IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF NORTH CAROLINA
NO. 1:15-CV-00399

SANDRA LITTLE COVINGTON, *et al.*, Plaintiffs, v. STATE OF NORTH CAROLINA, *et al.* Defendants.	)	**DEFENDANTS' MOTION FOR LEAVE TO FILE A CORRECT VERSION OF DECLARATION OF DR. THOMAS HOFELLER**

Pursuant to this court's prior orders, on October 28, 2016, Defendants filed their Memorandum in Opposition to Plaintiffs' Motion for Additional Relief.

In support of this motion, Defendants filed a Declaration of Dr. Thomas B. Hofeller (October 28, 2016).

It has come to Dr. Hofeller's attention that Map 4 attached to his October 28, 2016, declaration is not correct and represents an earlier and slightly incorrect version of a county grouping formula for House districts pursuant to the requirements of North Carolina's "Whole County Provision." *See* N.C. CONST. Art. II, §§ 3(3) and 5(3); *Dickson v Rucho*, 368 N.C. 481, 485-86, 781 S.E. 2d404, 410-11 (2016) ("*Dickson II*"). The only changes made in the correct version of Map 4 relate to a few House county groups in Northeastern North Carolina. Thus, the only difference between the corrected declaration and the declaration filed on October 28, 2016, is that the corrected declaration includes the correct version of Map 4 which is also referenced in Table 2 included in the original and corrected declarations.

Based upon the foregoing, Defendants move for leave to file a Corrected Declaration of Dr. Thomas B. Hofeller (October 31, 2016), which defendants are filing contemporaneously with this motion.

We have consulted with plaintiffs and can advise the Court as follows. Plaintiffs do not object to the substitution of Map 4 but reserve the right to object to and argue the relevance of both the original and substituted versions of May 4 and Dr. Hofeller's explanation of the maps.

Respectfully submitted, this the 31st day of October, 2016.

OGLETREE, DEAKINS, NASH
SMOAK & STEWART, P.C.

/s/ Thomas A. Farr
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CERTIFICATE OF SERVICE

I, Thomas A. Farr, hereby certify that I have this day electronically filed the foregoing **DEFENDANTS' MEMORANDUM IN OPPOSITION TO PLAINTIFFS' MOTION FOR ADDITIONAL RELIEF** with the Clerk of Court using the CM/ECF system which will provide electronic notification of the same to the following:

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This the 31st day of October, 2016.

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IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF NORTH CAROLINA
NO. 1:15-CV-00399

SANDRA LITTLE COVINGTON, *et al.*,	)
	)
Plaintiffs,	)
	)
v.	)
	)
STATE OF NORTH CAROLINA, *et al.*	)
	)
Defendants.	)
	)

CORRECTED DECLARATION OF THOMAS B. HOFELLER, PH.D.
(October 31, 2016)

Thomas Brooks Hofeller, under penalty of perjury, declares the following:

1. I am a recognized expert in the fields of districting and reapportionment in the United States. I have been retained, as an independent consultant, through counsel by Intervenor-Defendants to provide expert testimony in this case. My hourly rate is $300 per hour.

QUALIFICATIONS

2. I set forth here a summary of my experience that is most relevant to this testimony. The full range of my professional qualifications and experience is included in my resume, which is attached as Appendix 1.

3. I am a Partner in Geographic Strategies, LLC, located in Columbia, South Carolina. Geographic Strategies provides redistricting services including database construction, strategic political and legal planning in preparation for actual line drawing, support services and training on the use of geographic information systems (GIS) used in redistricting, analysis of

plan drafts, and actual line-drawing when requested. The corporation and its principals also provide litigation support.

4. I hold a Ph.D. from Claremont Graduate University, where my major fields of study were American political philosophy, urban studies and American politics. I hold a B.A. from Claremont McKenna College with a major in political science.

5. I have been involved in the redistricting process for over 46 years, and have played a major role in the development of computerized redistricting systems, having first supervised the construction of such a system for the California State Assembly in 1970-71.

6. I have been active in the redistricting process leading up to and following each decennial census since 1970. I have been intimately involved with the construction of databases combining demographic data received from the United States Census Bureau with election information which is used to determine the probable success of parties and minorities in proposed and newly enacted districts. Most of my experience has been related to congressional and legislative districts, but I have also had the opportunity to analyze municipal and county-level districts.

7. I served for a year and one half as Staff Director for the U. S. House Subcommittee on the Census in 1998-99.

8. I was Staff Director of the Subcommittee when the Census Bureau was proposing to substitute the American Community Survey (ACS) for the use of the decennial long form questionnaire in the 2000 and previous decennial Censuses. The long form was not used in the 2010 Decennial Census.

9. I have drafted and analyzed plans in most states including, but not limited to, California, Nevada, Arizona, New Mexico, Colorado, Texas, Oklahoma, Kansas, Missouri,

Minnesota, Wisconsin, Illinois, Indiana, Ohio, Arkansas, Mississippi, Louisiana, Alabama, Georgia, Florida, South Carolina, North Carolina, Virginia, New York, New Jersey and Massachusetts.

10. In this decennial round of redistricting, I have already been intensely involved in Texas, Alabama, North Carolina, Virginia and Massachusetts. As much of my consulting activities involve work in states subject to the provisions of Section 5 of the Voting Rights Act. I am very familiar with the data used to analyze the expected performance of redrawn and newly created minority districts. Although I am not an attorney, I regularly advise clients about the characteristics of minority districts in their plans, and whether or not they are meeting the requirements of both Sections 2 and 5 of the Voting Rights Act.

11. I have given testimony as an expert witness in a number of important redistricting cases including, but not limited to, Gingles v. Edmisten, 590 F. Supp. 345 (N.D.N.C. 1984), *aff'd in part and rev'd in part* Thornburg v. Gingles 478 U.S. 30 (1986); State of Mississippi v. United States, 490 F. Supp. 569 (D.C.D.C. 1979); Shaw v. Hunt, 92-202-CIV-5-BR, U.S. District Court for the Eastern District of North Carolina, Raleigh Division (1993-4); Ketchum v. Byrne, 740 F,2d 1398, *cert. denied* City Council of Chicago v. Ketchum, 471 U.S. 1135 (1985), *on remand*, Ketchum v. City of Chicago 630 F. Supp. 551 (N.D. Ill. 1985); and Arizonans for Fair Representation v. Symington, CIV 92-0256, U.S. District Court Arizona (1992), *aff'd mem. sub nom.* Arizona Community Forum v. Symington, 506 U.S. 969 (1992), David Harris v. Patrick McCrory, Civil Action No. 1:13 CV-00949 (United States District Court, Middle District of North Carolina Durham Division 2013), North Carolina State Conference of the NAACP v. Patrick Lloyd McCrory, 1:13 CV-658 (United States District Court, Middle District of North

Carolina 2013) and *Sandra Little Covington v. State of North Carolina* 1:15-CV-00399 (United States District Court, Middle District of North Carolina 2016),

12. I have done considerable work regarding compactness as a criterion in redistricting maps, including but not limited to a work I coauthored in *The Journal of Politics*, "Measuring Compactness and the Role of a Compactness Standard in a Test for Partisan and Racial Gerrymandering." Id., Vol. 52, No. 4 (Nov., 1990), pp. 1155-1181 (with Richard G. Niemi, Bernard Grofman, and Carl Carlucci).

13. In that work, my co-authors and I discussed the advantages and limitations of various measures of compactness as well as differing definitions. As we stated in the article, "disputes about compactness will be numerous… there are those who would dismiss it outright as well as those who believe in it passionately." We further noted that "whatever turns out to be its utility as a districting standard, we hope that we have sufficiently clarified the concept so as to stimulate more rational, enlightened discussion of its merits and faults as well as further study of its supposed effects."

14. Both prior and subsequent to my co-authorship of the Journal of Politics article, I have regularly advised state legislatures and others regarding the concept of compactness and regarding the compactness of specific districts and districting plans.

DATA AND SOFTWARE

15. Census Data used in this report comes from the United States Bureau of the Census' 2010 Redistricting Data File and the 2010 Decennial Census TIGER File, both released following the 2010 Decennial Census. No data containing election results or voter registration was used to prepare this report.

16. All the information I used has been incorporated into a geographic information system called "Maptitude for Redistricting", a product which is offered by Caliper Corporation, based in Newton, Massachusetts. The maps included in this report have all been produced using Maptitude, and tables were produced using census and election data extracted from Maptitude and reformatted using Microsoft Excel. Other reports, such as compactness reports and core constituency reports were also produced using Maptitude.

OBJECTIVES OF DECLARATION

17. I have been asked by Defendants to compare the Whole County Groups (WCGs) used to draft the current legislative districts for North Carolina, known as the "Rucho Senate 2" Plan, enacted as Session Law 2011-402 on July 27th, 2011 (2011 Enacted Senate Plan), and "Lewis-Dollar-Dockham 4" Plan (Lewis-Dollar-Dockham 3, as amended), enacted as Session Law 2011-404 on July 28th, 2011 (2011 Enacted House Plan), with the Optimal[1] WCGs mandated by the North Carolina Supreme Court's *Stephenson* decisions handed down prior to this redistricting cycle. These would be the Optimal WCGs used for any new General Assembly plans drafted subsequent to the Court's 2016 decision in the *Covington* case. This analysis will identify the 2011 Enacted Plan's WCGs for both the North Carolina House and Senate which will be replaced with new Optimum WCGs, along with the districts which will require redrafting as a result of such a switch. Furthermore, this analysis will also identify districts in WCGs which will remain the same but will require redrafting because these WCGs contain districts which the court has judged to be illegal. In summary, 35 out of 50, or 75 percent of the Senate

[1] The term "Optimal", used in reference to WCGs, refers to the grouping of counties determined by strict application of the North Carolina Supreme Court's order on how whole counties must be grouped together for purposes of legislative redistricting in conformance with the *Stephenson* decision, without modifications in order to comply with the requirements for construction of majority-minority districts in compliance with the U. S. Supreme Court's order in *Bartlett v, Strickland.*

districts must be redrafted and 81 out of 120, or 67.5 percent, of the House districts must be redrafted.

NORTH CAROLINA'S LEGISLATIVE REDISTRIING RULES ARE UNIQUE

18. The North Carolina Constitutional Amendment and the North Carolina Supreme Court's Stephenson decision are an anti-gerrymandering provision which severely limits the General Assembly's discretion in the construction of legislative maps. Most redistricting decisions are made by mechanical application of the formula to individual county populations from the Decennial Census. The maps provided in this report represent an application of formula result using the 2010 Decennial Census. Unlike most redistrict line-drawing decisions, where there are many was to draft the line, there only one correct solution to the use of the Whole County Provision.

WHOLE COUNTY GROUP NAMING CONVENTION

19. On both the tables and maps contained in this report I have assigned names to WCGs which contain three two-digit numbers separated by hyphens. The first number is the unique WCG number. The second number is the number of whole counties contained in the WCG. The third number is the number of legislative districts which must be drawn with that group.

SENATE WHOLE COUNTY GROUPS

20. Map 1 shows the location of the 29 WCGs which must be used to conform to the Optimum WCG structure. Map 2 shows the location of the 26 WCGs which were used in the 2011 Enacted Senate Plan. Map 3 divides the Senate Optimum into three classes. The first class of WCGs, colored green, will remain unchanged and also contain no districts determined to be illegal by the court. The second class of WCGs, colored yellow, will also remain unchanged but

the districts within them must be redrafted because the court has found some of the districts within the group to be illegal. The third class of WCGs, colored white, have been changed from the WCGs used in the 2011 Enacted Plan requiring that all the districts within them must be redrafted.

21. Table 1 lists all the Senate Optimum WCGs with additional information. The color coding on Table 1 is the same as the found on Map 3. The Group name, or ID, has also been parsed into 3 columns showing the group number, the number of counties in that group, and the number of districts in the group. A summary of the information contained on the table appears at the bottom.

HOUSE WHOLE COUNTY GROUPS

22. Map 4 shows the location of the 41 WCGs which must be used to conform to the Optimum WCG structure. Map 5 shows the location of the 36 WCGs which were used in the 2011 Enacted House Plan. Map 6 divides the House Optimum into three classes. The first class of WCGs, colored green, will remain unchanged and also contain no districts determined to be illegal by the court. The second class of WCGs, colored yellow, will also remain unchanged but the districts within them must be redrafted because the court has found some of the districts within the group to be illegal. The third class of WCGs, colored white, have been changed from the WCGs used in the 2011 Enacted Plan requiring that all the districts within them must be redrafted.

23. Table 2 lists all the House Optimum WCGs with additional information. The color coding on Table 2 is the same as the found on Map 6. The Group name, or ID, has also been parsed into 3 columns showing the group number, the number of counties in that group, and

the number of districts in the group. A summary of the information contained on the table appears on page 2 of the table.

NUMBER OF COUNTIES – COMPARING ENACTED TO OPTIMUM WCGs

24. Table 3 shows, for each General Assembly Chamber, the degree to which the 2011 Enacted Plans' WCGs compare to the Optimum WCGs in conformance to the dictates of the North Carolina Supreme Court's *Stephenson* decision. This table lists the number of counties per WCG from 1 to 20 for each Chamber's two grouping plans (Enacted and Optimal). For each grouping plan, the number of 1-county groups, 2-county groups, 3-county groups, and so on, are listed for each of the four WCGs discussed in this report (House Optimum, 2011 House Enacted, Senate Optimum and 2011 Senate Enacted). For example the table shows that there are 12 one-county groups, 17 two-county groups and 4 three-county groups in the new Optimum whole county grouping structure. In contrast, there were 11 one-county groups, 15 two-county groups, and 4 three-county groups in the 2011 Enacted Plan whole county grouping structure. The Optimum grouping structure is in greater conformance with the strict mandate of the *Stephenson* decision.

GENERAL CONCLUSIONS

25. While considerable complexity exists in drawing within the multi-district groupings, many of the districts in rural areas are entirely contained within single-district groupings and are self drawing. In the Senate map most of the districts in the rural eastern part of the state are in this category. All three of the Senate districts currently held by African-American incumbents are in this category. The three districts in question are the only districts within WCGs15-03-01, 23-06-01 and 12-02-01. WCG 15-03-01 (2011 SD 4) becomes 47.46% BVAP and 46.15% NHWVAP. WCG 23-06-01 (2011 SD

3) becomes 44.36% BVAP and 51.04% NHWVAP. WCG12-02-01 (2011 SD 5) becomes 32.94% BVAP and 59.81% NHWVAP.

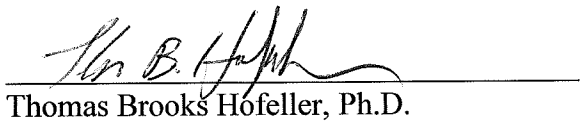
26. Similarly for the House of Representatives a number of single district groupings self draw in the rural eastern part of the state. This includes two districts which existed in their same configuration in the enacted plan, 17-02-01 and 40-02-01, both of which are majority minority districts. One of these districts, 17-02-01 (2011 HD 27) is currently represented by a NHW incumbent. Other districts currently held by African-American incumbents in the House in the rural eastern part of the state are more severely affected. Wilson County, which is adjacent to the districts mentioned above (and which is included in 2011 HD 24), also self draws as grouping 41-01-01 and has a BVAP of 38.11% and a NHWVAP 51.26%. In several other groupings in the eastern rural part of the state, application of the county line traverse rule within the groupings, the exact rule that was the subject of the *Pender County* case, reductions in the BVAP similar to those for Wilson County will occur. These groupings are 15-02-03, 14-02-02, 04-07-07, 18-02-02 and 19-03-03. The changes in these county groups will impact 2011 HDs 5, 7, 12, 21, and 48. Because the *Stephenson* case requires a drawing formula there is no way to avoid these results under the North Carolina Constitution.

27. Significant changes will have to be made in the whole county groupings to bring the new General Assembly Plans into maximum conformity with the *Stephenson* decision.

28. The two-week period which was given by the court to redraft the 2016 Congressional Plan only required redrafting of 13 districts, which also did not require the affirmative votes of the congressional incumbents affected by the new plan. In contrast, the

drafting of 36 new Senate districts and 81 new House districts, in strict conformity to the *Stephenson* whole county grouping criterion, is a far more complicated task facing the General Assembly than when it redrew the congressional map in early 2016.

Stated and signed under penalty of perjury on October 31, 2016.



Thomas Brooks Hofeller, Ph.D.

Table 1

NORTH CAROLINA STATE SENATE

Optimum County Groups for 2016 Districts

Tabular Summary of Map 3

Group ID	Group Number	Counties In Group	Districts in Group	Group Type	Group Population	Total Group Deviation	Avg. Group Deviation	Avg. %Group Dve.
01-01-05	1	1	5	S-VRA	919,628	(33,922)	(6,784)	-3.56%
02-03-02	2	3	2	NEW	382,429	1,009	505	0.26%
03-02-01	3	2	1	SAME	191,556	846	846	0.44%
04-02-02	4	2	2	NEW	391,910	10,490	5,245	2.75%
05-03-04	5	3	4	NEW	781,289	18,449	4,612	2.42%
06-02-02	6	2	2	SAME	379,303	(2,117)	(1,059)	-0.56%
07-02-01	7	2	1	SAME	190,676	(34)	(34)	-0.02%
08-02-01	8	2	1	SAME	197,306	6,596	6,596	3.46%
09-02-02	9	2	2	S-VRA	366,383	(15,037)	(7,519)	-3.94%
10-02-01	10	2	1	SAME	192,266	1,556	1,556	0.82%
11-02-01	11	2	1	SAME	187,925	(2,785)	(2,785)	-1.46%
12-02-01	12	2	1	NEW	189,510	(1,200)	(1,200)	-0.63%
13-02-01	13	2	1	NEW	182,118	(8,592)	(8,592)	-4.51%
14-03-01	14	3	1	SAME	183,118	(7,592)	(7,592)	-3.98%
15-03-01	15	3	1	NEW	192,477	1,767	1,767	0.93%
16-02-01	16	2	1	NEW	199,013	8,303	8,303	4.35%
17-08-02	17	8	2	NEW	397,291	15,871	7,936	4.16%
18-03-02	18	3	2	SAME	378,148	(3,272)	(1,636)	-0.86%
19-04-02	19	4	2	SAME	397,505	16,085	8,043	4.22%
20-03-02	20	3	2	NEW	366,967	(14,453)	(7,227)	-3.79%
21-03-01	21	3	1	NEW	191,738	1,028	1,028	0.54%
22-06-01	22	6	1	SAME	187,477	(3,233)	(3,233)	-1.70%
23-06-01	23	6	1	NEW	182,039	(8,671)	(8,671)	-4.55%
24-06-03	24	6	3	NEW	559,198	(12,932)	(4,311)	-2.26%
25-02-05	25	2	5	S-VRA	961,612	8,062	1,612	0.85%
26-04-01	26	4	1	NEW	197,991	7,281	7,281	3.82%
27-07-01	27	7	1	SAME	194,102	3,392	3,392	1.78%
28-11-01	28	11	1	NEW	196,665	5,955	5,955	3.12%
29-02-01	29	2	1	NEW	197,843	7,133	7,133	3.74%
		100	50					

SUMMARY OF TABLE INFORMATION

Group Group Classification	Number of Counties	Number of Districts
County Groups Same as 2011, But With NO Court VRA Disapproved Districts	35	14
County Groups Same as 2011, But With Court VRA Disapproved Districts	5	12
2016 Enacted County Groups Different From 2011 Enacted Groups	60	24
All 2016 County Groups	100	50

Table 2

NORTH CAROLINA HOUSE OF REPRESENTATIVES

Optimum County Groups for 2016 Districts

Tabular Summary of Map 6

Group ID	Group Number	Counties In Group	Districts in Group	Group Type	Group Population	Total Group Deviation	Avg. Group Deviation	Avg. %Group Dve.
01-01-12	1	1	12	S-VRA	919,628	(33,916)	(2,826)	-3.56%
02-01-01	2	1	1	SAME	83,029	3,567	3,567	4.49%
03-01-01	3	1	1	SAME	78,265	(1,197)	(1,197)	-1.51%
04-07-07	4	7	7	NEW	584,028	27,794	3,971	5.00%
05-01-02	5	1	2	SAME	154,358	(4,566)	(2,283)	-2.87%
06-01-02	6	1	2	SAME	159,437	513	257	0.32%
07-01-02	7	1	2	SAME	162,878	3,954	1,977	2.49%
08-01-06	8	1	6	S-VRA	488,406	11,634	1,939	2.44%
09-01-02	9	1	2	SAME	151,131	(7,793)	(3,897)	-4.90%
10-01-04	10	1	4	S-VRA	319,431	1,583	396	0.50%
11-01-11	11	1	11	S-VRA	900,993	26,911	2,446	3.08%
12-02-04	12	2	4	NEW	331,092	13,244	3,311	4.17%
13-02-01	13	2	1	SAME	76,622	(2,840)	(2,840)	-3.57%
14-02-02	14	2	2	NEW	151,264	(7,660)	(3,830)	-4.82%
15-02-03	15	2	3	NEW	227,643	(10,743)	(3,581)	-4.51%
16-02-03	16	2	3	NEW	236,277	(2,109)	(703)	-0.88%
17-02-01	17	2	1	SAME	76,790	(2,672)	(2,672)	-3.36%
18-02-02	18	2	2	S-VRA	156,459	(2,465)	(1,233)	-1.55%
19-03-03	19	3	3	NEW	244,483	6,097	2,032	2.56%
21-02-01	21	2	1	NEW	83,109	3,647	3,647	4.59%
22-02-03	22	2	3	SAME	228,240	(10,146)	(3,382)	-4.26%
23-06-06	23	6	6	NEW	492,701	15,929	2,655	3.34%
24-02-05	24	2	5	NEW	389,076	(8,234)	(1,647)	-2.07%
25-02-04	25	2	4	SAME	304,164	(13,684)	(3,421)	-4.31%
26-02-02	26	2	2	SAME	158,722	(202)	(101)	-0.13%
27-02-01	27	2	1	SAME	78,360	(1,102)	(1,102)	-1.39%
28-02-02	28	2	2	NEW	157,520	(1,404)	(702)	-0.88%
29-03-01	29	3	1	SAME	78,372	(1,090)	(1,090)	-1.37%
30-03-02	30	3	2	SAME	160,340	1,416	708	0.89%
32-04-01	32	4	1	SAME	80,814	1,352	1,352	1.70%
33-04-02	33	4	2	S-VRA	165,774	6,850	3,425	4.31%
34-04-01	34	4	1	NEW	76,421	(3,041)	(3,041)	-3.83%
35-06-04	35	6	4	NEW	332,410	14,562	3,641	4.58%
36-05-02	36	5	2	SAME	151,870	(7,054)	(3,527)	-4.44%
37-01-03	37	1	3	SAME	238,318	(68)	(23)	-0.03%
38-06-01	38	6	1	NEW	77,143	(2,319)	(2,319)	-2.92%
39-02-04	39	2	4	SAME	310,098	(7,750)	(1,938)	-2.44%
40-02-01	40	2	1	SAME	81,057	1,595	1,595	2.01%
41-01-01	41	1	1	NEW	81,234	1,772	1,772	2.23%
42-02-03	42	2	3	SAME	229,999	(8,387)	(2,796)	-3.52%
43-03-01	43	3	1	NEW	77,527	(1,935)	(1,935)	-2.44%
		100	120					

SUMMARY OF TABLE INFORMATION

County Group Classification	Number of Counties	Number of Districts
County Groups Same as 2011, But With No Court VRA Disapproved Districts	40	39
County Groups Same as 2011, But With Court VRA Disapproved Districts	10	37
2016 Enacted County Groups Different From 2011 Enacted Groups	50	44
All 2016 County Groups	100	120

TABLE 3

STATE OF NORTH CAROLINA

North Carolina General Assembly

Analysis of 2011 Enacted and 2016 Optimum County Groups

Count of Numbers of Counties in Groups by Plan

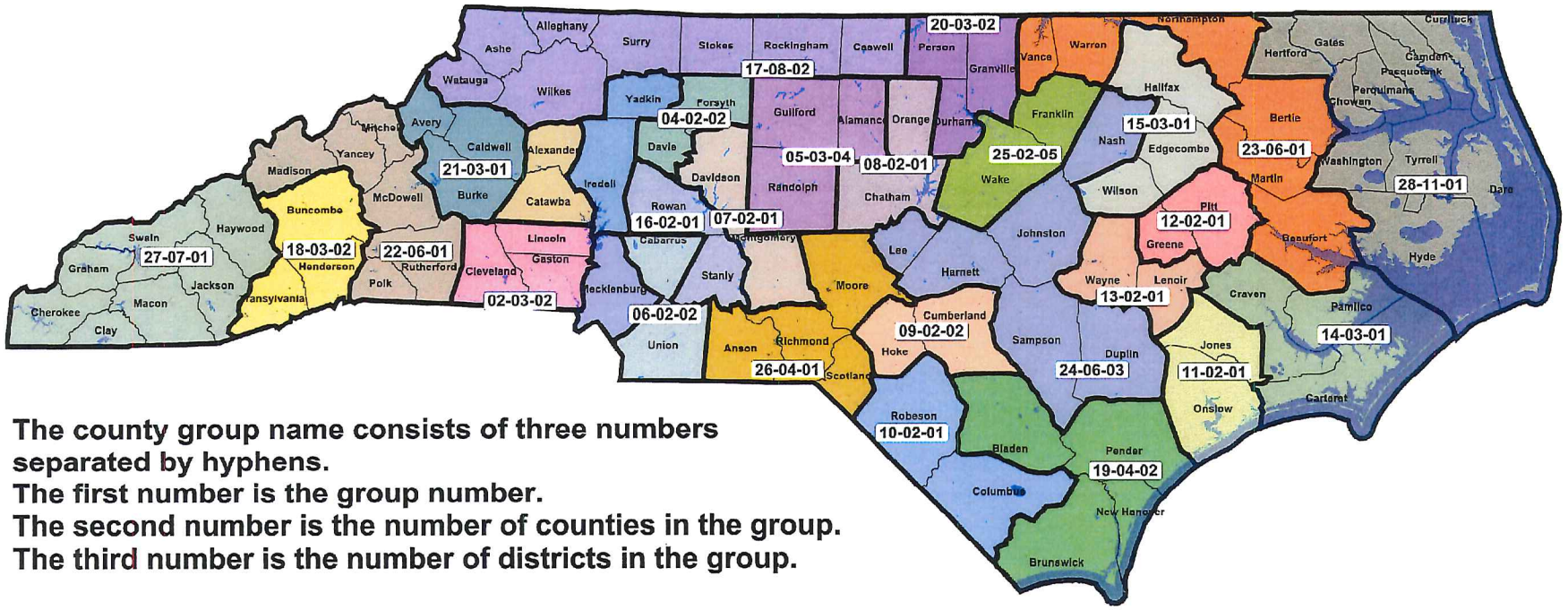
Number of Counties in Group	House Optimum Groups	House Enacted Groups	Senate Optimum Groups	Senate Enacted Groups
1	12	11	1	1
2	17	15	13	11
3	4	4	7	4
4	3	2	2	3
5	1	2		1
6	3		3	1
7	1		1	1
8			1	2
9		1		1
10				1
11			1	
12				
13				
14				
15				
16				
17				
18				
19				
20		1		
Total Groups	41	36	29	26

Note: The word "group" refers to whole county groups.

Note: The changes in the number of groups from between the 2016 Optimum and Enacted groups is due to the harmonization process between the Whole County Requirement and VRA requirements followed in the 2011 Plans.

MAP 1

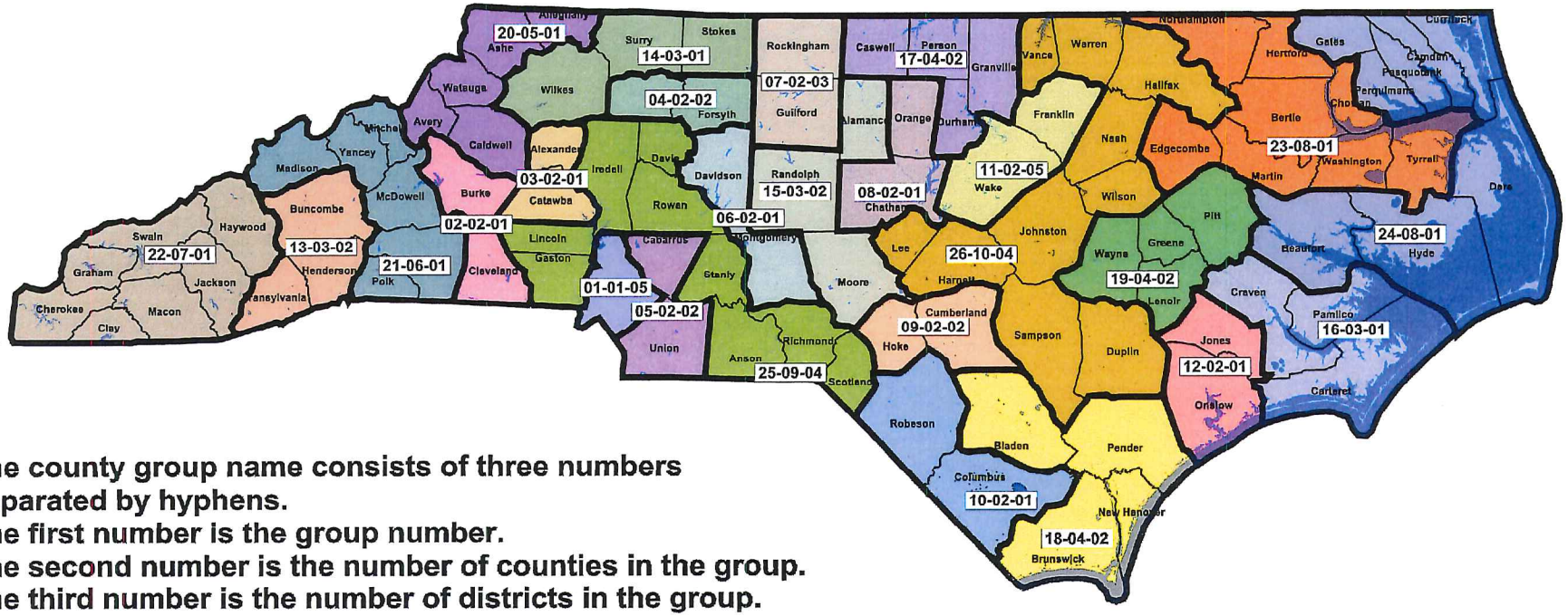
Optimum County Groups For Senate



The county group name consists of three numbers separated by hyphens.
The first number is the group number.
The second number is the number of counties in the group.
The third number is the number of districts in the group.

MAP 2

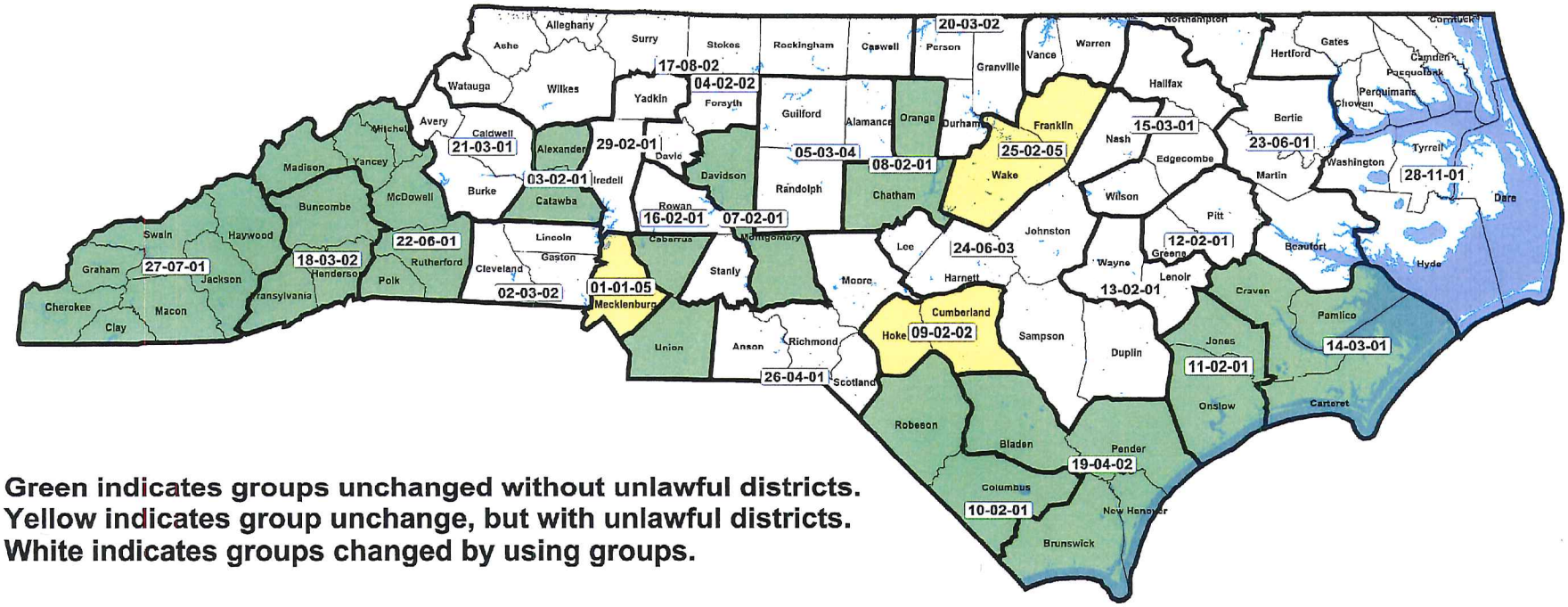
County Groups For 2011 Enacted Senate Plan



The county group name consists of three numbers separated by hyphens.
The first number is the group number.
The second number is the number of counties in the group.
The third number is the number of districts in the group.

MAP 3

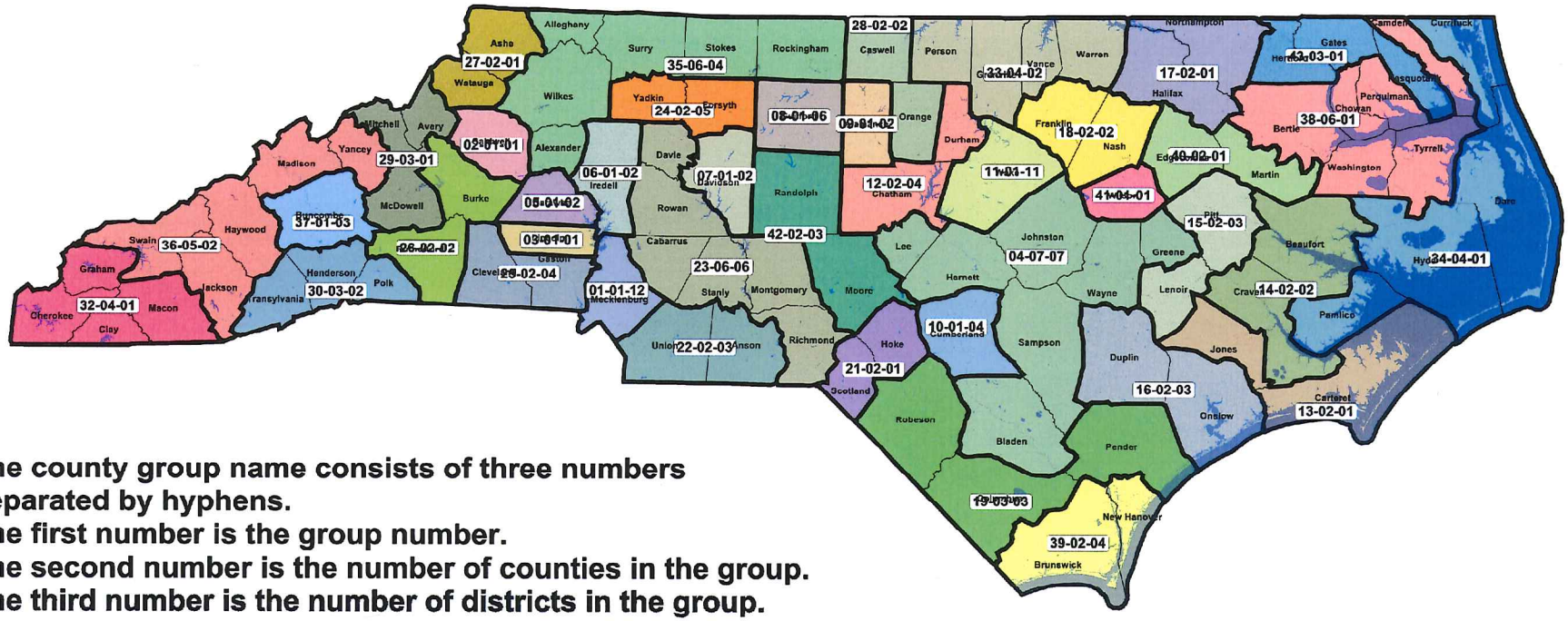
Comparison of 2011 Enacted to Optimum Senate County Groups



Green indicates groups unchanged without unlawful districts.
Yellow indicates group unchange, but with unlawful districts.
White indicates groups changed by using groups.

MAP 4

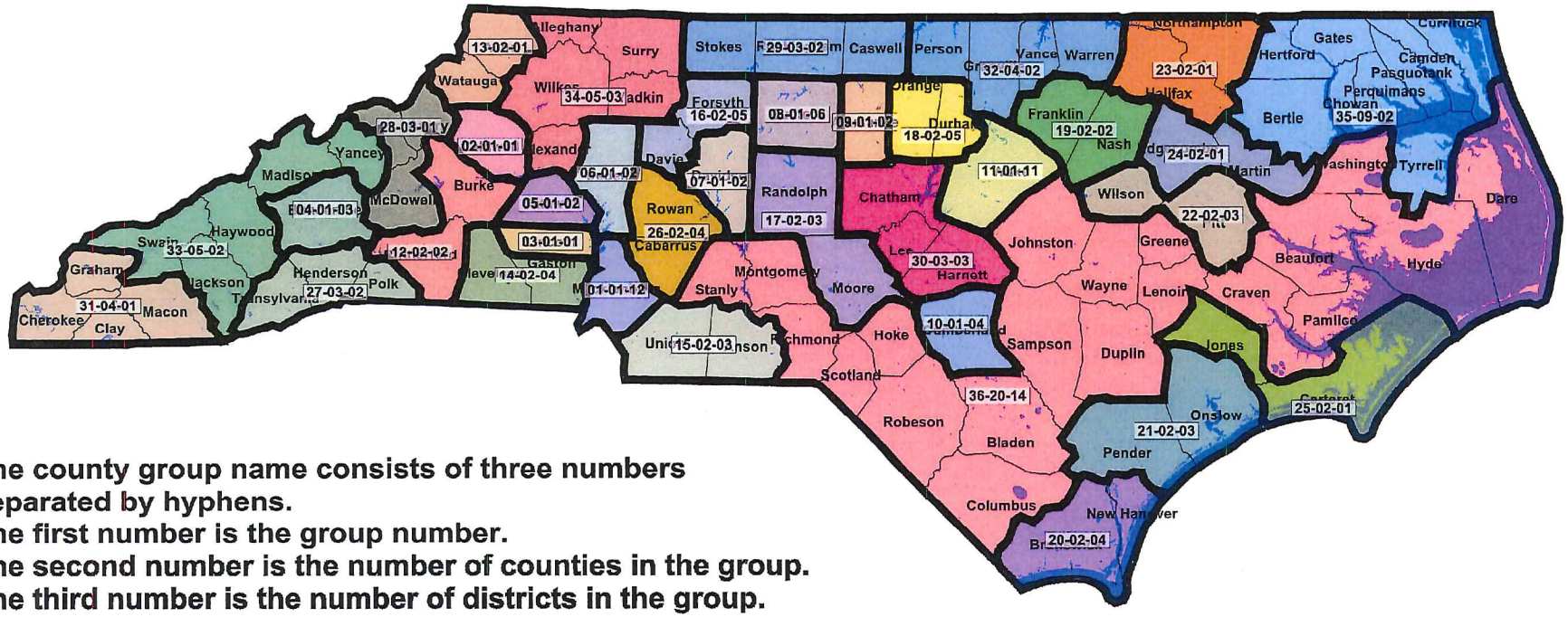
Optimum County Groups For House



The county group name consists of three numbers separated by hyphens.
The first number is the group number.
The second number is the number of counties in the group.
The third number is the number of districts in the group.

MAP 5

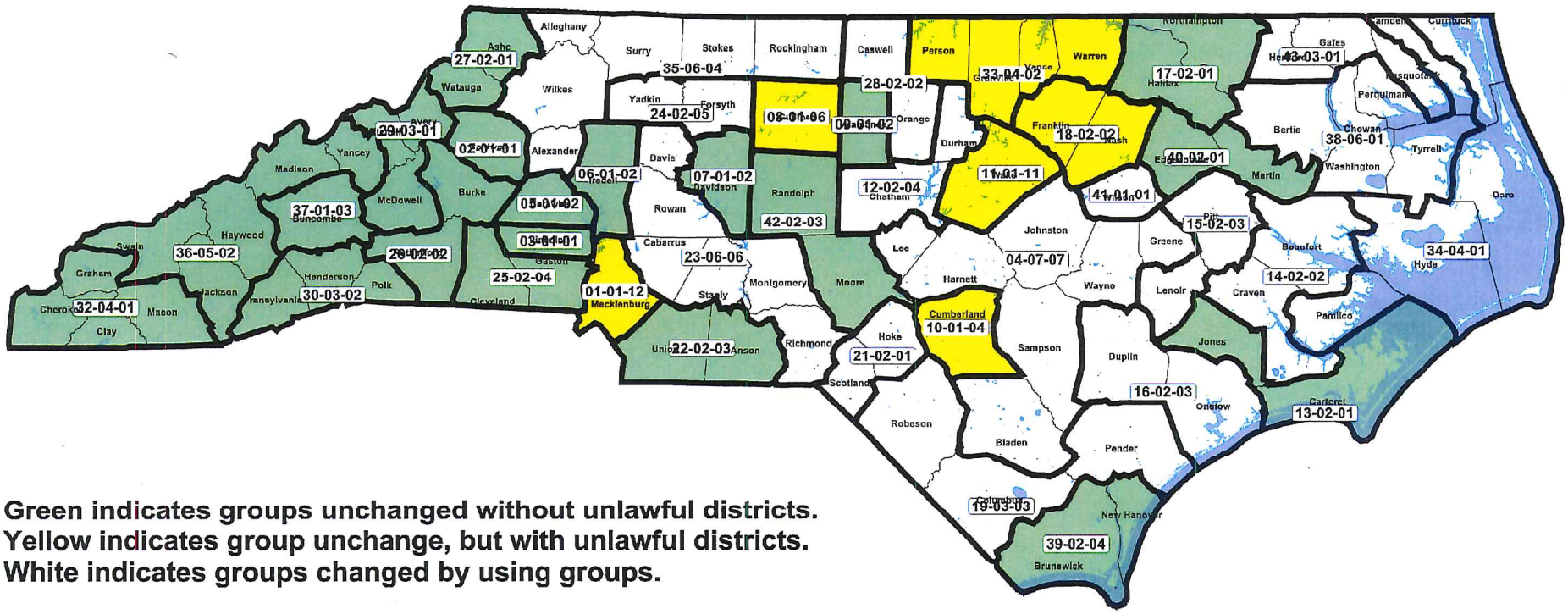
County Groups For 2011 Enacted House Plan



The county group name consists of three numbers separated by hyphens.
The first number is the group number.
The second number is the number of counties in the group.
The third number is the number of districts in the group.

MAP 6

Comparison of 2011 Enacted to Optimum House County Groups



Green indicates groups unchanged without unlawful districts.
Yellow indicates group unchange, but with unlawful districts.
White indicates groups changed by using groups.

Appendix 1

RESUME

Thomas Brooks Hofeller, Ph.D.

6701 Pointe Vista Circle, Raleigh, North Carolina 27615
Home: (984) 202-5193 – Cell: (703) 623-0764

Qualifications:

A varied career in government, business, academia and politics. Positions of significant responsibility, requiring intelligence, scholarship, communications skills, creativity and leadership include

- Successful completion of a Doctorate in Government requiring research and writing skills and the ability to communicate in an academic setting. Also includes a firm grounding in the philosophical and political roots of the American Governmental System.
- Litigation support and courtroom experience as a qualified expert witness in federal court. Clear presentation of difficult demographic and statistical concepts – making them understandable to non-technical audiences.
- Strategic and tactical analysis of political and demographic data for campaigns and political organizations. Understanding of survey design and interpretation, political resource targeting, list development and use of direct mail.
- Experience in management and information systems – including database construction, geographic information systems and creation of user interfaces that allow access by persons without extensive computer skills.
- Senior executive management of an office within a large government agency, planning and directing operations of a staff with a diverse number of missions while coordinating activities ranging across an entire agency.
- Setting up a new U. S. House subcommittee and conducting oversight, developing legislation and interacting with leadership. Experience in statistical, demographic and budgetary analysis.
- Creating and managing small businesses, including budgeting, human resources, facilities management, accounting and shareholder interface.

Areas of Expertise:

- **Redistricting**: Over 50 years of experience in the redistricting field. Development of computerized redistricting systems. Analysis of census and political data used for redistricting. Drafting of plans for congressional, legislative and local districts in multiple states. Submission of numerous expert reports and trial testimony as an expert witness.
- **Operations:** Recruiting, training and directing staffs for existing and newly instituted projects in government and national political organizations. Private sector experience as a business owner and CAO. Proven ability to organize and direct multiple projects with

effective use of delegation. Able to function as a team player in both management and support positions.

- **Communications:** Ability to develop and deliver engaging and informative presentations involving difficult concepts and issues to decision-makers, the public and press. Effective in preparation of affidavits and exhibits as well as giving depositions and delivering courtroom testimony.
- **Information Technology:** Expertise in analysis of complex technical problems involving large amounts of data – both for analysis and practical use in business, government and politics. Able to break down information and develop effective solutions. Ability to interface between highly technical personnel and management.
- **GIS:** Considerable experience in integration of mapping and data (geographic information systems).
- **Budget & Programs:** Experience in budget formulation and managing accurate accounting systems in the private and public sectors.

Education:

- **Claremont Graduate University**, Claremont, CA – Ph.D. in Government - 1980
- **Claremont McKenna College**, Claremont CA – B. A. in Political Science - 1970
- **U. S. Navy, Electronics School,** Treasure Island, CA, Graduate -1966

Publications:

- Thomas S. Engeman, Edward J. Erler and Thomas B. Hofeller (1980. **The Federalist Concordance.** Chicago: University of Chicago Press.
- Grofman, Bernard and Hofeller, Thomas B (1990). **"Comparing the Compactness of California Congressional districts Under Three Different Plans".** In Bernard Grofman (ed) *Political Gerrymandering and the Courts.* New York: Agathon.
- Richard Niemi, Bernard Grofman, Thomas Hofeller, and Carl Carlucci (1990). **Measuring the Compactness and the Role of a Compactness Standard in a Test for Partisan Gerrymanderings".** ***Journal of Politics.***
- **Reports and affidavits prepared for, and testimony in, numerous court cases** (listed below).

References:

Current and recent employer references are available and will be furnished upon request.

Experience:

Geographic Strategies LLC **Partner** **May 2011 – present**
7119 Marine Drive
Alexandria, Virginia 22307

- Geographic Strategies provides redistricting services clients including database construction, strategic political and legal planning in preparation for actual line drawing, support services and training on the use of geographic information systems (GIS) used in redistricting, analysis of plan drafts, and actual line-drawing when requested. The corporation and its principals also provide litigation support.

State Government Leadership Foundation **Redistricting Consultant** **April 2011 – April 2012**
1800 Diagonal Road, Suite 230

Alexandria, VA 22314

Contracting Officer: J. Christopher Jankowski
Executive Director
(571-480-4861

- Retained as a consultant to state legislatures and statewide elected officials in all aspects of their work on the 2011-2012 redistricting process.

Areas of consultation:

- Develop strategic and tactical plans for Legislatures and statewide elected officials to develop and defend redistricting plans for legislative and congressional districts.
- Providing assistance in actual redistricting plan drafting and analysis.
- Providing a linkage between complex legal standards and their practical application to plan drafting in difficult political and technical environments.
- Provide assistance in redistricting litigation
- Identification of specialized GIS software, database and hardware systems to be used by stakeholders.
- Ongoing strategic, technical and legal support to those involved in redistricting in all states.
- Development of a clearinghouse of redistricting activities throughout the nation and analysis of the effects of the process on future elections.

REPUBLICAN NATIONAL COMMITTEE
310 First Street, S.E.
Washington, DC 20003

Redistricting Consultant **May 2009 – April 2011**

Contracting Officer: John Phillippe
RNC Chief Counsel
(202) 863-8638

- Retained as a consultant to recreate a new department to coordinate the redistricting activities of the National Committee and the greater GOP community in preparation and execution of the 2011 redistricting Areas of responsibility and to support the Committee's 2011 through 2012 redistricting efforts:
  - Developed a strategic plan for the Committee to best position itself for maximum success in this highly competitive process.
  - Liaison and training with members of Congress, legislators, key statewide officials, state parties and other divisions within the Committee to ensure a high level of political, technical and legal preparation.
  - Recruitment and training of a technical and legal staff.
  - Providing a linkage between complex legal standards and their practical application to plan drafting in difficult political and technical environments
  - Identification of specialized GIS software, database and hardware systems to be used by the Committee and other stakeholders.
  - Ongoing strategic, technical and legal support to members of congress and those involved in redistricting in all states, including plan drafting.
  - Development of a clearinghouse of redistricting activities throughout the nation and analysis of the effects of the process on future elections.

DEPARTMENT OF AGRICULTURE
FARM SERVICE AGENCY
1400 Independence Avenue
Washington, DC 20250

Associate Administrator for Operations and Management **June 2004 – January 2009**

Supervisor: Teresa C Lasseter, Administrator
Farm Service Agency
(229) 890-9127

- Associate Administrator providing management and oversight to staff with diverse missions supporting the activities of the entire Farm Service Agency (FSA).

Areas of responsibility:

- Provides oversight and guidance to the 1,100 person staff of the Deputy Administrator for Management. These functions include management services, human resources, financial management, budgeting, and information technology.

- Directs the activities of the Office of Civil Rights which performs all of the EEO functions for the Agency, as well managing FSA's diversity programs.
- Provides oversight and guidance to the Office of Business and Program Integration. This office supports a wide range of cross-cutting activities including economic policy analysis, strategic planning, outreach, state and county office review, county service center integration, emergency planning, county office reviews and audits, e-Government, and program appeals and litigation.
- Has primary oversight of the business realignment process underway in the Agency. This realignment includes such projects as Agency-wide enterprise architecture development, field office realignment, and concurrent changes to the Agency's business processes. This realignment is necessary to allow the Agency to meet the present and future challenges involved in providing the best possible customers service and implementation the President's Management Agenda.
- Spearheads the ongoing reform of the FSA county committee election system which included the drafting of guidelines just published in the Federal Register.

DEPARTMENT OF AGRICULTURE
FARM SERVICE AGENCY
1400 Independence Avenue
Washington, DC 20250

Director, Office of Business and Program Integration

Apr. 2003 – June 2004

Supervisor: Verle Lanier, Associate Administrator for Operations and Management (retired)
(301) 424-5776

❑ Director of a senior level office directing the activities of subordinate staffs with diverse missions supporting the overall activities of the Farm Service Agency.

Areas of responsibility:

- Provided oversight and guidance to the 75-person staff of the Office of Business and Program Integration. This office supported a wide range of cross-cutting activities including economic policy analysis, strategic planning, outreach, state and county office review, county service center integration, emergency planning, county office reviews and audits, e-Government, and program appeals and litigation.
- Directed the development of administrative strategies essential to the successful management of e-Government initiatives. Coordinated citizen-centered eGovernment initiatives.
- Provided centralized direction for the Agency's strategic plan in compliance with the Government Performance and Results Act of 1993.
- Coordinated outreach efforts for all FSA programs to enhance participation of small or limited resource farmers and ranchers to provide equal access to programs striving to acquire and maintain economic viability for family farmers and ranchers.

- Directed the preparation of policies and dockets on national program determinations to be submitted for CCC Board consideration and Federal Register publications.

REPUBLICAN NATIONAL COMMITTEE
310 First Street, S.E.
Washington, DC 20003

Redistricting Director **Jul. '99 – Mar. 2003**

Supervisor: Thomas Josefiak, former RNC Chief Counsel
(703) 647-2940

- Hired to create a new department to coordinate the redistricting activities of the National Committee mandated by the release of data from the 2000 Decennial Census.

(See the description of present position.)

U. S. HOUSE SUBCOMMITTEE ON THE CENSUS

Staff Director **Feb. '98 - Jul. '99**

Supervisor: Hon. Dan Miller, Chairman
(202) 225-5015

- Staff Director at inception of this oversight subcommittee, created by the House in February of 1998, to monitor the preparations for and the execution of the 2000 Decennial Census. Directed all day-to day operations of the subcommittee including:
  - Recruitment and training of a staff for a new subcommittee.
  - Liaison with the Director and Senior Staff of the Census Bureau, the Department of Commerce, and U.S. Senate Staff involved in census oversight.
  - A complete examination of the preparations underway at the Census Bureau for conduct of the 2000 Decennial Census.
  - An examination of the proposed statistical methods proposed by the Bureau to improve coverage of the Census.
  - Reviewed and made recommendations to the Chairman and House Leadership regarding census policy.
  - Coordination with Government Accounting Office personnel involved in census oversight.
  - Preparation and support for oversight hearings conducted by the members of the Subcommittee.
  - Interface between the academic statistical community and the subcommittee in the development of census policy.
  - Liaison with census stakeholders in general, with particular attention to members of the Decennial Census Advisory Committees.

U. S. HOUSE COMMITTEE ON HOUSE OVERSIGHT

Professional Staff **Nov. '97 - Feb. '98**

Supervisor: Hon. William M. Thomas, Chairman
(202) 225-2915

- ❑ Involved in the oversight activities of the Committee that supervises the operations of the U.S. House of Representatives. Advised the Chairman and House Leadership on congressional policy with regard to all census operations prior to the establishment of the Subcommittee on the Census

PARTES CORPORATION **Director of Administration** **Mar. '96 - Nov. '97**

Kirkland, Washington

Supervisor: Mark Schnitzer, Chairman

- ❑ Chief Administrator of a software development company specializing in the creation of databases used by investment professionals to analyze information on securities.

Information was downloaded, parsed, and reformatted from the Securities and Exchange Commission's EDGAR database and other relevant sources. Was responsible for all administrative functions of the corporation including:

- ♦ Procurement, renovation and management of facilities housing the company.
- ♦ All human resource activities.
- ♦ Accounting and payroll.
- ♦ Liaison with attorneys and shareholders.

CAMPAIGN MAIL & DATA, INC **Professional Staff** **Nov. '93 - Mar. '96**

Falls Church, Virginia

Supervisor: John Simms, President
(703) 790-8676

- ❑ Supervised development and maintenance of geographic databases that were integrated with the company's various political and commercial lists. Created a new department that collected and converted voter lists from states, counties and towns.

NATIONAL REPUBLICAN CONGRESSIONAL COMMITTEE **Redistricting Director** **Mar. '89 – Nov. '93**

320 First Street, S.E.
Washington, DC 20003

Supervisor: Maria Cino, Chief of Staff

- ❑ Created a new department to coordinate the redistricting activities of the NRCC and provide support to all GOP members of the U.S. House and their staffs.

Areas of responsibility:

- ♦ Recruitment and training of a technical staff.

- Development of specialized GIS software, databases and hardware systems to be used by the Committee and members of Congress.

REPUBLICAN NATIONAL COMMITTEE — **MIS Director** — **Jan. '82 – Mar. 89**
310 First Street, S.E.
Washington, DC 20003

- Transformed the Committee's computer capabilities from a single mainframe system operated completely within a computer division into a building-wide network, utilized by all divisions and from remote locations. Supervised all the Committee's data processing activities, including database and software development. Directed research activities involving analyses of demographic and election data. Primary computer consultant to the GOP's state and county party organizations.

ROSE INSTITUTE OF STATE AND LOCAL GOVERNMENT — **Associate Director** — **1973 – 1981**
Claremont McKenna College
Claremont, California

- Co-Founder of this Southern California research center specializing in the examination of current financial and political issues affecting California's state and local governments. Supervised staff and day-to-day operations, directed software and database development, managed research projects and assisted in fundraising.

COMPASS SYSTEMS, INC. AND LOCAL GOVERNMENT — **Vice President** — **1970 – 1973**
San Diego, California

- Part of the management team that developed the first computerized geographic mapping and data retrieval system used by the California State Assembly for redistricting and demographic analysis. Directly supervised programming and database development staffs.

UNITED STATES NAVY — **Petty Officer 2nd Class** — **1965 – 1969**

- Electronics Technician. Served on USS Porterfield, DD682, in Tonkin Gulf operations during Vietnam War. (Honorable Discharge)

Summary of Participation in Lawsuits:

Shaw v. Hunt, 92-202-CIV-5-BR, U.S. District Court for the Eastern District of North Carolina, Raleigh Division (1993-4)

This case was the second trial phase following the U.S. Supreme Court's reversal of the lower court in Shaw v. Reno (1993). Prepared alternative plans for presentation to the court. Prepared political and demographic analyses of the state's plans, along with numerous exhibits supporting the plaintiffs' complaints. Gave a deposition and served as plaintiffs' primary expert witness at trial.

Arizonans for Fair Representation v. Symington, CIV 92-0256, U.S. District Court Arizona (1992), aff'd mem. sub nom. Arizona Community Forum v. Symington, 506 U.S. 969 (1992)

Prepared an affidavit evaluating the three major plans submitted to court for redistricting of Arizona's six congressional districts. Plans were examined with regard to all major redistricting criteria. Also examined minority voting strength in proposed new sixth district in State Senate Plan. Gave expert testimony in trial phase. Drafted a new map for presentation in court that was adopted, with minor changes, by the three-judge panel.

De Grandy v. Wetherell, No 92-40015-WS, U.S. District Court Florida (1992)

Prepared model plans and submitted affidavits evaluating alternative plans for two of the parties in the congressional phase of the case and gave testimony on the political and voting rights implications of various other plans. Presented an affidavit and gave expert testimony in the legislative phase of the case for the De Grandy plaintiffs.

Good v. Van Straten, 800 F. Supp. 557, U.S. District Court Eastern & Western Michigan (1992)

Prepared compactness analysis of plans submitted to court to redistrict Michigan's congressional districts. Gave testimony on compactness theories and other relevant redistricting criteria.

Pope v. Blue, U.S. District Court Western District of North Carolina (1992)

Prepared an affidavit containing compactness analysis and political analysis of the plan passed by North Carolina Legislature and approved by U.S. Department of Justice.

Ketchum v. Byrne, 740 F,2d 1398, cert. denied City Council of Chicago v. Ketchum, 471 U.S. 1135 (1985), on remand, Ketchum v. City of Chicago 630 F. Supp. 551 (N.D. Ill. 1985)

Consultant to African-American plaintiffs (P.A.C.I.). Assisted in building Plaintiffs' political and demographic database, performed a racial and ethnic analysis of City of Chicago, gave a deposition, and testified in court. Participated in second remedy phase of case, gave a second deposition, was prepared to give testimony (the case was settled before retrial).

Carrillo v. City of Los Angeles, No. CV-85-7739 JMI-JRX (unreported) (C.D. Cal. 1986)

Consultant to Mexican American Legal Defense Fund (MALDEF). Constructed database, performed analysis of ethnic voter registration levels, analyzed various plans submitted by all parties, submitted affidavit to the court.

McNeil v. Springfield School District, 656 F. Supp. 1200, 66 F. Supp. 1208 (C.D. Ill 1987), 851 F.2d, 937 (7th Cir. 1988)

Consultant to counsel for Springfield School Board. Constructed demographic database, performed analyses on various proposed districts, gave deposition, presented affidavit to court. Prepared an analysis determining levels of African-American voting strength in proposed districts.

State of Mississippi v. United States, 490 F. Supp. 569 (D.C.D.C. 1979)

Principle consultant to Joint Reapportionment Committee of Mississippi State Legislature. Compiled databases, drew plans, prepared analysis for the legislature, and gave general redistricting advice to Committee Chairman and Counsel. Gave an extensive deposition and testified before the District Court in DC. Assisted in the preparation of all briefs.

Badham v. Eu, 568 F. Supp. 156; 721 F.2d 1170 (1983); -- F.Supp. -- (Apr. 21 1988), appeal docketed, No. 87-1818 56 U.S.L.W. 3791 (U.S. May 4 1988)

Principle technical consultant to counsel for Badham Plaintiffs and Republican National Committee. In charge of all database construction, development of sample court plans, analyses of Burton Plans and preparation of maps, charts and other materials for trial. Submitted affidavits.

Bandemer v. Davis, 478 U.S. 109 (1986)

Consultant to counsel for amicus, Republican National Committee. Prepared a demonstration plan for brief submitted to U.S. Supreme Court.

California Legislature v. Reinecke, 6 Cal. 3d595 99 Cal. Rptr. 481, 492 P.2d 385 (1972)

As consultant, drafted redistricting plan for California State Senate and Assembly that were subsequently accepted by California Redistricting Commission.

Jordan v. Winter, 541 F. Supp. 1135 (N.D. Miss. 1982)

Performed analyses and gave court testimony on behalf of the defendants.

Gingles v. Edmisten, 590 F. Supp. 345 (N.D.N.C. 1984), aff'd in part and rev'd in part Thornburg v. Gingles 478 U.S. 30 (1986)

Consultant to Attorney General. Performed demographic analysis of state with regard to creation of African-American districts for North Carolina General Assembly. Gave deposition and testified in court on behalf of Legislature.

City of Port Arthur v. United States, 459 U.S. 159 (1982)

Consultant to City Attorney. Performed analysis of racial content of City Council Districts. This was required for the case required because the 1980 Decennial Census data were not yet available. Analysis required extensive residential survey to determine racial characteristics of individual districts. Gave a deposition in the case.

Ryan v. Otto, 661 F.2d 1130 (7th Cir. 1981)

Consultant to Republican plaintiffs and Illinois Congressional Delegation. Drew alternative plans for presentation to Court, gave deposition and testimony.

Rybicki v. State Board of Elections, 584 F. Supp. 849 (N.D. Ill. 1984)

Principle technical consultant to State House of Representatives and the Senate Minority Caucus. Supervised construction of all political and demographic databases. Responsible for design and programming of House's computerized redistricting information system. Analyzed and drafted numerous redistricting plans. Gave depositions and testified at trial.

La Comb v. Growe, 541 F. Supp. 145 (D.Minn.), aff'd sub nom. Orwall v. La Comb, 456 U.S. 966 (1982)

Consultant to Minority members of Congressional Delegation. Drafted a plan for presentation to Court and submitted an affidavit.

Karcher v. Daggett, 462 U.S. 725 (1983), 467 U.S. 1222 (1984)

Participated in presentation of briefs on Republican side. Consultant to members of New Jersey Congressional Delegation.

Flanagan v. Gillmor, 561 F. Supp. 36 (S.D.Ohio 1982) Brown v. Brandon, (unreported), (S.D.Ohio Jan. 30, 1984), as modified (Feb. 13, 1984), aff'd 467 U.S. 1223 (1985)

Consultant to State Legislature. Modified 1981congressional district redistricting plan to conform to "one person, one vote" standard imposed by decision of the Court.

Massachusetts Republican State Committee v. Connolly, 679 F. Supp. 109 (D. Mass. 1988)

Consultant to counsel for plaintiffs. Examined evidence submitted in regard to 1985 Massachusetts State Census (particularly for Boston), analyzed legislative redistricting plan, submitted affidavit, gave deposition.

Sinkfield v. Bennett, Civil Action CV 93-689-PR (Circuit Court of Montgomery County, Alabama)

Gave testimony supporting the replacement of the Alabama congressional plan drawn by the Federal Court with a plan drawn by the Circuit Court.
Mississippi State Conference of the NAACP v. Haley Barbour, Civil Action No. 3:11-ev-159 TSL-EGJ-LG (SD Mississippi, Jackson Division – 2011)

Prepared a declaration for the intervenors analyzing the compactness and deviations of various legislative plans submitted to the Court for consideration.

Dickson v. Rucho, Civil Action 11 CVS 16896 and North Carolina State Conference of the NAACP v. State of North Carolina, Civil Action 11CVS 16940 (General Court of Justice, Superior Court Division, Raleigh, North Carolina – 2011)

Submitted two affidavits and gave a deposition concerning my role as a consultant to the General Assembly with regard to the redistricting of North Carolina State Senate and State House of Repre-

sentative districts as well as the redistricting of that state's congressional districts. Testified at hearing before 3-judge panel.

Boone v. Nassau County Legislature, Civil Action CV 11-cv 02712 (Supreme Court of the State of New York, County of Nassau - 2011)

Prepared an affidavit evaluating the 2011 redistricting plan enacted by the Nassau County Legislature and other sample plans presented by the Plaintiffs, with particular attention to the efficacy of the use of the U.S. Census Bureau's American Community Survey for measuring compliance with the provisions of Section 2 of the Federal Voting Rights Act.

Petteway v. Henry, Civil Action CV 11-411 (SD Texas, Galveston Div. 2011)

Prepared and presented at trial an alternative redistricting plan Galveston County's commissioner districts to the court for defendant intervenors.

Pearson v. Koster, Civil Action 11AC-CC00624 (Circuit Court of Cole County, Missouri, Div. II - 2012)

Prepared an affidavit evaluating the compactness of Missouri's newly enacted congressional districts (2011) in light of the State Supreme Court's remand of this case for determination of whether or not, in light of Plaintiffs' alleged claims to the contrary, the districts reflected in H.B. 193 were sufficiently compact to meet the requirement contained in the Missouri Constitution that districts be "composed of territory as compact as may be." Served as the expert witness at trial for the defendant intervenors.

Bob Johnson v. State of Missouri, Civil Action 12AC-00056 (Circuit Court of Cole County, Missouri 2012)

Prepared an affidavit analyzing the compactness and deviations of the enacted State House of Representative districts.

Harris v. Arizona Independent Redistricting Commission, Civil Action cv-12-0894-PHX-ROS (United States District Court, District of Arizona 2012)
Prepared affidavits analyzing the state legislative districts enacted by the Arizona Independent Redistricting Commission concerning population deviations, ethnic and racial characteristics and adherence to other neutral redistricting criteria. Presented expert testimony at trial.

Cynthia Hauser v. Martin O'Malley, Civil Action September Term 2012, Misc. No 5 – 2012, (Maryland Court of Appeals)

Prepared a declaration analyzing the State Senate and State House of Maryland enacted by the Governor following the 2010 Census and comparing both plans to senate and house plans submitted by plaintiffs.. Conclusions were made concerning the integrity of county lines, and district deviations as well as adherence to the provisions of the federal Voting Rights Act.

Kermit L. Moore, Jr. v. State of Tennessee, In the Chancery Court Case No. 120402-III (2012)

Prepared an affidavit analyzing the State Senate redistricting plan enacted by the Legislature for the 2012 elections and compared it to a plan submitted as a bill by the opposition. Conclusions were made analyzing the compliance of both plans with the federal and state provisions of one-person/one vote.

David Harris v. Patrick McCrory, Civil Action No. 1:13 CV-00949 (United States District Court, Middle District of North Carolina Durham Division 2013)

Retained by Defendant's counsel to prepare a declaration in response to plaintiffs' expert report' concerning the congressional redistricting plan enacted by the North Carolina General Assembly in 2011. Gave a deposition concerning the construction and characteristics of the congressional district contained in the enacted plan as well as other relevant congressional maps.

Terry Petteway v. Galveston County, Texas, Civil No. 3:-cv-00308, (United States District Court, Southern district of Texas, Galveston Division 2013)

Retained by Defendant's counsel to prepare a redistricting map for Galveston County's Justice of the Peace Precincts, prepared a declaration in response to plaintiffs' experts' reports and gave testimony at trial.

North Carolina State Conference of the NAACP v. Patrick Lloyd McCrory, 1:13 CV-658 (United States District Court, Middle District of North Carolina 2013)

Retained by Defendant's counsel to prepare an expert report summarizing a study of information from the voter files of North Carolina's State Board of elections as compared to the North Carolina Department of Motor Vehicles' (DMV) customer file as well as locations of DMV offices proximity to potential registered voters who do not appear to have drivers licenses or DMV ID,s Performed and analyses of demographics and registration information with regard to this information. Analyzed the locations and hours of one-stop voting centers. Testified as a witness at the trial of the case.

Golden Bethune-Hill v. Virginia State Board of Elections, Civil Action No. 3:14-cv-00852 (United States Court for the Eastern District of Virginia – Richmond Division 2015)
Retained by Defendant Intervenors to prepare an expert report determining whether H.B. 5005, which the Virginia General Assembly enacted to redistrict the Virginia House of Delegates, was compact and contiguous, and also to comment on other factors which are relevant to such a determination. Offered testimony at the trial in July of 2015.

Sandra Little Covington v State of North Carolina, Civil Action No. 1:15-cv-00399 (United States District Court for the Middle District of North Carolina – 2015)

Retained by Defendant Intervenors to prepare an expert report explaining the relationship between exemplar districts identifying compact areas of minority voting strength and the actual 2011 enacted redistricting plans for both chambers of the North Carolina General Assembly. Testified at trial