

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ALABAMA
SOUTHERN DIVISION**

MARCUS CASTER, LAKEISHA
CHESTNUT, BOBBY LEE DUBOSE,
BENJAMIN JONES, RODNEY ALLEN
LOVE, MANASSEH POWELL,
RONALD SMITH, and WENDELL
THOMAS,

Plaintiffs,

v.

JOHN H. MERRILL, in his official
capacity as Alabama Secretary of State,

Defendant.

Case No. 2:21-CV-1536-AMM

SECOND DECLARATION OF WILLIAM S. COOPER

WILLIAM S. COOPER, acting in accordance with 28 U.S.C. § 1746,
Federal Rule of Civil Procedure 26(a)(2)(B), and Federal Rules of Evidence 702
and 703, does hereby declare and say:

1. My name is William S. Cooper. I serve as a demographic and redistricting expert for the Plaintiffs. I filed a declaration in this lawsuit on December 10, 2021.
2. I file this second declaration to respond to assertions made in Thomas Bryan's December 10, 2021 report as it pertains to the *Gingles* 1 analysis in my December 10, 2021 declaration ("December 10 Declaration").

I. Illustrative Plan 7

3. First, Mr. Bryan criticizes an illustrative plan that “scores worse” than the 2021 Plan in his opinion on compactness. *See* Bryan Milligan and Caster Report at 31.

4. To be clear, there is no bright line rule as to what constitutes a sufficiently compact redistricting plan or district. There are many factors that the map drawer must take into account, such as odd-shaped precincts and jurisdictional lines, that can impact compactness.

5. While Illustrative Plans 1-6 offer multiple ways to draw an additional majority-Black district consistent with traditional districting principles, they are by no means the sole way to do so. Specific to Mr. Bryan’s concern, it is certainly possible to draw another such district while prioritizing compactness.

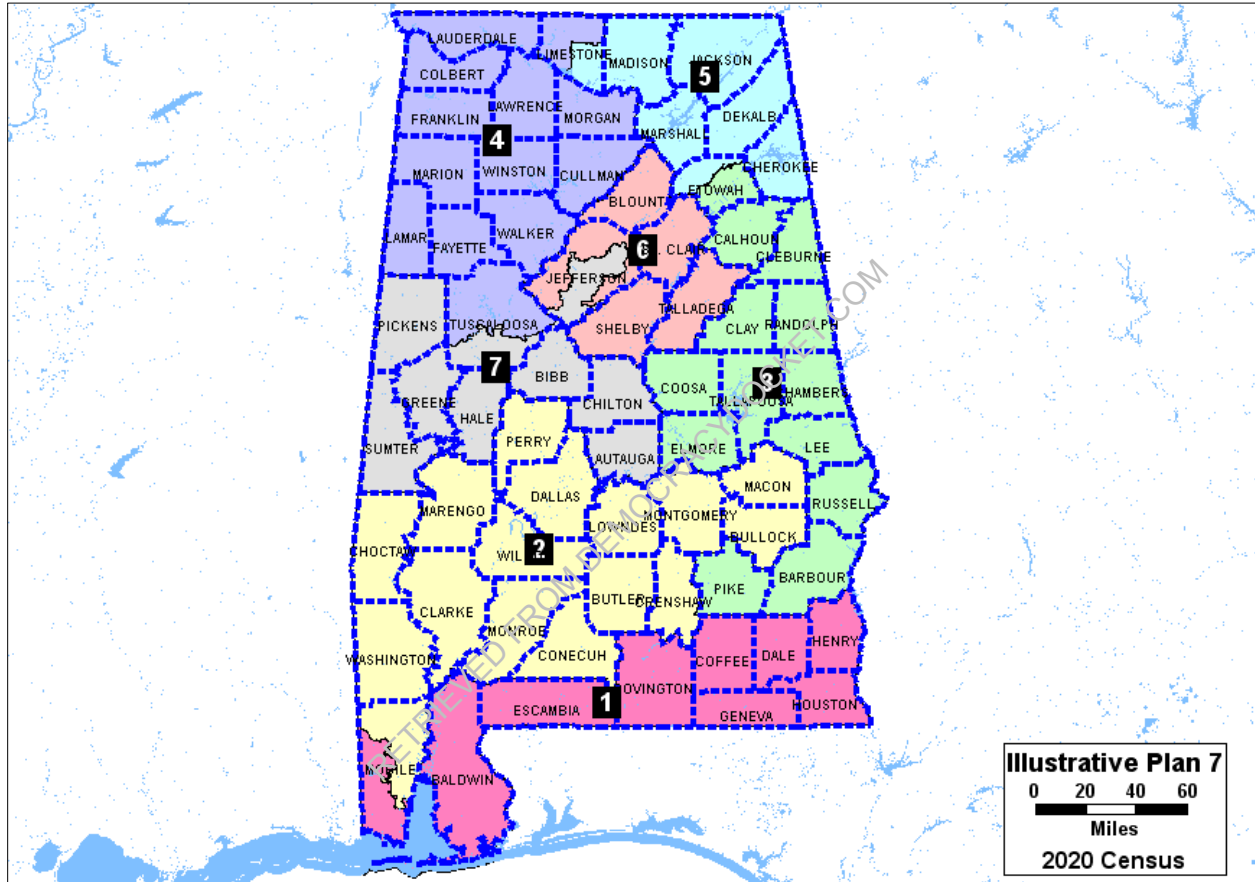
6. In response to Mr. Bryan’s criticism, I present an additional plan – Illustrative Plan 7 – to add to the six illustrative plans presented in my December 10 Declaration. Illustrative Plan 7 achieves higher compactness scores than the compactness scores I documented for Illustrative Plans 1 through 6. Compactness scores for Illustrative Plan 7 are on par with, or superior to, the 2021 Enacted Plan. Illustrative Plan 7 splits just five counties – one less than the 2021 Enacted Plan.

7. The map in **Figure 1** depicts Illustrative Plan 7. District 2 is 51.88% BVAP and District 7 is 50.31% BVAP.

8. As in Illustrative Plan 6, majority-Black District 2 is drawn so that both the City of Mobile and the City of Montgomery (and Montgomery County) are entirely in District 2.

Figure 1

Alabama U.S. House – Illustrative Plan 7



9. Majority-Black District 2 extends north to Choctaw County and then east through the Black Belt, encompassing whole counties. Macon and Bullock Counties form the easternmost border.

10. As is the case under the enacted 2021 BOE Plan, from District 1 it is necessary to drive for a short distance through District 2 (BOE District 5) in order

to get to the Baldwin County portion of District 1 (BOE District 1).¹ The enacted 2021 Senate Plan also contains this feature. There are no roads directly connecting the Washington County and Mobile County portions of SD 22 with the Baldwin County portion of SD 22 without driving outside of the district to reach I-10 or I-65 into Baldwin County.

11. Majority-Black District 7 in Illustrative Plan 7 encompasses part of the Counties of Jefferson and Tuscaloosa, extending west to Hale, Green, Sumter, and Pickens Counties. To the southeast, District 7 encompasses all of Bibb, Autauga, and Chilton Counties.

12. The table in **Figure 2** shows 2020 summary population statistics for Illustrative Plan 7. **Exhibit A-1** contains detailed 2020 population statistics by district.

¹ In Illustrative Plans 1 through 6, there is a direct route from District 1 in Mobile County to District 1 in Baldwin County.

Figure 2**2021 Illustrative Plan 7 – 2020 Census**

District	Population	18+ Pop	% 18+ AP Black	% 18+ NH White
1	717753	556689	15.58%	75.40%
2	717752	559658	51.88%	42.02%
3	717755	564958	25.51%	66.69%
4	717755	564081	8.63%	82.48%
5	717755	557105	16.11%	71.57%
6	717755	555983	13.25%	78.02%
7	717754	558692	50.31%	42.08%

13. The map in **Exhibit A-2** is a higher resolution version of the **Figure 1** map.

Exhibit A-3 contains maps focusing on District 2 and District 7 and adjacent areas.

14. As shown in **Exhibit A-4**, Illustrative Plan 7 splits five counties and populated areas in 28 VTDs. However, ten of the 28 VTD splits are created because the plan generally follows the city limits of the City of Mobile (rather than VTDs) to define the boundary between District 1 and District 2.

15. In addition to being majority-BVAP, Districts 2 and 7 are majority-non-Hispanic AP BVAP—50.97% and 50.83%, respectively—a feature Illustrative Plan 7 shares with Illustrative Plan 6.²

16. I have therefore provided the Court with seven illustrative congressional plans that adhere to traditional redistricting principles and the state's redistricting

² Under Illustrative Plan 6, District 2 and District 7 are also majority SR BVAP – 50.19% and 50.05%, respectively.

guidelines, which include population equality, compactness, contiguity, respect for communities of interest, and the non-dilution of minority voting strength.

II. Compactness Scores -- Illustrative Plans and 2021 Enacted Statewide Plans

17. I present expanded district-by-district compactness scores (including Convex Hull and Schwartzberg analyses) for each of my seven illustrative plans, as well as the four statewide plans signed into law in 2021 by Governor Ivey – the 2021 U.S. House Plan (“2021 Plan”), the Board of Education Plan (“2021 BOE Plan”), the 2021 Senate Plan (“2021 Senate Plan”), and the 2021 State House Plan (“2021 House Plan”).³ Mr. Bryan presents these scores for various enacted and hypothetical district plans. Bryan Milligan and Caster Report at 29-30.

18. **Figure 3** reports compactness scores generated by Maptitude for Illustrative Plan 7, the 2021 U.S. Congressional Plan, the 2021 BOE Plan, the 2021 State Senate Plan, and the 2021 State House Plan. The Figure 3 table summarizes the Reock and Polsby-Popper scores – the two most widely-referenced measures of compactness. Higher scores indicate higher compactness.⁴

³ I was unable to provide this information in my December 10 Declaration because I did not have the GIS shapefile of the plans. The GIS shapefiles for the three statewide plans were obtained by the attorneys for the plaintiffs during the post-December 10 discovery process.

⁴ See my December 10 Declaration at ¶¶ 82-84 for a similar table with compactness scores for Illustrative Plans 1 through 6 and the 2011 BOE and 2011 U.S. House plans.

Figure 3**Compactness Scores – Illustrative Plan 7 vs 2021 Plans**

	Reock		High		Polsby-Popper		High
		Low			Low		
Illustrative Plan 7							
All Districts (mean avg.)	.41	.20	.56		.21	.13	.39
District 2	.39				.19		
District 7	.37				.13		
2021 U.S. Congressional Plan							
All Districts (mean avg.)	.38	.30	.50		.22	.15	.32
CD 2	.50				.26		
CD 7	.43				.19		
2021 BOE Plan							
All Districts (mean avg.)	.39	.24	.52		.24	.18	.38
District 4	.35				.18		
District 5	.36				.19		
2021 Senate Plan							
All Districts (mean avg.)	.41	.19	.63		.26	.12	.54
2021 House Plan							
All Districts (mean avg.)	.39	.11	.62		.24	.07	.60

19. **Exhibit B-1** through **B-7** contains district-by-district compactness scores for the seven illustrative plans. In addition to Reock and Polsby-Popper, there are Maptitude generated scores under the Convex/Hull⁵ measure (higher is better) and the Schwartzberg measure⁶ (lower is better).

⁵ “The Area/Convex Hull test computes the ratio the district area to the area of the convex hull of the district (minimum convex polygon which completely contains the district). The measure is always between 0 and 1, with 1 being the most compact. The Minimum Convex Polygon test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan.” *Maptitude For Redistricting* software documentation (authored by the Caliper Corporation).

⁶ “The Schwartzberg test is a perimeter-based measure that compares a simplified version of each district to a circle, which is considered to be the most compact shape possible. This test requires the base layer that was used to create the districts. The base layer is used to simplify each district to exclude complicated coastlines. . . . This measure is usually greater than or equal

20. The four compactness measures in the Exhibit B series are the ones that Mr. Bryan purports to use in his analysis of the Hatcher Plan and the 2021 Plan. Mr. Bryan's report of the Schwartzberg scores is plainly erroneous, because those scores cannot fall below 1. Lower (not higher) scores are better and 1.0 is both the lowest and the most compact score possible.

21. Also, with respect to compactness scores, it was methodologically flawed for Mr. Bryan to sum the compactness scores across measures to compare and contrast scores with a single consolidated data point.

22. The **Exhibit C** series contains district-by-district compactness scores for the 2021 Plan, the 2021 BOE Plan, the 2021 State Senate, and 2021 State House in the same format as the Exhibit B series.

III. Comparative Compactness Scores – A Texas Case Study

23. In my December 10 Declaration, I referenced a 2012 study conducted by Azavea with compactness score comparisons for congressional plans in the 2010 Census redistricting cycle.⁷ Based on the Azavea report, in my opinion, compactness scores for the Illustrative Plans fall within a normal range when compared with plans in other states.

to 1, with 1 being the most compact.” *Maptitude For Redistricting* software documentation (authored by the Caliper Corporation).

⁷ https://2rct3i2488gxf9jvb1lqhek9-wpengine.netdna-ssl.com/wp-content/uploads/2019/08/Azavea_Redistricting-White-Paper-Addendum-2012_sm.pdf

24. **Exhibit D-1** contains Reock and Polsby Popper scores for the 2021 congressional plan recently enacted in Texas, where Mr. Bryan serves as a consultant to the Republican House Redistricting Committee. Bryan Milligan and Caster Report at 3.

25. As shown in **Exhibit D-1**, the mean average Reock and Polsby-Popper scores for the 2021 Texas congressional plan is about the same as those of the Illustrative Plans. Several Texas congressional districts score significantly worse than the Illustrative Plan districts.

26. Eight Texas congressional districts have Reock scores below .29, which is the lowest score for the Illustrative Plans. The lowest Reock scores are TX CD 14 (.19), TX CD 15 (.12), and TX CD 35 (.08).

27. Nine Texas districts have Polsby-Popper scores below .11 – the lowest score for the Illustrative Plans. The lowest Polsby-Popper score is registered by TX CD 33 at .04.

28. **Exhibit D-2** (Texas Senate) and **Exhibit D-3** (Texas House) are in a similar format as Exhibit D-1. Both exhibits reveal a number of compactness scores lower than the Illustrative Plans.

IV. Proper BVAP Metric

29. In my December 10 Declaration, I discuss how AP Black, as opposed to SR Black, is the appropriate metric for determining the Black population of a given district. Initial Declaration at 3 n.3. Mr. Bryan claims SR Black has been “most consistently used historically in VRA cases.” See Bryan Milligan and Caster Report at 10. In my experience, this is wrong and courts have consistently accepted AP Black as the correct measure in Section 2 cases.

30. As explained in *Georgia v. Ashcroft*, 539 U.S. 461, 473 n.1 (2003), the appropriate *Gingles* 1 metric in this case is AP BVAP due to the relatively small population percentage of single-race minority voters in Alabama who are some race other than Black.

31. Throughout the 2010s, I have consistently reported AP BVAP in litigation and non-litigation settings.

32. Courts in Section 2 cases in which I served as an expert in the 2010s have accepted the Any Part classification for the *Gingles* 1 analysis. See *Ga. State Conf. of NAACP v. Fayette Cnty. Bd. of Comm’rs*, 118 F. Supp. 3d 1338 (N.D. Ga. 2015); *Missouri State Conference NAACP et al. v. Ferguson-Florissant School District*, 201 F. Supp. 3d 1006 (E.D. Mo. 2016).⁸

⁸ I have also used AP BVAP in other cases where the court relied on my testimony without making a specific finding as to the appropriateness of using the figure.

33. To my recollection, the first time I reported Any Part VAP statistics was in the 2006 remedial phase of *Bone Shirt v. Hazeltine*, No. 01-cv-3032 (D.S.D.). In that lawsuit, an illustrative plan that I developed became the court-ordered remedial plan.⁹

V. Voter Registration by Race by District– Illustrative Plans and 2021 Plan

34. Regardless, my Illustrative Plans demonstrate the ability to draw two majority-Black congressional districts using either AP BVAP or SR BVAP. *See supra* n.2.

35. Voter registration data further demonstrates that the majority of eligible voters in these district are Black. Though he is incorrect, Mr. Bryan claims Black alone is the “most defensible” definition to use when measuring the Black population. Bryan Milligan and Caster Report at 10. Because Alabama’s voter registration form allows voters to choose only one race, those statistics demonstrate that the majority of registered voters in Districts 2 and 7 in all seven Illustrative Plans self-identified as Black.

36. Below, I provide 2021 voter registration statistics for active voters who self-identified as Black in areas encompassed by District 2 and District 7 in the

⁹ In Footnote 14 in my December 10 Declaration, I mistakenly stated that the Any Part classification was not available from the 2000 PL94-171 redistricting file. While Any Part Black counts were not available in the 1990 Census PL 94-171 file, they were available in the 2000 PL94-171 file.

Illustrative Plans.

37. I used *Maptitude for Redistricting* to geocode a statewide list of 3.16 million active registered voters obtained by the plaintiffs' attorneys through discovery.

38. As shown in **Figure 4**, under all seven illustrative plans, Black registered voters are a majority in District 2 and District 7.

Figure 4

Black Registered Voters in District 2 and District 7 by Illustrative Plan

Plan Number	District 2	District 7
Plan 1	51.8%	57.7%
Plan 2	52.3%	58.3%
Plan 3	52.0%	52.7%
Plan 4	51.7%	54.2%
Plan 5	52.3%	53.8%
Plan 6	53.3%	54.6%
Plan 7	53.6%	53.5%

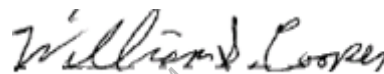
39. Current Black registered voter percentages are higher than the CVAP estimates I reported in my December 10 Declaration. There are at least two reasons for this difference: (1) the CVAP estimates count only persons who are non-Hispanic single-race Black; and (2) the 2015-2019 ACS is historical, with a survey midpoint of July 1, 2017.

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I reserve the right to continue to supplement my reports in light of additional facts, testimony and/or materials that may come to light.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: December 20, 2021



WILLIAM S. COOPER

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