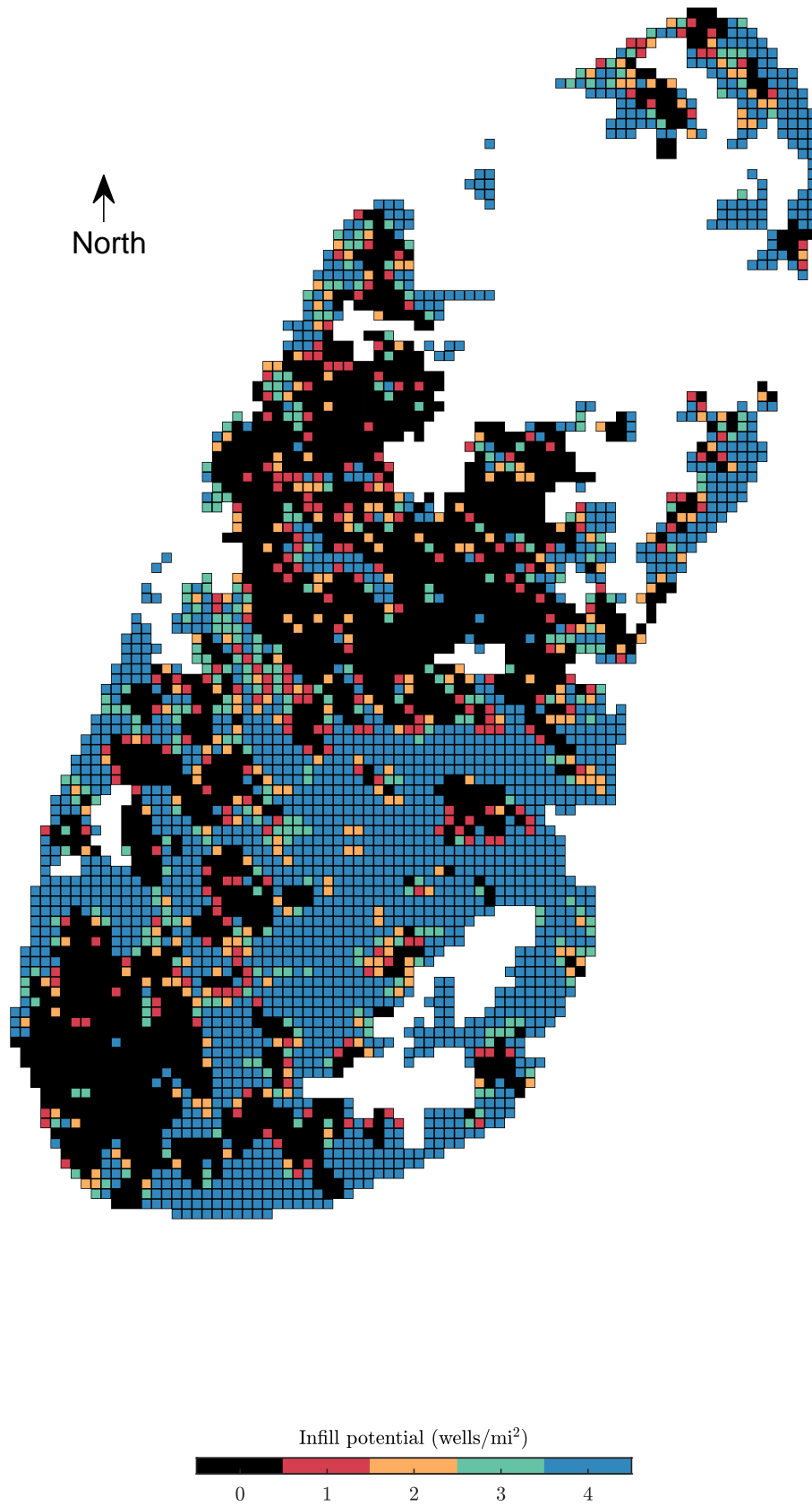


Figure 14. Infill potential map of Southwest Core



Figure 15. Bottom-hole location map of 1,448 existing horizontal gas wells in Marcellus noncore

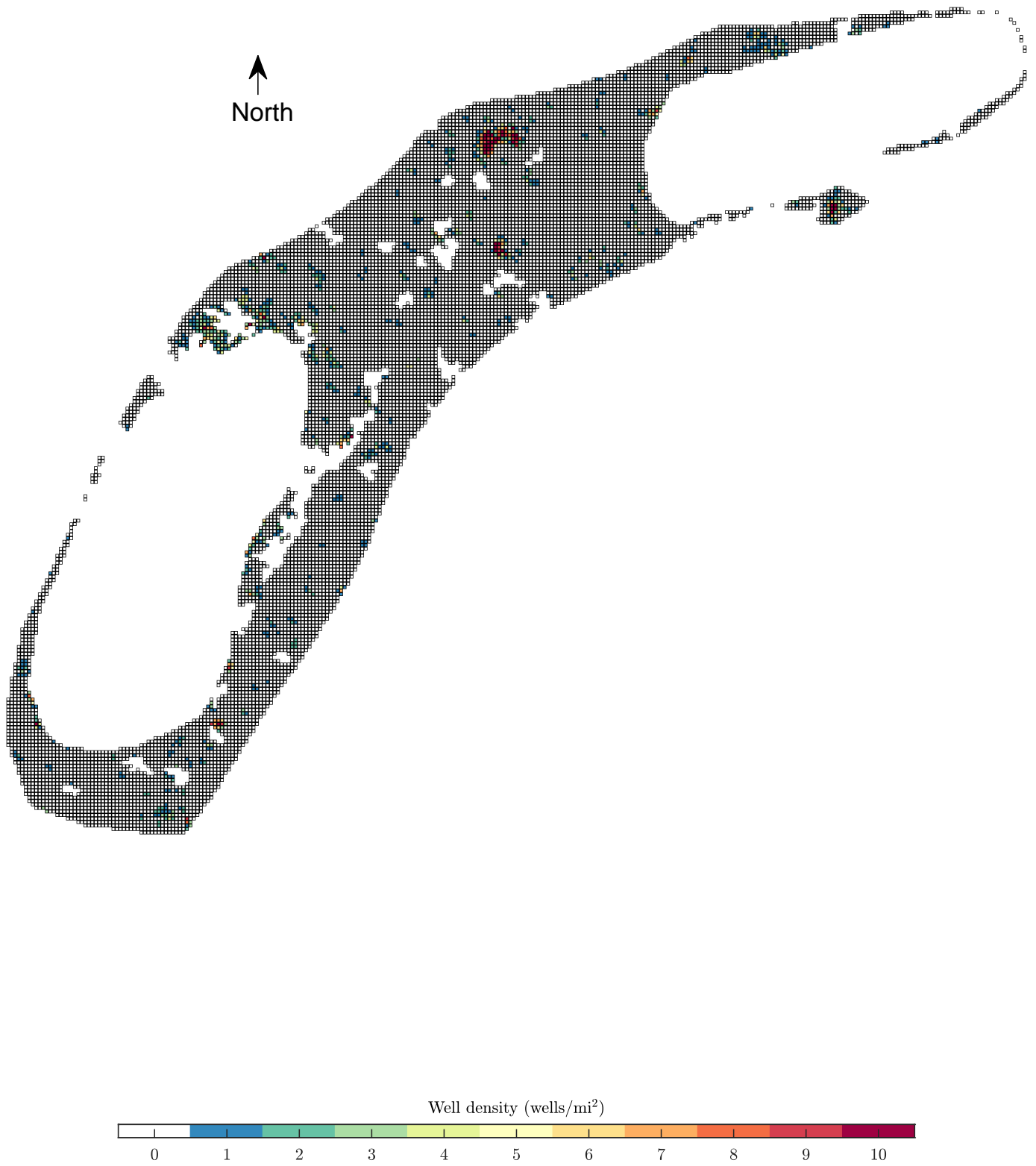


Figure 16. Well density map of Marcellus noncore



Figure 17. Infill potential map of Marcellus noncore

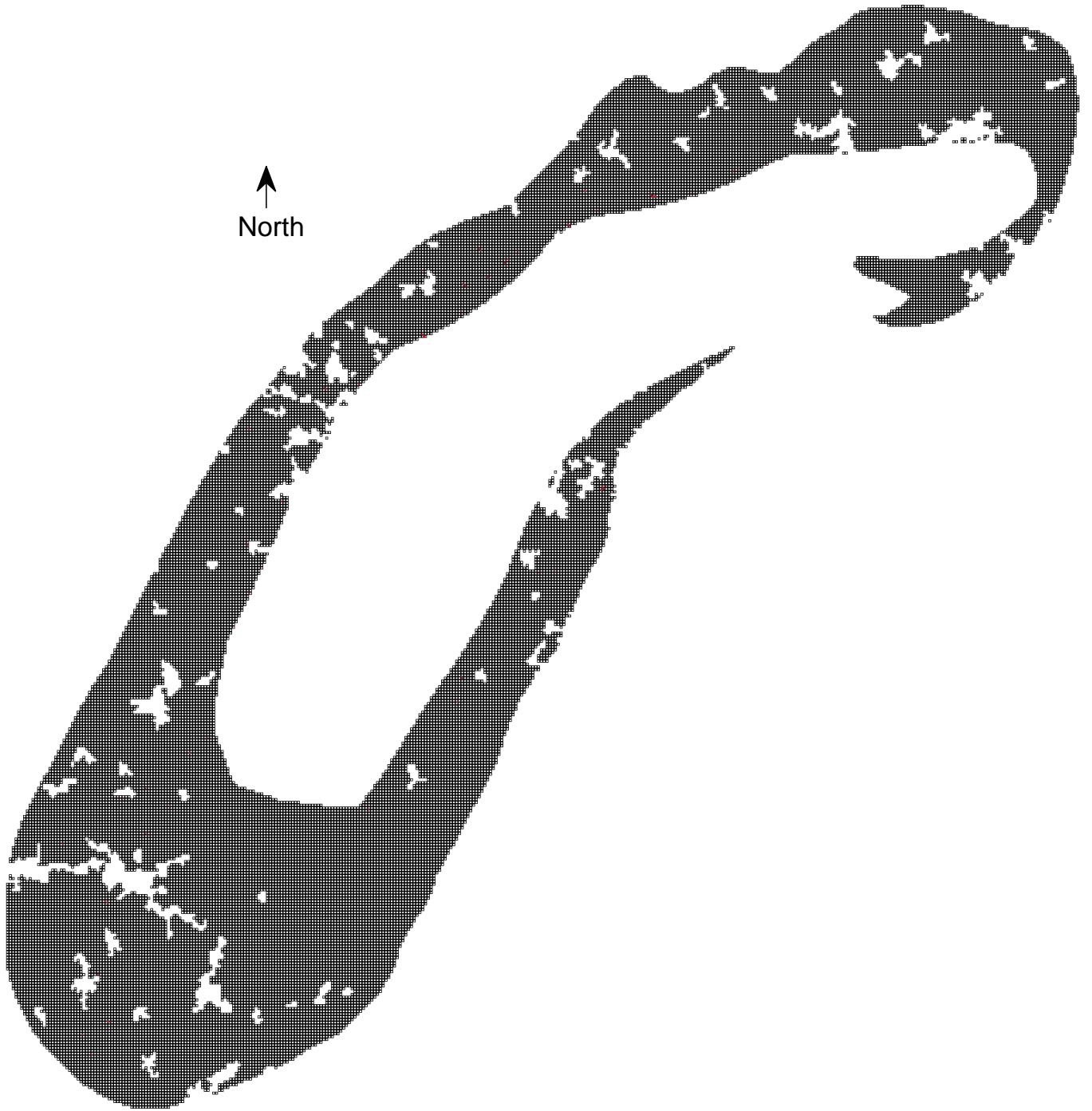


Figure 18. Bottom-hole location map of 68 existing horizontal gas wells in Marcellus Outer

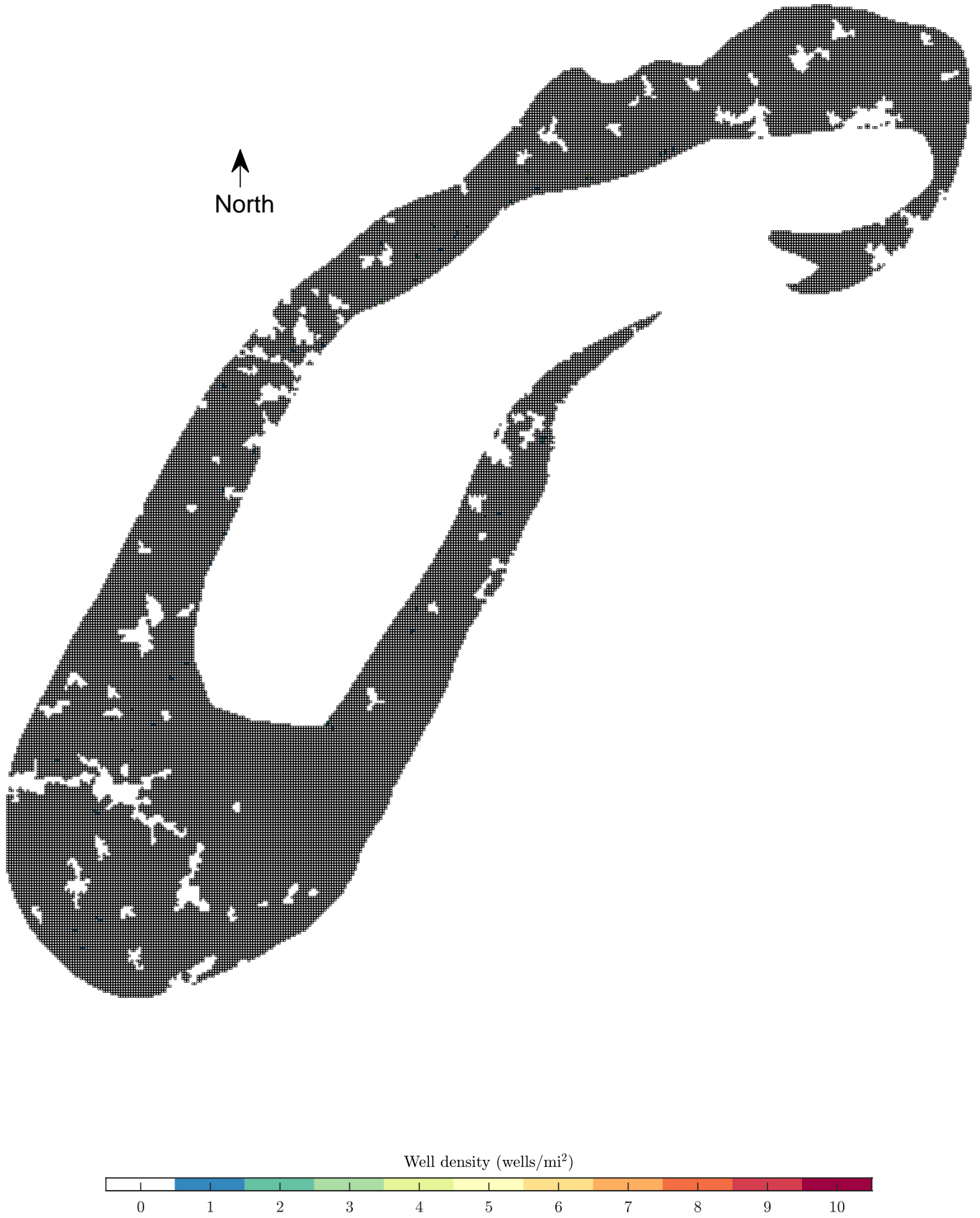


Figure 19. Well density map of Marcellus Outer



Figure 20. Infill potential map of Marcellus Outer