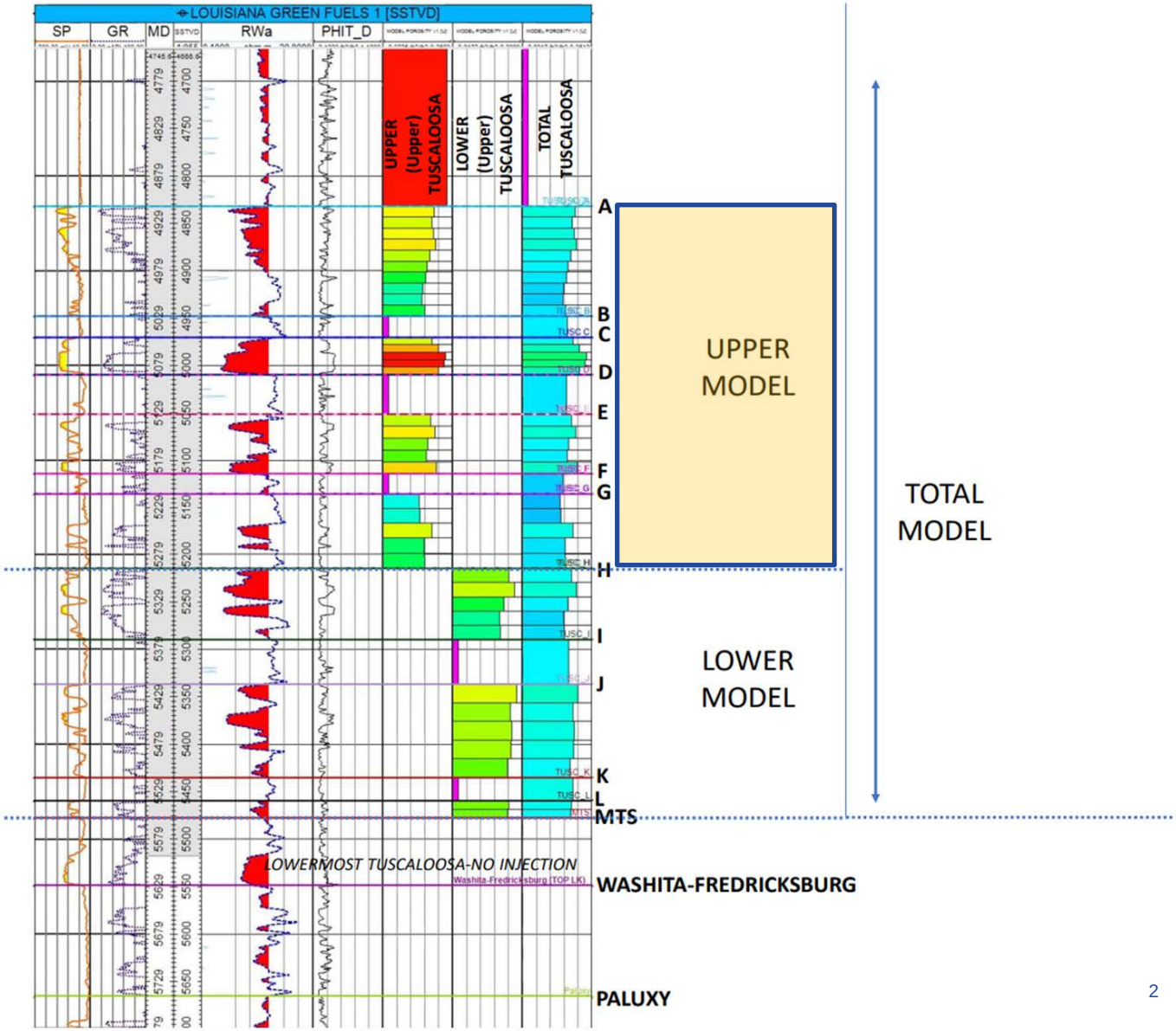
APPENDIX 7 - Upper Tuscaloosa (Upper Interval) Dynamic Model Spatial Porosity and Permeability Distribution

Upper Tuscaloosa and Paluxy Model Layers

Upper
29 Layers

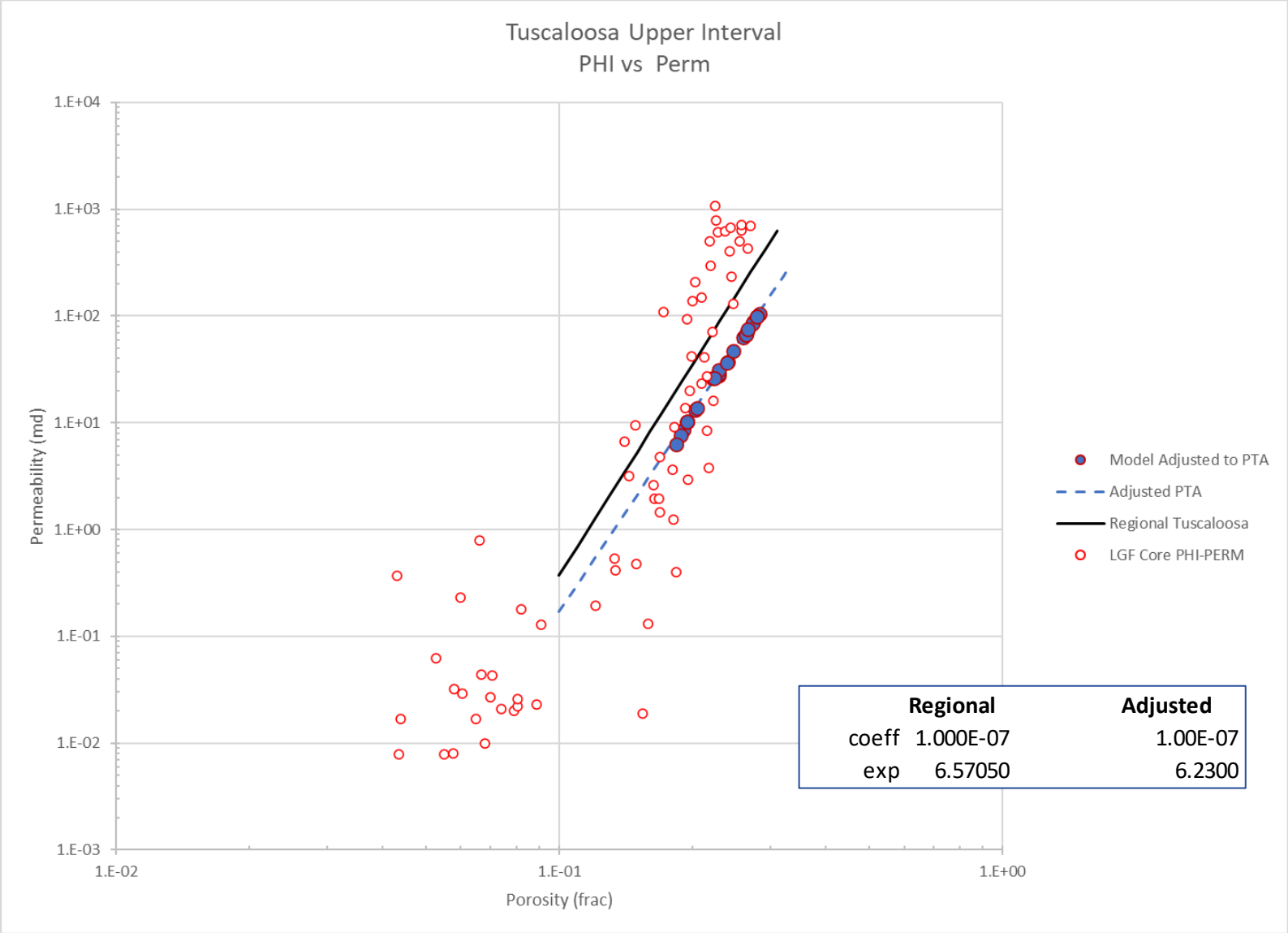
Lower
19 Layers
Including Paluxy



Upper Tuscaloosa Upper Interval Model
Properties within ~2500 ft radius of LGF well

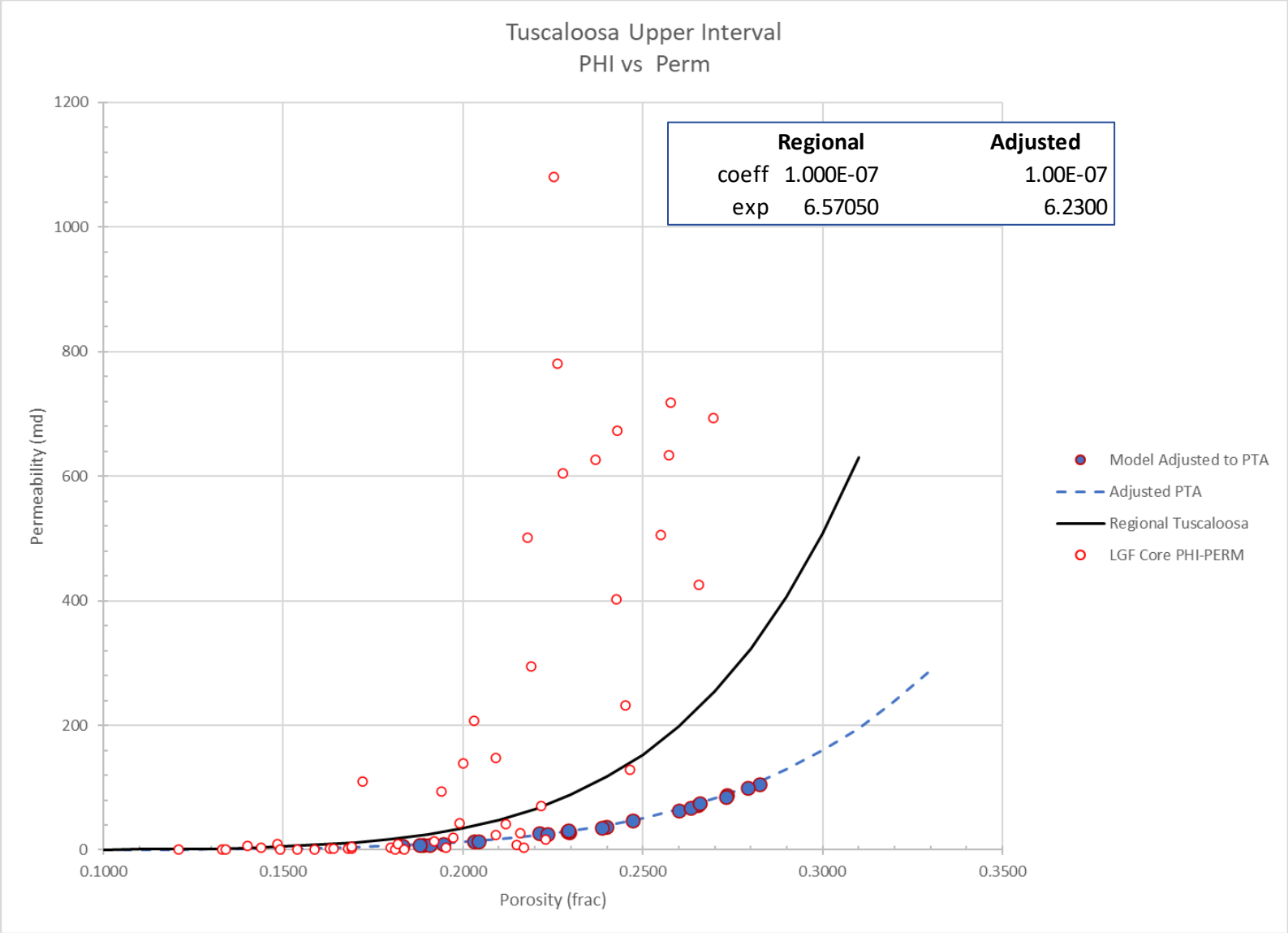
Layer	PHI	Regional Perm (md)	Gross Thickness (ft)	KH (md-ft)	N/G	Hnet (ft)	KH (md-ft)	KH/u (md-ft/cp)	K Adjusted (md)	KH Adj Perm and NG	KH/u adj Perm and NG	Top (TVDSS)	MD (ft)
1	0.0000	406	705.9									4110.5	4189.5
2	0.1529	231.50	11.6	2683	0.392	45.46	13,038	25,073	68.5	311.5		4816.5	4895.5
3	0.2600	215.32	11.6	2493	0.392				63.7	289.5	2911	4828.1	4907.1
4	0.2398	126.31	11.6	1463	0.392				37.4	169.8		4839.6	4918.6
5	0.2654	241.97	11.6	2804	0.392				71.6	325.6		4851.2	4930.2
6	0.2295	94.56	11.6	1095	0.392				28.0	127.1		4862.8	4941.8
7	0.2289	98.42	11.6	1140	0.392				29.1	132.3		4874.4	4953.4
8	0.1891	28.40	11.6	329	0.392				8.4	38.2		4886.0	4965.0
9	0.1906	28.85	11.6	334	0.392				8.5	38.8		4897.5	4976.5
10	0.1879	25.83	11.6	299	0.392				7.6	34.7		4909.1	4988.1
11	0.1944	34.32	11.6	397	0.392				10.2	46.1		4920.7	4999.7
12	0.0000	0.10	0.0	0					0.0	0.0		4932.3	5011.3
13	0.0000	210.26	0.0	0	0.716	23	10217	19,647	62.2	0.0		4954.4	5033.4
14	0.2733	296.90	8.0	2375	0.716				87.8	503.0	4161	4962.4	5041.4
15	0.2826	354.48	8.0	2839	0.716				104.9	601.3		4970.4	5049.4
16	0.2731	287.50	8.0	2303	0.716				85.1	487.7		4978.5	5057.5
17	0.2793	337.41	8.0	2699	0.716				99.8	571.6		4986.5	5065.5
18	0.0000	0.10	0.0	0					0.0	0.0		4994.5	5073.5
19	0.2294	106.29	12.6	1334	0.409	26	8264	15,892	31.4	161.6		5035.4	5114.4
20	0.2472	157.77	12.5	1980	0.409				46.7	239.9	1925	5048.0	5127.0
21	0.2385	122.27	12.5	1534	0.409				36.2	185.9		5060.5	5139.5
22	0.2030	44.36	12.5	556	0.409				13.1	67.4		5073.0	5152.0
23	0.2633	227.80	12.6	2859	0.409				67.4	346.3		5085.6	5164.6
24	0.0000	0.10	0.0	0					0.0	0.0		5098.1	5177.1
25	0.1832	21.29	15.9	339	0.256	20	7931	15,253	6.3	25.7		5119.7	5198.7
26	0.2043	46.64	15.9	743	0.256				13.8	56.3	1156	5135.6	5214.6
27	0.2657	253.16	15.9	4030	0.256				74.9	305.5		5151.5	5230.5
28	0.2212	88.68	15.9	1413	0.256				26.2	107.1		5167.5	5246.5
29	0.2235	88.28	15.9	1406	0.256				26.1	106.6		5183.4	5262.4
												5199.3	5278.3
			290.2	39450		114.5	39,450	75,865	1047	4968	10,153		

Porosity Permeability Transform

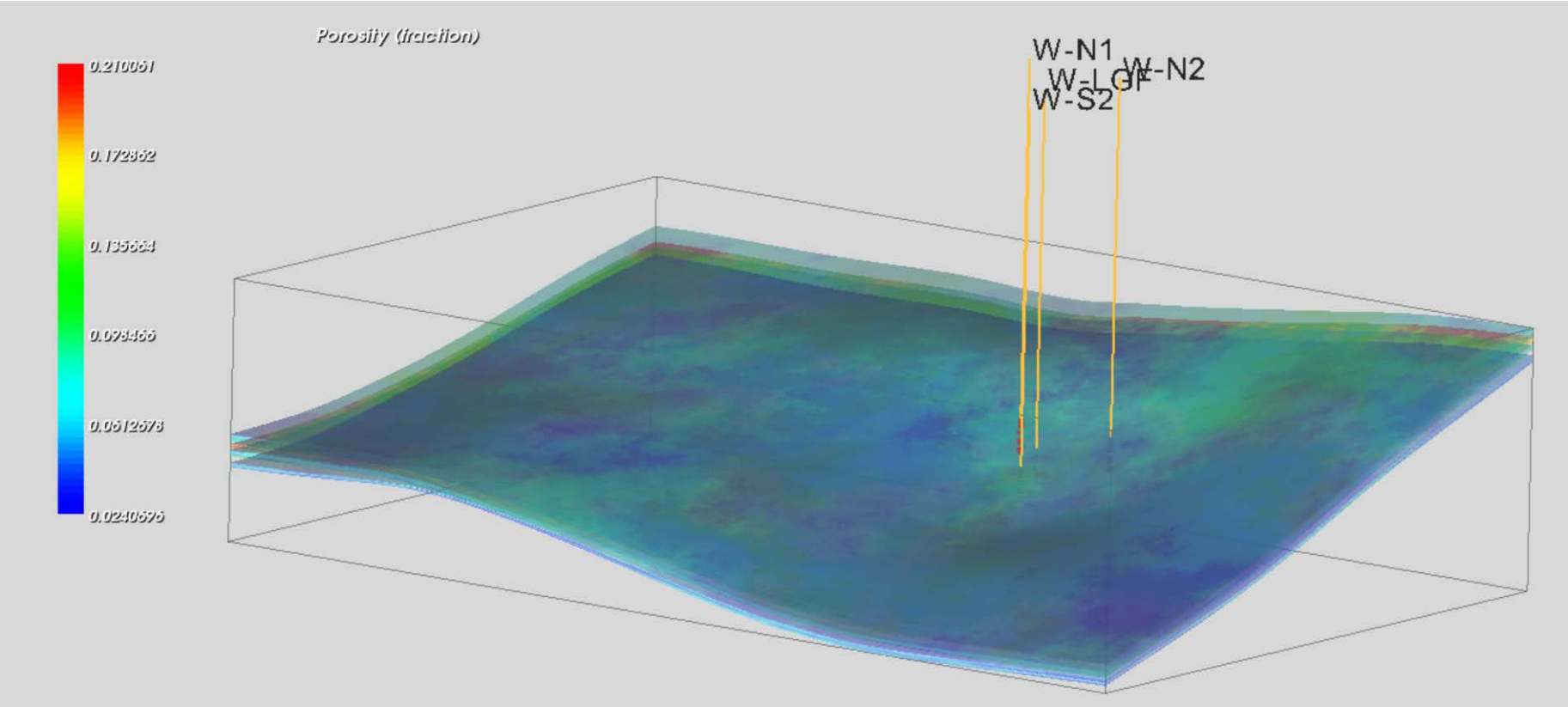


	Regional	Adjusted
coeff	1.000E-07	1.00E-07
exp	6.57050	6.2300

Upper Tuscaloosa Porosity-Permeability Transform



Upper Tuscaloosa Upper Interval Porosity Composite

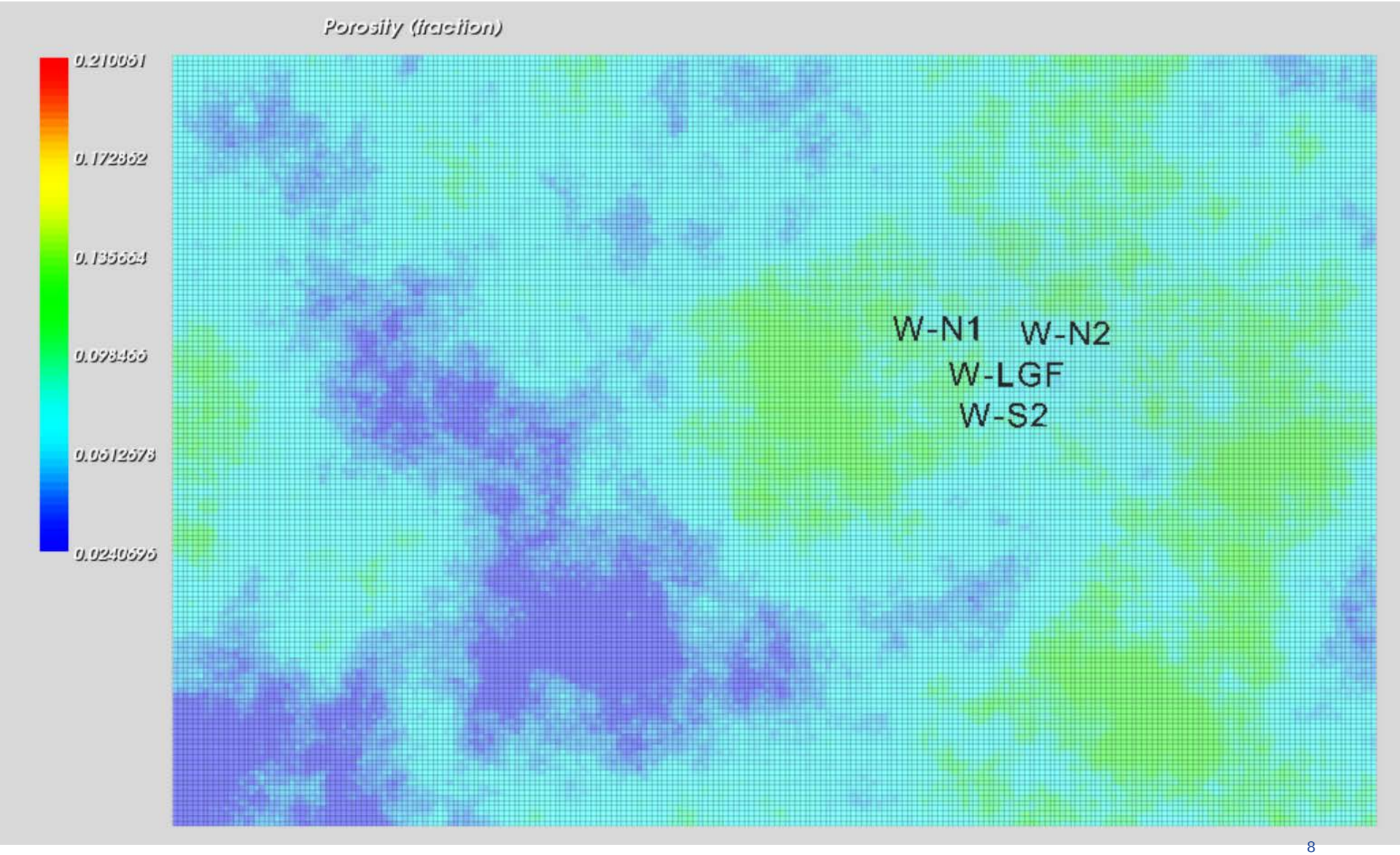


Grid Porosity = Original Porosity x NG
Vertical Exaggeration: 10x

Upper Tuscaloosa Upper Interval Porosity – Layer 1

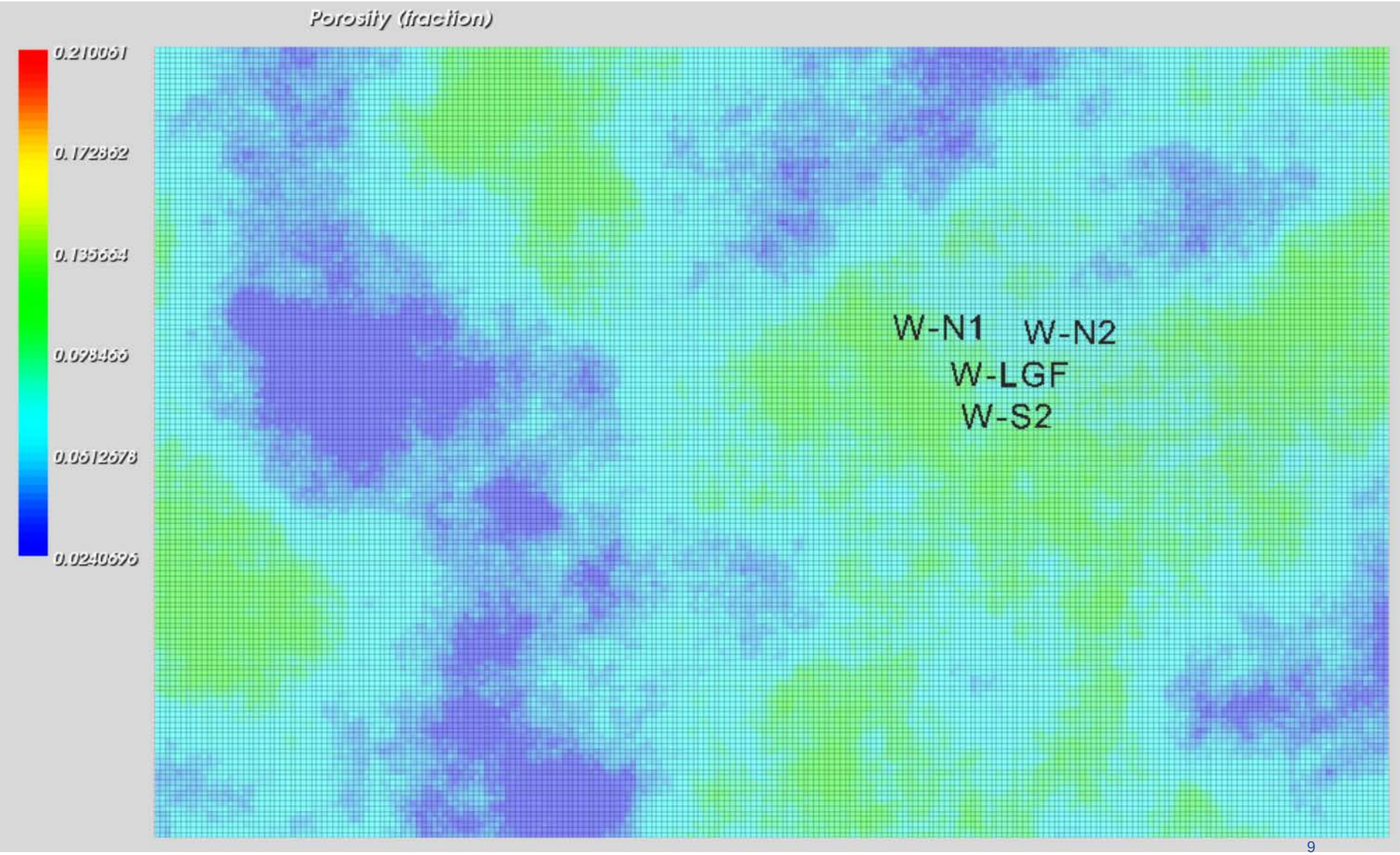
Layer 1 – PHI = 0

Upper Tuscaloosa Upper Interval Porosity – Layer 2



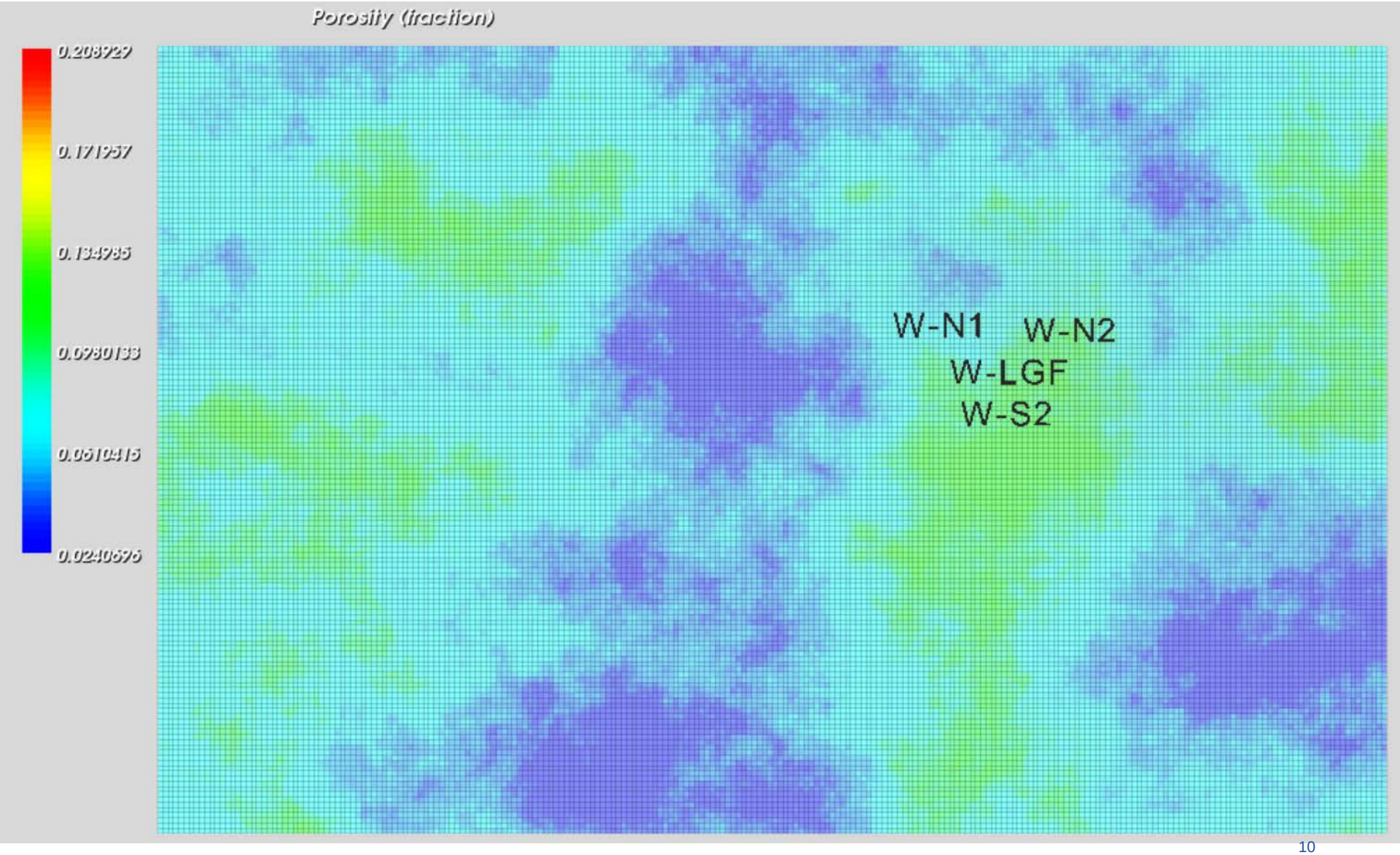
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 3



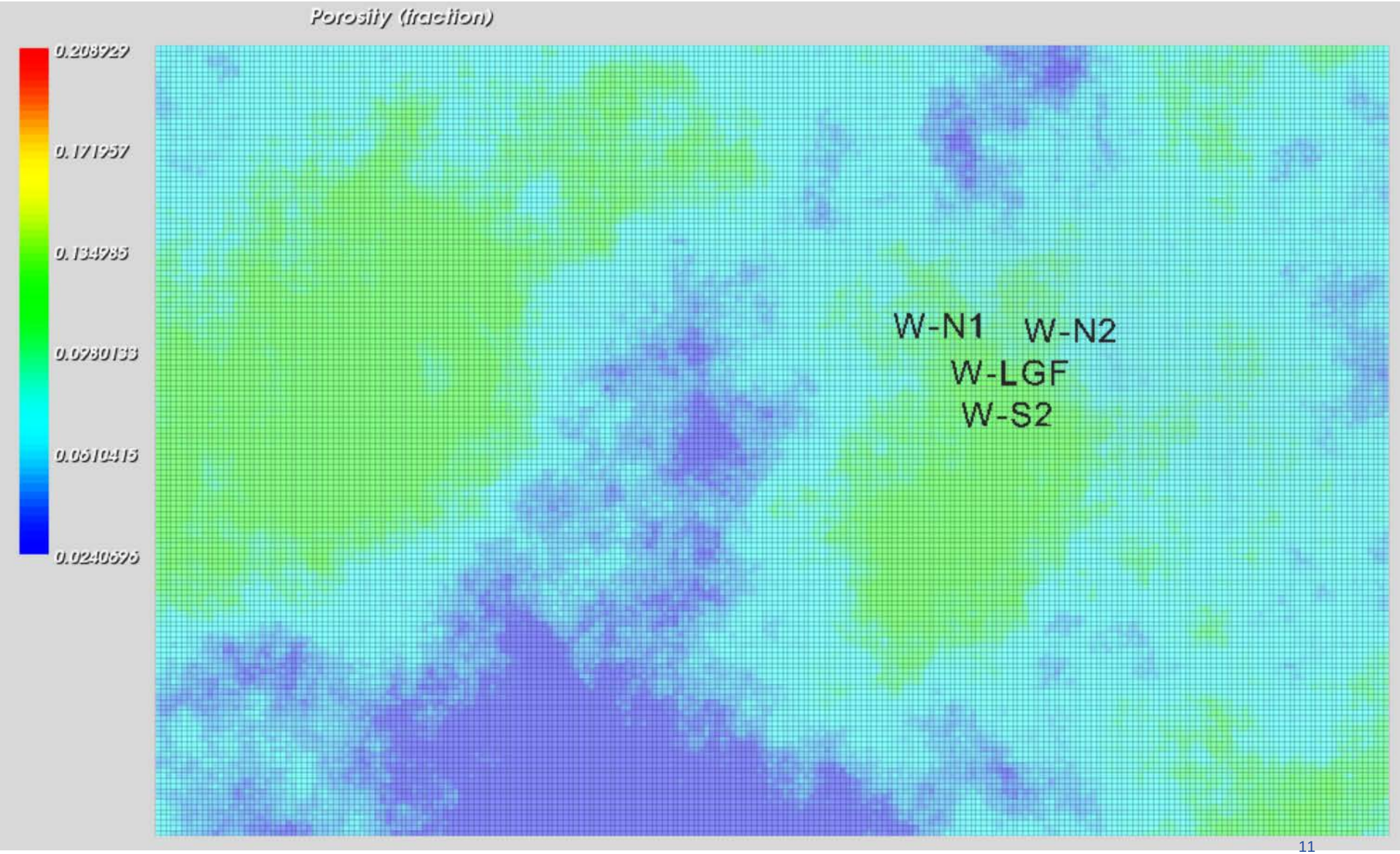
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 4



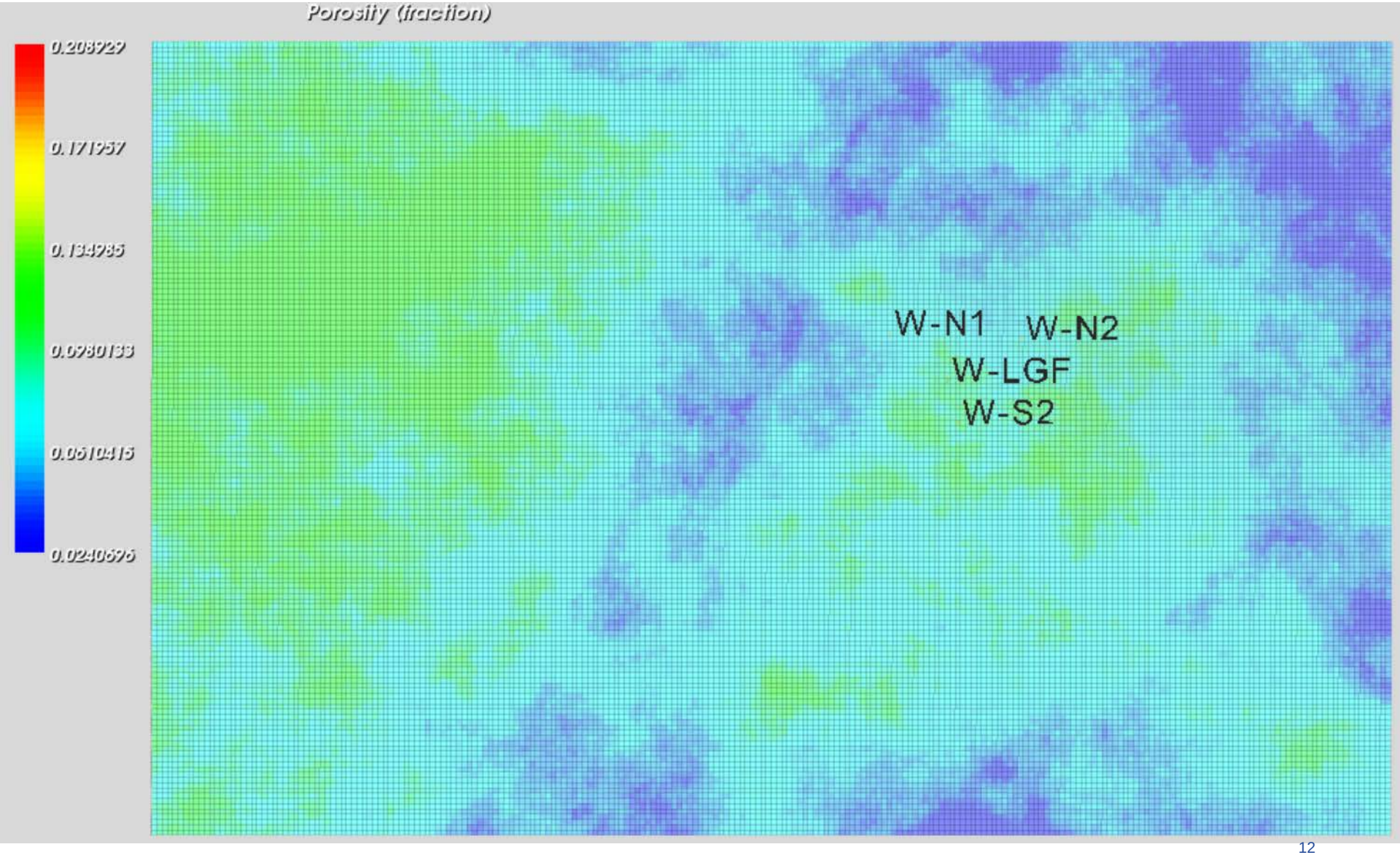
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 5



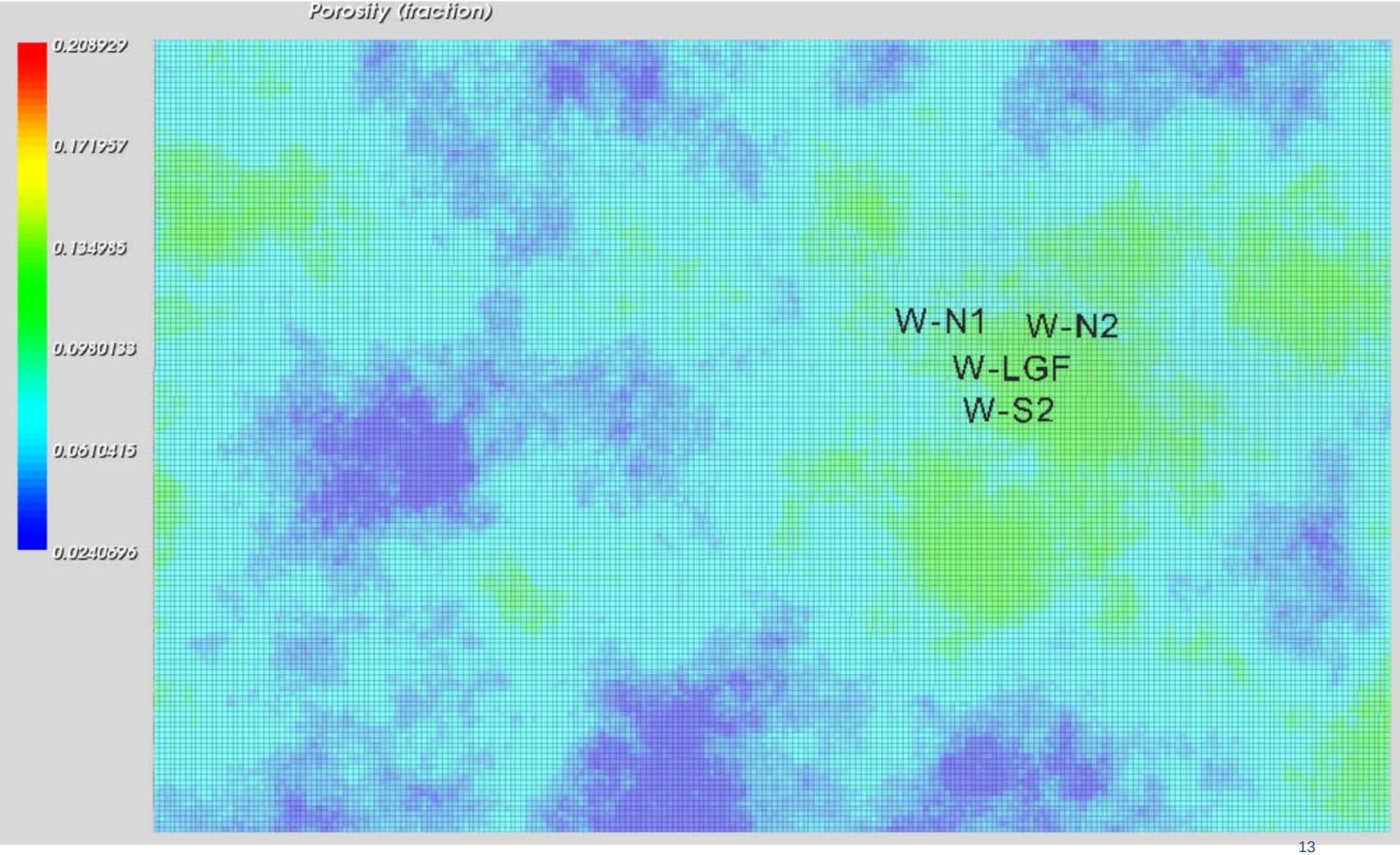
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 6



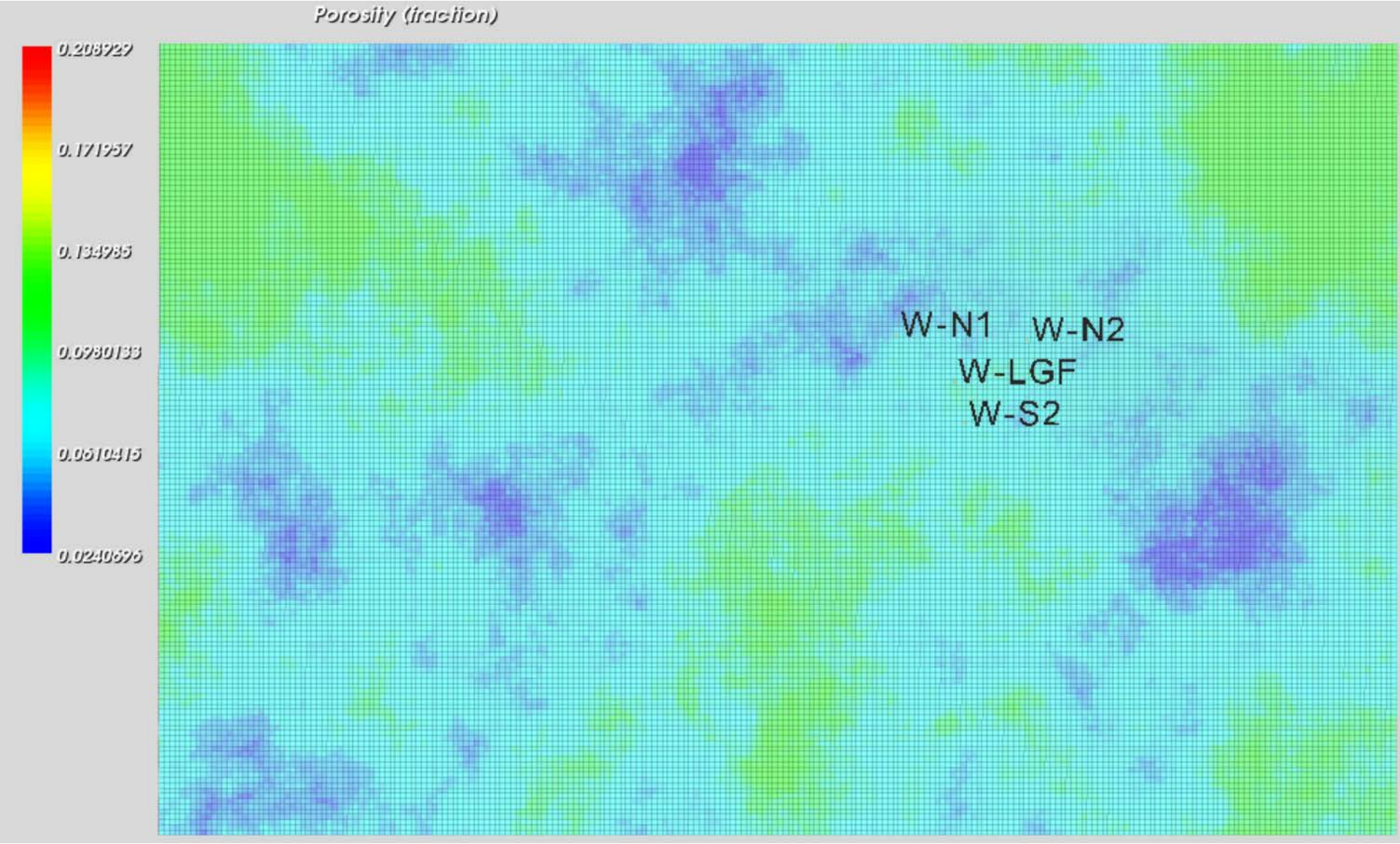
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 7



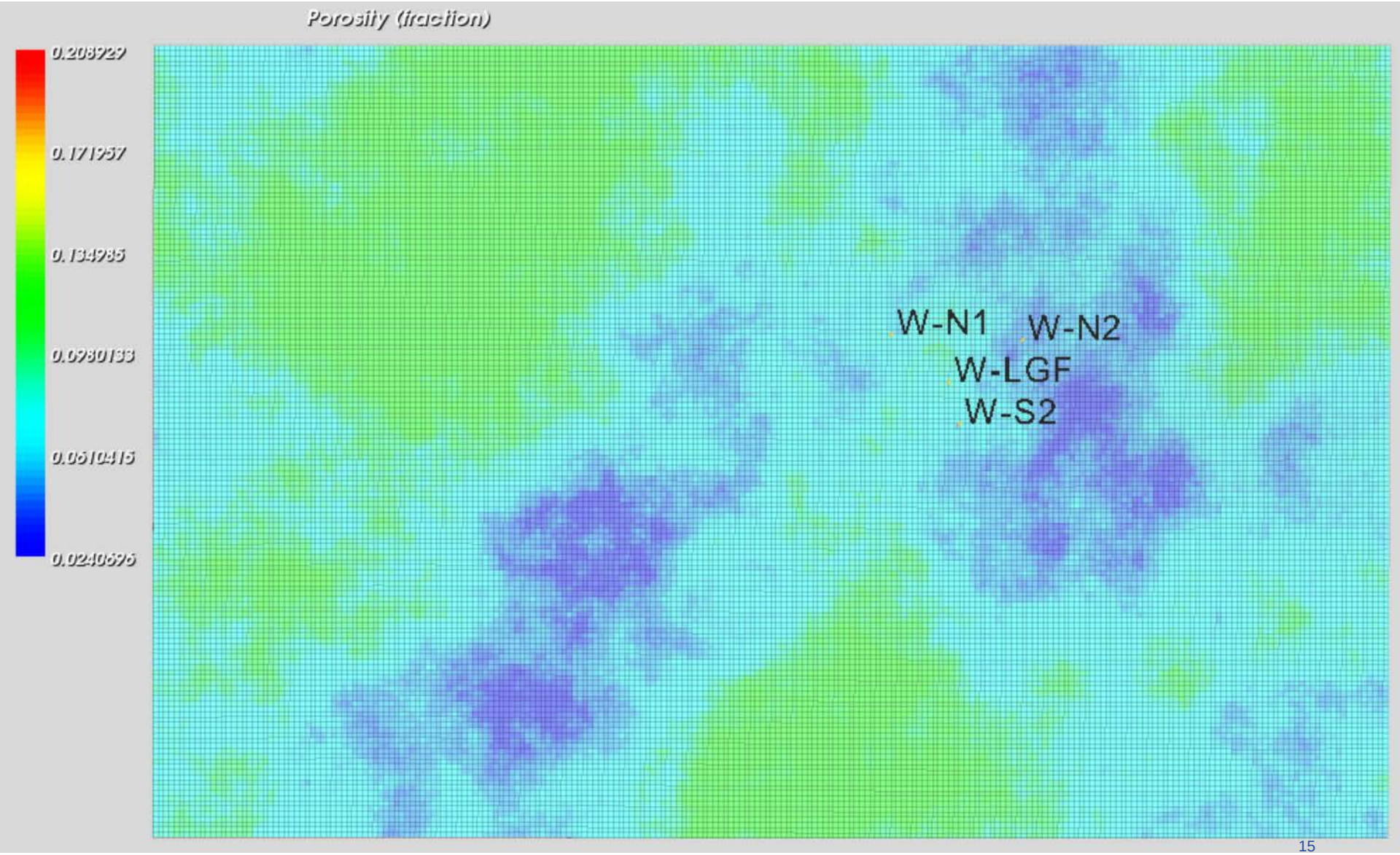
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 8



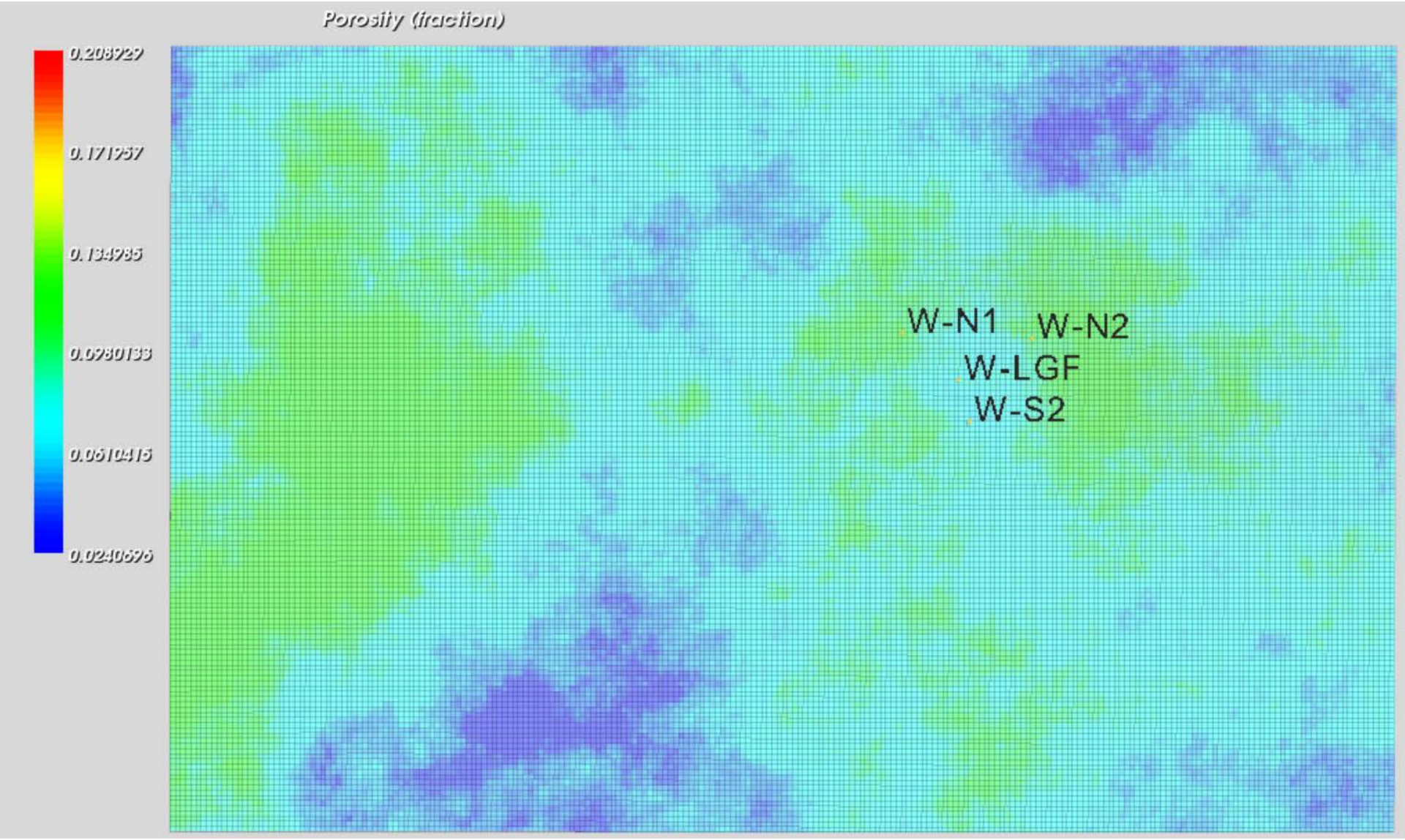
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 9



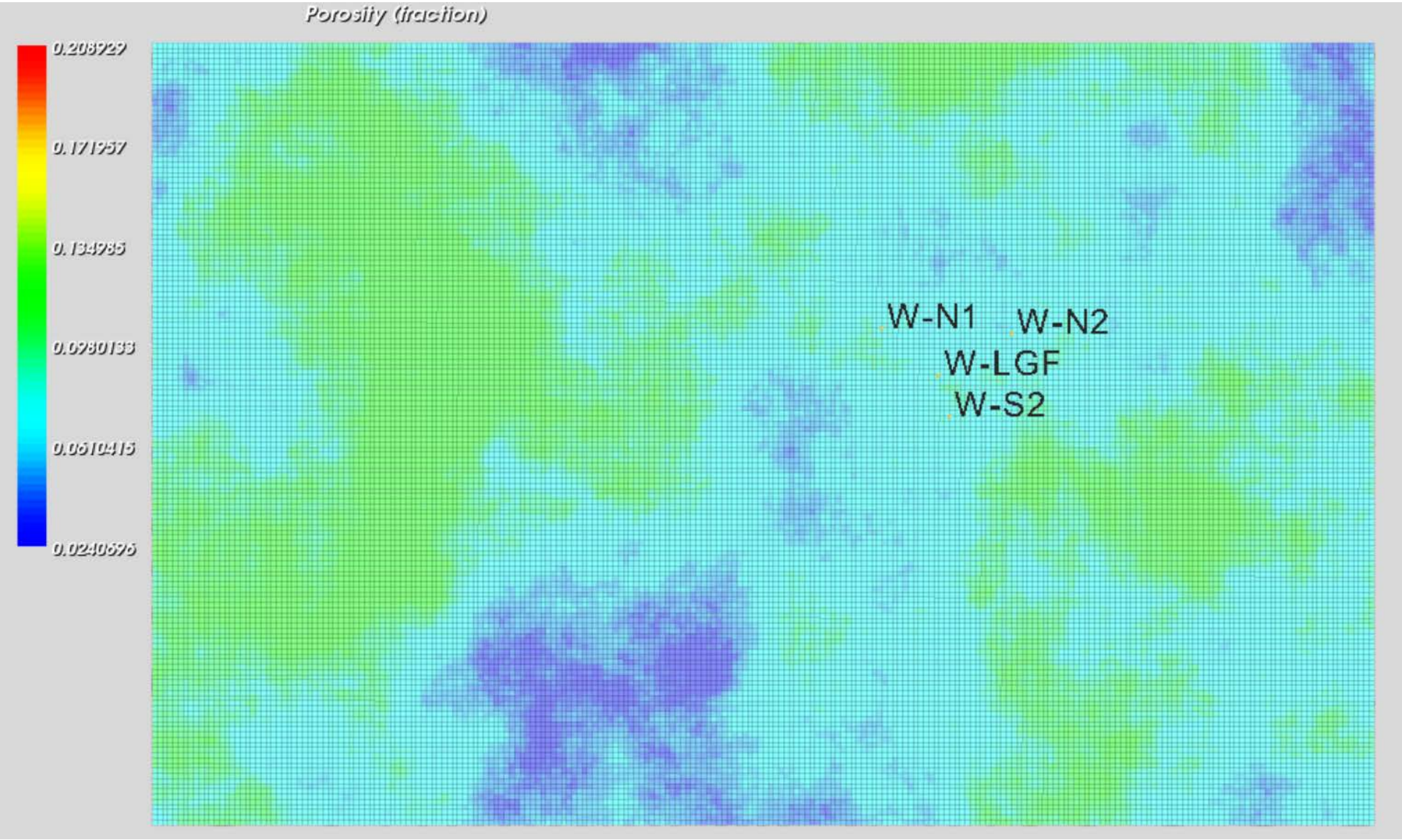
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 10



Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 11

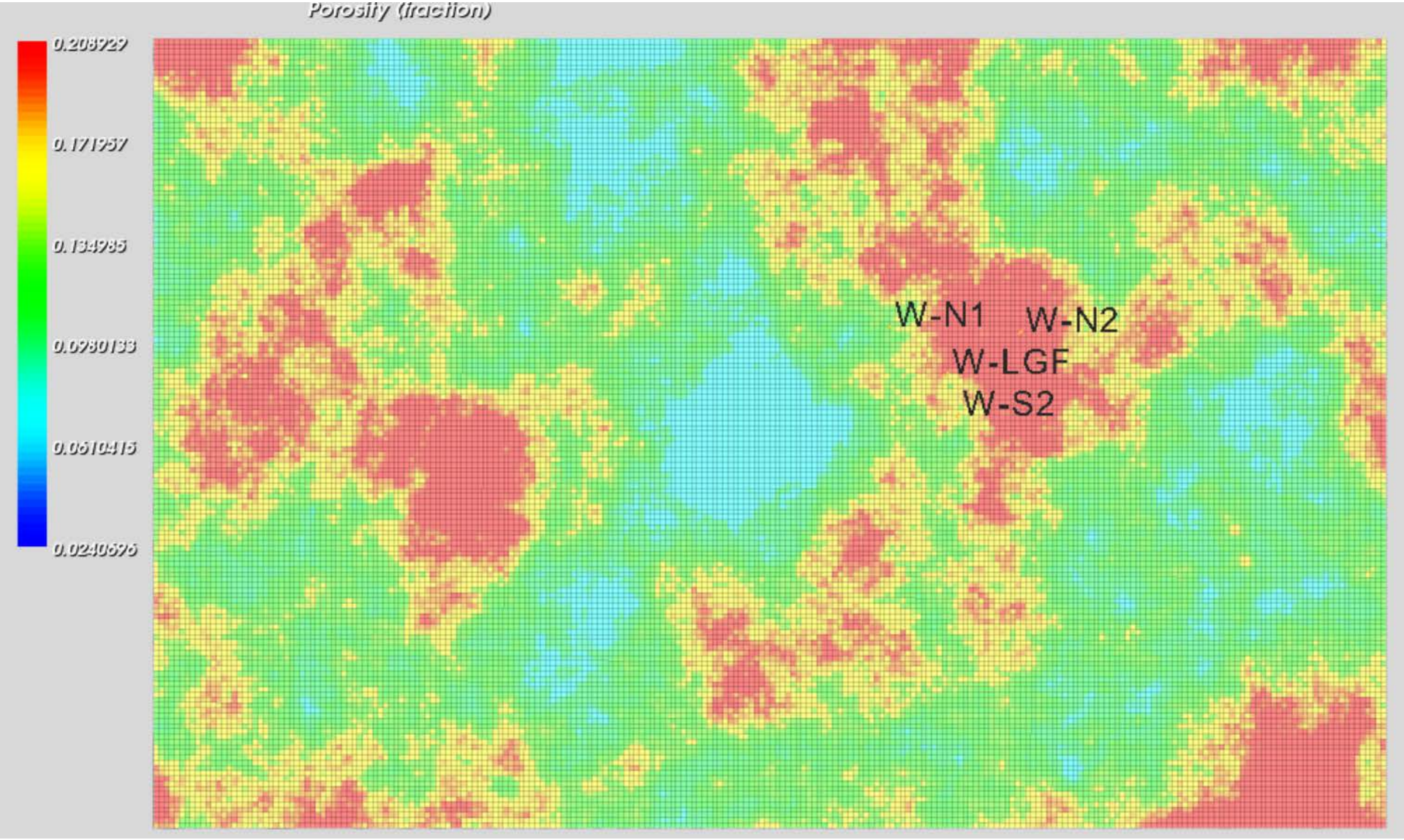


Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 12

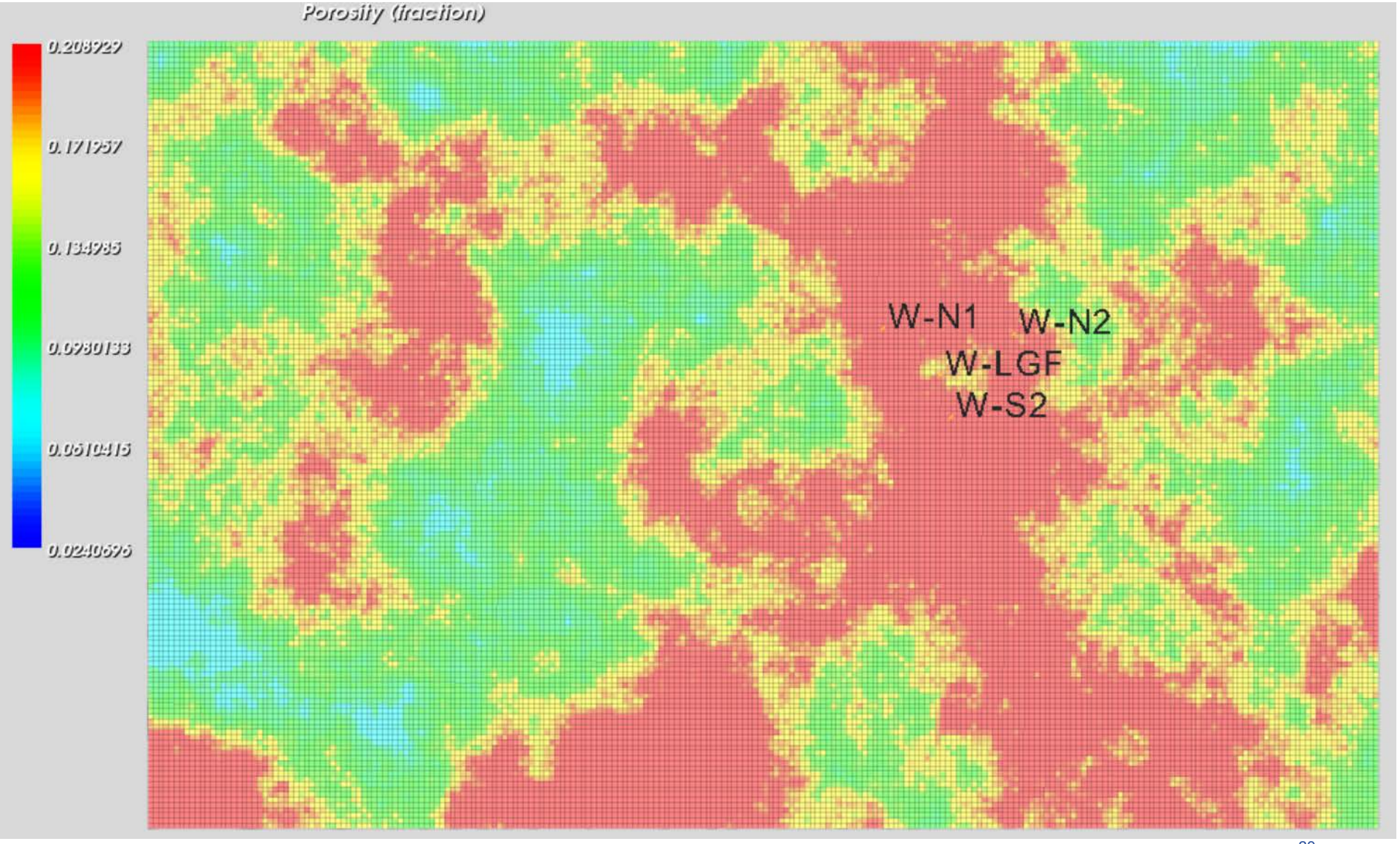
Layer 12 – PHI = 0

Upper Tuscaloosa Upper Interval Porosity – Layer 13



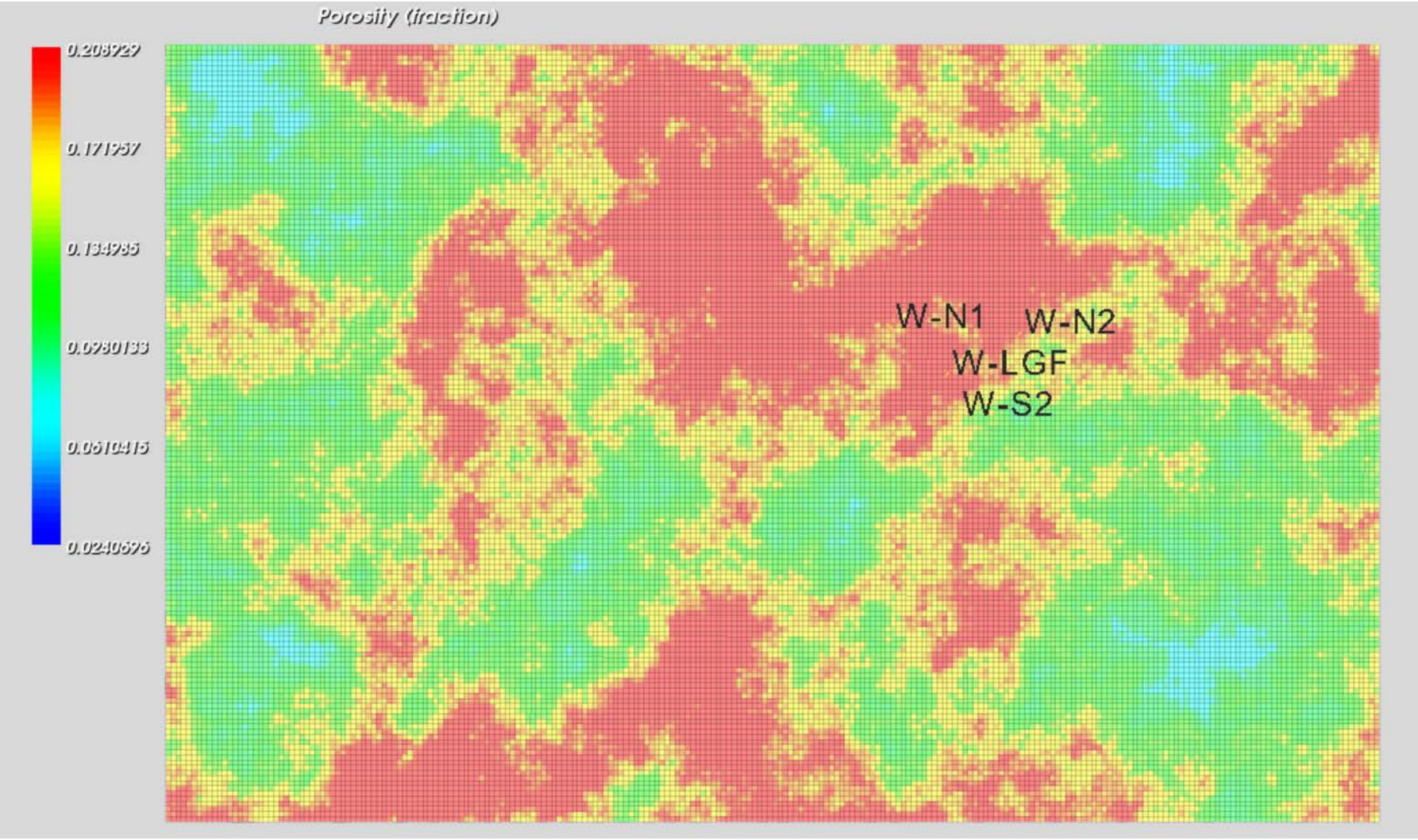
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 14



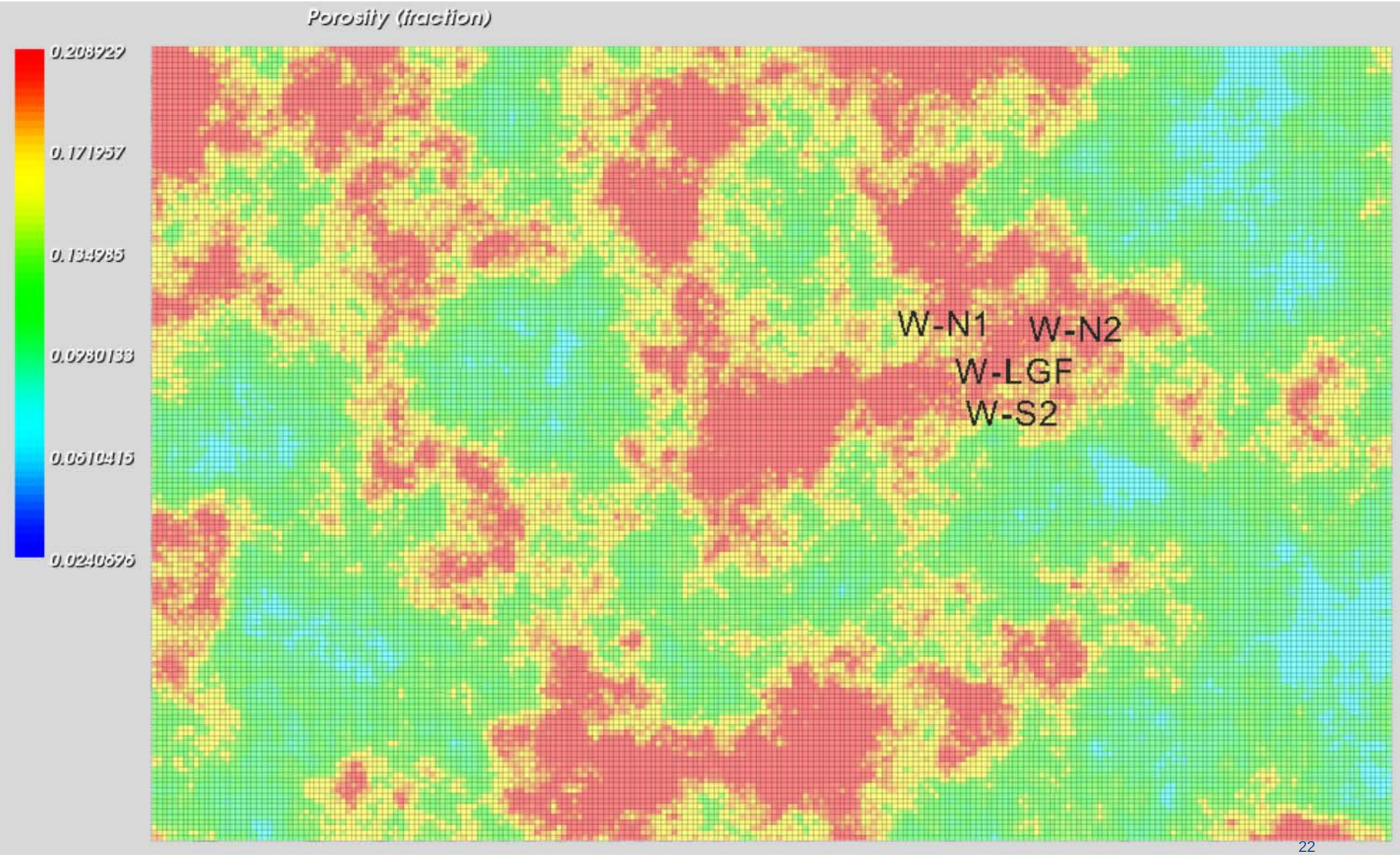
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 15



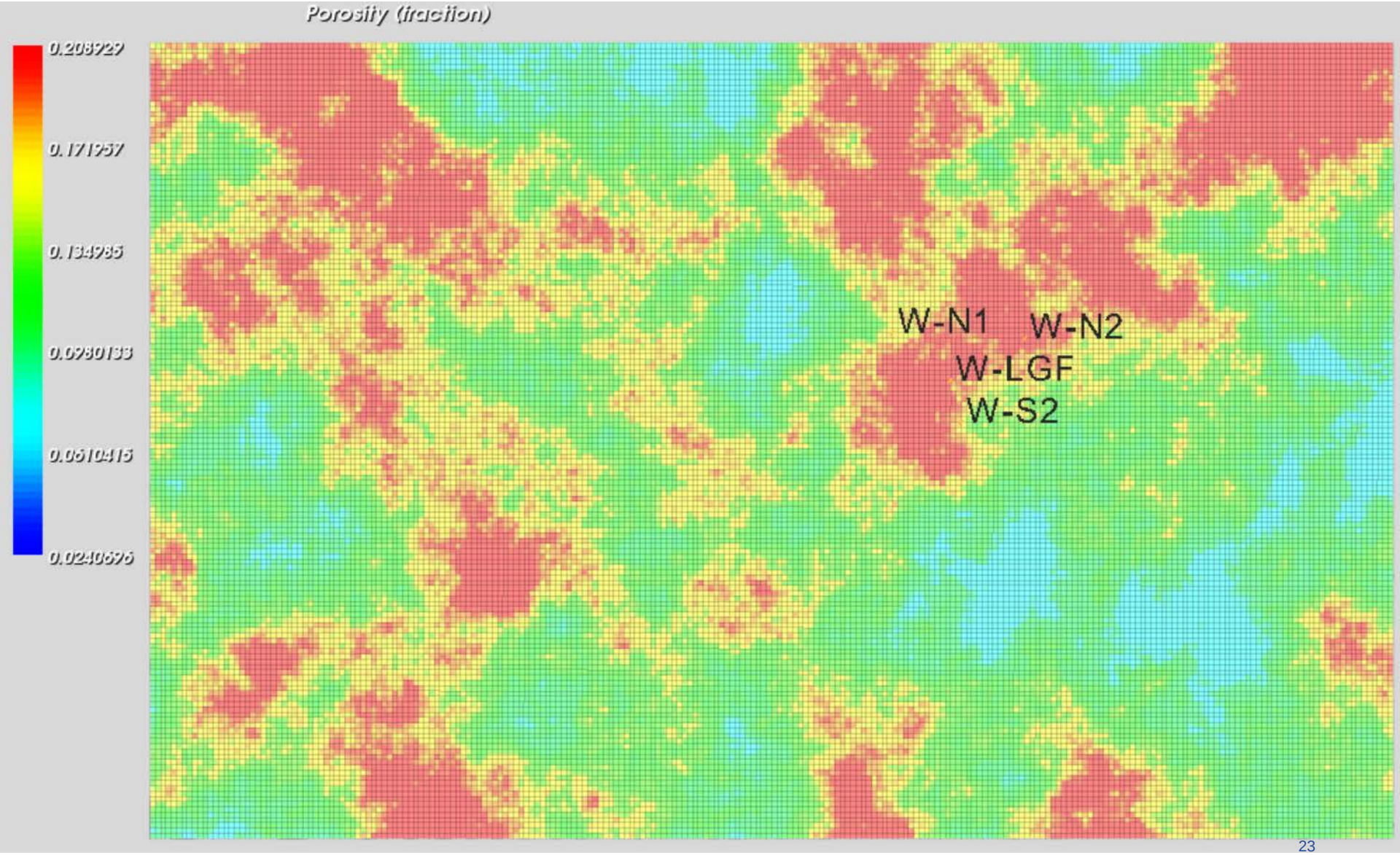
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 16



Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 17

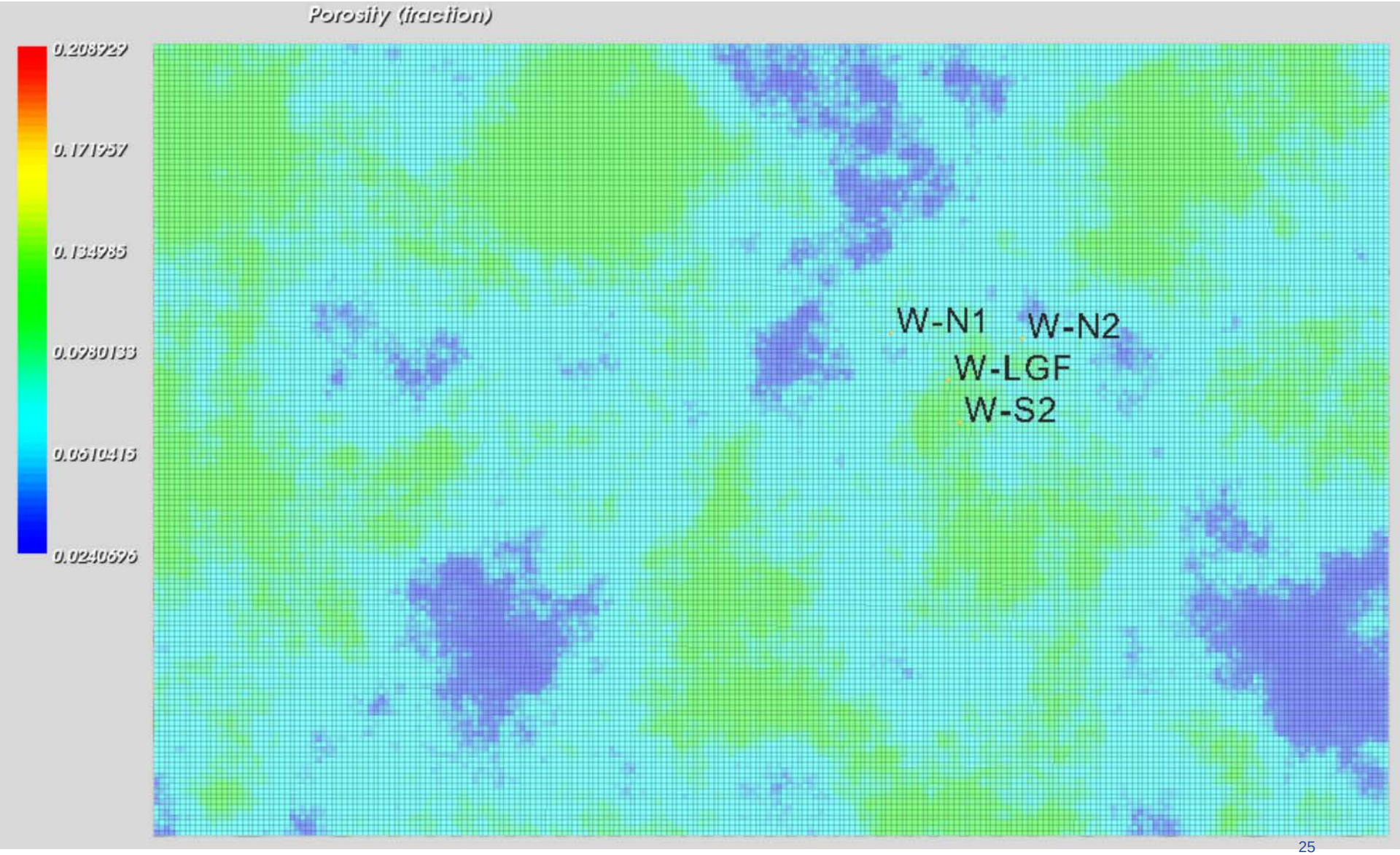


Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 18

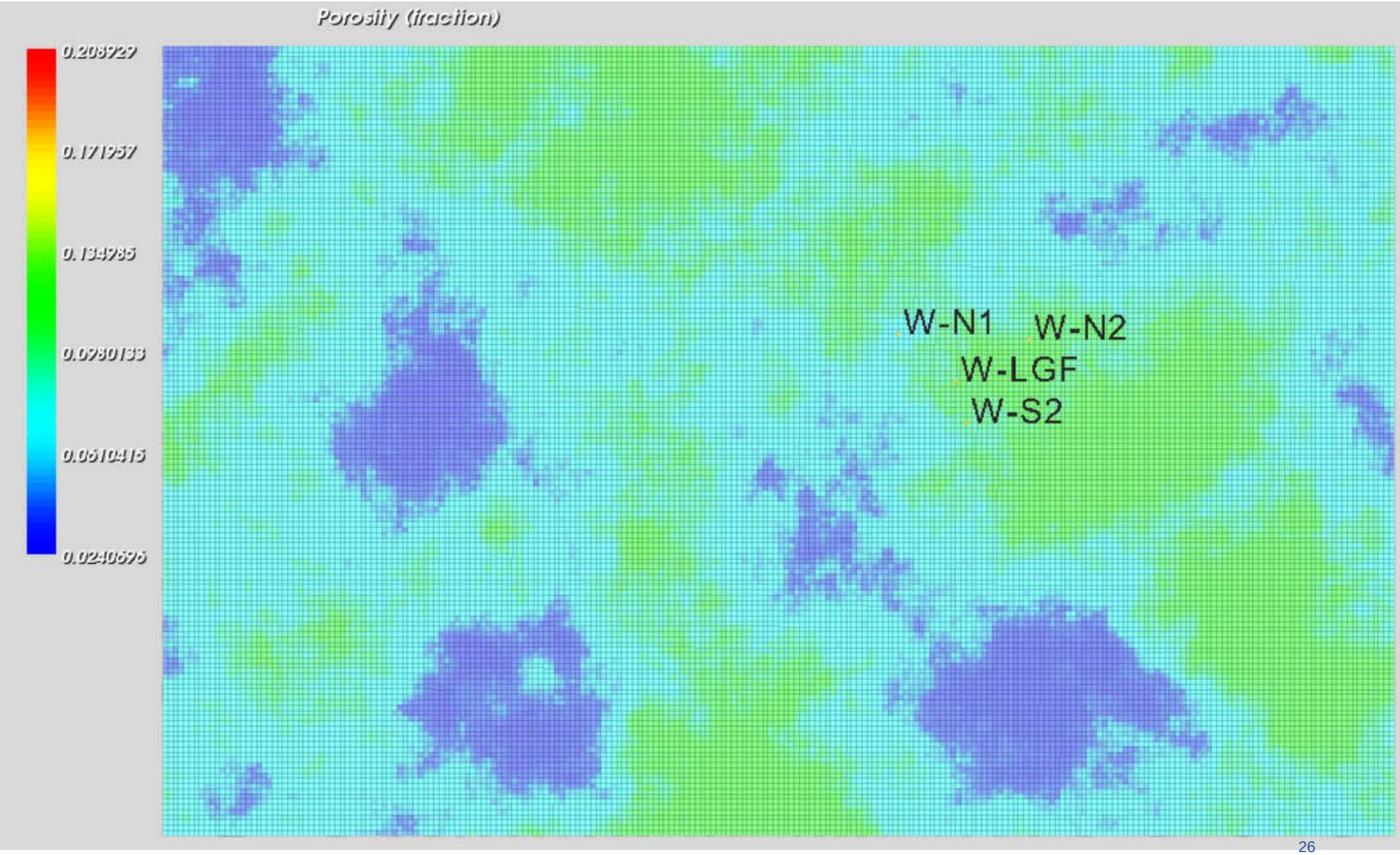
Layer 18 – PHI = 0

Upper Tuscaloosa Upper Interval Porosity – Layer 19



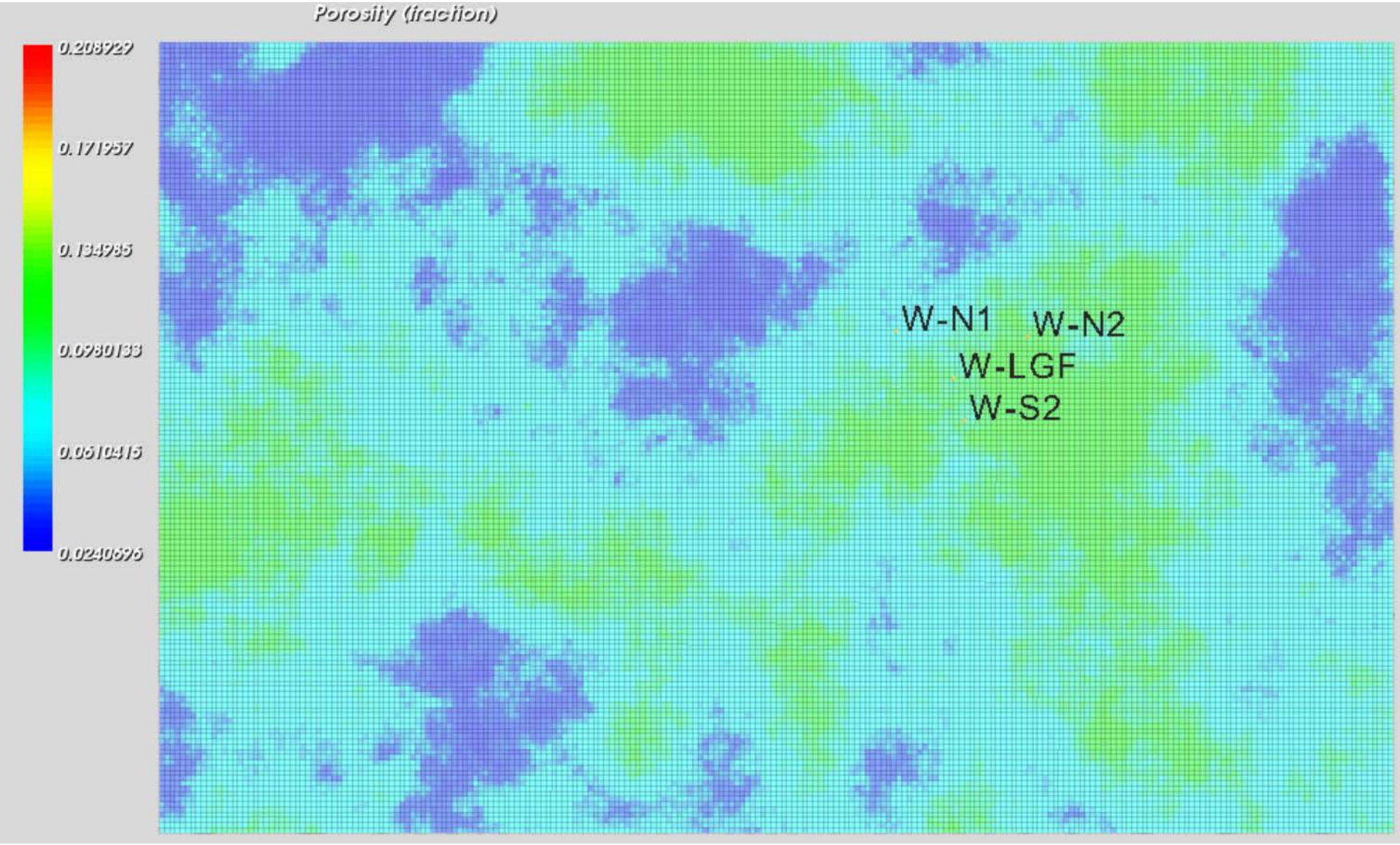
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 20



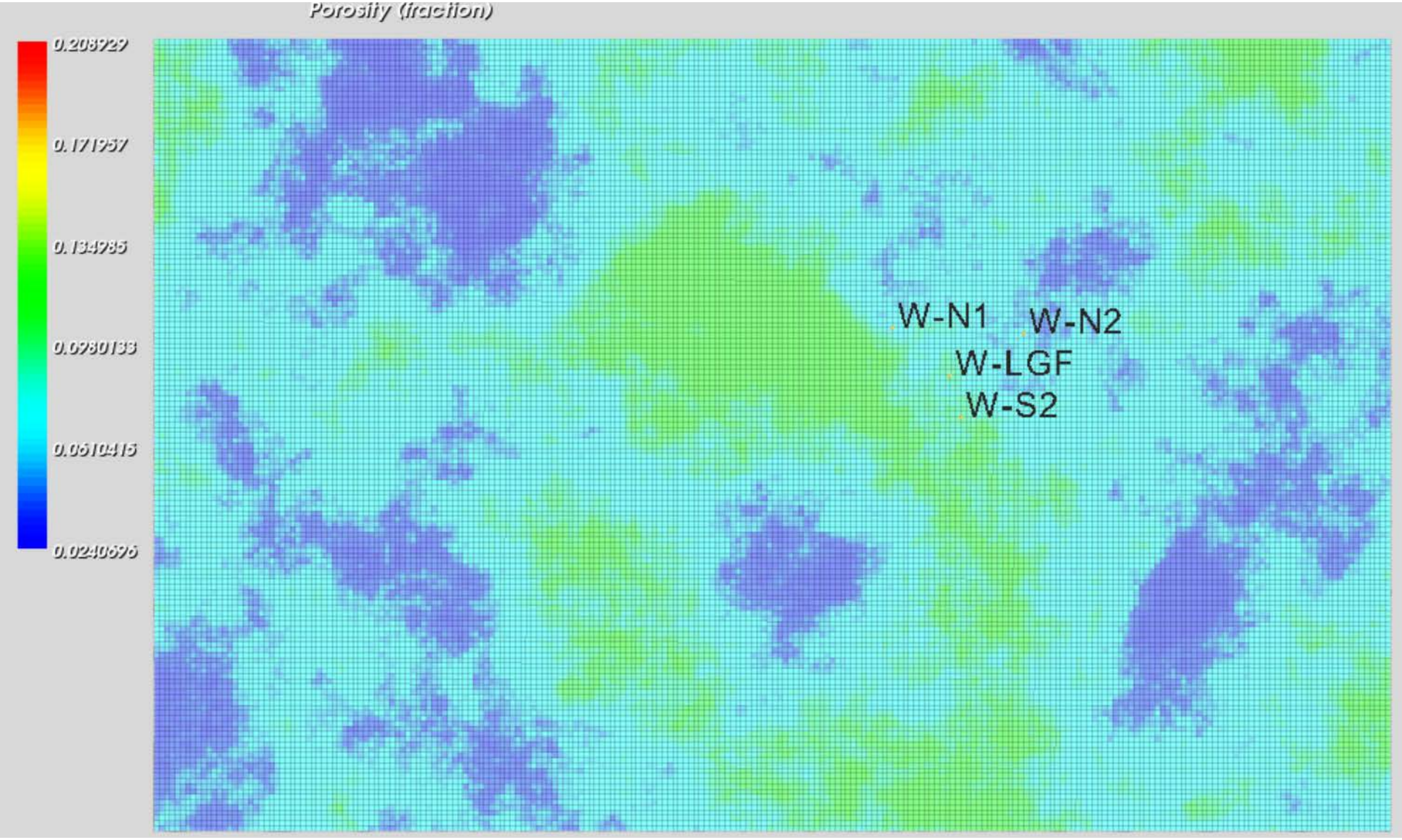
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 21



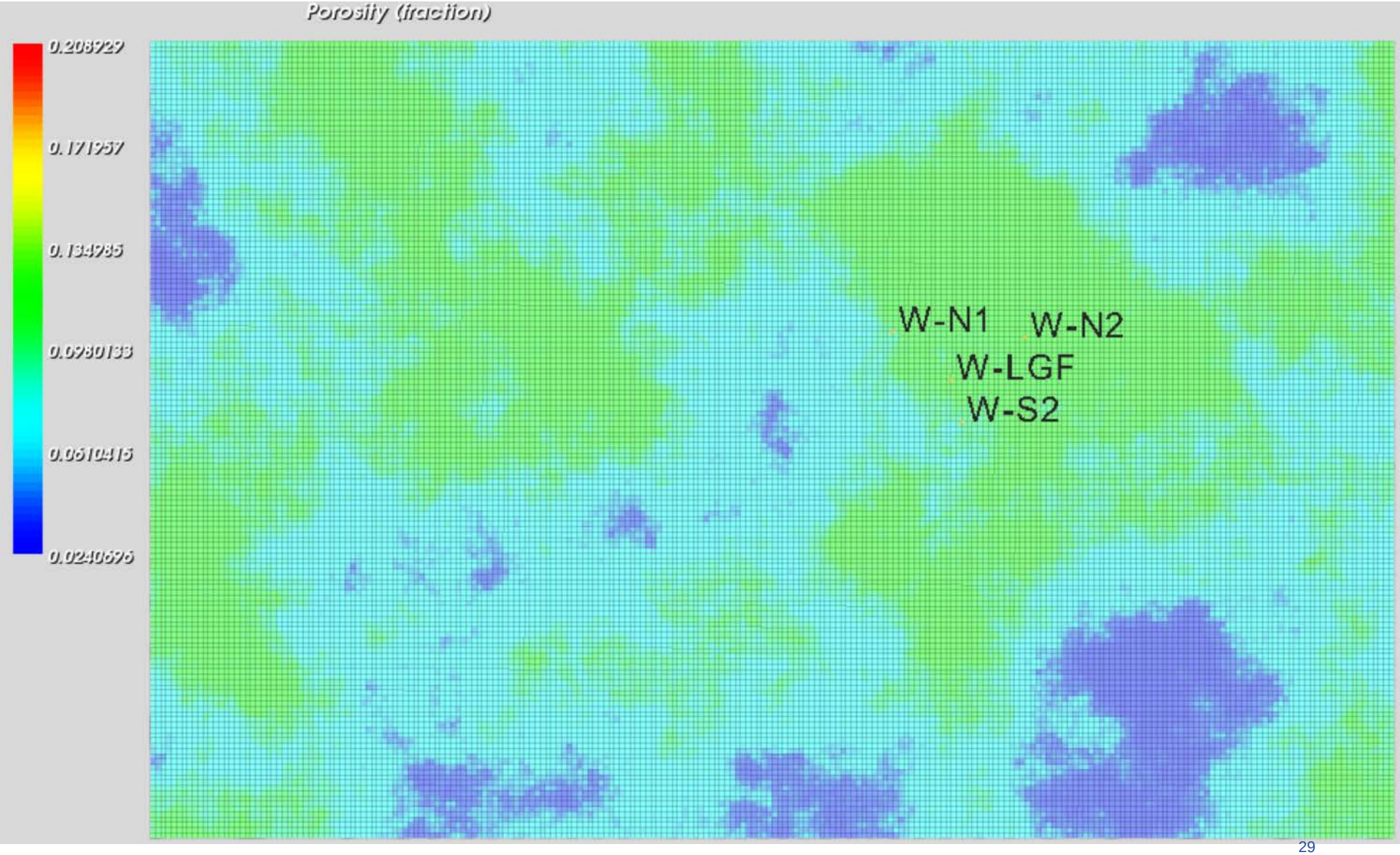
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 22



Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 23



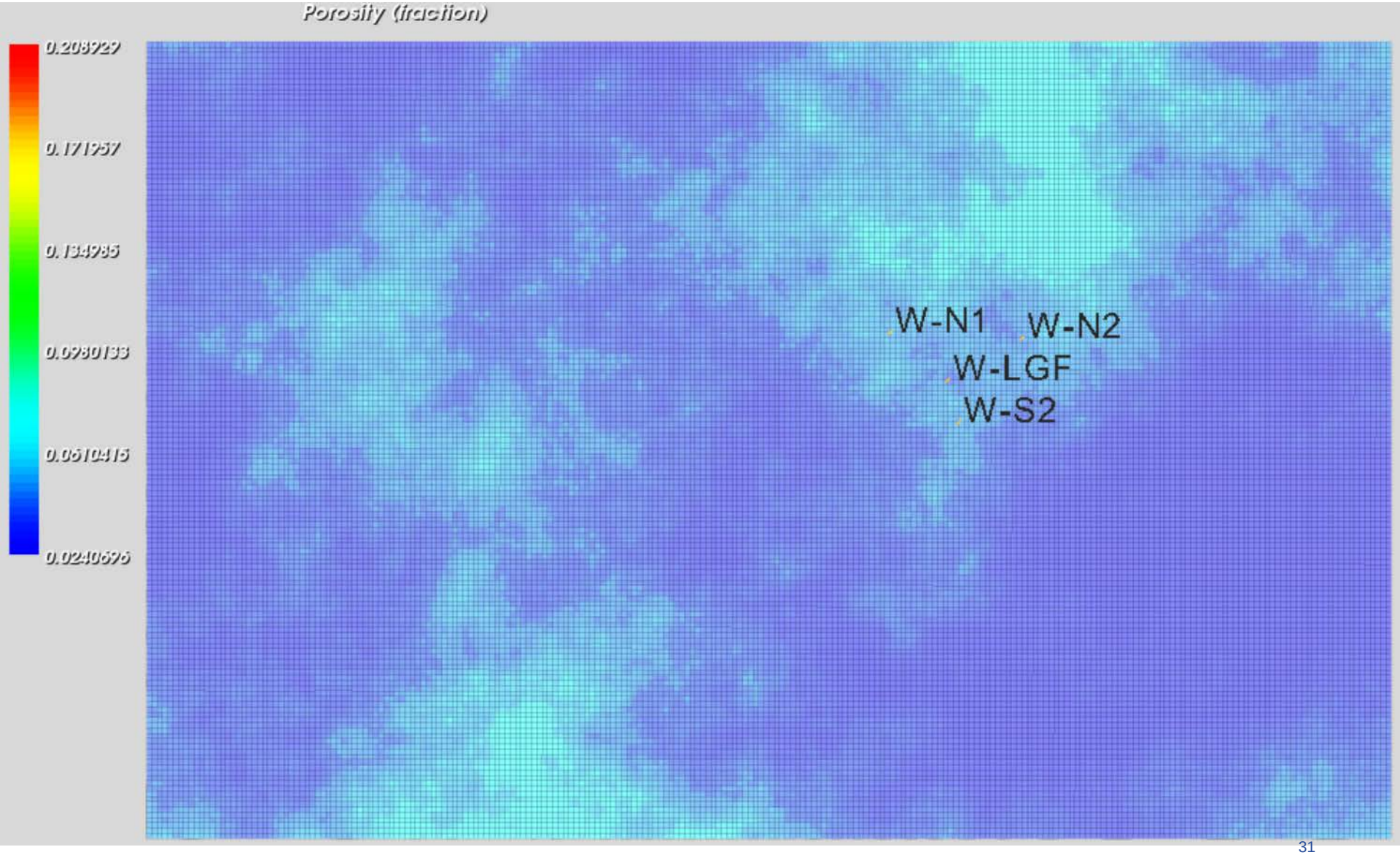
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 24

Layer 24 – PHI = 0

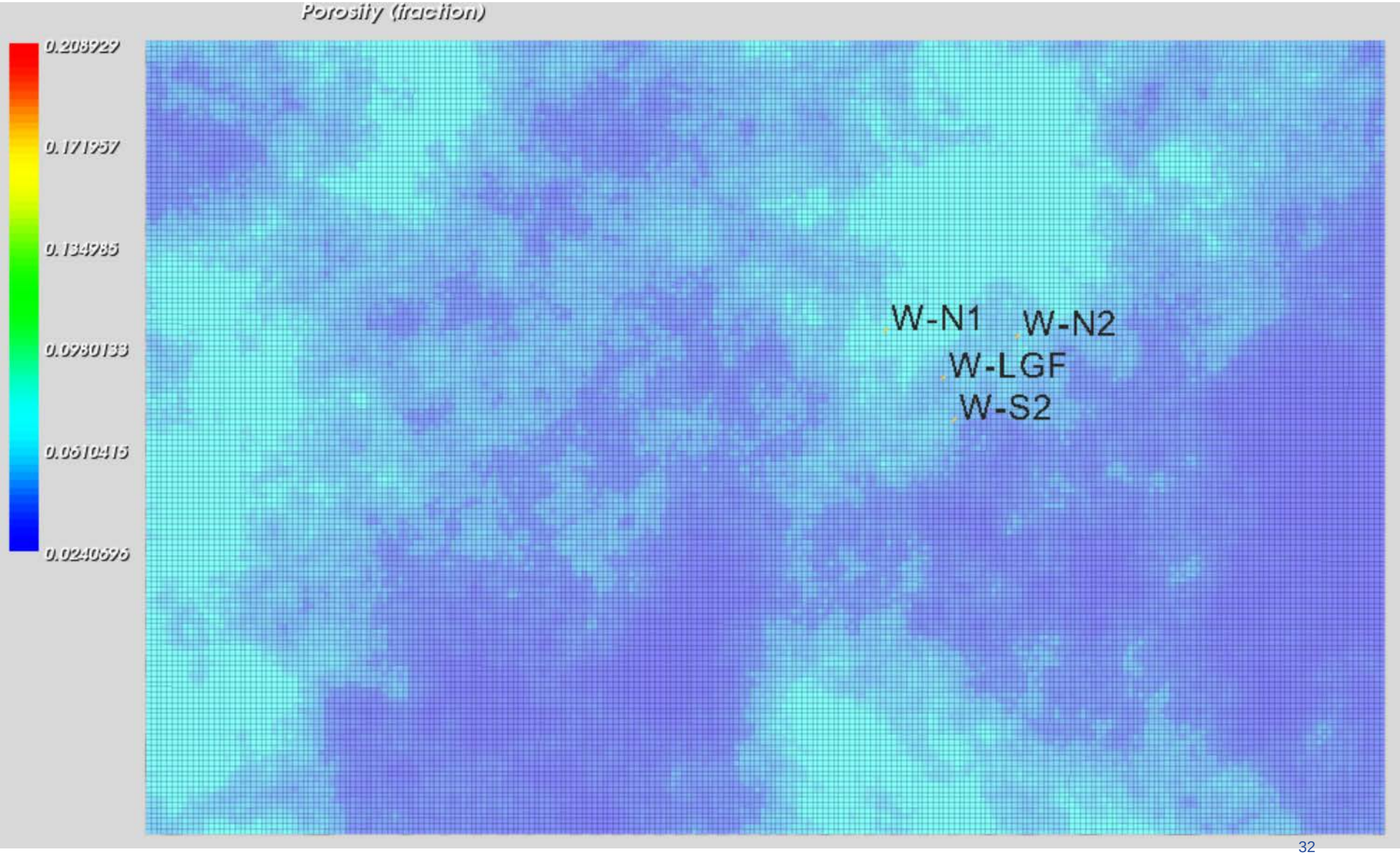
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 25



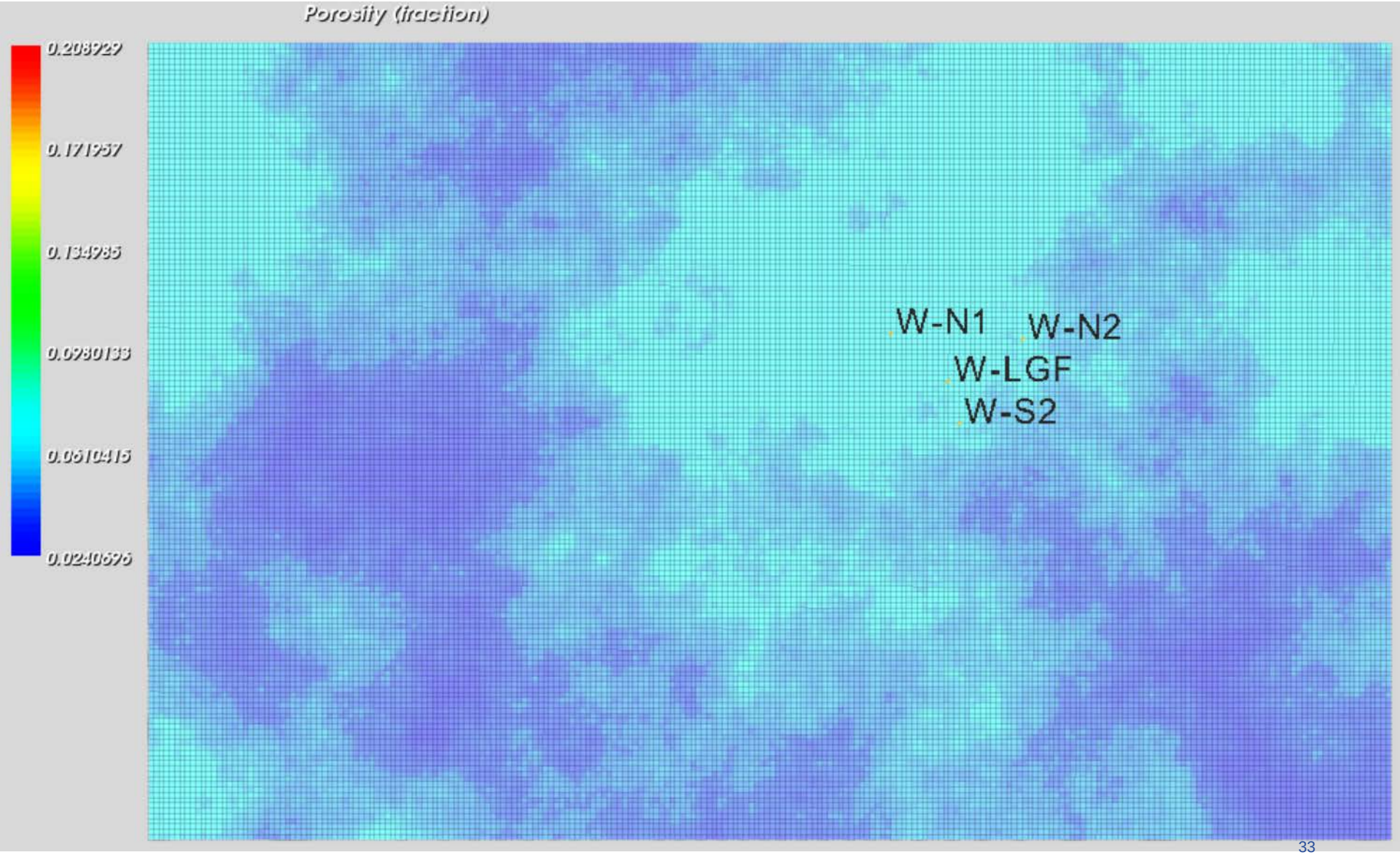
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 26



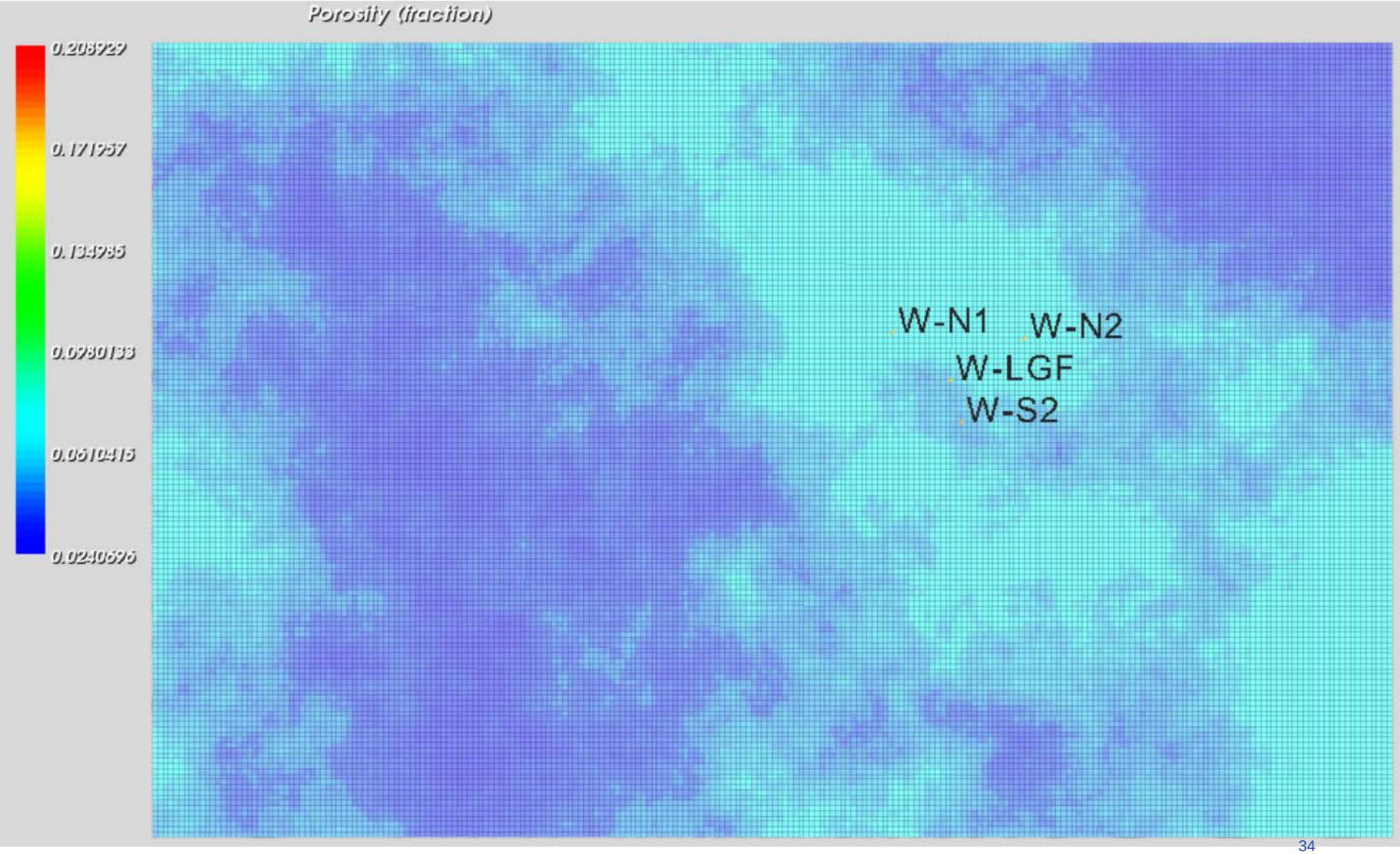
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 27



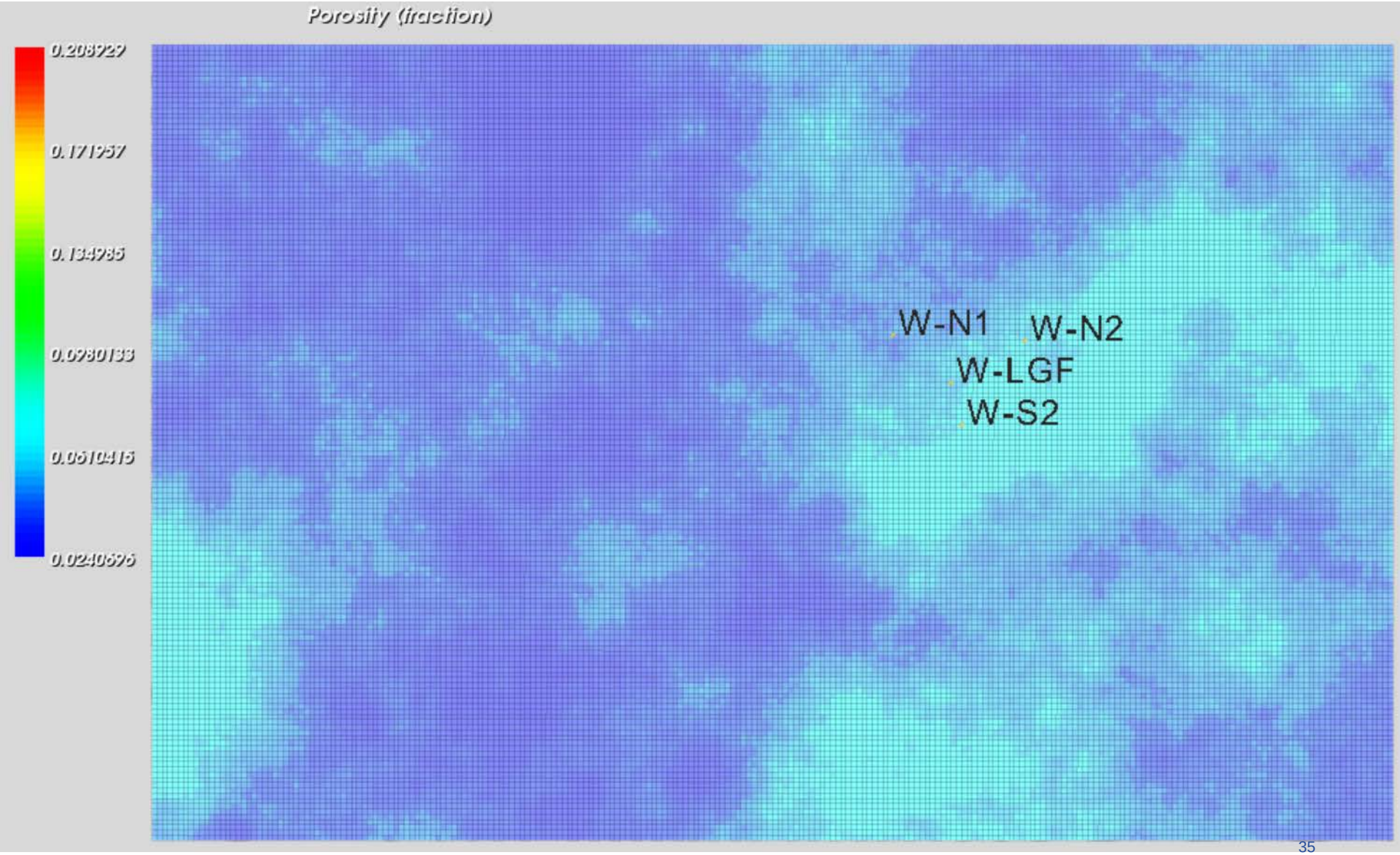
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 28



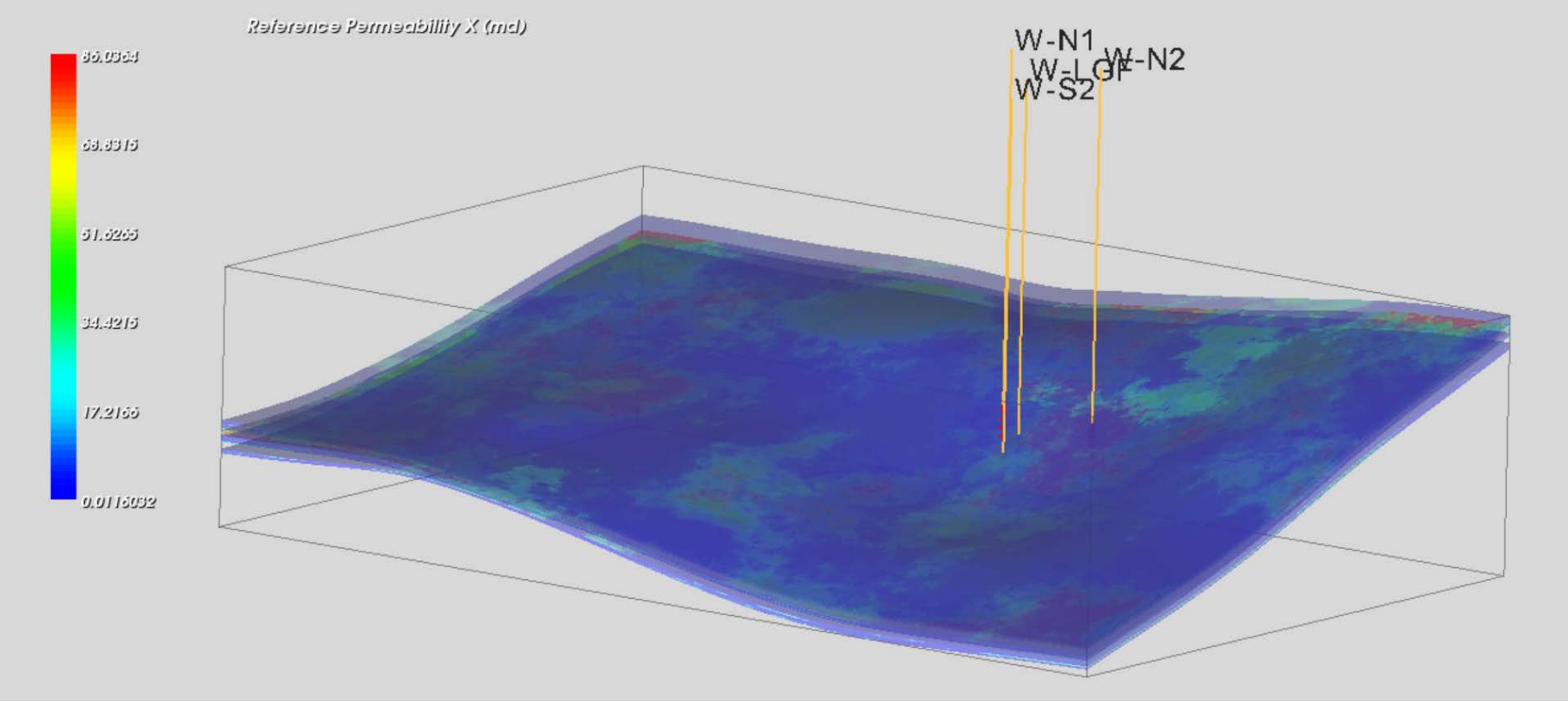
Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Porosity – Layer 29



Grid Porosity = Original Porosity x NG

Upper Tuscaloosa Upper Interval Permeability Composite



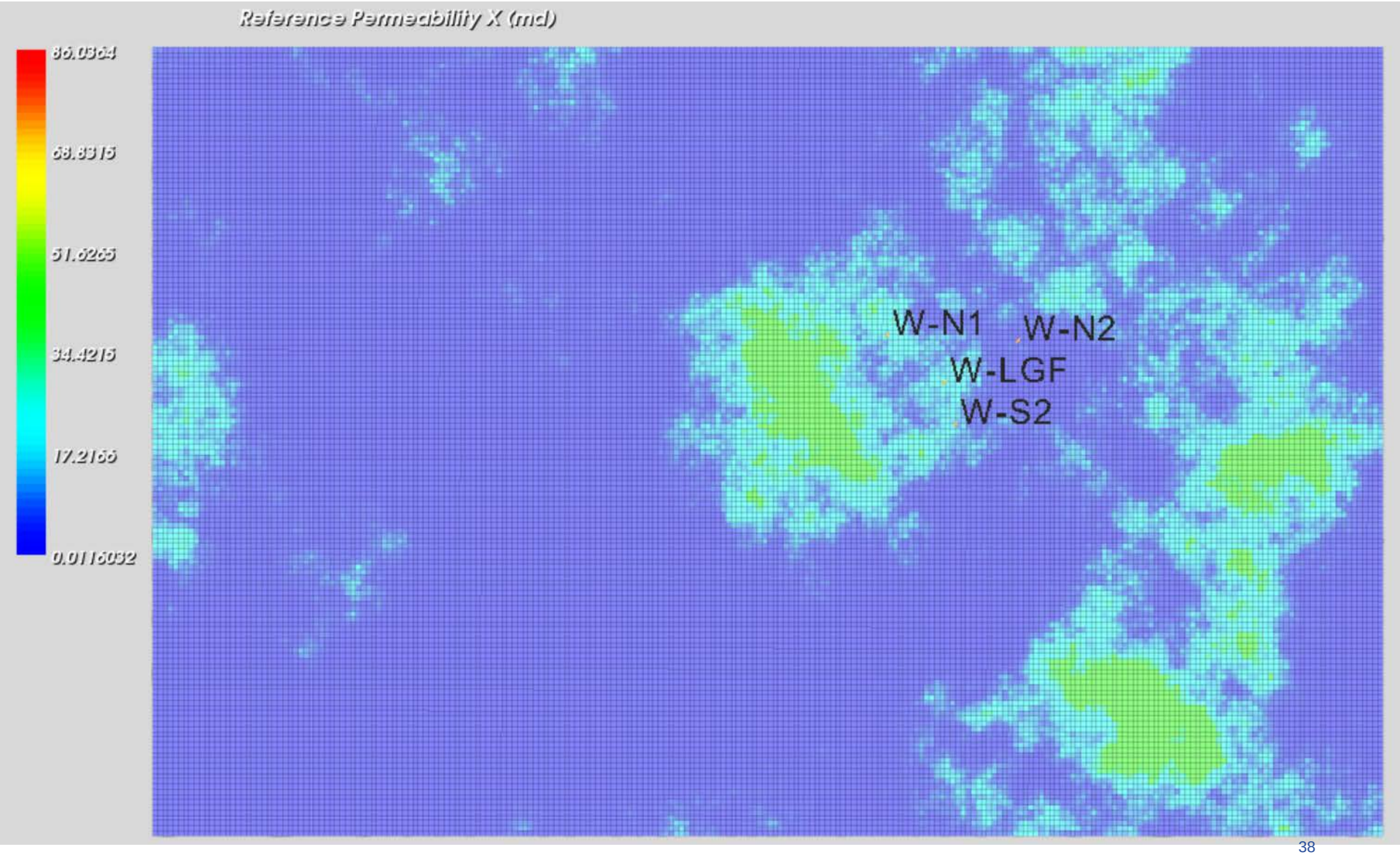
Vertical Exaggeration: 10x

Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 1

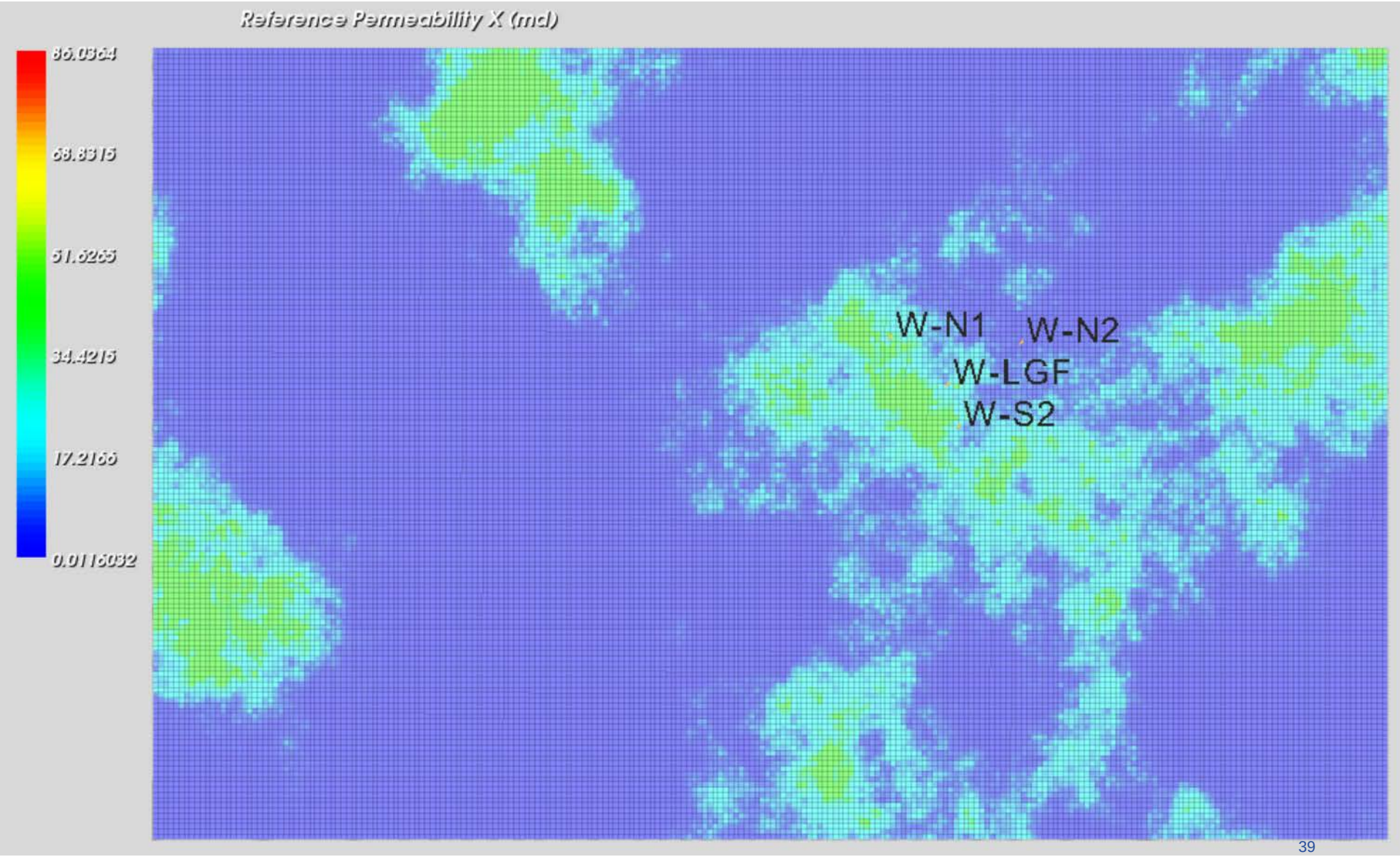
Layer 1 – K = 0.001 md

Upper Tuscaloosa Upper Interval Permeability – Layer 2



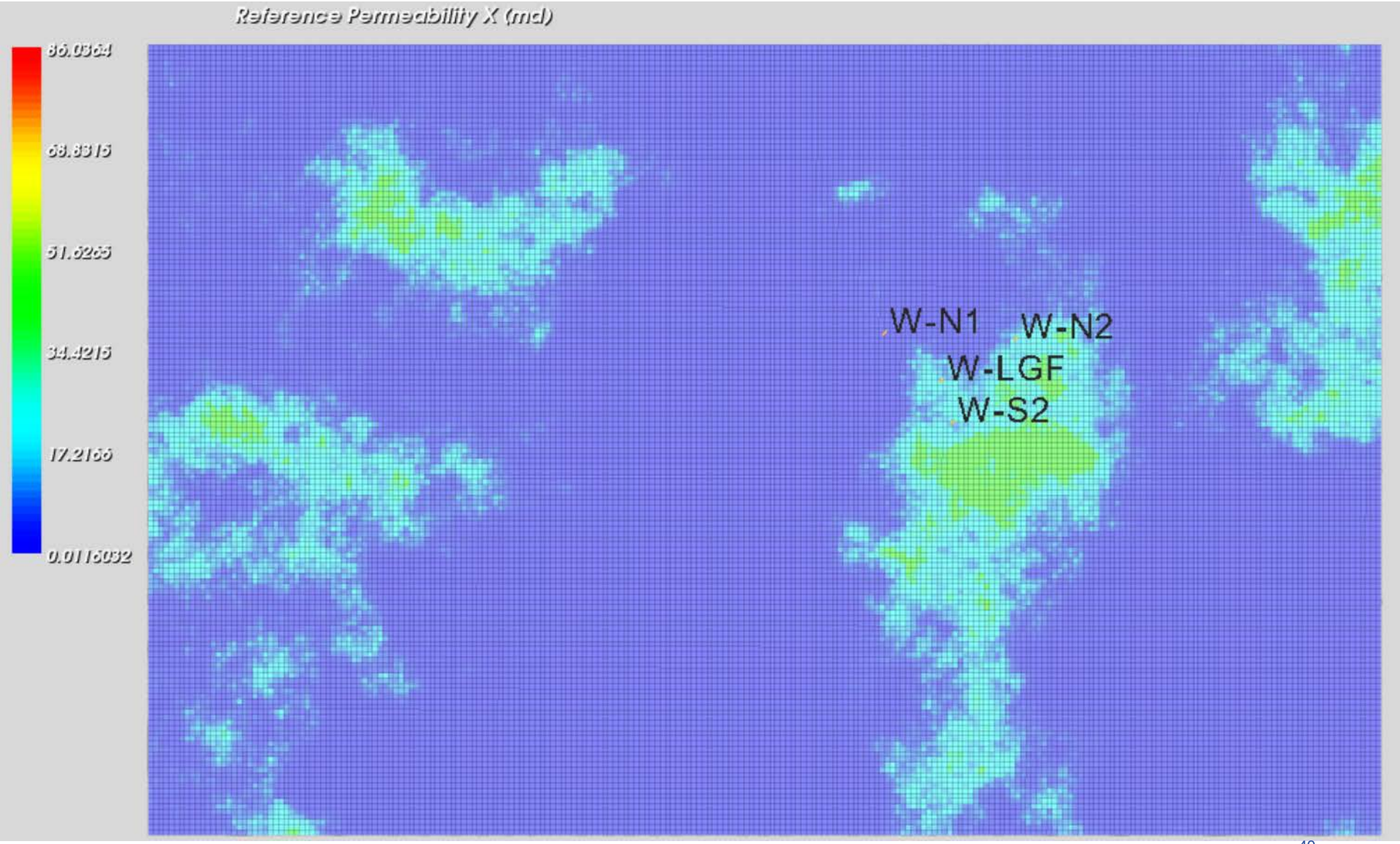
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 3



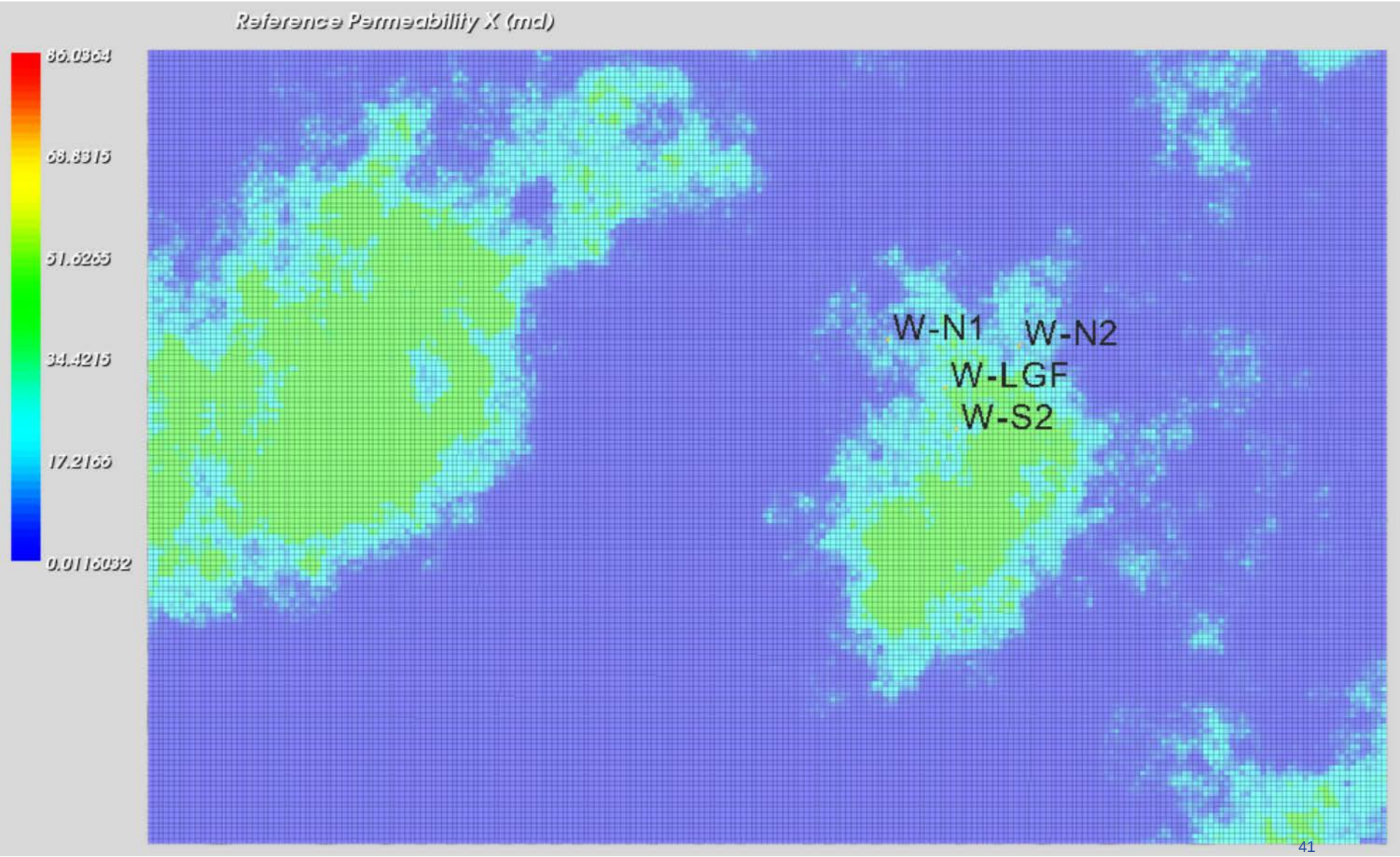
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 4



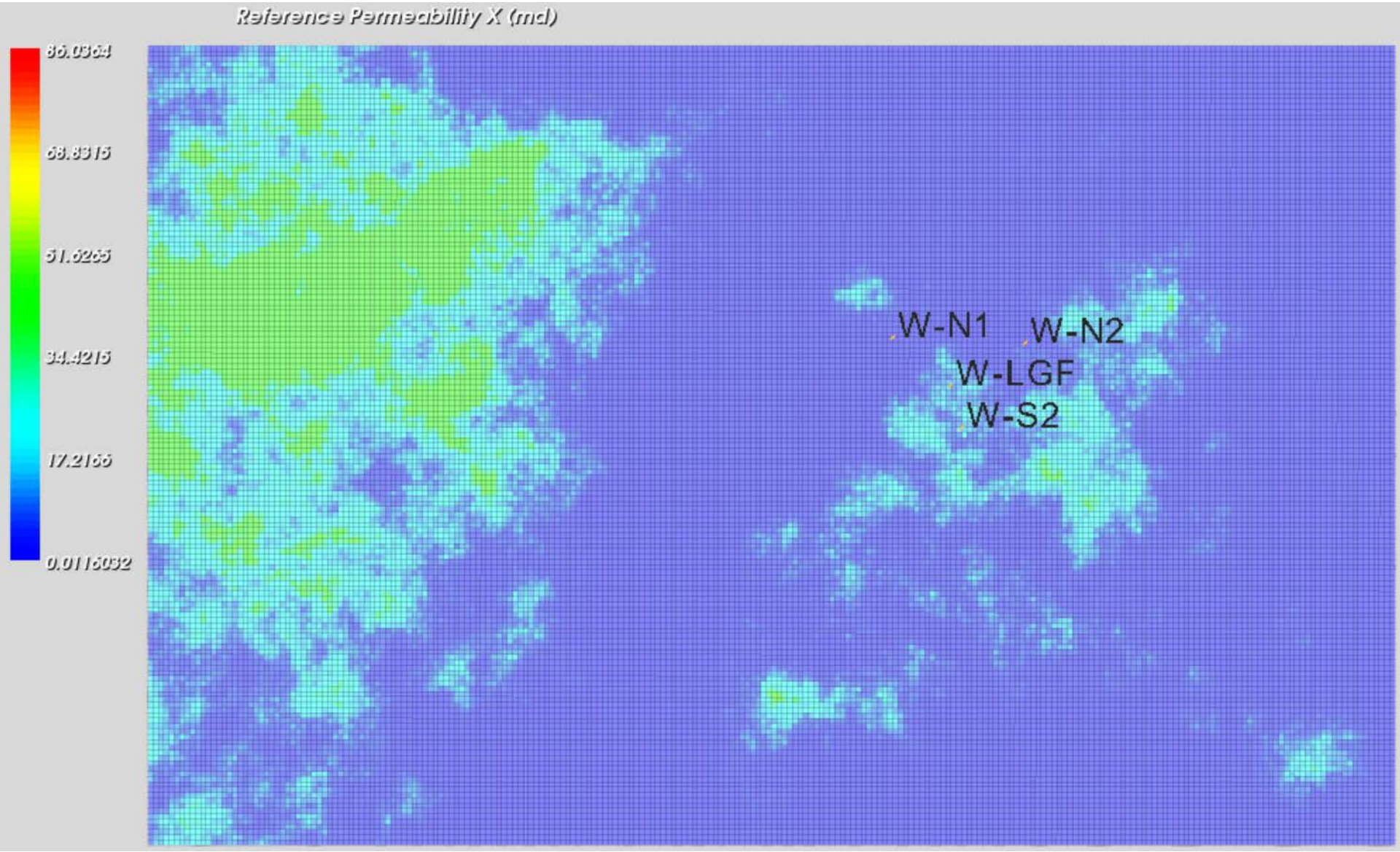
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 5



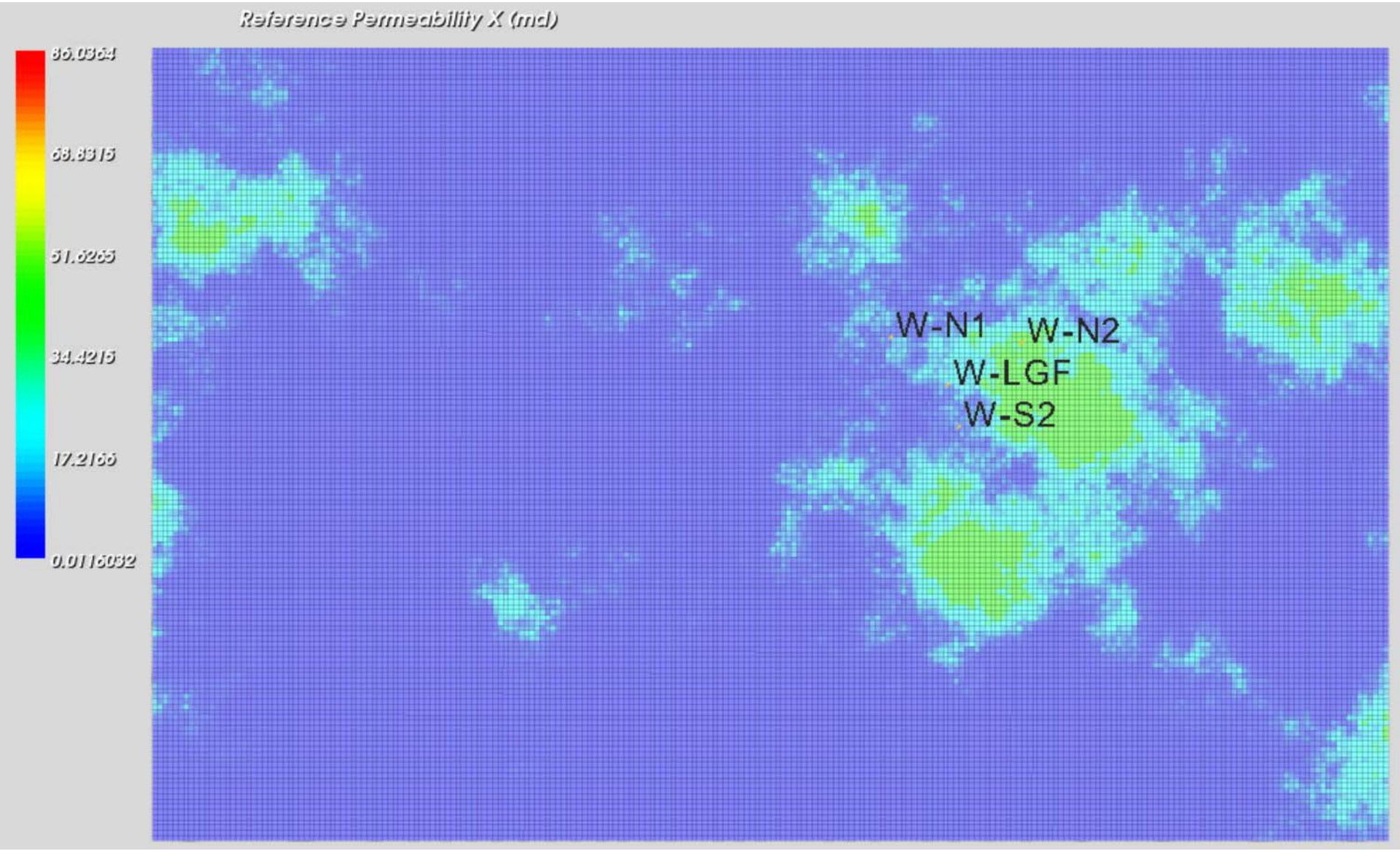
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 6



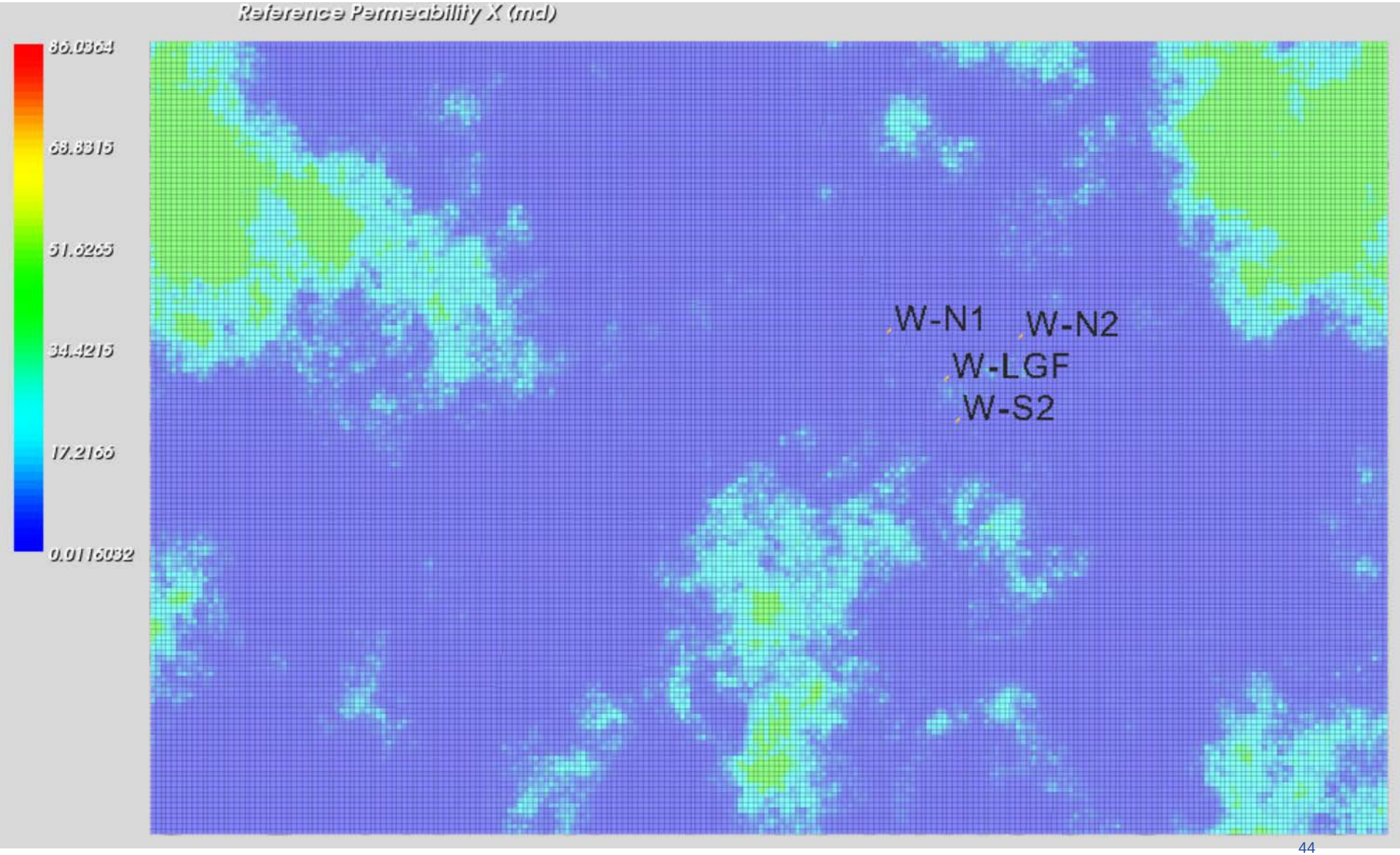
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 7



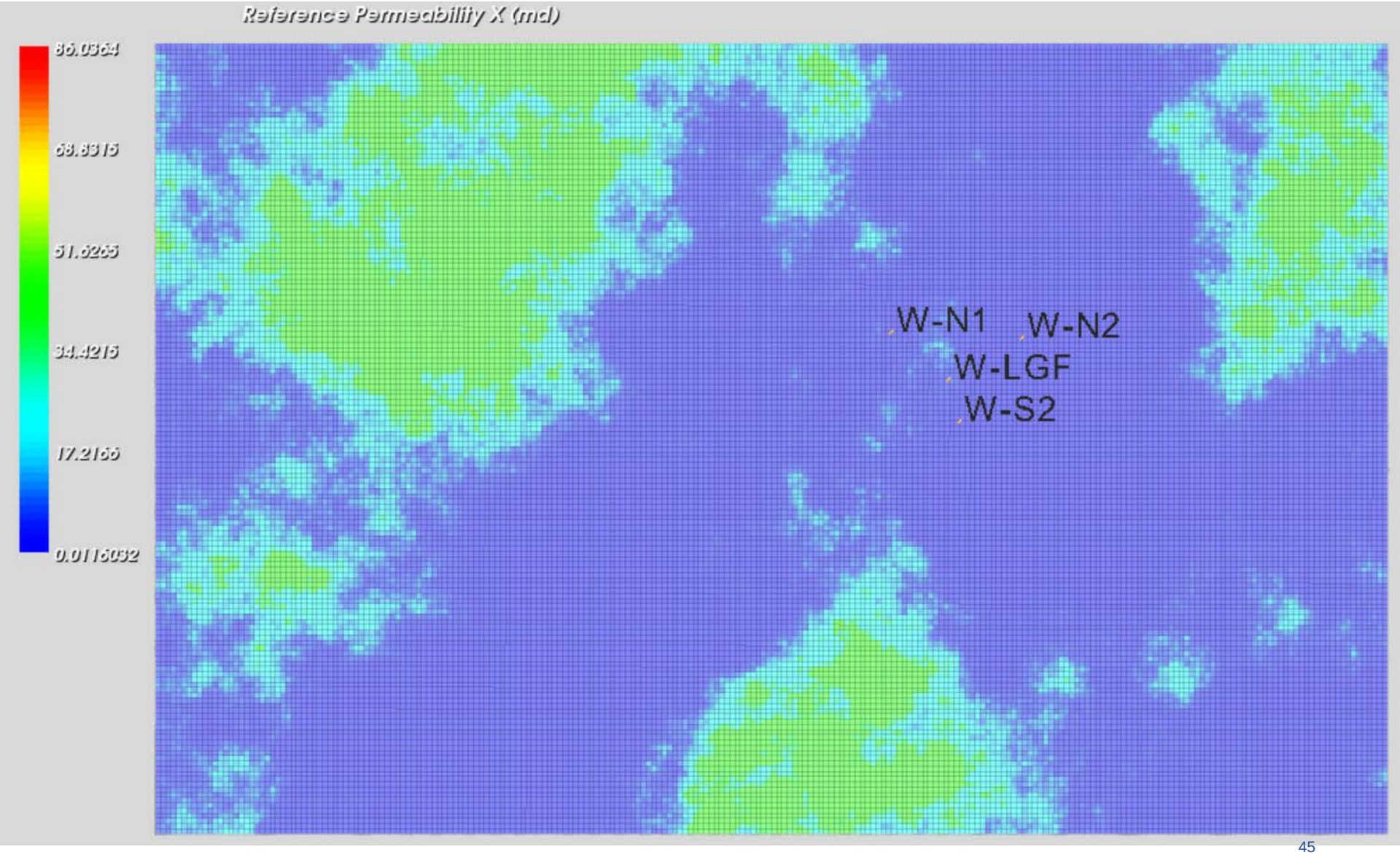
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 8



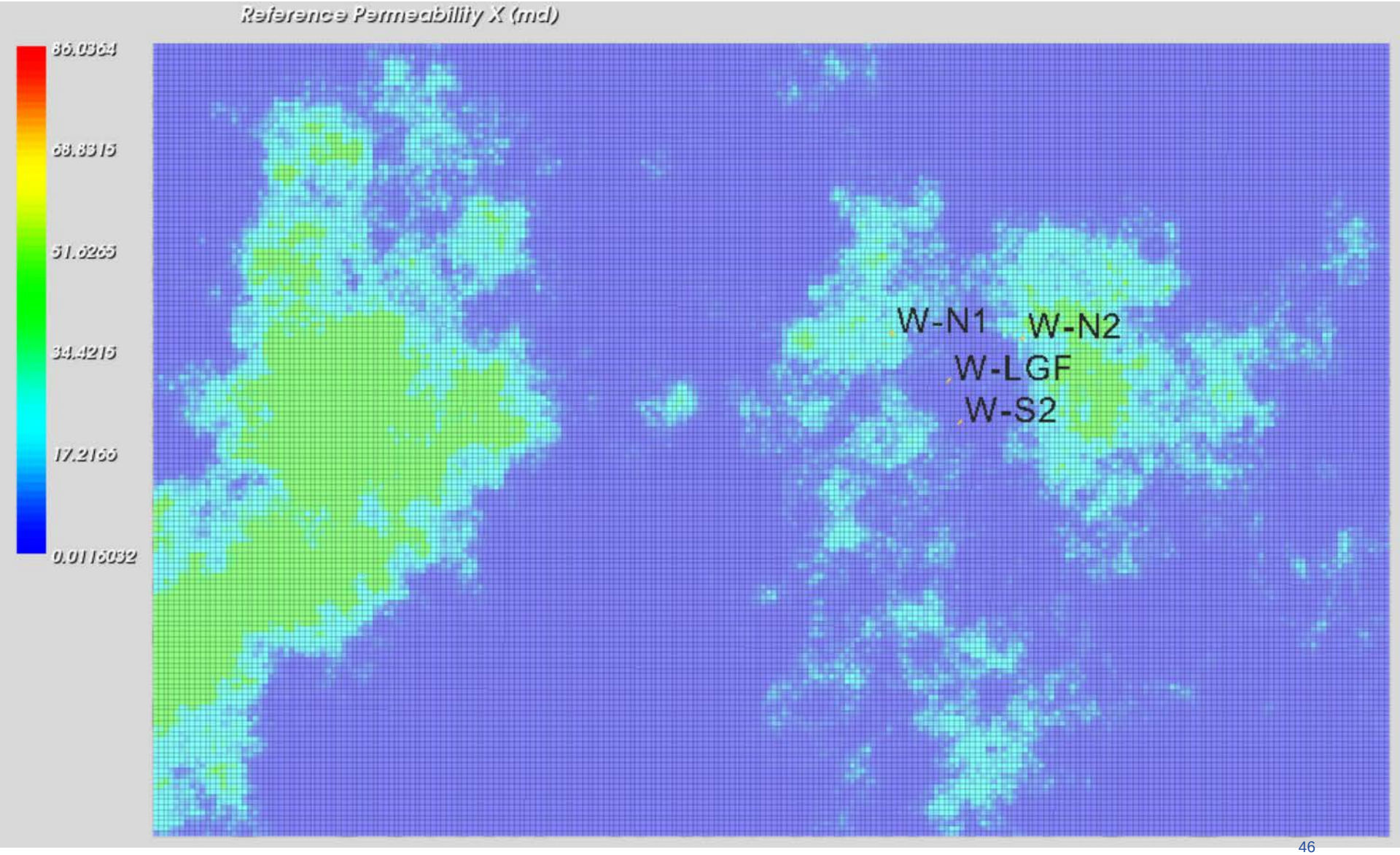
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 9



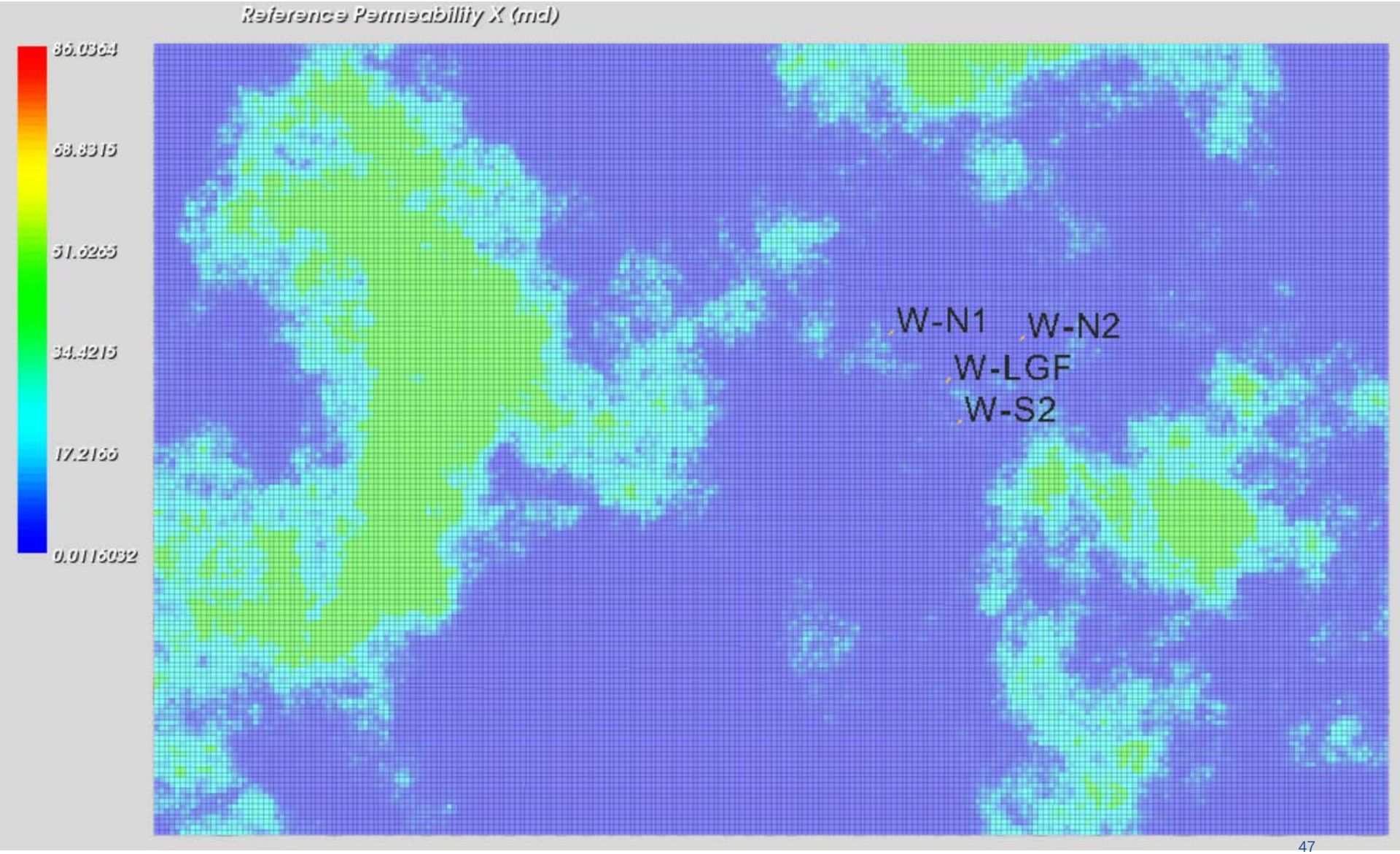
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 10



Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 11

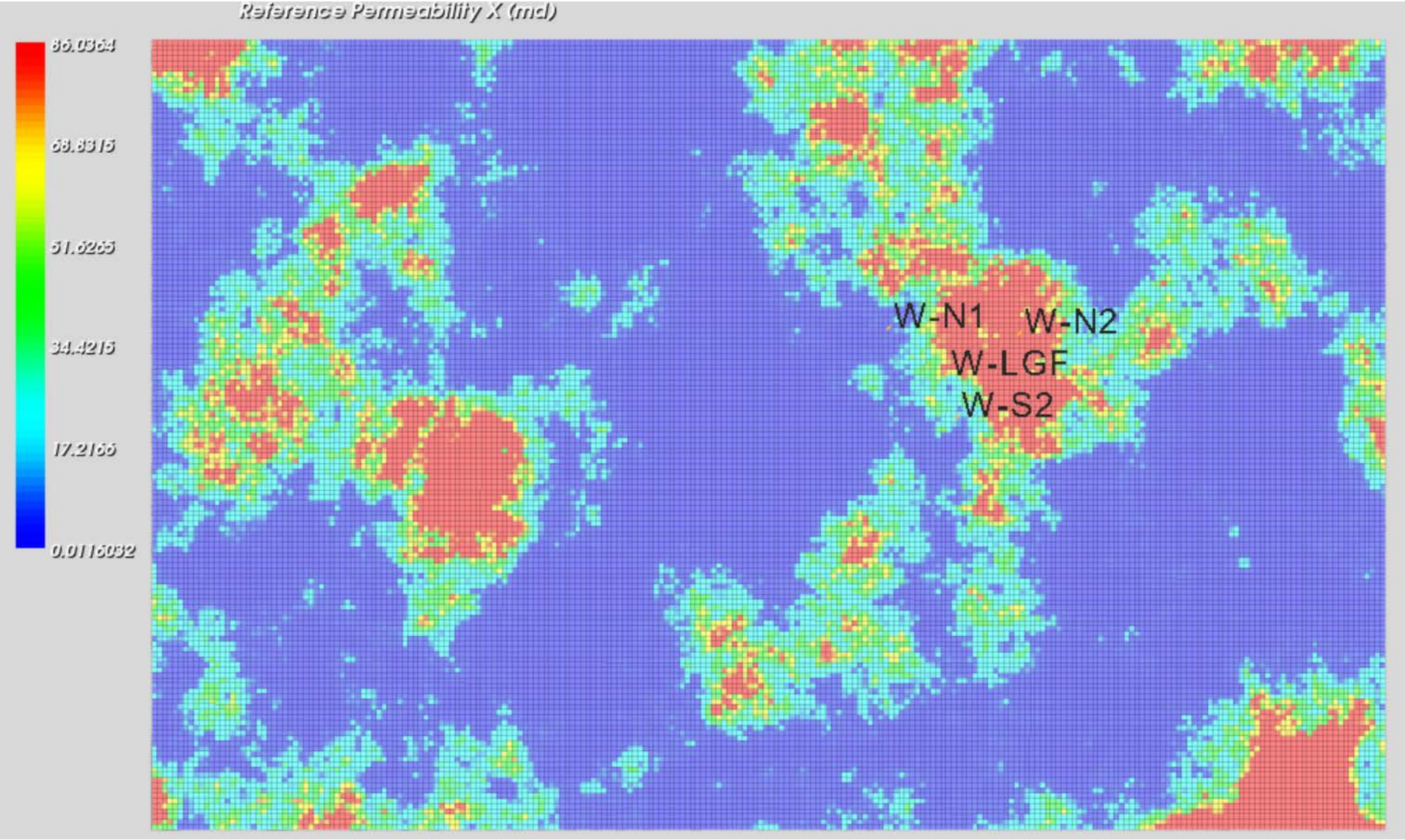


Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 12

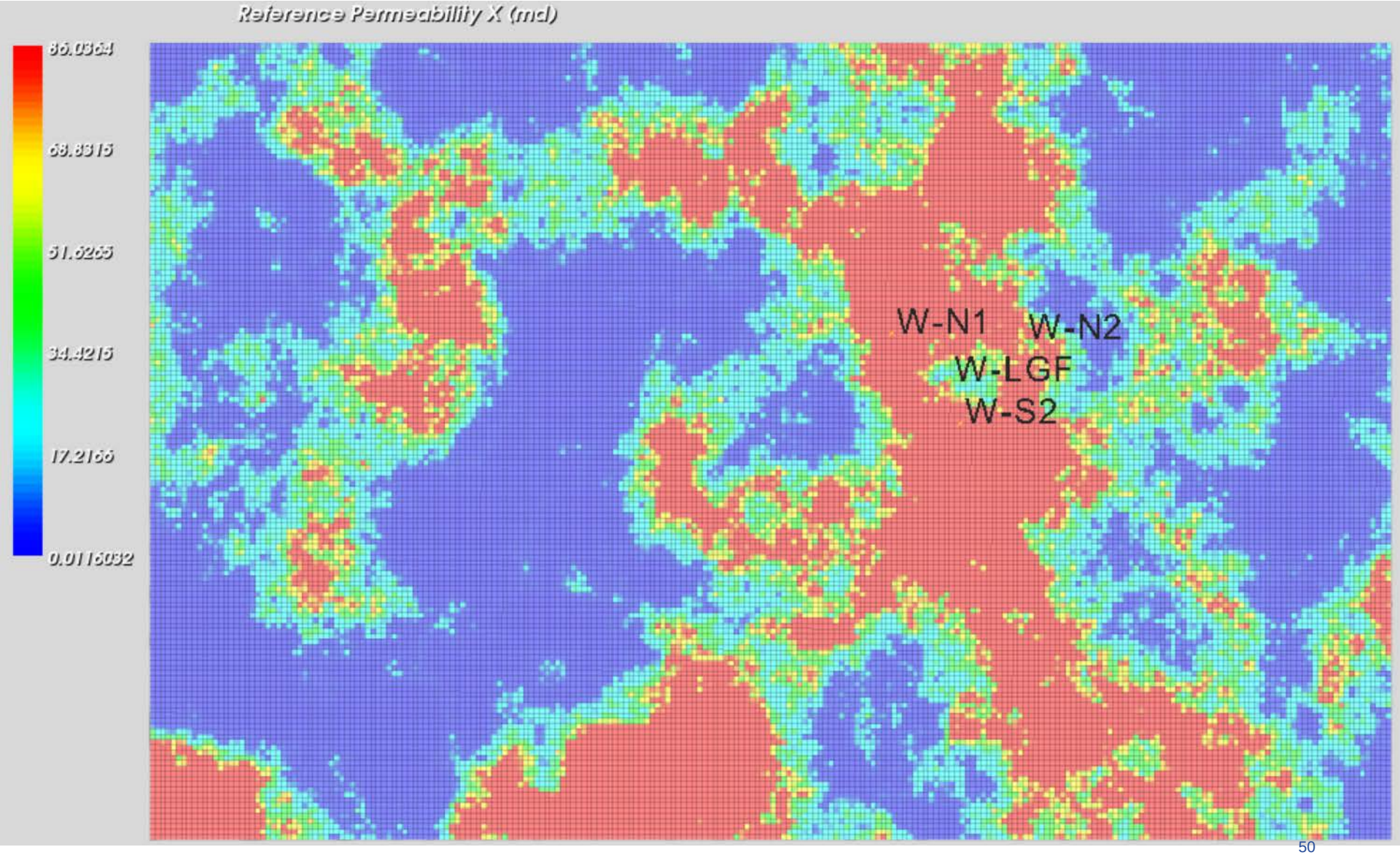
Layer 12 – K = 0.001 md

Upper Tuscaloosa Upper Interval Permeability – Layer 13



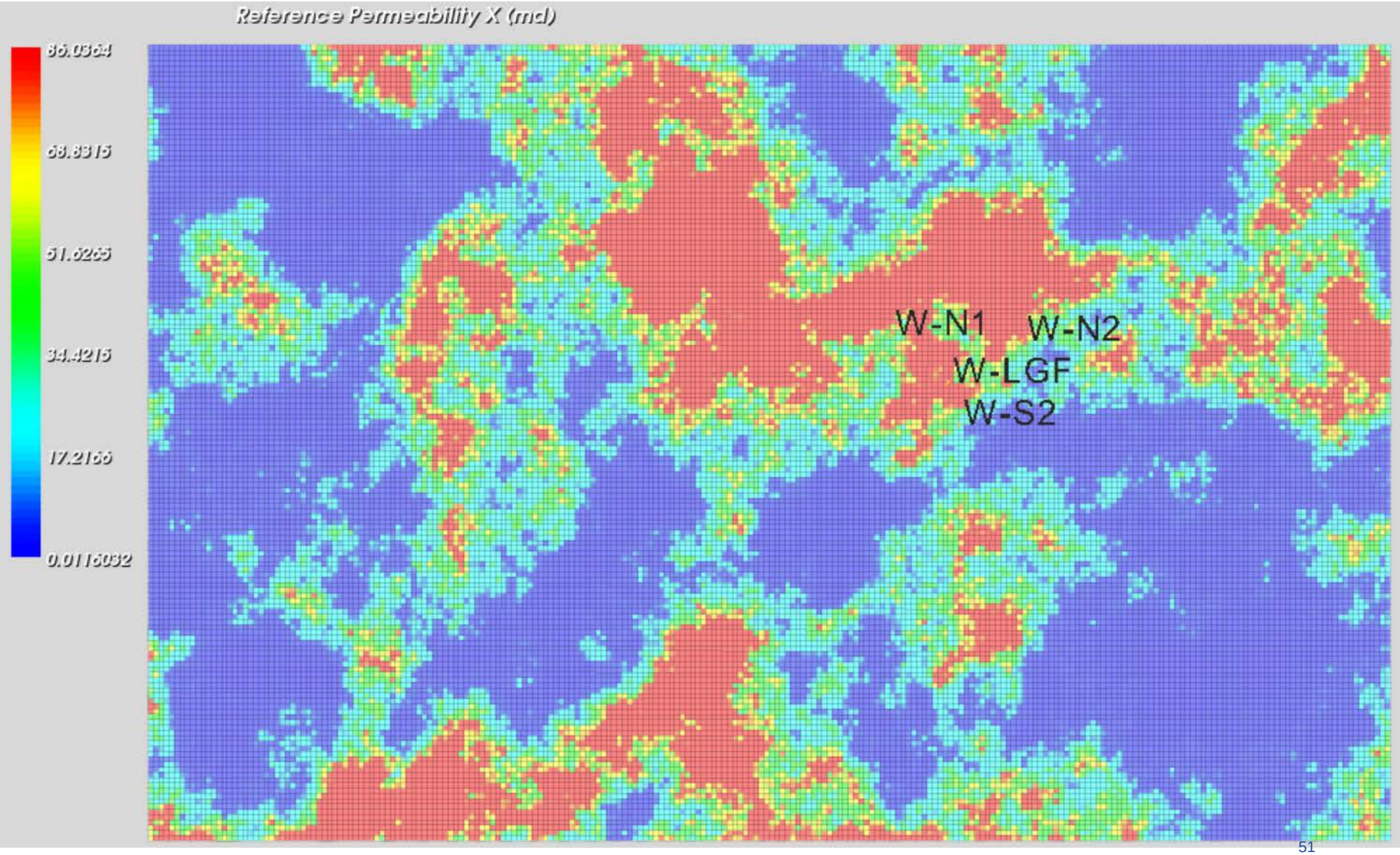
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 14



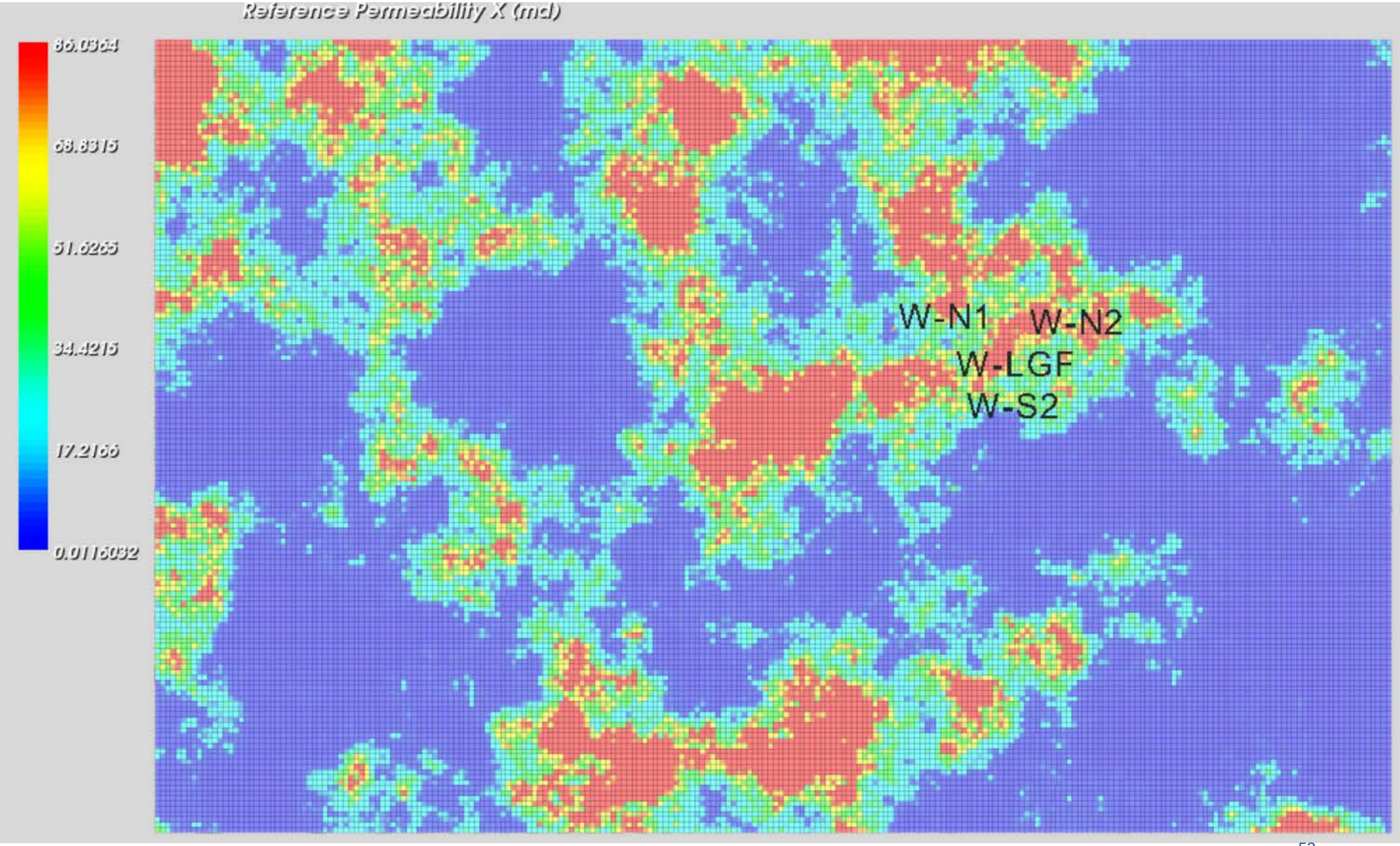
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 15



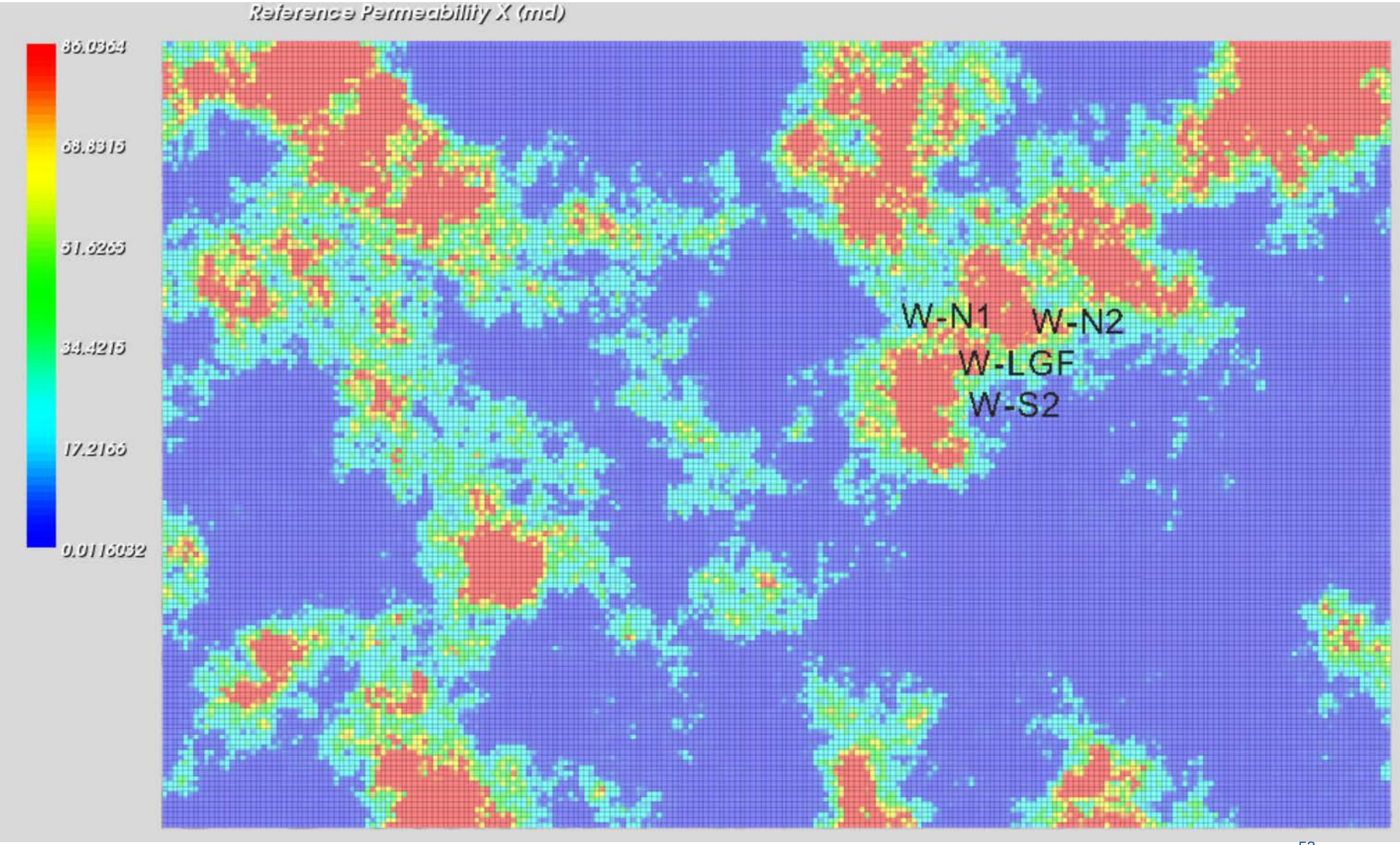
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 16



Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 17

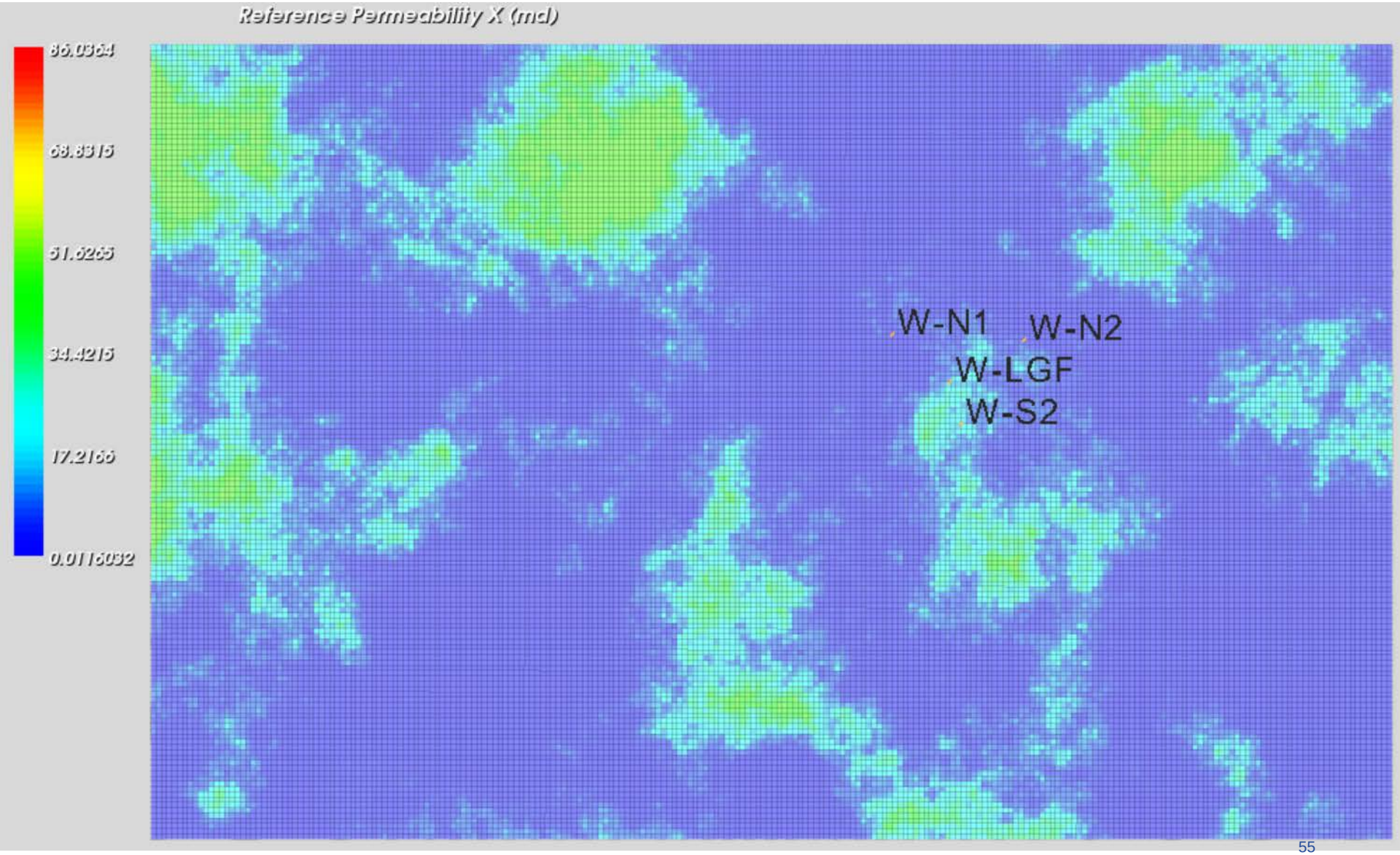


Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 18

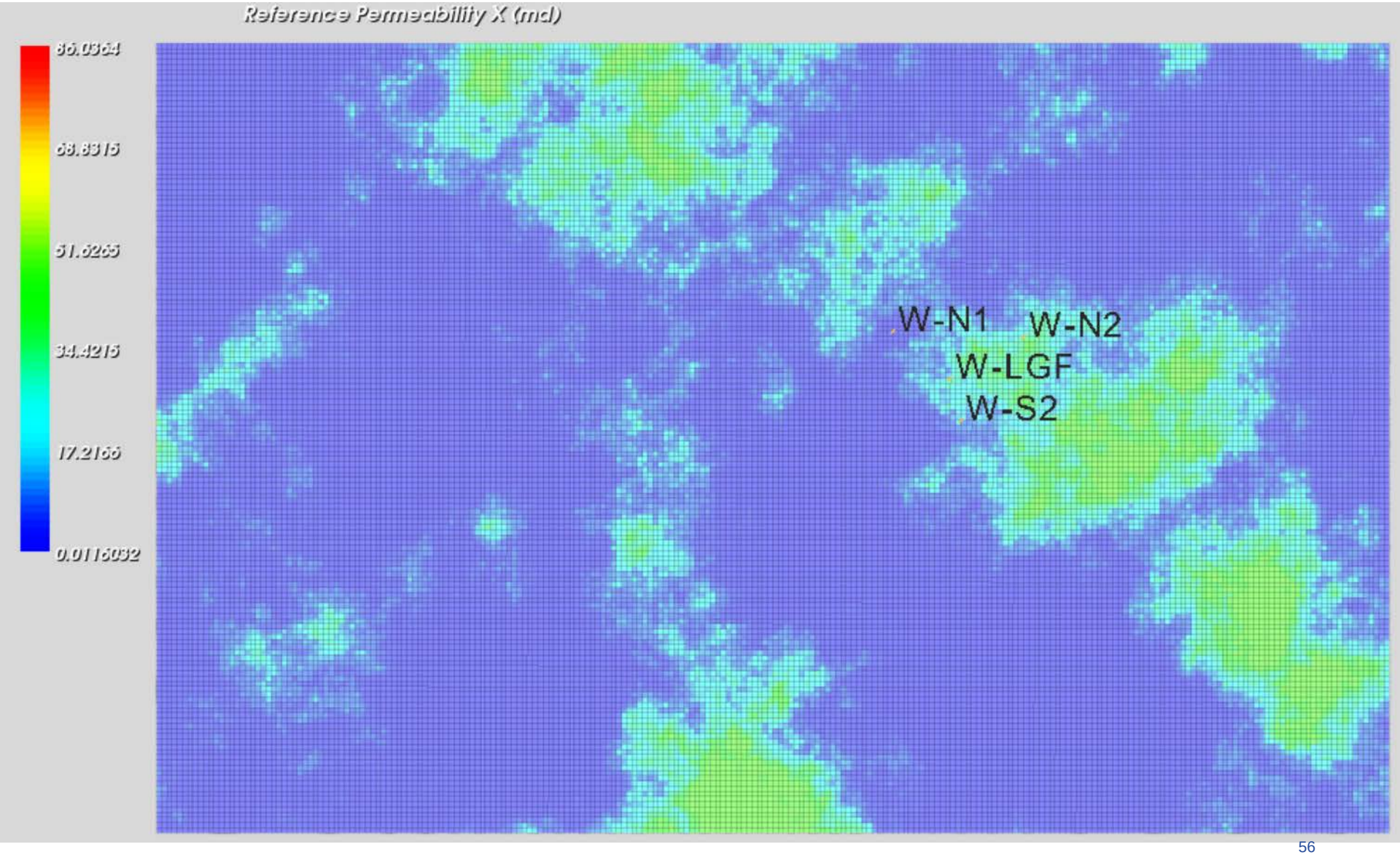
Layer 18 – K = 0.001

Upper Tuscaloosa Upper Interval Permeability – Layer 19



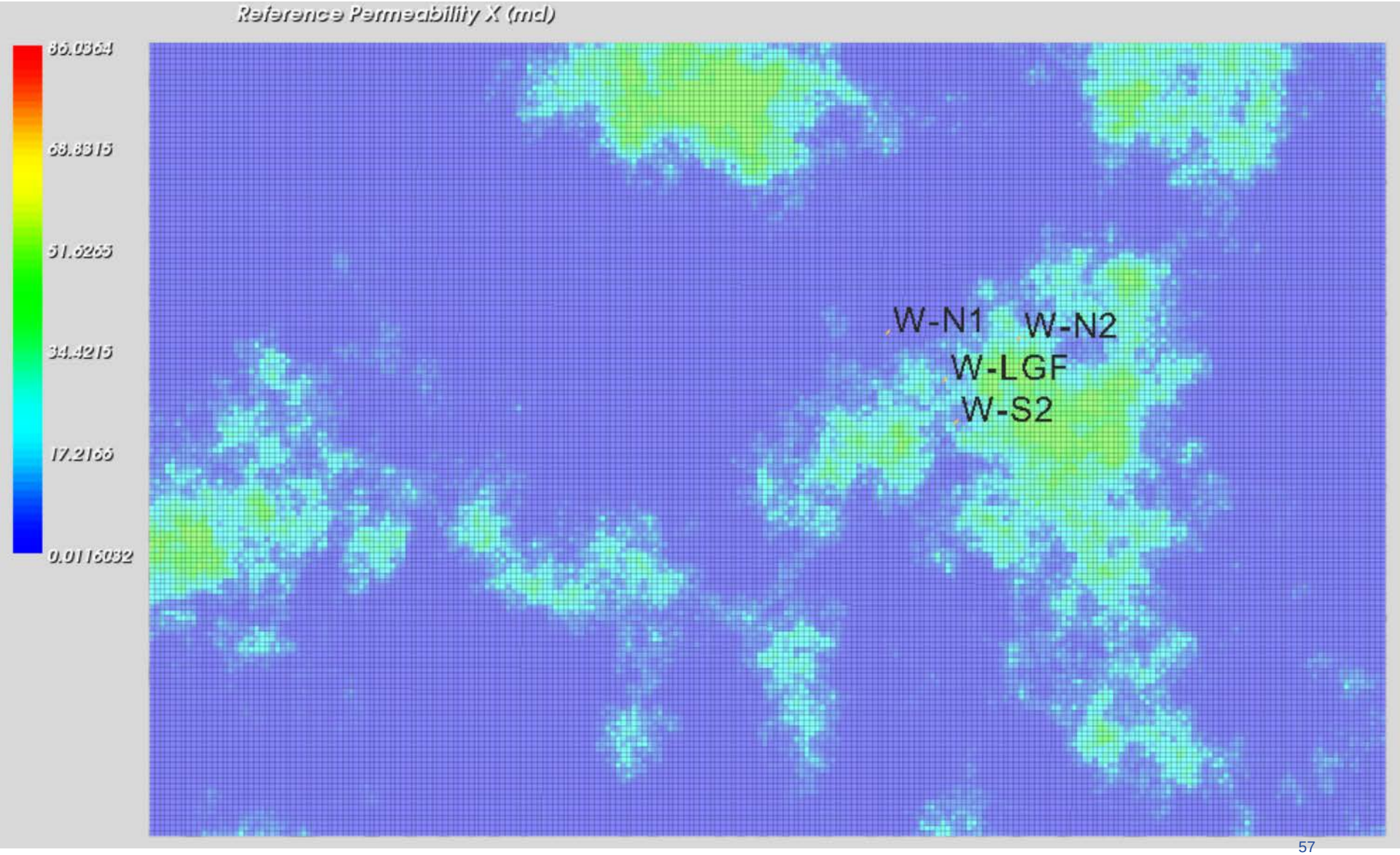
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 20



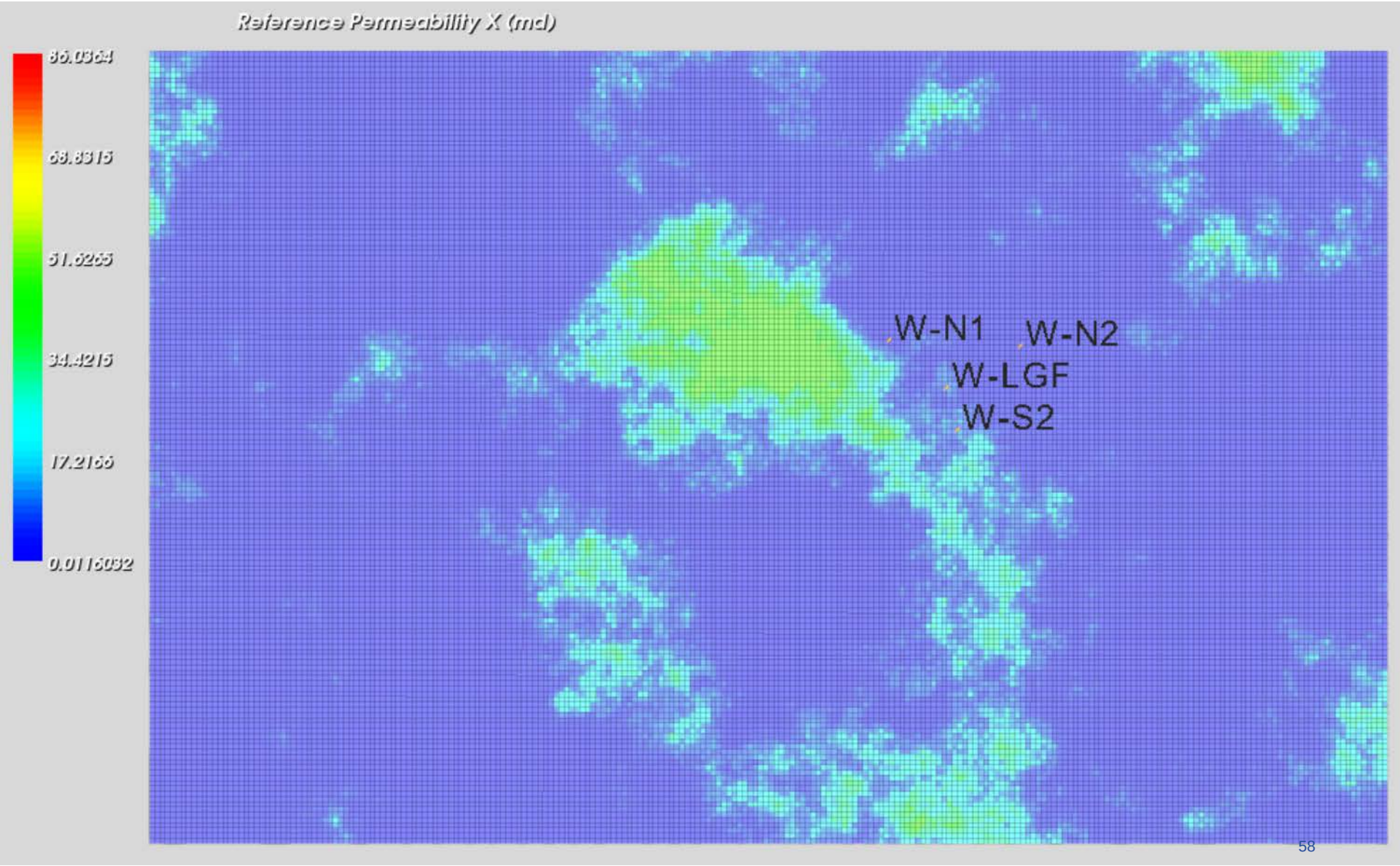
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 21



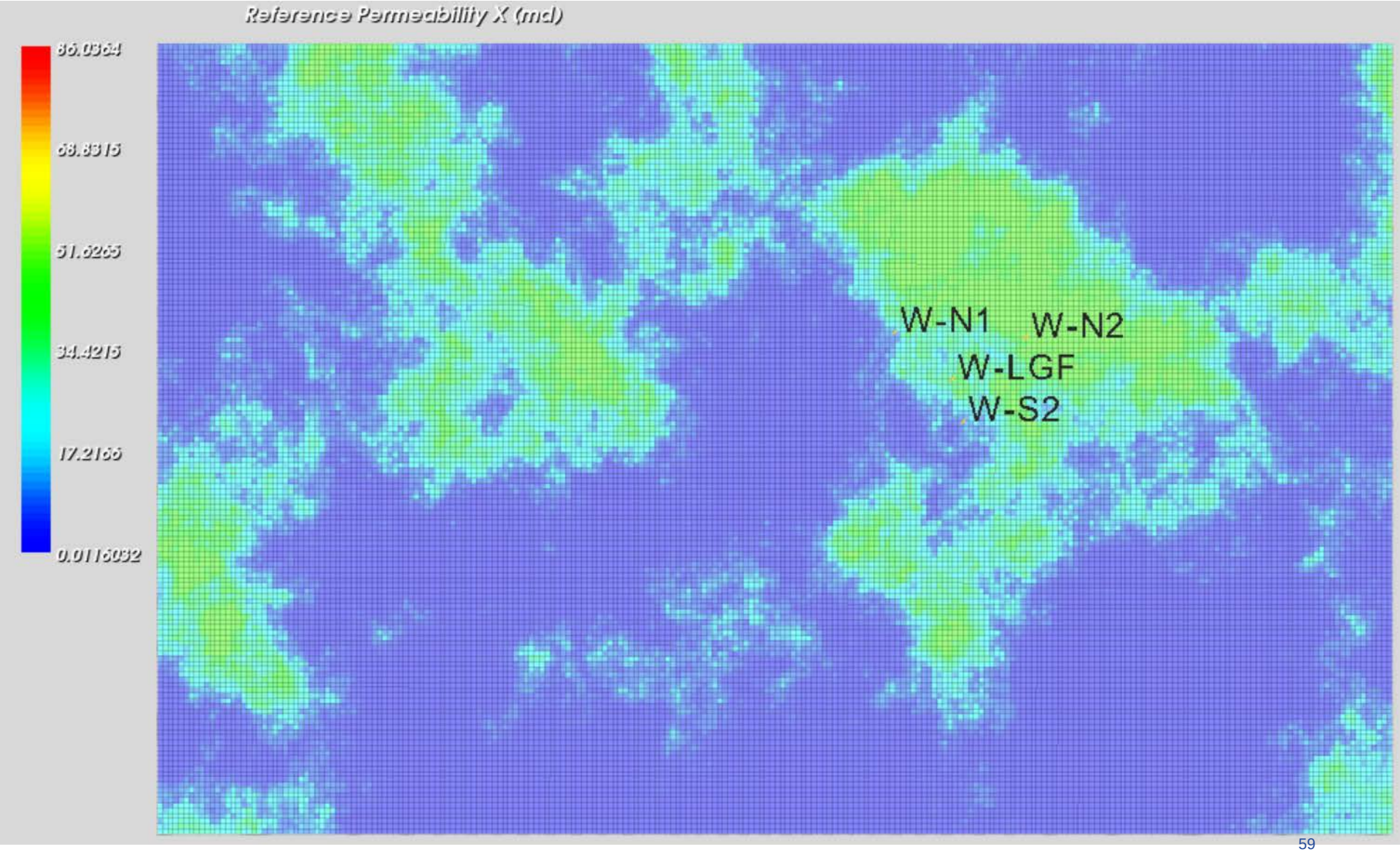
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 22



Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 23

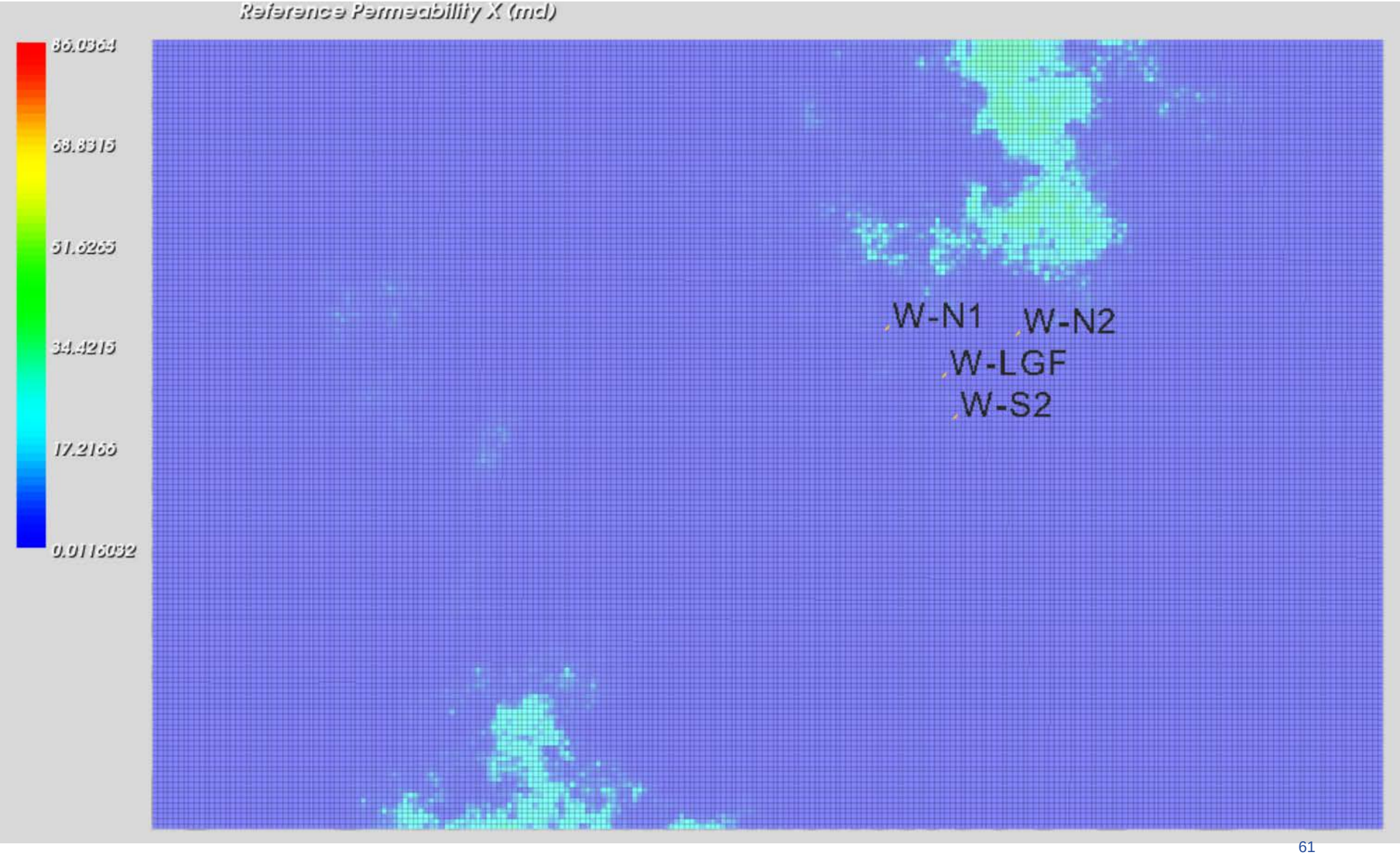


Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 24

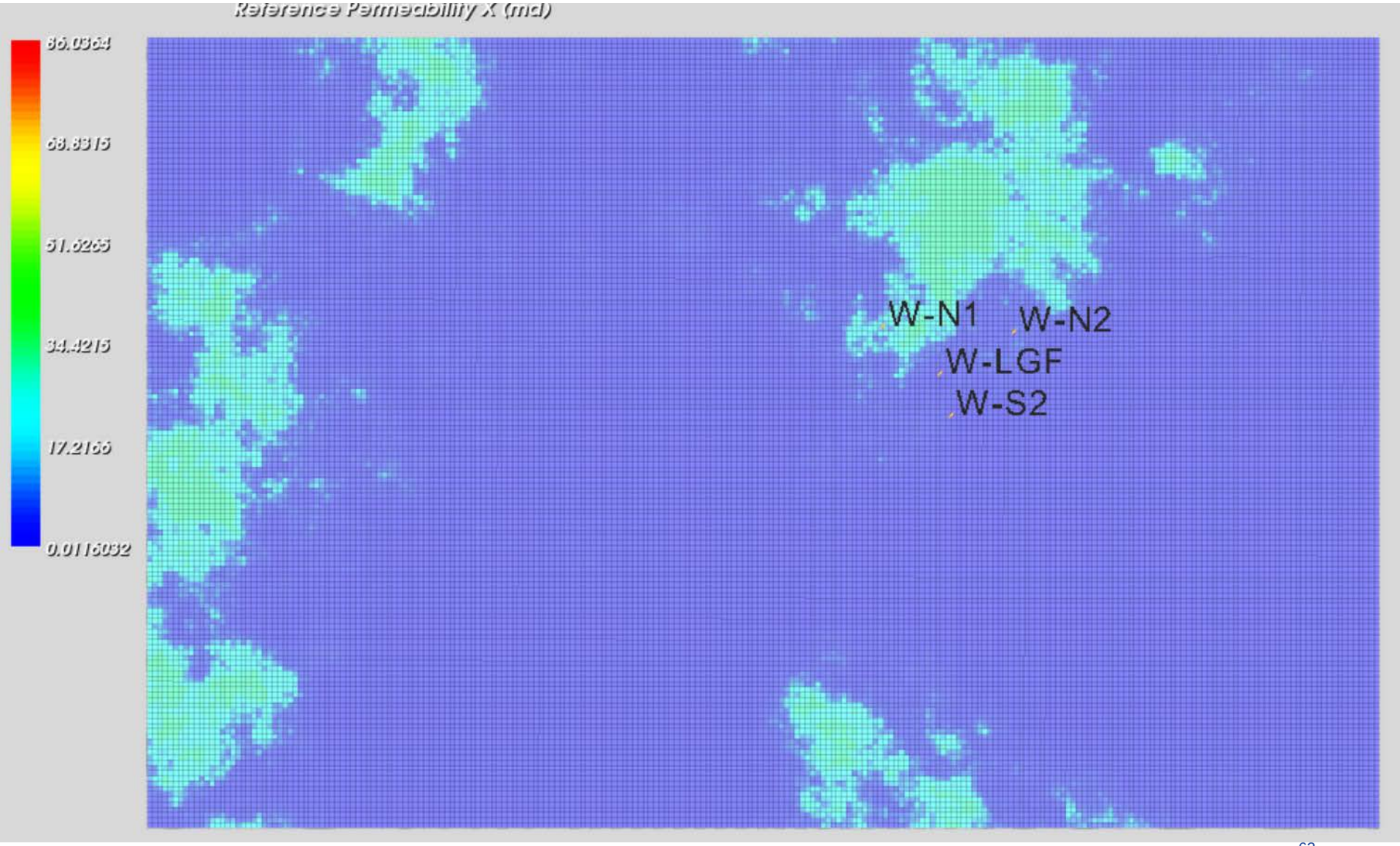
Layer 24 – K = 0.001 md

Upper Tuscaloosa Upper Interval Permeability – Layer 25



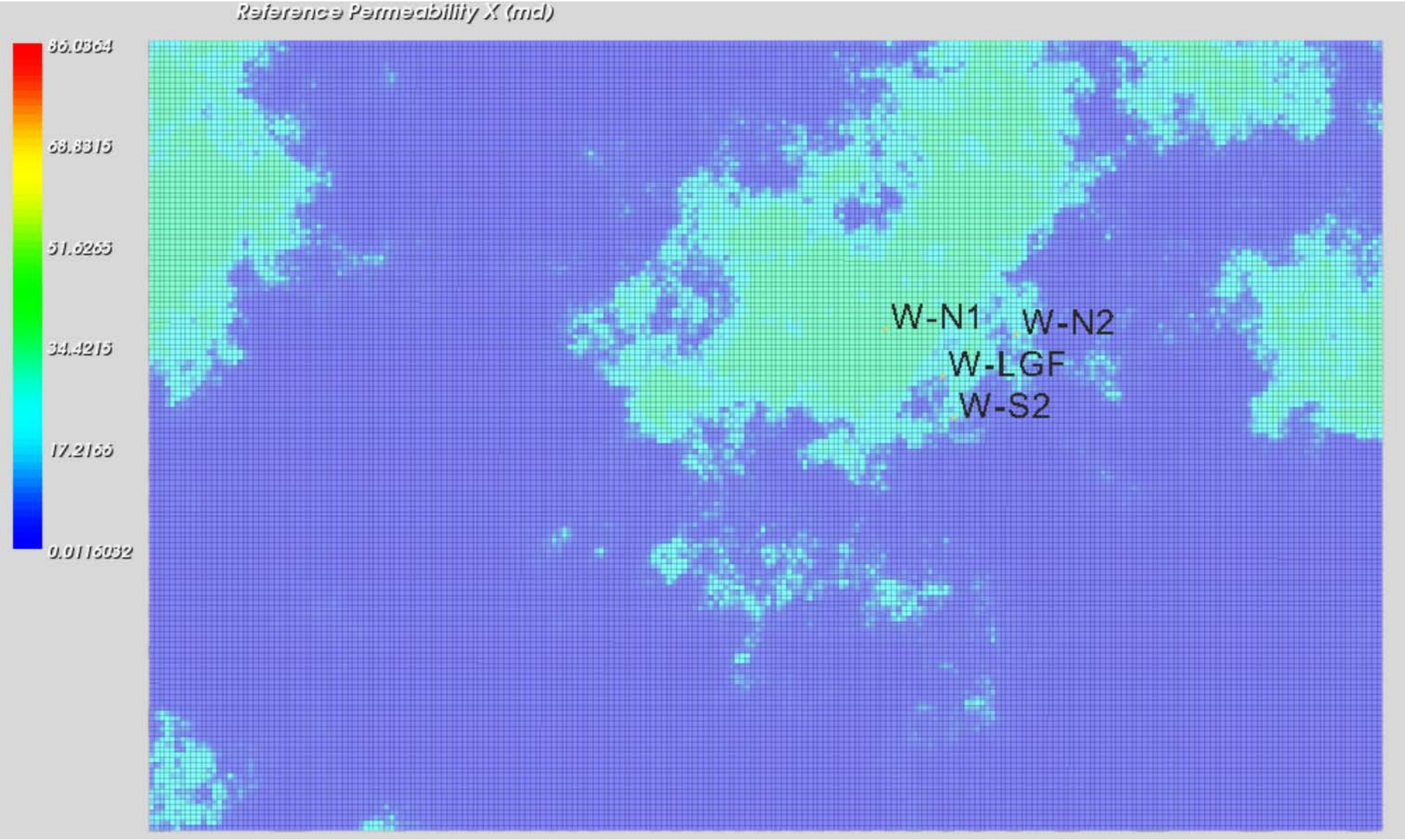
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 26



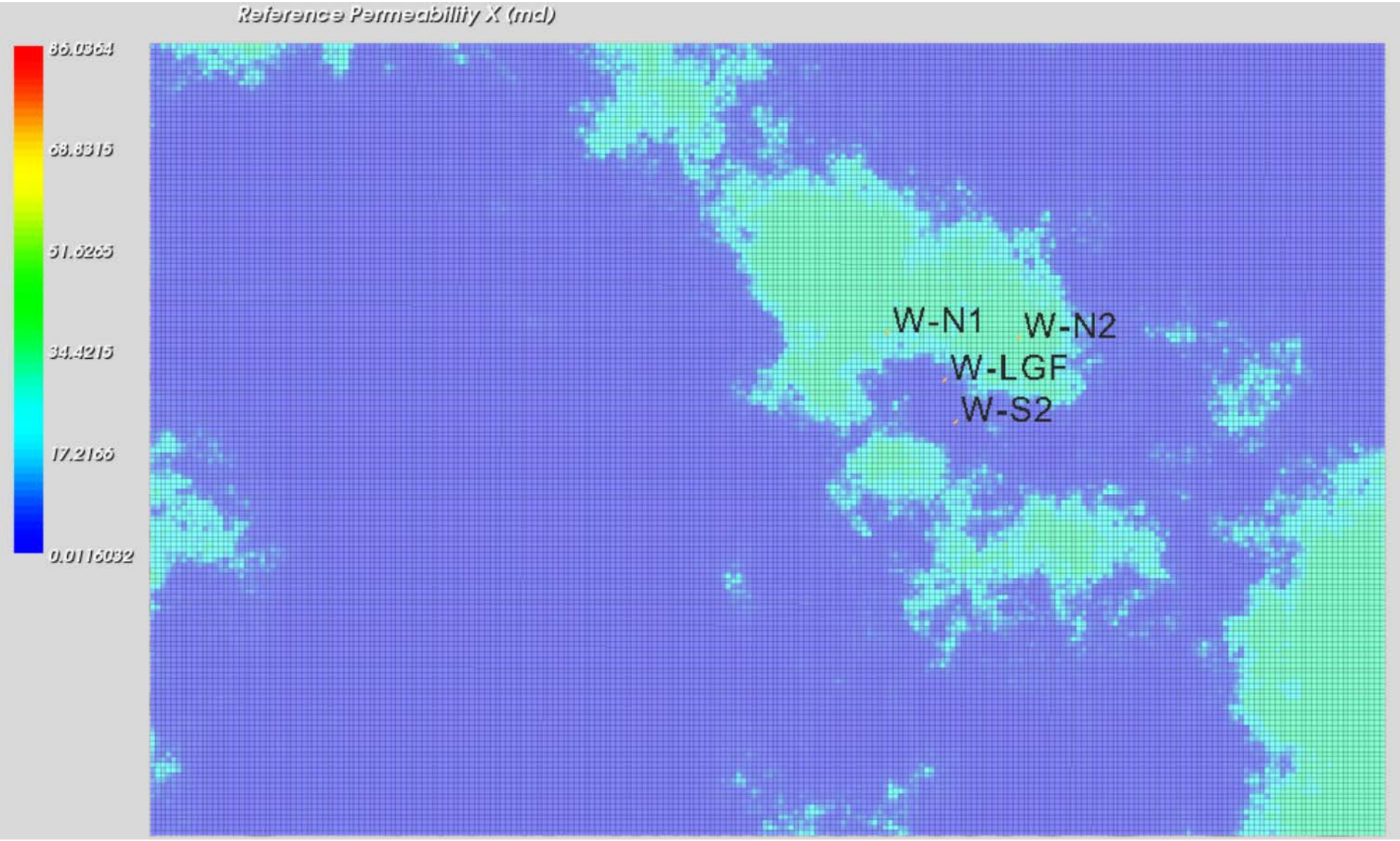
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 27



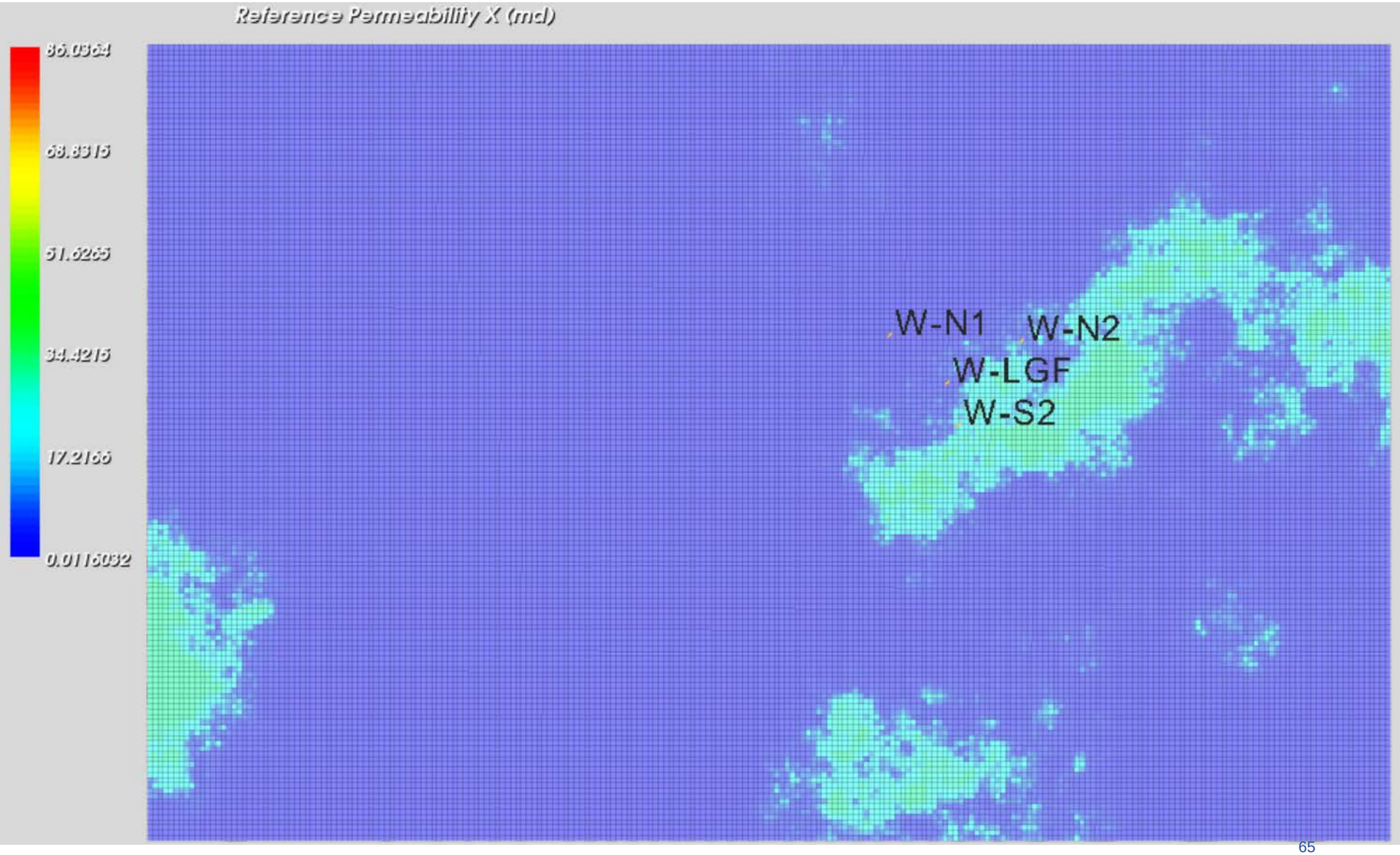
Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 28



Grid Permeability = Original Permeability x NG

Upper Tuscaloosa Upper Interval Permeability – Layer 29



Grid Permeability = Original Permeability x NG

Tuscaloosa Relative Permeability

RelPerm Section: saturation function model and data

Relative Permeability Table: Rel Perm 1 | Family Type: Family1 (W-G) | Data Entry: Parametric

Type : Drainage, Tension : Initial (HT), Region : <All>, Direction : <All>

Water			
Sw	Krw	Krow	PCow
fraction			psi
0.2			182
0.202			63.8
0.222			36.5
0.242			24.9
0.262			18.7
0.282			14.7
0.302			12.1
0.322			10.2
0.342			8.8
0.362			7.7
0.381			6.83

Oil		
So	Krow	Krog
fraction		

Gas			
Sg	Krg	Krog	PCog
fraction			psi
0			0

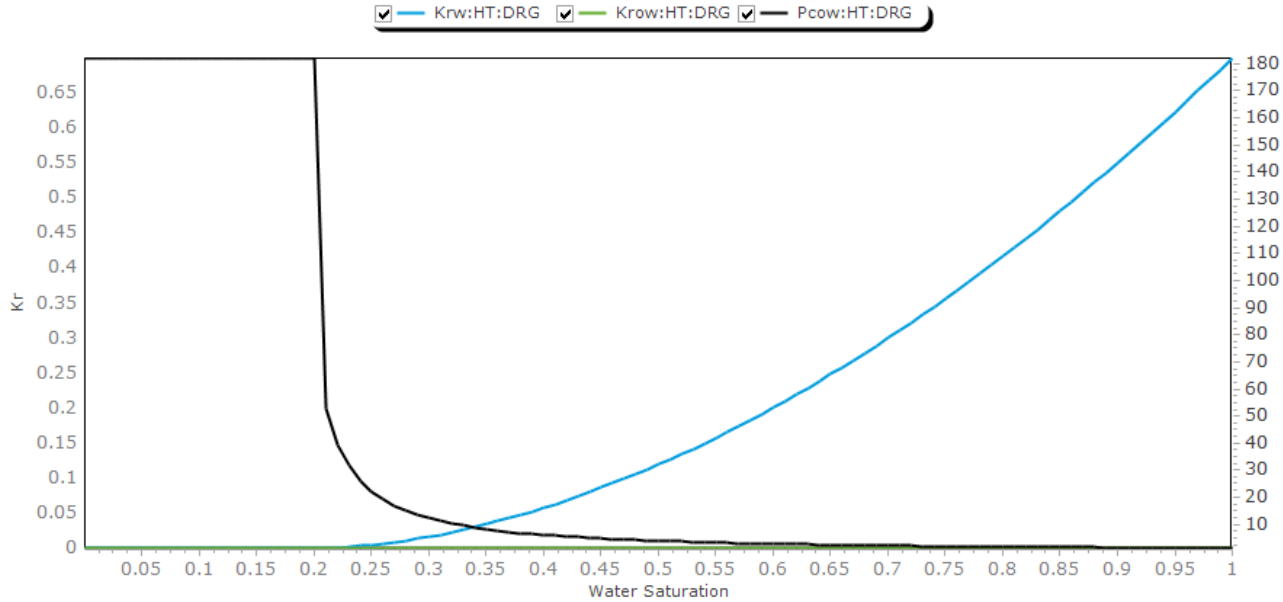
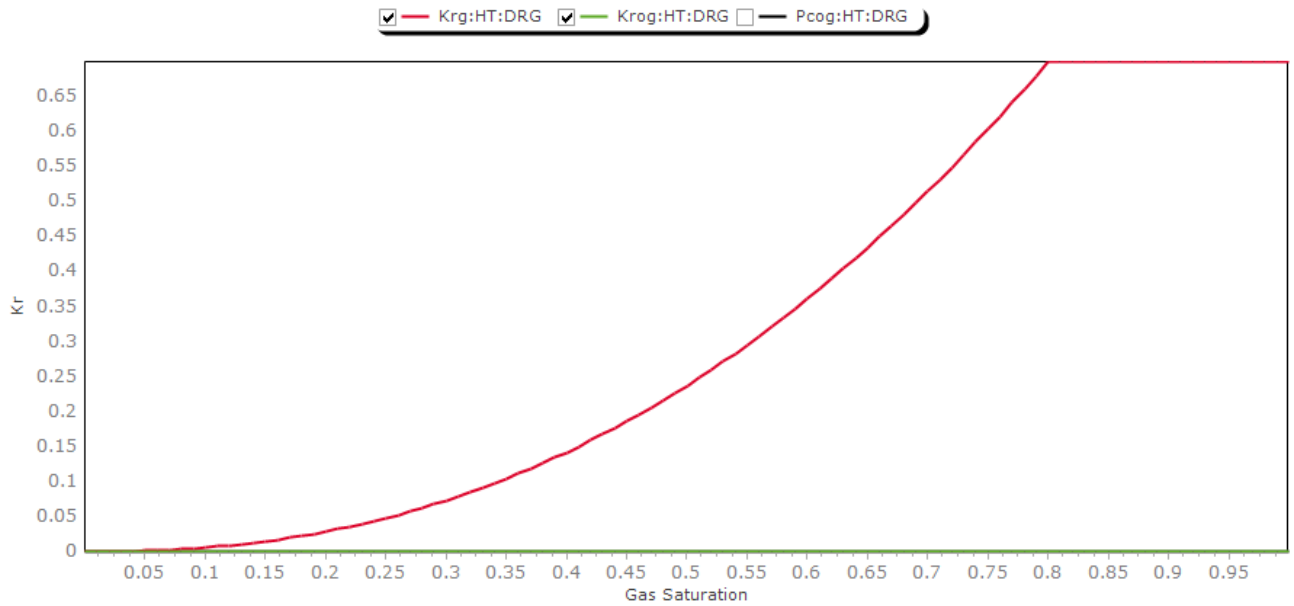
Emulsion	
Sm	Krm
fraction	

WAG2P	
Sw	Krw
fraction	

WAG3P	
Sw	Krw
fraction	

Phase	Parametric		
	Critical Saturation	Endpoint	Exponent
	fraction		
Water	0.2	0.7	1.8
Oil-Water	0	0	0
Oil-Gas	0	0	0
Gas	0	0.7	2.3
Emulsion			
WAG2P			
WAG3P			

- control
- reservoir
- physical
- **relperm**
  - options
  - coverage
  - **sat func**
  - EPS
  - EPS imbibition
  - EPS extende
- aquifer
- mobility
- phase
- adsorption
- wchemistry
- solids
- well
- wellbore heating
- initialisation
- schedule

Previous | Next | Finish | Cancel | Help | Validate | Plot | Calculate

Tuscaloosa Relative Perm and Pc Model