IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF NORTH CAROLINA

COMMON CAUSE, et al., Plaintiffs, vs. ROBERT A. RUCHO, in his official capacity as Chairman of the North Carolina Senate Redistricting Committee for the 2016 Extra Session and Co-Chairman of the Joint Select Committee on Congressional Redistricting, et al., Defendants.	Civil Action No. 1:16-CV-1026-WO-JEP
LEAGUE OF WOMEN VOTERS OF NORTH CAROLINA, et al., Plaintiffs, vs. ROBERT A. RUCHO, in his official capacity as Chairman of the North Carolina Senate Redistricting Committee for the 2016 Extra Session and Co-Chairman of the 2016 Joint Select Committee on Congressional Redistricting, et al., Defendants.	Civil Action No. 1:16-CV-1164-WO-JEP

DEPOSITION OF JOWEI CHEN

10:00 A.M.

MONDAY, JULY 30, 2018

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JOWEI CHEN,

having been first duly sworn or affirmed by the Certified Shorthand Reporter and Notary Public to tell the truth, the whole truth and nothing but the truth, testified as follows:

EXAMINATION

BY MR. STRACH:

Q. Good morning, Dr. Chen. How are you?

A. Good morning, sir. I'm doing well.

Q. You've been deposed and have testified numerous times, so I'm dispensing with the formalities other than to say if you need a break at any time, just let me know. Okay.

A. Yes, sir.

Q. Dr. Chen, you testified in these matters, the Common Cause and the League of Women Voters matters, in North Carolina under oath in a deposition in 2017; is that correct?

A. Yes, sir.

Q. And then you testified at the trial in October of 2017. Do you recall that?

A. Yes, sir.

Q. All right. And you're aware that the reason for the deposition today is that the case is on remand from the U.S. Supreme Court?

A. I'm generally aware of that.
Q. Okay. Since the trial in October of 2017, have you submitted any articles for publication?
A. Any academic articles?
Q. Yes.
A. Since 2017. Let me think about that for a minute.
Q. Sure. Since October 2017 specifically.
A. Okay. To my recollection, I have not.
Q. All right. And then similar question: Have you published any articles or had any articles published since October 2017, academic articles?
A. There are no new articles that were not already on my c.v. that was discussed at trial. I believe at the time there was a forthcoming article, and it may have been -- I just want to be technically accurate -- may have been that it did not actually go to print until after October, but certainly it was -- it was on my c.v. at that time. It was already in the publication process and certainly on my c.v.
Q. All right. And so to your knowledge, no new writings that have been submitted or published other than what was on your c.v. in October 2017?

A. That's right, sir.
Q. All right. Have you participated in any other partisan gerrymander cases other than this North Carolina case since October of 2017?
A. I have served as an expert in other redistricting cases since that time.
Q. Which cases are those?
A. I was disclosed as an expert in a Pennsylvania state case, state court case, and that went to trial in December of 2017. I was also disclosed as an expert in a federal case involving two state house districts in Georgia. I believe that was Georgia NAACP versus Kemp. And I believe that those are the only two cases in which I have been disclosed as an expert since October.
Q. All right. You're familiar with the Whitford v Gill case or Gill v Whitford case?
A. Yes, sir.
Q. That's the decision that the Supreme Court recently handed down dealing generally with partisan gerrymandering.
A. Yes, sir.
Q. Have you read that decision?
A. I'm generally aware of it. I haven't read it in

1 any great detail, but obviously I've read it
2 about it.
3 Q. Have you actually pulled the opinion and read
4 the opinion?
5 A. I haven't read it in its entirety. I obviously
6 read about it in the news. I'm sure that I
7 downloaded a copy of the decision and looked
8 through some parts of it, but I did not look at
9 it in any great detail.
10 Q. All right. You understand that in the opinion
11 there's a majority opinion and then a concurring
12 opinion? Do you understand that?
13 A. I generally understand that.
14 Q. With regard to the majority opinion, which was
15 the opinion written by Chief Justice Roberts, do
16 you recall reading all or any part of that
17 opinion?
18 A. I'm sure I looked through parts of it, but,
19 again, I did not read it in great detail.
20 Q. All right. When you say that -- when I don't
21 read something in great detail, that might mean
22 something different from when you don't read
23 something in great detail.
24 When you say you don't read -- you did
25 not read it in great detail, does that mean you

1 did not read every word in the opinion?
2 A. I definitely did not read every word. What I
3 generally mean is that I obviously am not
4 legally qualified to read and interpret the
5 case, and so to those of us who are not lawyers,
6 a very large portion of any court case involves
7 material that we're just simply not qualified to
8 understand at all, and so when I read it, I
9 would skip over a great deal of any part of any
10 Supreme Court case. That's all I generally mean
11 is that I obviously am not even qualified to
12 really understand a great deal of any given
13 Supreme Court case.
14 Q. Since -- you recall when the Gill decision came
15 down it was in June of this year?
16 A. Yes, sir.
17 Q. Since that decision was issued, have you
18 participated at all in the Wisconsin case that
19 gave rise to that opinion?
20 A. My understanding is that I have not been
21 disclosed as an expert in that -- in that case.
22 Q. All right. Do you intend to submit any reports
23 in that case since it was issued by the U.S.
24 Supreme Court?
25 A. Do I intend to -- if I could just ask you to

1 repeat your question.
2 Q. Do you intend to submit any reports in the Gill
3 decision post the Supreme Court decision?
4 A. I don't have any immediate plans to do that
5 right now.
6 Q. Are you preparing any reports for that case?
7 MS. RIGGS: Objection to the extent it
8 requires him to reveal materials that would be
9 protected by the attorney work product in that
10 case.
11 MR. STRACH: I'm just asking him the
12 fact is he preparing a report in that case.
13 MS. RIGGS: And whether he's preparing
14 a report, until he's prepared to disclose it, it
15 is attorney work product privilege.
16 MR. STRACH: You're asserting that the
17 fact of preparation of a report, nothing to do
18 with the report itself, but the fact of
19 preparing a report is privileged.
20 MS. RIGGS: Until it's decided whether
21 or not it's going to be disclosed and used, yes.
22 MR. STRACH: The fact of preparation.
23 MS. RIGGS: Yes.
24 BY MR. STRACH:
25 Q. So are you going to refuse to answer that

1 question?
2 MS. RIGGS: I instruct the witness not
3 to answer the question.
4 BY MR. STRACH:
5 Q. All right. Are you going to follow Ms. Riggs'
6 instruction and not answer that question?
7 THE WITNESS: That's my instruction?
8 MS. RIGGS: Yes.
9 THE WITNESS: I'm following counsel's
10 instruction not to answer the question.
11 BY MR. STRACH:
12 Q. All right. Since the Gill decision, have you
13 participated at all in a partisan gerrymander
14 case called Benisek out of Maryland?
15 A. I have not.
16 Q. Do you intend to participate in that case at
17 all?
18 A. I have no such plans right now.
19 Q. We're going to take a look at them in a moment,
20 but you've submitted two reports in this case,
21 one on behalf of League of Women Voters and one
22 on behalf of Common Cause; is that correct?
23 A. That is correct.
24 Q. And both of those --
25 A. I just -- if I could just ask you to repeat that

1 question. I want to make sure I heard it
2 properly.
3 Q. Sure. Since the Gill decision, you've submitted
4 two reports in this case, one for the League of
5 Women Voters and one for Common Cause?
6 A. I just want to clarify. I submitted two
7 supplemental declarations in this case, one
8 for -- on behalf of the League of Women Voters
9 plaintiffs and one on behalf of Common Cause
10 plaintiffs.
11 Q. All right. How long did it take you to prepare
12 those reports or those declarations?
13 A. I prepared them -- both of them during, I
14 believe, the first one and a half weeks of July,
15 so it might have spanned approximately one week
16 or so, perhaps up to ten days, all in that time
17 period right before July 11th.
18 Q. All right. If I use the term cracking as it
19 relates to redistricting, does that term have
20 any meaning to you?
21 A. I've obviously heard it used in journalistic
22 news articles and by other people discussing
23 redistricting. I don't have any understanding
24 of that term in any precise scientific way as an
25 expert, as a social scientist. In other words,

I'm just qualifying that it does not mean anything to me precisely in social science terms, but, obviously, anybody that reads about redistricting will come across that term.

Q. Have you ever written any academic publications regarding how to identify cracking in redistricting?

A. Have I ever read any academic articles about how to identify cracking?

Q. Have you ever written any?

A. Oh, have I ever written. To my knowledge, I have never used the term cracking in my own academic work.

Q. All right. Is there any term that is similar to cracking that you've used in lieu of the word cracking?

A. As I said, I don't understand the term cracking in any social scientific way in my own work as an empirical social scientist, so I don't have a substitute word for that either. It's just not a term that I would normally use in my academic work.

Q. Can you sitting here today give me a definition of what cracking is in the redistricting context?

A. Well, as I said, I've certainly seen other people use the word cracking and so I have an idea of what other people mean by it. It's just not part of my own terminology in my academic work or in my expert work as a social scientist.

Q. Sure. Aside from what other -- how other people define cracking, sitting here today can you define cracking for me?

A. Not other than what I just said, which is that I know how other people mean that and I can describe for you how journalists and other people who use the term mean it, and I'd be happy to give you my best shot at that, but I just want to qualify that I personally don't use the term because I don't understand it to mean anything specific in terms of social science.

Q. All right. Would the same be true for you for the term packing in the redistricting context?

A. Yes, sir, I would give all the same answers that I just gave you.

Q. Okay. All right.

(WHEREUPON, Defendant's Exhibit 14 was marked for identification.)

BY MR. STRACH:

Q. The court reporter is going to mark that and

hand it to you. I have three other copies. Y'all can distribute accordingly.

Dr. Chen, if you'll just flip through what's been marked as Exhibit 14 and let me know if that document looks familiar to you.

A. Yes, sir, I do recognize it.

And I also wanted to tell you that if there's an opportunity for me to go to the restroom, I would be very appreciative of that.

MR. STRACH: All right. Let's take a break and do that now.

(Brief Recess: 10:13 to 10:18 a.m.)

THE WITNESS: Mr. Strach, if I may, I would like to go back and revisit a question you asked me earlier this morning and make sure my answer is as complete and as accurate as possible.

You asked me this morning if I had been disclosed as an expert or if I have been an expert in any other case since -- any new cases since October.

BY MR. STRACH:

Q. Right.

A. And I just want to make sure that my answer is as complete as possible.

1 Since last October, I have written an
2 expert report in a Michigan redistricting case,
3 I believe it's something like League of Women
4 Voters of Michigan versus I don't know who, and
5 my understanding is that that expert report has
6 been turned over. I don't know if that
7 technically means I've been disclosed as an
8 expert, but I wanted to alert you to the fact
9 that I had written that report, and that's what
10 I wanted to add to my answer.
11 Q. Okay. And along those lines, are you aware of a
12 similar partisan gerrymandering case in Ohio?
13 A. I'm generally aware that there's been a case
14 filed in Ohio.
15 Q. Have you participated in that case to date?
16 A. I have not.
17 Q. All right. So we were looking at Exhibit 14
18 which is your declaration on behalf of -- I
19 believe this one is on behalf of League of Women
20 Voters; is that correct?
21 A. Yes, sir.
22 Q. All right. And if you'll look at the first
23 page, you reference in paragraph 1 a request by
24 plaintiffs' counsel. Can you describe to me
25 what this request was.

1 A. Well, it's exactly what I describe here:
2 Plaintiffs' counsel, specifically League of
3 Women Voters' counsel -- and from here on out
4 I'll call -- I'll just call it League counsel,
5 and if you ask me about the other declaration,
6 I'll refer to that as Common Cause counsel and
7 so that you'll understand what I'm referring to.
8 The request was exactly as I describe
9 here in paragraph 1: The League counsel gave me
10 four criteria to use, and I applied those
11 calculations and reported on what I calculated.
12 Q. All right. So the instructions that you
13 identify in paragraph 1, were they exclusively
14 counsel's instructions, or did you have any part
15 in devising any of those instructions?
16 A. I did not participate in the construction or the
17 giving of those instructions.
18 Q. All right.
19 A. I simply received the instructions is what I'm
20 saying.
21 Q. And when you received the instructions, were
22 they these exact instructions that are listed in
23 paragraph 1 or were they any different?
24 A. They were these exact instructions. I
25 faithfully wrote down the exact instructions

1 that I received from plaintiffs' counsel.
2 Q. Okay. In paragraph 1 you started with the maps
3 in your Simulation Set 2, correct?
4 A. I looked at -- so, yes, I started with the 1,000
5 maps that I had previously turned over as part
6 of Simulation Set 2.
7 Q. All right. And in Step 2, you identified the
8 maps in that set that contained a district with
9 a BVAP above 40 percent, correct?
10 A. Yes, sir.
11 Q. How many of the 1,000 maps contained a district
12 with a BVAP above 40 percent?
13 A. How many of the 1,000 maps in Simulation Set 2
14 had one district of BVAP over 40 percent. I
15 can't tell you the number off the top of my
16 head, but I would point out that I did these
17 calculations regarding Step 2 last year, I
18 believe back in April of 2017. I disclosed the
19 computer code as well as the results of those
20 calculations back in April of 2017, and so
21 certainly that number was there, and I believe
22 it was discussed at trial last October.
23 Q. All right. Sitting here today --
24 A. I just can't remember off the top of my head is
25 what I'm saying.

1 Q. So there was some subset of the 1,000 maps that
2 contained at least one district with a BVAP
3 above 40 percent, and out of that subset you
4 then identified the ones with seven Republican
5 districts and six Democrat districts, correct?
6 A. Yes, sir.
7 Q. Do you recall how many were -- how many maps you
8 were left with after Step 3?
9 A. I don't recall that exact number. I would just,
10 again, point out that obviously I had testified
11 last October about exactly how many of these
12 plans have seven Republican districts and six
13 Democratic districts using the Hofeller formula,
14 and so certainly all of that data and the code
15 used to calculate those numbers were turned over
16 last year, but I can't remember the number off
17 the top of my head.
18 Q. During the trial you identified the districts
19 with one district or more with a BVAP above 40,
20 and you identified what I would call the 7-6
21 maps, but did you identify during the trial maps
22 that contained both one district over 40 percent
23 and were 7-6?
24 A. The combination of both of those things, I can't
25 recall right now. I certainly -- what I meant

is that the underlying computer code and the calculation needed to isolate that subset were all turned over last year. I turned over the computer code used to calculate both the BVAP numbers as well as calculate the number of Republican districts and Democratic districts. I recall that either in deposition in April 2017 or at trial, or perhaps both, there was at least one figure and perhaps multiple figures that isolated the partisan distribution of those simulations with respect to ones that had a district with a BVAP over 40 percent.

So what I'm pointing out is the underlying data as well as the computer code for isolating that subset of simulations with those combinations, with that combination of those two features that you're asking me about, was certainly turned over last April and so the data was certainly there. I simply went back to that same data, those same maps, and revisited those calculations that I had done.

Q. Right. Sitting here today, do you remember how many maps you were left with after Step 3?

A. I can't remember off the top of my head.

Q. Was it less than five?

A. To my recollection it definitely was not less than five. It was definitely more than five.
Q. Would it have been more than ten?
A. To the best of my recollection, it was definitely more than ten. Again, as I said, I just can't remember the precise number.
Q. All right. So the instruction to pick what I will call 7-6 maps, however set per the instructions, as opposed to 8-5 maps or 9-4 maps, i.e., maps that would elect nine Republicans, four Democrats, et cetera, did the idea to isolated maps that were 7-6 maps come strictly from counsel?
A. The instructions to follow these four criteria came strictly from League counsel. I don't know, you characterize it as an idea, and I don't know that it was an idea to me. It was simply an instruction.
Q. In Instruction Number 3, you reference the 7-6 maps and you have a parenthetical that says "and thus an efficiency gap near zero." Do you see that?
A. Yes, sir.
Q. What relevance did that have in the instructions to you?

A. I was simply reporting what I had reported on in my expert analysis from last year, that -- and certainly I testified about this at trial last year regarding the efficiency gap as well as the number of Republican-Democratic seats in these simulated plans, so certainly I had already known and had testified and had reported on efficiency gaps of maps with various configurations of Republican-Democratic districts using Dr. Hofeller's formula. So I was just reporting on what I had already reported on in my expert analysis from last year, in my original expert report as well as trial.

Q. All right. If you will turn to the next page in the report, Dr. Chen. This is the 7-6 map that you ultimately chose based on the instructions from counsel, correct?

A. I would just clarify that I did not do any choosing here. I simply -- as I said before, I followed counsel's instruction in going back to the 1,000 maps that I had already produced and turned over last year, I applied four criteria, and this is what emerged from the application of those instructions. I didn't do any choosing.

Q. And the number 297 is the plan number that this was out of the 1,000 maps and in Simulation Set 2, correct?

A. Correct. The Plan 297 has no -- the number 297 has no real substantive meaning. It was simply referring to the fact that I turned over last year 1,000 maps, and in the data, the shape files, the maps that I turned over, they were numbered from 1 to 1,000, and this particular one happened to be the 297th one. It was labeled on the files that I turned over as 297.

Q. And remind me, your deposition in this case was in April of 2017, correct?

A. Yes, sir.

Q. And had you prepared your report last year after the November 2016 election?

A. My report was turned over after the 2016 elections, that's correct. I believe it was turned over on March 1st, maybe March 1st or March 2nd of 2017.

Q. All right. If you'll look at this map in what is labeled District 8 on this map, there are little stars with names beside them. Those are the incumbents of those districts; is that correct?

A. These are the locations -- the residential locations of the incumbents. And again, I would point out that I analyzed in my expert report, in my original expert report from last year, I analyzed the locations of the incumbents with respect to the Enacted Plan as well as all of these simulated plans in Simulation Set 2. So that's all that this is, it's simply copying over what I had already calculated last year and reported on last year in my original expert report.

Q. All right. Were you aware that Congresswoman Elmers was not elected after the November 2016 elections?

A. I wasn't specifically aware of that, but I accept your representation of it.

Q. Can you tell me why you used her address in this report?

A. Can I explain to you why I placed a star there for Elmers?

Q. Why did you use the address of a person that was not an incumbent at the time that you wrote this report, your report?

A. You're asking about my original 2017 expert report?

Q. Right. Whenever you put the -- whenever you used the residential address for Renee Elmers, why did you use an address for a person that was no longer incumbent?

A. Okay, I just want to make sure I understand your question correctly. You're asking me to go back to my March 2017 expert report and answer your question regarding why I did the analysis that I did regarding Elmers, as well as all of the other incumbents in my original expert reports, and I just wanted to make sure I understood your question.

Q. We can start there. Go ahead.

A. Okay. I appreciate that. So you're asking me a question about my original March 2017 expert reports. And so let me go back and try and remember as best as I can what I did in that report.

In that March 2017 expert report, with respect to Simulation Set 2, I analyzed the residential locations of all of the incumbents as of the 2016 drawing of the enacted -- of the Enacted Plan, and so the relevant analysis for that expert report that I did last year was the residential locations of those incumbents that

1 were in place at the time. I did that for all
2 of the incumbents. It wasn't a decision that
3 was specific to Elmers or any particular
4 incumbent. So that's what I recall about my --
5 about how I carried out my original expert
6 report from 2017.
7 Q. All right. When you submitted your expert
8 report in 2017, why didn't you update it to
9 include the actual incumbent after the 2016
10 election?
11 MR. THORPE: Objection. Phil, I'm
12 going to jump in just to say that I think
13 questions that are clearly about the
14 construction of his original 2017 expert report
15 are well outside the scope of the purpose of
16 this deposition today. I'm not going to
17 instruct him not to answer these, but, you know,
18 this is -- this is pretty well outside and
19 certainly stuff that could have and in many
20 cases was asked of him a year ago.
21 MR. STRACH: That's noted. I disagree,
22 but certainly you have a right to put that on
23 the record.
24 BY MR. STRACH:
25 Q. Dr. Chen, can you answer the question?

A. Sure. My recollection of what I did in the 2017 expert report is that I was interested in analyzing the incumbents that were there as of the 2016 drawing. I was not interested in a hypothetical future set of incumbents that was not in place as the legislature's drawing of the Enacted Plan, and my recollection is that I was strictly trying to follow various portions -- the non-partisan portions of the adopted criteria as well as the portions of the adopted criteria regarding incumbents. So that was -- that was what I did in my original report, that's what I recall.

Q. All right. And then in producing the report that we're looking at, Exhibit 14, why didn't you update the incumbents for purposes of this report?

A. Okay. You are asking about this exhibit in front of me here, my supplemental declaration for the League plaintiffs.

Q. Yes.

A. I had -- first, I simply wasn't instruct to do any new analysis or any new analysis of incumbents that was not already done as part of my original expert report. That's why I didn't

1 do any new analysis for this supplemental
2 declaration.
3 I simply took the same maps, the same
4 simulated maps that were already produced as a
5 part of my original 2017 expert report,
6 including the identification of incumbent
7 locations that was done as part of my original
8 2017 expert report which I testified about at
9 trial last October.
10 Q. All right. Are you familiar with a congressman
11 from North Carolina named Ted Budd?
12 A. I am not.
13 Q. And so obviously you do not know where Ted Budd
14 resides, correct?
15 A. No, sir, I don't.
16 Q. And you've not used his residential address in
17 any of the materials that you've prepared for
18 your report for which we are here today?
19 A. No, sir.
20 Q. All right. Let's look at Table 2 which is
21 page 6 of the report.
22 A. Yes, sir.
23 Q. This table contains the precincts in which the
24 League of Women Voters plaintiffs and certainly
25 League of Women Voters members reside; is that

1 correct?
2 A. It's just plaintiffs that were given to me by
3 the League -- it's just precincts that were
4 given to me -- a list of precincts that were
5 given to me by League plaintiffs.
6 Q. All right. And in the column called Precinct's
7 District in Enacted Plan, is that a reference to
8 the 2016 congressional plan, the map that's
9 challenged in this case?
10 A. The column that says Precinct's District in
11 Enacted Plan and in parentheses SB 2, right.
12 Q. When you use SB 2, you're referring to the 2016
13 congressional plan?
14 A. Yes, sir, the Enacted Plan.
15 Q. All right. And if you look down the column,
16 there are no -- there's no reference to
17 District 3; is that correct?
18 A. That appears to be the calculation reported
19 here.
20 Q. All right. So there -- none of the precincts
21 for the plaintiffs or League of Women Voters
22 members that were provided to you were located
23 in District 3 in the 2016 Plan; is that correct?
24 A. I just want to answer that very precisely
25 because I think you're asking two different

1 things there.
2 League of Women Voters plaintiffs gave
3 me a list of precincts. The League did not give
4 me any plaintiffs. The League counsel gave me a
5 list of precincts, and I simply analyzed the
6 Enacted Plan's district in which each precinct
7 was located, and certainly we see here that
8 there were none of those precincts in
9 District 3. I did not analyze any particular
10 plaintiffs.
11 Q. Okay. But the title of your table is Precincts
12 in which League of Women Voters of
13 North Carolina Plaintiffs and Members Reside.
14 Did you write that title?
15 A. I did.
16 Q. What did you mean by League of Women Voters of
17 North Carolina plaintiffs and members?
18 A. League -- I simply meant the following: League
19 counsel represented to me that there were
20 plaintiffs and members residing in these
21 precincts, and so I titled it that way, but that
22 was purely based on League counsel's
23 representation of that fact to me. League --
24 League counsel did not transmit or communicate
25 to me anything about any actual plaintiffs or

1 members or any individuals.
2 Q. All right. Let's look at the first row, and let
3 me make sure I understand the information that
4 you've put in this table. Let's just go block
5 by block.
6 The first column in row -- in the first
7 row is Washington. That's a reference to the
8 county of Washington in North Carolina?
9 A. Yes, sir.
10 Q. And then beside that is Plymouth 1. That is the
11 precinct name in Washington county that you're
12 referring to, correct?
13 A. Yes, sir.
14 Q. And then the next block that has the number 1 in
15 it, that is the congressional district in the
16 2016 Plan in which that precinct is located,
17 correct?
18 A. Yes, sir.
19 Q. The next block says 31.17 percent, and that is
20 the vote share that Republicans received in that
21 precinct in the 2016 Plan using Dr. Hofeller's
22 formula, correct?
23 A. Not quite. I don't think you quite
24 characterized that accurately. What that column
25 represents is the calculation that I did back in

1 my 2017 expert report regarding the
2 congressional districts' partisanship using
3 Dr. Hofeller's formula, so I think you might
4 have described something a little bit different
5 in your question. I just wanted to clarify that
6 this column refers to the partisanship of the
7 entire district as I calculated it last year
8 using Dr. Hofeller's formula.
9 Q. Okay. That's the partisanship of District 1 in
10 this row that we're looking at, Plymouth 1 in
11 Washington county, 31.17 percent is the
12 partisanship measure of District 1 in the 2016
13 Plan?
14 A. Correct. It's the partisanship of Congressional
15 District 1 in the Enacted Plan.
16 Q. And it's using the Dr. Hofeller formula that we
17 reviewed in the trial last year, correct?
18 A. Yes, sir. I simply used that same calculation
19 that I had done last year.
20 Q. And why was Dr. Hofeller's formula used?
21 A. You're asking why I reported on Dr. Hofeller's
22 formula calculations in this table in this
23 column?
24 Q. Right, as opposed to another measure.
25 A. I did so because plaintiffs' counsel -- League

1 counsel asked me to do so.
2 Q. Then in the next block over there's the number
3 12, and that is the location -- that's which
4 district this precinct would be in in Plan 297?
5 A. That's correct, the location -- the geographic
6 location of this precinct within the districts
7 in Plan 297.
8 Q. All right. And then the next and final block in
9 this row is the Republican vote share in the
10 district in Plan 297 that this precinct sits?
11 A. Yes, sir. It refers to the calculation that I
12 did from my original expert report in 2017
13 regarding the partisanship, the Republican vote
14 share of that particular district in simulated
15 Plan 297. In this case, in the first row, we're
16 talking about District Number 12 of Plan 297.
17 Q. All right. So if we look back at this row, the
18 number 31.17 percent, does that indicate that
19 District 1 in the Enacted Plan is a Democratic
20 district?
21 A. It simply tells us that District 1 in the
22 Enacted Plan is a district that has more
23 Democratic voters than Republican voters as
24 calculated by Dr. Hofeller's formula; in other
25 words, it's a Democratic-leaning district. It

has more Democrats than Republican voters.
Q. All right. So you would characterize this as a Democratic-leaning district?
A. Yes, sir, it is Democratic-leaning district.
Q. All right. If you stay in the same row, the same district in Plan 297, 40.84 percent, is it also true that that is also a Democratic-leaning district?
A. The row is calculating -- the row is reporting that it is a district that has more Democratic than Republican voters. So District 12 from Simulation 297 is a district that is Democratic leaning.
Q. Okay. And dropping one row down, the county Martin with the precinct Jamesville, that's the same result because it's the same district at issue there?
A. Yes, sir, the same district in the Enacted Plan.
Q. All right. If you'll look down at the row for Wake county precinct 01-04, do you see that one?
A. Yes, sir.
Q. That is in Congressional District 4 in the Enacted Plan, correct?
A. Yes, sir.
Q. And the Republican vote share is 37.68 percent.

1 Do you see that?
2 A. Yes, sir. Using the Hofeller formula, it is a
3 37.68 percent district.
4 Q. All right. So would it be fair to say that that
5 would be a strong -- strongly Democratic-leaning
6 district?
7 A. It is a Democratic-leaning district.
8 Q. All right. Are you willing to characterize that
9 in any way?
10 A. That was not an analysis that I did.
11 Q. All right. And in that particular precinct
12 01-04 in Congressional District 4, it's a
13 Democratic-leaning district, and in Plan 297,
14 District 10, it would remain a
15 Democratic-leaning district, correct?
16 A. I see that District 10 of the simulated plan, of
17 Plan 297, is indeed a Democratic-leaning
18 district.
19 Q. Okay. In the next column down -- sorry, the
20 next row down you've got Forsyth Precinct 074.
21 Do you see that one?
22 A. Yes, sir.
23 Q. That precinct is located in Congressional
24 District 5 which has a Republican vote share of
25 56.15 percent, correct?

A. Yes, sir, using the Hofeller formula.
Q. And the corresponding district in Plan 297 has a Republican vote share of 49.3 percent using the Hofeller formula, correct?
A. Yes, sir.
Q. How would you characterize in terms of Democratic or Republican leaning District 6 in Plan 297?
A. District 6 in Plan 297 is a Democratic-leaning district.
Q. All right. But it's close to 50 percent, correct?
A. If what you're asking me to affirm is your math on that, I can certainly do the mathematical calculation and tell you that 49.3 percent is 0.7 percent away from being 50 percent. So if what you're asking me is about the math, that's the calculation.
Q. All right. Let's just flip back. You recall that you created for this report a map of the Enacted 2016 Plan and of Plan 297, correct? They're on pages 2 and 3 of the report.
A. You're asking me what those are, or you're asking me --
Q. Just turn to them.

A. Sure, I've turned to them.
Q. So what I want to focus on initially is in Plan 297, I want you to look at District 6 in Plan 297. Do you see that?
A. Yes, sir.
Q. And the color there I would characterize that as light blue. Is that fair?
A. That sounds about right. It's a lighter shade of blue.
Q. What does -- what does the shading mean in these districts on Plan 297 in terms of what -- what is that representing in your words?
A. The districts here on this map were shaded from dark blue to light blue and from light red to dark red in accordance with their partisan vote share using the Dr. Hofeller formula such that dark blue districts represent districts with a lower Republican vote share and lighter districts represent districts with a relatively higher Republican vote share for districts that were Democratic leaning.

For districts that were Republican leaning, I used the reverse color scheme with lighter red indicating districts that had a relatively lower Republican vote share and

1 darker red indicating districts with a higher
2 Republican vote share for those districts that
3 were Republican leaning.
4 Q. All right. And so what was the percentage
5 cutoff that would result in a district being
6 darker shaded versus lighter shading? Was there
7 a percentage cutoff by which that would result
8 in one being lighter or darker than the other?
9 A. Sure. I'll explain that cutoff to you. I would
10 just start by explaining that this is all part
11 of the -- laid out in the computer code that was
12 turned over in connection with this -- the
13 supplemental declaration.
14 There were categories of 5 percent, so,
15 in other words, districts that had from 50 to
16 55 percent using Dr. Hofeller's formula were the
17 lightest red, districts from 55 to 60 percent
18 were slightly darker red and so on.
19 And the same for the blue districts,
20 the Democratic-leaning districts. Districts
21 from 50 down to 45 percent were lightest blue,
22 districts from 45 to 40 percent were a somewhat
23 darker blue and so on.
24 Q. So is it fair to say that in Plan 297,
25 District 11 is a strong Democratic district?

1 A. I would characterize it as a Democratic-leaning
2 district.
3 Q. Would you characterize District 11 any
4 differently than, say, District 6 despite the
5 different shading?
6 A. You're asking me if I would characterize it
7 differently in terms of partisanship?
8 Q. Yes.
9 A. To answer that, I would go back to the numbers
10 that I reported, and certainly I could tell you
11 the precise partisanship number of those
12 districts.
13 Q. All right. Let me ask you this way: Is it fair
14 to say that District 11 is a stronger Democratic
15 district than District 6?
16 A. I would say they have -- they certainly have
17 different partisanship numbers using
18 Dr. Hofeller's formula. I didn't analyze these
19 districts in the way that I think you're asking
20 me, but I obviously reported on the calculations
21 that I did last year regarding the partisanship
22 of each district, and certainly I can affirm for
23 you that they have different partisanship
24 numbers using the Dr. Hofeller formula.
25 Q. All right. Is it fair to say that District 11

has a higher number of Democratic voting individuals than District 6?

A. I can affirm your math on that one. Certainly District 11 has a Hofeller score or Hofeller formula partisanship of 36.78 percent, and that number is lower than the corresponding number for District 6 in Plan 297.

Q. So if you look at the next page, which is the Enacted 2016 Plan.

A. Yes, sir.

Q. If you look at District 5 in that plan -- and District 5 is what I would characterize as a medium shade of red -- would that be in the 55 to 60 percent range?

A. Yes, sir. The actual number was 56.15 percent, so certainly it would have -- as I described it a moment ago, it would have been the second band which is why it's a somewhat darker shade of red.

Q. In the Enacted 2016 Plan, the District 13 is a light shade of red which is the lowest Republican-leaning district you can have, correct?

A. District 13 is drawn in a light shade of red, yes, sir.

Q. All right. In Plan 297 of Simulation Set 2, is it fair to say that District 5 in that district contains much of the same territory as District 5 and 13?
A. That's not an analysis that I did.
Q. Is it fair to say that?
A. It's just not an analysis I did so I can't offer an expert opinion on that.
Q. Can you read the county names on these maps?
A. I think I can see most of the county names so I can -- I can see the county names listed on each of these maps.
Q. All right. Is it fair to say that most of the counties in Districts 5 and 13 in the 2016 Plan are in District 5 in the Plan 297?
A. I haven't done that calculation or that analysis. If you want to go through them one county -- each at a time, I'm happy to read out the county names.
Q. Can you count them? Can you sit there and count them?
A. Sure, I can go -- you want me to go through the individual counties?
Q. I just want you to count up the counties in District 5 and 13 in the 2016 Plan and then

1 count up the -- any number of similar counties
2 in District 5. Are you able to do that?
3 A. I think I can see most of the county names. I'm
4 happy to start going county by county. And
5 maybe this will be responsive to your question,
6 and I think this is what you're trying to ask
7 me.
8 So, for example, I can look at the
9 northwest corner and see that Ashe county is in
10 District 5 of Plan 297, and I can see that Ashe
11 county is in District 5 of the SB 2 Plan. I
12 could keep on doing that for all these
13 individual counties if you'd like me to keep on
14 going.
15 Q. Can you do that to yourself and count the number
16 of counties that overlap between those
17 districts?
18 MR. THORPE: I want to be clear about
19 your instructions. You mean entirely overlap
20 where the whole county -- I'm not sure the point
21 of the task. If we're going to have him count
22 up the counties, I want to be very precise.
23 MR. STRACH: Just whole counties.
24 MR. THORPE: Whole counties that are
25 whole in both the Enacted Plan and Plan 297 in

1 either District 5 of Plan 297 or Districts 5 or
2 13 of the Enacted Plan?
3 MR. STRACH: Right. The overlap in
4 whole counties between District 5 in Plan 297
5 and Districts 5 and 13 in the 2016 Plan.
6 MS. RIGGS: I'll just also object to
7 the form of the question in light of the fact
8 that he's represented he didn't do this
9 analysis. I can't see all the county names on
10 both of these maps. If you want him to do it
11 now, I think he needs pen and paper.
12 BY MR. STRACH:
13 Q. Do you need some pen and paper?
14 A. I'm happy to go through them individual -- the
15 individual counties each, but that would be
16 helpful to have a pen and paper.
17 Q. All right. Let's take a quick break.
18 (Brief Interruption.)
19 BY MR. STRACH:
20 Q. Back on.
21 A. I just want to make sure that your instructions
22 are to go through each whole county but to
23 disregard the split counties; is that correct?
24 Q. Yes, let's disregard the split counties.
25 A. And you want me to go through and tell you

whether each of these whole counties is both in District 5 of the SB 2 Plan as well as in District 5 of the 297 Plan, right?

Q. Slightly different. Whether they are both in District 5 in Plan 297 on the one hand and in District 5 or 13 in the 2016 Plan on the other hand.

A. In 5 or 13 of the SB 2 Plan.

Q. That's right.

A. Okay. So what I am going to do, then, is I will go through one county at a time, and each time I analyze an individual county I'll report to you what I found. That's what you want me to do, right?

Q. Sure, we'll try that.

A. Okay. I guess I'll go ahead and start with Watauga county. And I can see that Watauga county is in District 5 of the Plan 297. I can see that Watauga is not split in that plan. And when I look at the SB 2 Plan, I see that Watauga is also not split, and it is located in District 5 of the Enacted Plan.

So I've answered your question with respect to Watauga county.

Next, I am going to go to -- is it

1 Avery county; is that correct? That's right to
2 the southwest of Watauga.
3 Q. Yes.
4 A. So I'll look at Avery county next. I can see
5 that Avery county is not within District 5 of
6 Plan 297. It appears to be in District 2, so
7 it's not within District 5. And I'm going to
8 flip over to the Enacted SB 2 Plan, and I see
9 that Avery county is located within District 5
10 of the SB 2 Plan.
11 So now I've answered your question with
12 respect to Avery county.
13 Next, I am going to go over to Ashe
14 county, to the northeast of Watauga, and I see
15 that Ashe county is located within District 5 of
16 Plan 297. When I look at the SB 2 Plan, I see
17 that Ashe county is not split, and it is located
18 within District 5 of the SB 2 Plan.
19 So now I've answered your question with
20 respect to Ashe county.
21 Next I'll go over to Alleghany county.
22 And I can see that this county is located within
23 District 5 of the Plan 297. When I flip over to
24 the SB 2 Plan, and I can see that this county is
25 also located within District 5 of the SB 2 Plan.

1 Next I'll look at Wilkes county. And I
2 can see that Wilkes is located within District 5
3 of Plan 297, and it's not split, and I can see
4 that Wilkes is located in the SB 2 Plan within
5 District 5 in the Enacted Plan.
6 Next I'll go down to Alexander county.
7 I can see that Alexander county is located
8 within District 2 of Plan 297, so it's not
9 located within District 5, no part of Alexander
10 is located within District 5. And I flip over
11 to the SB 2 Plan and I can see that Alexander
12 county is located within District 5 of the SB 2
13 Plan, so it is located within District 5 of the
14 SB 2 Plan.
15 Next I'll go down to Catawba county. I
16 can see that in Plan 297 Catawba is not located
17 within District 5; it's located within
18 District 2. I flip over to the SB 2 Plan and I
19 see that Catawba is split. It is partially
20 located within District 5 and partially located
21 within District 10.
22 Now I remember you told me to disregard
23 split counties, so you can disregard my
24 statements regarding Catawba.
25 Next I'll go to Surry county. I see

that Surry county is located within District 5 of Plan 297. Flip over to the SB 2 Plan and I see at that Surry county is located within District 5 of the SB 2 Plan.

Next I'll go down to Yadkin county. I can see that Yadkin county is located within District 5 of Plan 297. And I can see on the SB 2 Plan, Yadkin is located within District 5 of the SB 2 Plan.

Next I'll go out to Stokes county. And I can see that Stokes county is located in District 6 of the -- of Plan 297. And I can see that in the SB 2 Plan, Stokes county is located within District 5 of the SB 2 Plan.

Next I'll look at Forsyth county. And I can see that Forsyth county is located within District 5 of the SB 2 Plan, but when I go over to Plan 297, I see that Forsyth county is located within District 6 of Plan 297.

Just give me a minute to figure out what counties I haven't covered.

Okay. So next I'm going to go down to Iredell county, I-R-E-D-E-L-L. And I see that in the -- in Plan 297, Iredell county is located in District 5 of Plan 297. And when I go over

1 to the SB 2 Plan, I see that Iredell county is
2 located within District 13 of the SB 2 Plan.
3 Actually, now I can see that Iredell
4 county is listed as one of the split counties in
5 the SB 2 Plan, so I guess you asked me to ignore
6 split counties, so we can -- you can disregard
7 what I just said.
8 Next I'll look at Davie county. And
9 when I look at Plan 297, I see that Davie county
10 is located within District 5 of Plan 297. And
11 when I flip over to the SB 2 Plan, I see that
12 Davie county is not split, and it is located
13 within District 13 of the SB 2 Plan.
14 Next I'll look at Davidson county. And
15 I see that in the SB 2 Plan, Davidson is located
16 within District 13, and it appears to not be a
17 split county. And when I look at Plan 297 --
18 well, I can see that in Plan 297, Davidson is
19 partially located within District 5, but it is a
20 split county so it is partially located in
21 District 6. So you asked me not to look at
22 split counties so I guess you can disregard
23 Davidson.
24 And let me just look at whether or not
25 I've missed any other counties here.

1 Looks like the only other county I
2 skipped over was Rowan, and that too is a split
3 county in the -- in Plan 297. So for now I
4 won't answer your question with respect to
5 Rowan.
6 So I believe I have now covered every
7 county that fully is located within either
8 District 5 of Plan 297 or District 5 of the SB 2
9 Plan. I did not fully cover all the various
10 districts of district -- all the various
11 counties within District 10 of the SB 2 Plan.
12 Happy to do that if you intended for that to be
13 a part of your instructions, but I think I have
14 now fully answered your question with respect to
15 the individual counties in District 5 of the
16 SB 2 Plan.
17 Q. All right. So I'm going to add these up and you
18 tell me if our math equals. There are one --
19 A. If I could just ask you to clarify your
20 question. Can you tell me what you're going to
21 add up before -- so I can try and follow along.
22 Q. I'm going to add up the whole counties that
23 overlap between District 5 in 297 on the one
24 hand and Districts 5 and 13 in SB 2 on the other
25 hand.

A. Okay. I just want to make sure I understand. You're going to count up how many whole counties there are that are fully located within both District 5 of the 297 Plan as well as District 5 of the SB 2 Plan. Did I get that right?

Q. District 5 and 13 of the SB 2 Plan.

A. Oh, District 5 and 13. I'm not sure that I've done all the -- I'm not sure that I've done all the individual county calculations necessary for me to verify -- for me to verify you going through and counting that list. I just want to go back and make sure that I looked at all the counties in District 13 because I'm not sure I tried to fully cover that, so if you can just give me a second here.

Okay. I've looked at the various counties that are involved in District 13, and I just wanted to make sure that I had a chance to look at those before you go with your list. So I'm happy for you to go through your list. I just ask you to stop after each one and give me a couple seconds to verify.

Q. Okay. The whole counties that I have that are located both in District 5 in Plan 297 on the one hand and Districts 5 and 13 in SB 2 are

1 Watauga.
2 A. If you could just stop there. Okay.
3 Q. Is that correct?
4 A. I agree.
5 Q. And Ashe.
6 A. Okay. Just give me a second.
7 I agree.
8 Q. And Alleghany.
9 A. I agree.
10 Q. And Wilkes.
11 A. Yes, sir.
12 Q. And Surry.
13 A. Yes, sir.
14 Q. And Yadkin.
15 A. Yes, sir.
16 Q. And Davie.
17 A. Yes, sir.
18 Q. All right. And that's all the whole counties I
19 have.
20 A. Okay.
21 Q. And that's not counting any of the split
22 counties that were potentially common between
23 the two, right, because we didn't look at the
24 split counties, correct?
25 A. Those were your instructions to me.

Q. All right. Now, if you'll look at SB 2, District 5 in SB 2 is a medium shade of red, correct?

A. District 5 in SB 2 is what you're asking me about. It's not the very lightest shade of red.

Q. It's the one in the middle, correct?

A. I'm not sure I'd characterize it in the middle, but I think generally we're both talking about the fact that it was not within the 50 to 55 percent range but instead in the 55 to 60 percent range.

Q. Okay. In District 13 was the -- is the lightest shade of red, between 50 and 55 percent range, correct?

A. District 13 was indeed between 50 and 55 percent in the SB 2 Plan on the Hofeller measure, so it would have been the lightest shade of red.

Q. And in District 5 in Plan 297, that is the darkest shade of red which would be, what, over 60 percent per the Hofeller formula?

A. If you'll just give me a second to check.

Using the Hofeller formula, the Republican vote share of District 5 in Plan 297 is 63.86. So, yes, I believe that is the darkest shade of red that we would see on this

1 map.
2 Q. All right. So if you look back at Table 2, and
3 we're looking at the row of Forsyth precinct
4 074.
5 A. Yes, sir, I see it.
6 Q. That precinct was in the 2016 Plan in
7 District 5, correct?
8 A. If you could just repeat.
9 Q. That precinct 074 was in District 5 of the 2016
10 Plan, correct?
11 A. Yes, sir.
12 Q. And its Republican vote share was 56.15 percent,
13 so that was in the medium shade of red on the
14 map, correct?
15 A. Let me just take a look at that map again.
16 It was in a second band, so it was --
17 because it's 56.15 percent on the Hofeller
18 formula, it would have been the second slightly
19 darker shade of red. Not sure I would have
20 called it medium, but it's pretty clear that it
21 was not the lightest shade of red.
22 Q. Okay. And now this precinct under Plan 297,
23 this precinct would be located in District 6,
24 correct?
25 A. In the 297 Plan, yes, I reported here that it

1 would be -- it would have been in District 6 of
2 the 297 Plan.
3 Q. And so the precinct would now in District 6 be
4 in a Democratic-leaning district, correct?
5 A. District 6 in the 297 Plan is a
6 Democratic-leaning district.
7 Q. And Forsyth county, which is where this precinct
8 is located, in the Enacted Plan, it appears
9 Forsyth county was in District 5; is that
10 correct?
11 A. In the Enacted Plan, Forsyth county is in
12 District 5.
13 Q. And in Plan 297, it would now be in District 6
14 of the Democratic-leaning district, correct?
15 A. Forsyth -- Precinct 074 would have been in
16 District 6 of Plan 297.
17 Q. As well as Forsyth county?
18 A. Oh, Forsyth county was a whole. Okay. Let me
19 just make sure. I just want to make sure I get
20 that correct.
21 Indeed, Forsyth county is in District 6
22 of Plan 297.
23 Q. All right. So a Republican voter living in
24 Forsyth county in District 5 in the 2016 Plan
25 would find him or herself now in a

1 Democratic-leaning district in Plan 297,
2 correct?
3 A. It's true that any voter living in Forsyth
4 county in Plan 297 would be in a district that
5 is Democratic leaning because it would be
6 District 6 of Plan 297.
7 Q. All right. And is it true that a Republican
8 voter in Yadkin county who would live in a --
9 who would be in District 5 in the Enacted 2016
10 Plan, in Plan 297 -- would be in a stronger
11 Republican district in Plan 297?
12 A. I just want to take those statements one at a
13 time and make sure I can follow along here. So
14 you want to start with the --
15 Q. Let's look at Yadkin county in the 2016 Plan --
16 A. Yes.
17 Q. -- is in District 5, correct?
18 A. Yes.
19 Q. And District 5 is a medium shade of red
20 district, correct?
21 A. Well, District 5 is a 56.15 percent Republican
22 vote share district using the Hofeller formula.
23 Q. Which is not the strongest shade of red,
24 correct?
25 A. I'm not sure what you mean by that. I'm simply

1 affirming that it is within the 55 to 60 percent
2 range and was shaded as such on the enacted map.
3 Q. Right, which is the middle range. It's not the
4 strongest Republican range.
5 A. Again, I'm not sure what you mean by that. What
6 I see here is that there's a middle -- there is
7 a -- there is a range of 55 to 60 percent which
8 is how that district -- how District 5 is
9 shaded.
10 I'm not sure what you mean by middle or
11 medium because I don't see another range that is
12 even higher than 55 to 60 percent, so I'm not
13 sure what you mean by medium or where the idea
14 of medium comes from. I'm just trying to be as
15 precise as possible in telling you District 5 in
16 the Enacted Plan, in the SB 2 Plan, is a 56.15
17 Republican vote share district using the
18 Hofeller formula and it was shaded as such.
19 Q. I understand, but the darkest shade of red are
20 districts that have more than 60 percent
21 Republican voters, correct?
22 A. I'm just pointing out here that every district
23 on the SB 2 Plan falls below 60 percent, so
24 there are no 60 or 65 percent districts in the
25 Enacted Plan as shown here on this SB 2 Plan

which is why I was kind of confused why you were calling it medium, but I'm just trying to be as precise as possible here.

It is within the 55 to 60 percent range and it was shaded as such.

Q. So a Republican voter living in Yadkin county would be in a Republican-leaning district between 55 to 60 percent in the Enacted Plan, correct?

A. Yes, sir, it is indeed within the 55 to 60 percent range.

Q. And under Plan 297, that voter would find himself or herself in a Republican-leaning district at over 60 percent, correct?

A. You're -- let me just make sure I've got that right. I want to make sure I'm precisely correct about this.

You were asking about Yadkin again, right?

Q. Right.

A. Now we're looking at the simulated plan 297. And let me just make sure I get the calculation correct.

District 5 has a Republican vote share of 63.86 percent using the Hofeller formula in

1 Plan 297.
2 Q. All right. So a Republican-leaning voter --
3 A. So it's a Republican-leaning district.
4 Q. So a Republican voter in Yadkin county in
5 District 5 of the Enacted Plan would go from
6 being in a 55 to 60 percent district to a
7 60 percent plus district in Plan 297?
8 A. I'm agreeing with the numbers that you're
9 reporting regarding the partisanship.
10 District 5 in the SB 2 Plan is 56.15 percent,
11 and when I look at the numbers for Plan 297,
12 District 5 is a 63.86 percent, so certainly one
13 is higher than the other.
14 Q. If you look back at Table 2 and look at the row
15 for Catawba, the precinct is West Newton. Do
16 you see that?
17 A. Yes, sir.
18 Q. That precinct is located in Congressional
19 District 10 which has a Republican vote share of
20 58.17 percent, correct?
21 A. 58.17 percent using -- Republican vote share
22 using the Hofeller formula.
23 Q. So that would be a Republican-leaning district,
24 correct?
25 A. It is a Republican-leaning district.

Q. All right. And so this precinct in Plan 297 is in District 2, correct?
A. District 2 of Plan 297.
Q. Is that correct?
A. Yes, sir.
Q. And the Republican vote share in that district is 63.62 percent; is that correct?
A. Yes, sir.
Q. So that precinct goes -- that precinct remains in a Republican-leaning congressional district in Plan 297, correct?
A. I'm affirming that both of those districts we just described are indeed both Republican-leaning districts.
Q. And in Plan 297, the percentage of Republican voters is higher than in the 2016 Plan, correct?
A. I'm affirming that indeed 63.62 percent is certainly higher, higher Republican vote share than 58.17 percent.
Q. All right. And then if you look at the next row for Burke Drexel 01 -- do you see that?
A. Yes, sir.
Q. That is in District 11 in the 2016 Plan with a Republican vote share of 57.11 percent, correct?
A. I see that number, yes.

Q. In Plan 297, that precinct is located in District 2; is that correct?
A. Yes, sir.
Q. And District 2 in Plan 297 has a Republican vote share of 63.62 percent, correct?
A. It's 63.62 percent using the Hofeller formula.
Q. And 63.62 percent is a higher share of Republican voters than 57.11 percent, correct?
A. I agree that on the Hofeller formula 63.62 percent is higher than 57.11 percent.
Q. All right. If you look at the next row for Mecklenburg Precinct 20 -- do you see that?
A. Yes, sir.
Q. That's in Congressional District 12 in the 2016 Plan, correct?
A. Yes, sir.
Q. With a Republican vote share of 36.63 percent?
A. Yes, sir.
Q. And in Plan 297, it winds up in District 3, correct?
A. Yes, sir.
Q. And the District 3 has a Republican vote share of 45.82 percent, correct?
A. Yes, sir.
Q. And so both District 12 in the 2016 Plan at

36.63 percent and District 3 in Plan 297 at 45.82 percent are both Democratic-leaning districts, correct?

A. They are both Democratic-leaning districts.

Q. Let's look at your individual district maps. District 1 of Plan 297 is on page 8. Do you see that?

A. Yes, sir.

Q. And in District 1 of Plan 297, all of Buncombe county is in District 1, correct?

A. Yes, sir.

Q. And with the inclusion of Buncombe in District 1, District 1 is a Republican-leaning district, correct?

A. If you'll just give me a second.

District 1 is a Republican-leaning district.

Q. If you turn the page to District 2, I have just a curious -- a question about your legend. What does a star mean versus a triangle?

A. In this map, the star simply denotes the location of Precinct 40 in Catawba which is the precinct named West Newton. The triangle denotes the location of Precinct 01 which is Drexel, the precinct named Drexel in Burke

1 county. So it just refers to the two different
2 precincts on this map. There's no good
3 substantive reason for choosing a triangle
4 versus a star. It was just meant to be -- meant
5 to distinguish the two precincts.
6 Q. All right. Look at District 3 on page 10. Are
7 you able to tell looking at this map whether
8 District 3 splits the city of Charlotte?
9 A. I don't have a map of Charlotte in front of me
10 or on this map so I'm not able to do that
11 analysis right now.
12 Q. Look at District 6 on page 13.
13 A. Yes, sir.
14 Q. Is it true that the easternmost line of
15 District 6, which goes through Guilford county,
16 goes through the city of Greensboro?
17 A. I don't know.
18 Q. All right. If you'll look at District 8 on
19 page 15.
20 A. Yes, sir.
21 Q. Are you able to tell whether this district is
22 fully contiguous in the parts of the district
23 that appears to be in Hoke, maybe part of
24 Robeson down at the bottom? Do you know if
25 that's fully contiguous?

A. Yes, sir, it is.
Q. How do you know that?
A. How do I know that the district satisfies contiguity?
Q. Right.
A. I know because I know the process by which I produced last year the simulated maps and so I described that process in my expert report and at trial, and certainly part of that process involved following the requirement of district contiguity by checking for contiguity at the end of the districting process.
Q. Is there any part of the code you'd be able to look at to confirm that the computer followed your instructions and that that is actually contiguous?
A. How -- you're asking how would we know whether this district is in fact contiguous?
Q. Right.
A. Last year, in connection with my expert report, I turned over computer shape files depicting in great deal the latitude, longitude coordinate boundaries of every single one of these maps. Obviously, one of those that I turned over was Plan 297. All one would have to do is to zoom

in on the Robeson portions of District 8 here, zoom far in to be able to verify that it is in fact contiguous. You don't really need to do any fancy computer work. You could actually just zoom in on the map itself using the shape files that I turned over last year in connection with my expert report last year.

Q. All right. And is it true that District 8 -- that in District 8, in Plan 297, Robeson county is split?

A. It is.

Q. All right. And then the next page, District 9 --

A. Yes, sir.

Q. -- is it -- is it the case in District 9 that Johnson county is split?

A. It is.

Q. And also Robeson county is split?

A. Yes, sir.

Q. And then the next page, District 10, is it true that in District 10 Johnson county is also split?

A. It is.

Q. And the part of Johnson county that is included in District 10 is now in a Democratic-leaning

1 district, correct?
2 A. I just want to make sure I understand your
3 question. You're asking me whether the Johnson
4 county portion of District 10 is in a
5 Democratic-leaning district? Did I get that
6 question right?
7 Q. Yes.
8 A. Correct.
9 MR. STRACH: All right. Let's take a
10 quick break and we'll come back.
11 (Brief Recess: 11:41 to 11:50 a.m.)
12 BY MR. STRACH:
13 Q. Let me hand you what will be marked as
14 Exhibit 15 and 16.
15 (WHEREUPON, Defendant's Exhibits 15 and
16 16 were marked for identification.)
17 BY MR. STRACH:
18 Q. Do Exhibits 15 and 16 look familiar to you,
19 Dr. Chen?
20 A. I recognize Exhibit 15 as my supplemental
21 declaration for Common Cause plaintiffs. I have
22 never seen, at least not the first page, of
23 Exhibit 16.
24 Q. Okay. Flip through it, I think you'll recognize
25 the attachment to it.

A. I do recognize the last page of this exhibit as the clarification that I wrote, I believe it was several days after July 11, regarding my July 11th supplemental declaration.

Q. Let's look at Exhibit 15, the July 11, 2018, declaration. In this particular declaration, you use the maps in both your Simulation Set 1 and your Simulation Set 2, correct?

A. Yes, sir.

Q. And you also use the residential addresses for the Common Cause plaintiffs provided to you by counsel.

A. Yes, sir.

Q. All right. And for this particular exercise, you've used two different measures of partisanship, correct?

A. I simply reported on the calculation that I did for my original 2017 expert report using the two different measures of partisanship.

Q. All right. And one of those measures involves 20 statewide elections held between 2008 and 2014?

A. Yes, sir.

Q. And that measure of partisanship is an average of the Republican or Democratic vote share in

1 those elections; is that correct?
2 A. Not quite. It's as -- and again, I would
3 qualify that I explained exactly how that
4 measure works in my original expert report in
5 March of 2017, and obviously I testified about
6 it at trial and deposition.
7 It's not literally taking the average
8 between those 20 elections. It's simply summing
9 up the number of Republican votes cast across
10 all of those elections and then summing up the
11 number of Democratic votes cast across all those
12 elections and then calculating the Republican
13 vote share using those sums of the Republican
14 and Democratic votes. I just wanted to clarify
15 that, but, again, I explained that as part of my
16 expert report from 2017 and in my testimony in
17 2017.
18 Q. All right. So let's look at Figure 1 and
19 Figure 2.
20 A. Yes, sir.
21 Q. So both Figure 1 and Figure 2 use maps from
22 Simulation Set 1, correct?
23 A. Figure 1 and Figure 2 are indeed about
24 Simulation Set 1, yes, sir.
25 Q. And the plaintiffs in Figure 1 and Figure 2 are

1 all the -- they're all the same, correct?
2 A. Same list of plaintiffs in both figures.
3 Q. And what does this figure -- is this a plot? It
4 looks like a bunch of dots. Is there a
5 particular name that you give this kind of a
6 chart?
7 A. We could just call it a scatter plot or a dot
8 plot. I understand what you're referring to.
9 Q. Okay. We'll call it a dot plot. How's that?
10 A. Yes, sir.
11 Q. I like that. That rhymes.
12 So on the dot plot, for each plaintiff
13 you've got a series of dots on this line and --
14 on a horizontal line, and then the vertical line
15 is at .5, correct?
16 A. Yes, sir.
17 Q. And the .5 represents -- well, not the .5, but
18 the numbers at the bottom of the dot plot
19 represent the Republican vote share for the
20 district in each one of the plans that you've
21 dotted on the plot?
22 A. Basically, sir, it's a Republican vote share of
23 the simulated district as well as the enacted
24 district in which each of these plaintiffs
25 resides. And when I say Republican vote share,

1 in this figure we're talking about using the
2 20-election measure that you and I just
3 described a minute ago.
4 Q. Right. So in Figure 1 you used the 20-election
5 measure, and in Figure 2 you used Dr. Hofeller's
6 measure?
7 A. Yes, sir. And again, I was simply reporting on
8 calculations that I had performed last year as
9 part of my expert report and turned over last
10 year as part of my expert report.
11 Q. Right. So the only difference methodologically
12 between Figure 1 and Figure 2 is Figure 1 uses
13 the 20 elections and Figure 2 uses the Hofeller
14 elections?
15 A. Right. I was just reporting on two different
16 sets of calculations that I had done last year
17 as part of my 2017 expert report.
18 Q. All right. And so for instance, for each
19 plaintiff -- let's look at Russell G. Walker.
20 A. Yes.
21 Q. That is -- Mr. Walker lives in Congressional
22 District 13, correct?
23 A. Congressional District 13 of the Enacted Plan.
24 Q. And so Mr. Walker's district in the Enacted Plan
25 in terms of its Republican vote share, it falls

on the dot plot where the red star is in that -- on that line, correct?

A. Yes, sir, that's what the red star represents is the enacted Congressional District 13.

Q. Okay. So Mr. Walker, according to this line on the dot plot, in the 2016 Plan lived in a Republican-leaning district, correct?

A. District 13 of the SB 2 Plan is indeed a Republican-leaning district.

Q. All right. And all of the gray dots are the Republican vote share in each of the thousand simulation set plans, correct?

A. In each of the simulated districts in which Mr. Walker would have resided under the 1,000 plans in Set 1.

Q. Right. Okay. So whatever district that would have been in each one of those plans, if it included his residence -- let me make sure that I'm straight on that -- not his precinct, but his actual residence?

A. His actual geographic residence, yes, sir.

Q. Okay. Then the Republican vote share for that district would be plotted along this line with a dot, right?

A. Yes, sir.

Q. And so if you look for District 13, there are a number of dots on both the Republican-leaning side of the chart and on the Democratic-leaning side, correct?

A. I think what you're asking is whether there are dot -- there are circles that are below 50 percent and circles that are above 50 percent, and clearly that's the case.

Q. All right. And would you be able to calculate the number of dots on the Republican side of this chart for District 13?

A. You're asking -- I think you're trying to ask me whether -- how many dots are above 50 percent versus below 50 percent, right?

Q. Yes. Yes. Do you know?

A. I can't tell you off the top of my head, but I would again point out that all of these calculations were turned over last year as part of the data in the computer code I turned over in connection with my original expert report.

Q. All right. Was this -- was this Figure 1 part of that expert report? And I'm just asking because I don't remember. Or is this something new you've done?

A. Figure 1 was not part of the original expert

1 report. It simply extracts partisanship numbers
2 that were already calculated and turned over in
3 connection with my expert report in describing
4 certain districts in the simulated plan -- in
5 Simulation Set 1. So the figure itself
6 obviously was not included in my expert report.
7 Q. All right. And -- right. So the number of dots
8 above 50 percent for District 13, that specific
9 number is not reported in this July 11, 2018,
10 report, is it?
11 A. I don't believe there is any place in this
12 report -- in -- I'm sorry. I don't believe
13 there's a place in this supplemental declaration
14 that has that number reported. What I was
15 simply pointing out a moment ago with my
16 original expert report, those numbers -- those
17 underlying calculations were all turned over.
18 Q. Okay. And in Figure 2, Mr. Walker his -- the
19 red dot representing his residence is also in a
20 Republican-leaning district in the 2016 Plan,
21 correct?
22 A. It is a Republican-leaning district.
23 Q. And in Figure 2, there are also numerous dots
24 above 50 percent for CD 13; is that correct?
25 A. There are clearly some above 50 percent.

Q. For CD 12, in Figure 1 and in Figure 2, Mr. Gresham resides in a Democratic-leaning district, correct?

A. Yes, sir, District 12 is a Democratic-leaning district.

Q. And in both Figure 1 and Figure 2 there are numerous dots below 50 percent representing this district in the simulated maps, correct?

A. There clearly are some gray circles below 50 percent.

Q. Is it fair to say just by looking at the figure that for both Figure 1 and Figure 2 the number of dots below 50 percent exceeds the number of dots above 50 percent?

A. It's not something I'm always going to be able to eyeball. I think with Figure 1, simply because I can't remember off the top of my head the numbers for each of these 1,000, but clearly from Figure 1 the number below 50 percent for Mr. Gresham is the majority of the 1,000 simulations.

Q. Is the same true for Figure 2?

A. Again, it's not something I'm always going to be able to eyeball, but in this particular case I think it's pretty clear that the majority are

1 below 50 percent.
2 Q. And let's do this a little differently. Let's
3 look at also Figures 3 and 4 at the same time.
4 Let's do this district by district.
5 So in Figures 3 and 4 with regard to
6 Mr. Walker, in those figures he also is in a
7 Republican-leaning district in the 2016 Plan,
8 correct?
9 A. Yes, sir.
10 Q. And in both Figure 3 and Figure 4 there are
11 numerous dots above 50 percent in both figures,
12 correct?
13 A. You're asking about Figures 3 and 4, right?
14 Q. Figures 3 and 4 for District 13.
15 A. In Figure 3 I can see that there are some gray
16 circles above 50 percent, and in Figure 4 I can
17 see that there are some gray circles above
18 50 percent.
19 Q. And you say some, but you've not reported in
20 this declaration the precise number, correct?
21 A. I have not reported the precise number.
22 Q. And then Figures 3 and 4 with regard to
23 Mr. Gresham in CD 12, in both of those figures
24 he resides in a Democratic-leaning district in
25 the 2016 Plan, correct?

A. Yes, sir.
Q. Is it also the case in Figures 3 and 4 the number of dots below 50 percent exceeds the number of dots above 50 percent?
A. I can't give you the precise numbers, but obviously I can see that there are some below 50 percent in both Figures 3 and 4.
Q. And is it apparent just from eyeballing it that the numbers below 50 percent exceed the number exceeding 50 percent in Figures 3 and 4?
A. I'm not sure I can say with certainty off the top of my head. Obviously the underlying calculations that I turned over would give you the precise number.
Q. All right. And then with regard to CD 11, Jones Byrd, back to Figure 1.
A. Okay. Yes, sir.
Q. In all the Figures 1 through 4, Mr. Byrd lives in a Republican-leaning district in the 2016 Plan, correct?
A. Yes, sir.
Q. And in all of the Figures 1 through 4, all of the dots for CD 11 are above the 50 percent line, correct?
A. Yes, sir.

Q. And the same is true for all figures for CD 10 regarding Mr. Wolf, correct?
A. We're just talking about the enacted District 10 that Mr. Wolf resides within, right?
Q. In all figures he resides in a Republican-leaning district --
A. Yes, sir.
Q. -- correct?
A. Yes, sir.
Q. And in all figures, all the dots are above 50 percent for District 10, correct?
MR. THORPE: Objection.
BY MR. STRACH:
Q. Okay. All --
A. We'll just need to go through those one by one.
Q. So for Figure 1 -- excuse me. For Figure 1, all but one dot is above 50 percent for District 10, correct?
A. I'm not able to give you the precise number. And I do, obviously, see that there is just one circle, but I'm not able to right now -- without looking at the actual underlying data that I turned over in connection with my expert report last year, I'm not able to tell you that that's only one and not, say, two circles that just are

1 right on top of each other, so I can't give you
2 the precise number, but obviously I can affirm
3 what you're seeing here which is that most of
4 them are above 50 percent.
5 Q. And for Figure 2, it appears that all of them
6 are above 50 percent, although one just barely,
7 for CD 10; is that correct?
8 A. All of them are above 50 percent.
9 Q. And for Figures 3 and 4, all of them are above
10 50 percent for CD 10, correct?
11 A. They're all above 50 percent.
12 Q. All right. For CD 9, Mr. McNeill, I believe in
13 all four of the figures he resides in a
14 Republican-leaning district, correct?
15 A. Yes, sir.
16 Q. And in Figures 1 and 2, there are numerous dots
17 above 50 percent for both Figures 1 and 2,
18 correct?
19 A. In Figure 1, I see that there are some gray
20 circles above 50 percent. In Figure 2, I see
21 that there are some circles above 50 percent.
22 Q. All right. And then also in Figures 3 and 4
23 there are also dots above 50 percent, correct?
24 A. I see that in both Figures 3 and 4 there are
25 some gray circles above 50 percent.

1 Q. All right. For Congressional District 8,
2 Mr. Brewer, in Figures 1 through 4, he resides
3 in a Republican-leaning district, correct?
4 A. Yes, sir.
5 Q. And for Figures 1 and 2, there are numerous dots
6 above 50 percent, correct?
7 A. I would say that there are some gray circles
8 above 50 percent in Figure 1. In Figure 2, I
9 see that there are some gray circles above
10 50 percent.
11 Q. All right. And then there are some in Figure 3
12 for CD 8, correct?
13 A. I see that there are some gray circles above
14 50 percent in Figure 3. In Figure 4, I see that
15 there are some gray circles above 50 percent.
16 Q. In CD 7, Ms. Boylan, she resides in a
17 Republican-leaning district in all four figures,
18 correct?
19 A. Yes, sir.
20 Q. And in Figures 1 and 2, there are numerous dots
21 above the 50 percent -- above 50 percent in
22 Figures 1 and 2, correct?
23 A. I see that there are in Figure 1 some gray
24 circles above 50 percent. In Figure 2, I see
25 that there are some gray circles above

50 percent.
Q. In Figure 2, isn't it possible to say just from the naked eye that there are more above 50 percent than there are below 50 percent?
A. I'm not disputing that, but I'm not able to affirm that in front of you off the top of my head.
Q. All right. And then in Figures 3 and 4 there are dots above 50 percent for both of those, correct, Figures 3 and 4?
A. In Figure 3, I see -- and we're on Ms. Boylan, right?
Q. Yes.
A. I see that there are some gray circles above 50 percent. In Figure 4, I see that there are some gray circles above 50 percent.
Q. In Figures 3 and 4, the dots above 50 percent clearly outnumber the dots below 50 percent; isn't that correct?
A. I don't really have any specific reason to dispute it, but I can't say that I can give you a definitive answer right in front of you here.
Q. Okay.
A. Again, obviously, as I said earlier, all of the underlying calculations are ones that I turned

1 over last year in connection with my 2017 expert
2 report.
3 Q. And for CD 6 in Figures 1 and 2 and 3 and 4,
4 Mr. Morgan lives in a Republican-leaning
5 district in the 2016 Plan?
6 A. Yes, sir.
7 Q. And in Figures 1 and 2, there are dots above
8 the -- above 50 percent?
9 A. I see that in Figure 1 there are some dots above
10 50 percent.
11 Q. And Figure 2?
12 A. In Figure 2, I see that there are some gray
13 circles above 50 percent.
14 Q. And also Figures 3 and 4 for CD 6?
15 A. We're on Mr. Morgan, right?
16 Q. Right.
17 A. I see that there are in Figure 3 some gray
18 circles above 50 percent. In Figure 4, I see
19 that there are indeed some gray circles above
20 50 percent.
21 Q. All right. Mr. Freeman, Congressional
22 District 5, he is in a Republican-leaning
23 district in Figures 1 through 4, correct?
24 A. Yes, sir.
25 Q. And in Figures 1 and 2, there are gray dots

above 50 percent, correct?
A. I see that in Figure 1 that are some gray dots above 50 percent.
Q. In Figure 2?
A. In Figure 2, I see there are some gray dots above 50 percent.
Q. In Figure 2, it would appear that the gray dots above 50 percent outnumber the ones below 50 percent, doesn't it?
A. I'm not able to definitively affirm that. I don't have any reason to doubt -- to doubt you on that.
Q. All right. And in Figures 3 and 4 -- yeah, Figures 3 and 4 for CD 5, there are gray dots above 50 percent, correct?
A. I see that there are some gray dots above 50 percent.
Q. Isn't it fair to say that in both Figures 3 and 4 the gray dots above 50 percent outnumber the dots below 50 percent?
A. Same answer as before: I can't tell you for sure right here in front of you.
Q. There's two for CD 4 -- looking at Mr. Lurie, he resides in a Democratic-leaning district in all the figures, correct?

1 A. Yes, sir.
2 Q. As well as does Ms. Bordsen for CD 4, correct?
3 A. Yes, sir.
4 Q. And for both Mr. Lurie and Ms. Bordsen, for all
5 four figures there are gray dots below
6 50 percent, correct?
7 A. Yes, sir.
8 Q. All right. So CD 3, the Tafts, in all figures
9 they live in a Republican-leaning district,
10 correct?
11 A. Yes, sir.
12 Q. And in all figures there are gray dots above
13 50 percent, correct?
14 A. In each figure I can see that there are indeed
15 some gray circles above 50 percent.
16 Q. All right. And Mr. Berger in Congressional
17 District 2 is in a Republican-leaning district
18 in all four figures, correct?
19 A. In the enacted -- for the Enacted Plan I can see
20 that Mr. Berger is indeed in a
21 Republican-leaning district in all four figures.
22 Q. And in all four figures there are gray dots
23 above the 50 percent -- above 50 percent in all
24 four figures, correct, for Mr. Berger?
25 A. I can see that in each of the four figures there

are some gray circles above 50 percent.

Q. All right. Mr. Hall in Congressional District 1, he's in a Democratic-leaning district in all four figures, correct?

A. Yes, sir.

Q. And in Figure 1, it appears that all of the gray dots are below the 50 percent figure, correct?

A. Yes, sir, I see that.

Q. And in Figure 2, it appears that most of the gray dots are below 50 percent, correct?

A. Yes, sir.

Q. And in Figure 3, it appears that all of the gray dots are below 50 percent, correct?

A. Yes, sir.

Q. And in Figure 4, it appears that most of the gray dots are below 50 percent; is that correct?

A. Yes, sir.

MR. STRACH: Let's go off the record.

(Brief Recess: 12:18 to 12:25 p.m.)

MR. STRACH: Thank you, Dr. Chen. That's all the questions I have for now.

THE WITNESS: Thank you, sir.

MR. THORPE: Briefly, a few redirect questions.

///

EXAMINATION

BY MR. THORPE:

Q. Dr. Chen, if I could direct your attention to the declaration for the Common Cause plaintiffs, the Figure 1.

A. Yes, sir.

Q. You here identify plaintiff Russell Walker as being a resident of Jamestown, North Carolina, and accordingly Congressional District 13 in the Enacted Plan; is that correct?

A. Yes, sir.

Q. And you also identify Russell Walker as being in District 13 on the last page of this declaration; is that correct?

A. Yes, sir.

Q. And just to be clear, if there was any question about the placement of an individual in a district in the Enacted Plan, did you turn over the data files indicating how you determined where an individual Common Cause plaintiff would be placed in the Enacted Plan?

A. Yes, sir. I turned over the computer code as well as the underlying data reporting that calculation for each plaintiff.

Q. As well as the address information that you

1 received from Common Cause counsel to make that
2 determination, correct?
3 A. Yes, sir. I turned over a file reporting the
4 address information as well as the
5 latitude/longitude geocoding of that plaintiff's
6 residence as well as the census block in the
7 district in which each plaintiff resides.
8 Q. If you could turn to the last page of
9 Exhibit 16, the clarification.
10 A. Yes, sir.
11 Q. I believe I identified for the first time now a
12 typographical error in both the first and second
13 uses of this paragraph.
14 So this currently reads "Plaintiff
15 Russell Walker resides in Congressional
16 District 3 of the Enacted 2016 Plan."
17 Should that instead read "Plaintiff
18 Russell Walker resides in Congressional District
19 13 of the Enacted 2016 Plan"?
20 A. That is indeed a typographical mistake. I
21 obviously calculated and reported in all the
22 figures in the supplemental declaration that
23 Plaintiff Walker resides in Congressional 13.
24 Obviously, I tried to copy and paste over 13 and
25 somehow accidentally dropped the 1 and so

1 somehow 13 became 3, but obviously, as the
2 supplemental declaration and the underlying data
3 that I turned over indicates, Plaintiff Walker
4 resides in District 13.
5 Q. More broadly, turning to the paragraphs that
6 follow the figures in your supplemental
7 declaration of the Common Cause plaintiffs?
8 A. Yes, sir.
9 Q. For each plaintiff, what do these percentages
10 indicate?
11 A. These percentages are reporting -- you're asking
12 me about in paragraph 1 where I said
13 99.9 percent, right?
14 Q. Exactly.
15 A. These percentages indicate the percent of the
16 1,000 simulated plans in Simulation Set 1 and
17 later in Simulation Set 2 that place each
18 individual plaintiff into a simulated district
19 that is either more Republican leaning or more
20 Democratic leaning.
21 Q. As measured by one of the two formulas that you
22 used?
23 A. Yes, sir.
24 Q. Okay. I want to go to a couple examples of
25 that. If you would turn to Figure 1.

A. Yes, sir.
Q. Plaintiff Gresham, the Enacted Plan is marked by the red star, correct?
A. Yes, sir.
Q. Can you identify where -- whether there are any simulated districts from your simulated plans that would place Plaintiff Gresham in a district with a Republican vote share equal to or less than that of the Enacted Plan?
A. Clearly we can see in Figure 1 that all 1,000 of the simulations would have placed Plaintiff Gresham into a district that is more Republican leaning. None of the 1,000 would have placed Plaintiff Gresham into a district that is equal or less Republican leaning than the enacted District 12 that plaintiff Gresham is placed into.
Q. For Plaintiff Byrd in Congressional District 11, can you determine from this figure whether there's any simulated district in any of the thousand simulated plans in which Plaintiff Byrd would be placed that would have a Republican vote share equal to or greater than the Enacted Plan?
A. Clearly there are zero such simulated districts.

1 All 1,000 of these simulated districts would
2 have placed Plaintiff Byrd into a simulated
3 district that is less Republican leaning than
4 the enacted District 11 that Plaintiff Byrd is
5 placed into.
6 Q. If you could turn to Figure 2.
7 A. Yes, sir.
8 Q. Would you report a similar result for Plaintiff
9 Gresham and Plaintiff Byrd under the simulations
10 in Figure 2?
11 A. Yes, sir, we see the same thing here.
12 Q. The only difference between Figures 1 and 2
13 being the election formula that you used to
14 calculate that result, correct?
15 A. Yes, sir. In Figure 2, I've reported the
16 calculation that I did last year using
17 Dr. Hofeller's formula where obviously in
18 Figure 1 I reported the calculations that I did
19 in my original expert report using the 20
20 statewide elections.
21 Q. And could you turn to Figure 3.
22 A. Yes, sir.
23 Q. Would you report the same result with respect to
24 Plaintiffs Gresham and Byrd under
25 Simulation Set 2 as reported in Figure 3?

A. Yes, sir, we see the same thing.
Q. And what about Plaintiff Brewer from Fayetteville, North Carolina, in Congressional District 8, are there any of the simulated districts into which Plaintiff Brewer would be placed among the thousand simulated maps that would have a Republican vote share equal to or greater than the Enacted Plan's Congressional District 8?
A. There is not a single such simulation. All 1,000 of these simulations here in Simulation Set 2 would have placed Plaintiff Brewer into a simulated district with a lower Republican vote share. Not a single one of the thousand simulations places Plaintiff Brewer into a simulated district with equal or higher Republican vote share.
Q. And for Plaintiff Berger who was placed in Congressional District 2 under the Enacted Plan, is there any simulated district into which Plaintiff Berger would have been placed across your thousand simulated maps that would have a Republican vote share equal to or greater than enacted Congressional District 2?
A. There's not a single one. All 1,000 of the

simulations in Set 2 would have placed Plaintiff Berger into a simulated district with a lower Republican vote share than Congressional District 2 which Plaintiff Berger is placed into in the Enacted Plan.

Q. And if you could turn to Figure 4.

A. Yes, sir.

Q. Based on the results reported in Figure 4, would you report the same finding with respect to Plaintiffs Gresham, Byrd, Berger and Brewer based on the results reported in Figure 4 as you would in Figure 3?

A. You see exactly the same thing.

Q. Again, the only difference between Figure 3 and Figure 4 being the set of elections used to reach that determination, correct?

A. That's correct, sir. Figure 4 reports on the numbers I calculate in my original expert report using Dr. Hofeller's formula rather than the 20 statewide elections that was reported on in Figure 3.

MR. THORPE: Unless Allison has anything.

MS. RIGGS: No questions from the League of Women Voters.

MR. STRACH: Let me follow up just real quickly.

FURTHER EXAMINATION

BY MR. STRACH:

Q. Dr. Chen, two things: One, since we're looking at typos, look at Figure 3. Figures 3 and 4 deal with Simulation Set 2; is that correct?

A. Yes, sir. I can see that in the legend Figure 3 that the -- the second line in the legend right below where it says legend, obviously I had meant to write plaintiff's district in each of the 1,000 Simulation Set 2 plans. This was correctly labeled at the top of Figure 3 where it says Simulation Set 2 in very large fonts. For whatever reason, the legend miscopied that.

And I can see that the same mistake was made in Figure 4. Obviously at the top of Figure 4 it says Simulation Set 2. I described in text that I was describing Simulation Set 2. And the second line in the legend box should read plaintiff's district in each of the 1,000 Simulation Set 2 plans.

So thank you for catching those, Mr. Strach.

Q. All right. And let's just take a quick look at

1 Table 1, which was the last page of the report.
2 And this is a comparison of the district that
3 each plaintiff -- Common Cause plaintiff lives
4 in in the 2016 Plan versus the district they
5 would -- they would be in in Plan 297, correct?
6 A. Yes, sir.
7 Q. And it compares the Republican vote share in
8 their district in the Enacted Plan versus their
9 Republican vote share in the Plan 297 using the
10 Hofeller formula; is that correct?
11 A. Yes, sir.
12 Q. So in district -- for plaintiff Larry Hall, in
13 Plan 297, he would remain in a
14 Democratic-leaning district; is that correct?
15 A. Both of those districts are indeed
16 Democratic-leaning districts. His district in
17 the SB 2 Plan as well as his district in
18 Plan 297 are indeed both Democratic leaning.
19 Q. And both districts for the Tafts are
20 Republican-leaning districts, correct?
21 A. They are.
22 Q. And both districts for Ms. Bordsen are
23 Democratic-leaning districts, correct?
24 A. Yes, sir.
25 Q. And both districts for Mr. Lurie are

1 Democratic-leaning districts, correct?
2 A. Yes, sir.
3 Q. And both districts for Mr. Morgan are
4 Republican-leaning districts, correct?
5 A. Yes, sir.
6 Q. And both districts for Ms. Boylan are
7 Republican-leaning districts, correct?
8 A. Yes, sir.
9 Q. And both districts for Mr. Wolf are
10 Republican-leaning districts, correct?
11 A. Yes, sir.
12 Q. Both districts for Mr. Byrd are
13 Republican-leaning districts, correct?
14 A. Yes, sir.
15 Q. And both districts for Mr. Gresham are
16 Democratic-leaning districts, correct?
17 A. Yes, sir.
18 MR. STRACH: All right. That's all I
19 have.
20 [SIGNATURE RESERVED]
21 [DEPOSITION CONCLUDED AT 12:37 P.M.]
22
23
24
25

APPENDIX 2

League of Women Voters Plaintiffs

SUPPLEMENTAL DECLARATION OF JOWEI CHEN
DATED JULY 11, 2018

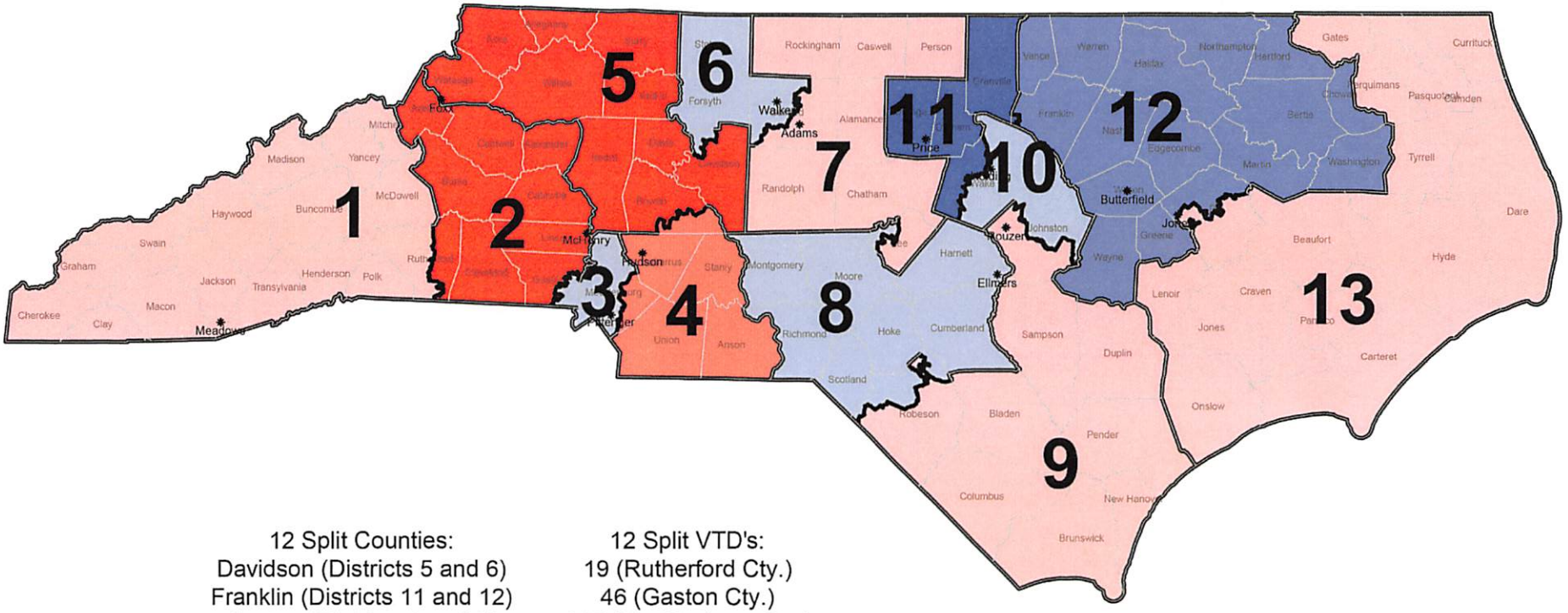
EXHIBIT 14
WIT: J. Chen
DATE: 7/30/18
DENISE MYERS BYRD

I, Jowei Chen, under penalty of perjury, declare the following:

1. I was asked by plaintiffs' counsel to use the following process to select one of the 3,000 North Carolina congressional maps I previously generated in this litigation as a demonstration plan for purposes of establishing standing: (1) Start with the 1,000 maps in Simulation Set 2, all of which protect more incumbents than the 2016 Plan and split fewer counties. (2) Of these maps, identify the ones that contain a district with a Black Voting Age Population above 40%. (3) Of these maps, identify the ones that contain seven Republican districts and six Democratic districts using Dr. Thomas Hofeller's seven-election average (and thus an efficiency gap near zero). (4) Of these maps, identify the one that has the most compact districts, on average, considering both Reock and Polsby-Popper compactness. In calculating the Black Voting Age Population of each district, I include only individuals who identify as single-race African-American.

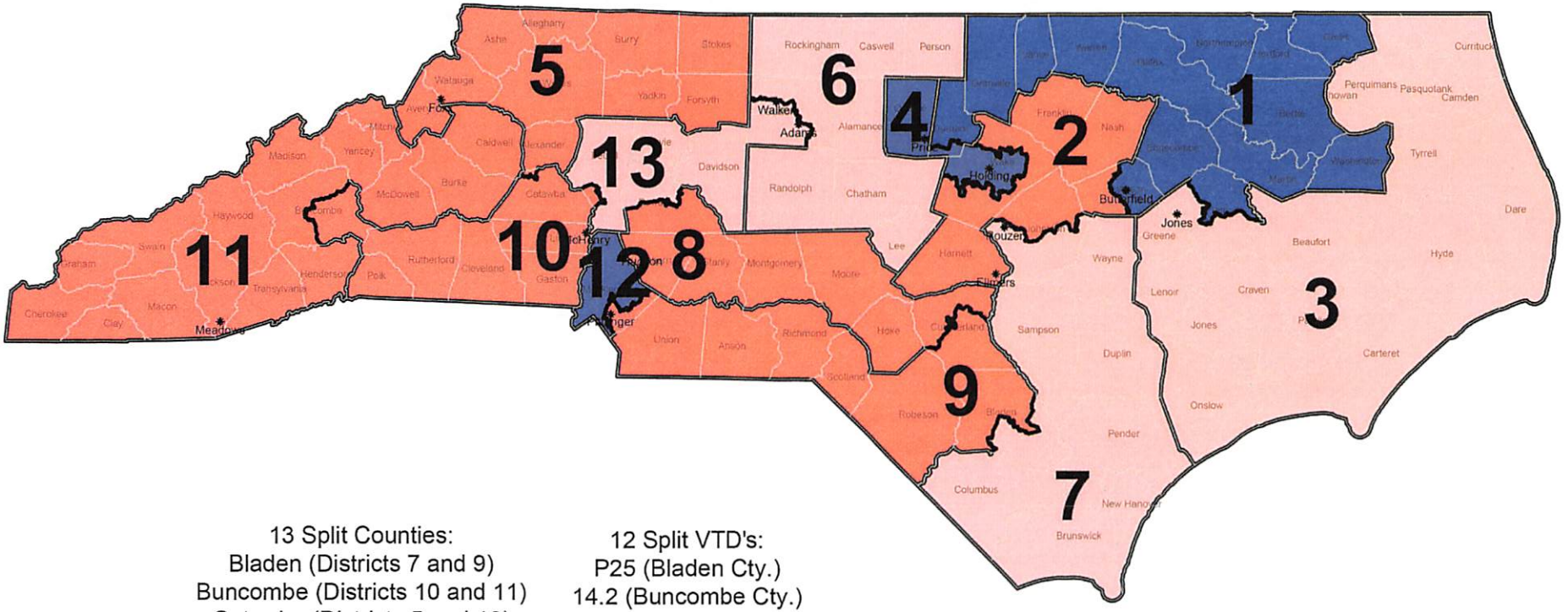
2. This process led to the selection of Plan 297 in Simulation Set 2 (hereinafter: Plan 2-297). Maps of Plan 2-297 and the 2016 Plan are below, in which each district in each plan is shaded based on Dr. Hofeller's seven-election average. Individual maps of each of Plan 2-297's and the 2016 Plan's districts (also shaded using Dr. Hofeller's seven-election average) are included at the end of this declaration.

Plan 297 of Simulation Set 2



12 Split Counties:	12 Split VTD's:
Davidson (Districts 5 and 6)	19 (Rutherford Cty.)
Franklin (Districts 11 and 12)	46 (Gaston Cty.)
Gaston (Districts 2 and 3)	045 (Mecklenburg Cty.)
Guilford (Districts 6 and 7)	46 (Rowan Cty.)
Johnston (Districts 10 and 9)	50 (Davidson Cty.)
Lee (Districts 7 and 8)	G44 (Guilford Cty.)
Mecklenburg (Districts 3 and 4)	D (Lee Cty.)
Pitt (Districts 12 and 13)	10 (Robeson Cty.)
Robeson (Districts 8 and 9)	PR28 (Johnston Cty.)
Rowan (Districts 4 and 5)	06−01 (Wake Cty.)
Rutherford (Districts 1 and 2)	19 (Franklin Cty.)
Wake (Districts 10 and 11)	0101 (Pitt Cty.)

Enacted 2016 Plan (SB 2)



13 Split Counties:
Bladen (Districts 7 and 9)
Buncombe (Districts 10 and 11)
Catawba (Districts 5 and 10)
Cumberland (Districts 8 and 9)
Durham (Districts 1 and 4)
Guilford (Districts 6 and 13)
Iredell (Districts 10 and 13)
Johnston (Districts 2 and 7)
Mecklenburg (Districts 9 and 12)
Pitt (Districts 1 and 3)
Rowan (Districts 8 and 13)
Wake (Districts 2 and 4)
Wilson (Districts 1 and 2)

12 Split VTD's:
P25 (Bladen Cty.)
14.2 (Buncombe Cty.)
29 (Catawba Cty.)
CC08 (Cumberland Cty.)
G71 (Guilford Cty.)
FT (Iredell Cty.)
PR26 (Johnston Cty.)
002 (Mecklenburg Cty.)
1509 (Pitt Cty.)
28 (Rowan Cty.)
16−05 (Wake Cty.)
PRTA (Wilson Cty.)

3. Like all of the maps in Simulation Set 2, Plan 2-297 protects 13 incumbents (compared to 11 in the 2016 Plan), splits 12 counties (compared to 13 in the 2016 Plan), splits 12 VTDs (the same as the 2016 Plan), and contains districts that are equal in population to within one person. Plan 2-297 further has an average Reock compactness score of 0.464 (compared to 0.337 in the 2016 Plan) and an average Polsby-Popper compactness score of 0.301 (compared to 0.242 in the 2016 Plan).

4. The below table provides additional information about each district in Plan 2-297: (1) its population; (2) its Black Voting Age Population share; (3) its partisan score using Dr. Hofeller's seven-election average; (4) its Reock compactness score; and (5) its Polsby-Popper compactness score.

Table 1: Characteristics of Districts in Plan 297 from Simulation Set 2 (Plan 2-297)

District	Total Population	Black Voting Age Population	District's Republican Vote Share (Hofeller Formula)	Reock Score	Polsby-Popper Score
1	733,498	3.88%	52.62%	0.320	0.324
2	733,499	10.16%	63.62%	0.553	0.325
3	733,499	27.79%	45.82%	0.516	0.237
4	733,499	19.06%	57.77%	0.574	0.448
5	733,498	8.53%	63.86%	0.359	0.276
6	733,499	22.60%	49.30%	0.522	0.320
7	733,499	22.99%	51.49%	0.481	0.248
8	733,499	28.24%	46.43%	0.396	0.245
9	733,498	18.75%	52.18%	0.551	0.300
10	733,499	22.75%	47.40%	0.393	0.249
11	733,498	22.60%	36.78%	0.418	0.269
12	733,499	41.42%	40.84%	0.465	0.327
13	733,499	20.79%	54.43%	0.490	0.343

5. Plaintiffs' counsel also provided me with a list of North Carolina precincts, in each of which either an individual plaintiff or a member of the League of Women Voters of North Carolina lives. The below table specifies the following information about each of these precincts: (1) in which district in the 2016 Plan the precinct is located; (2) what this district's partisan score is using Dr. Hofeller's seven-election average; (3) in which district in Plan 2-297 the precinct is located and (4) what this district's partisan score is using Dr. Hofeller's seven-election average.

Table 2:
Precincts in which League of Women Voters of North Carolina Plaintiffs and Members Reside:

County:	Precinct Name:	Precinct's District in Enacted Plan (SB 2):	Republican Vote Share of Precinct's District in Enacted Plan (Hofeller Formula) :		Precinct's District in Plan 297 of Simulation Set 2:	Republican Vote Share of Precinct's District in Plan 297 of Simulation Set 2 (Hofeller Formula):
Washington	PLYMOUTH 1	1	31.17%		12	40.84%
Martin	JAMESVILLE	1	31.17%		12	40.84%
Wake	20-11	2	56.20%		11	36.78%
Wake	01-04	4	37.68%		10	47.40%
Forsyth	074	5	56.15%		6	49.30%
Guilford	NCGR2	6	54.46%		6	49.30%
Wayne	13	7	53.42%		12	40.84%
Moore	EUREKA / WHISPERING PINES	8	55.13%		8	46.43%
Mecklenburg	86	9	56.04%		3	45.82%
Catawba	WEST NEWTON	10	58.17%		2	63.62%
Burke	DREXEL 01	11	57.11%		2	63.62%
Mecklenburg	20	12	36.63%		3	45.82%
Guilford	G31	13	53.71%		6	49.30%

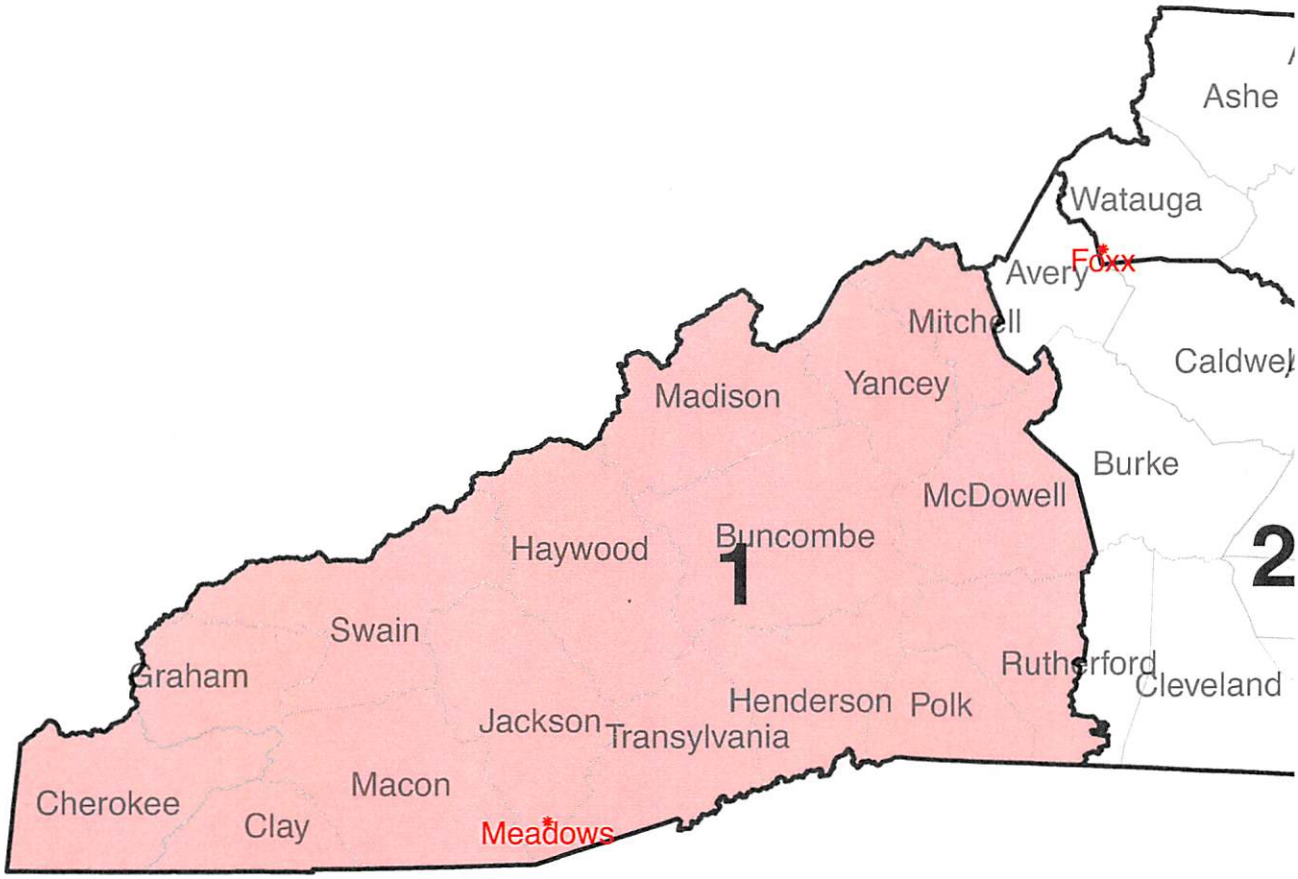
6. While I have carried out this analysis with respect to Plan 2-297, the results would be very similar under any of the maps I generated with seven Republican districts and six Democratic districts using Dr. Hofeller's seven-election average. Under any of these maps, many Democratic voters, in many parts of North Carolina, would be placed in districts with significantly different partisan compositions than their districts under the 2016 Plan.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge.

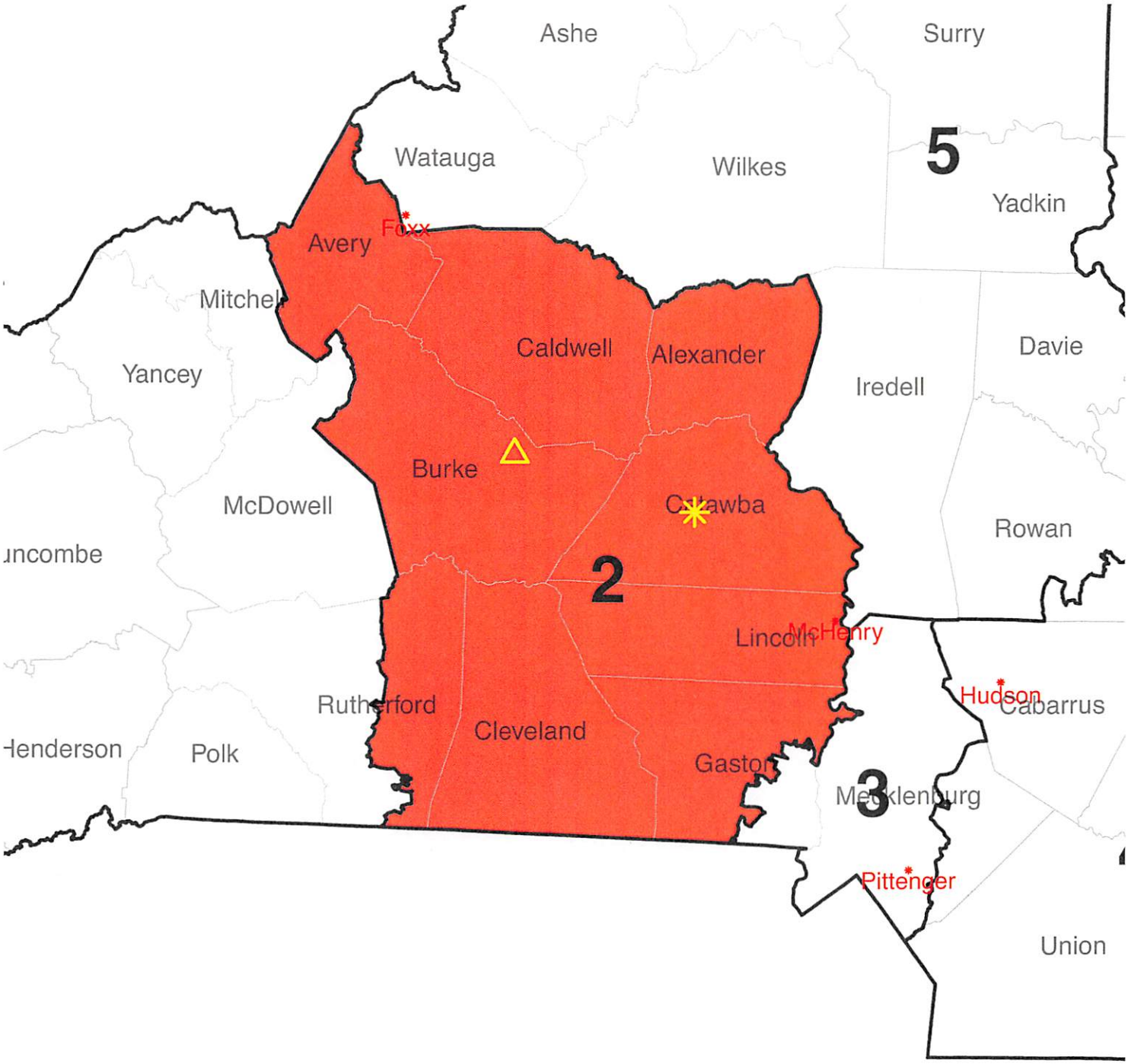
This 11th day of July, 2018.

Jowei Chen

District 1 of Plan 2–297



District 2 of Plan 2–297

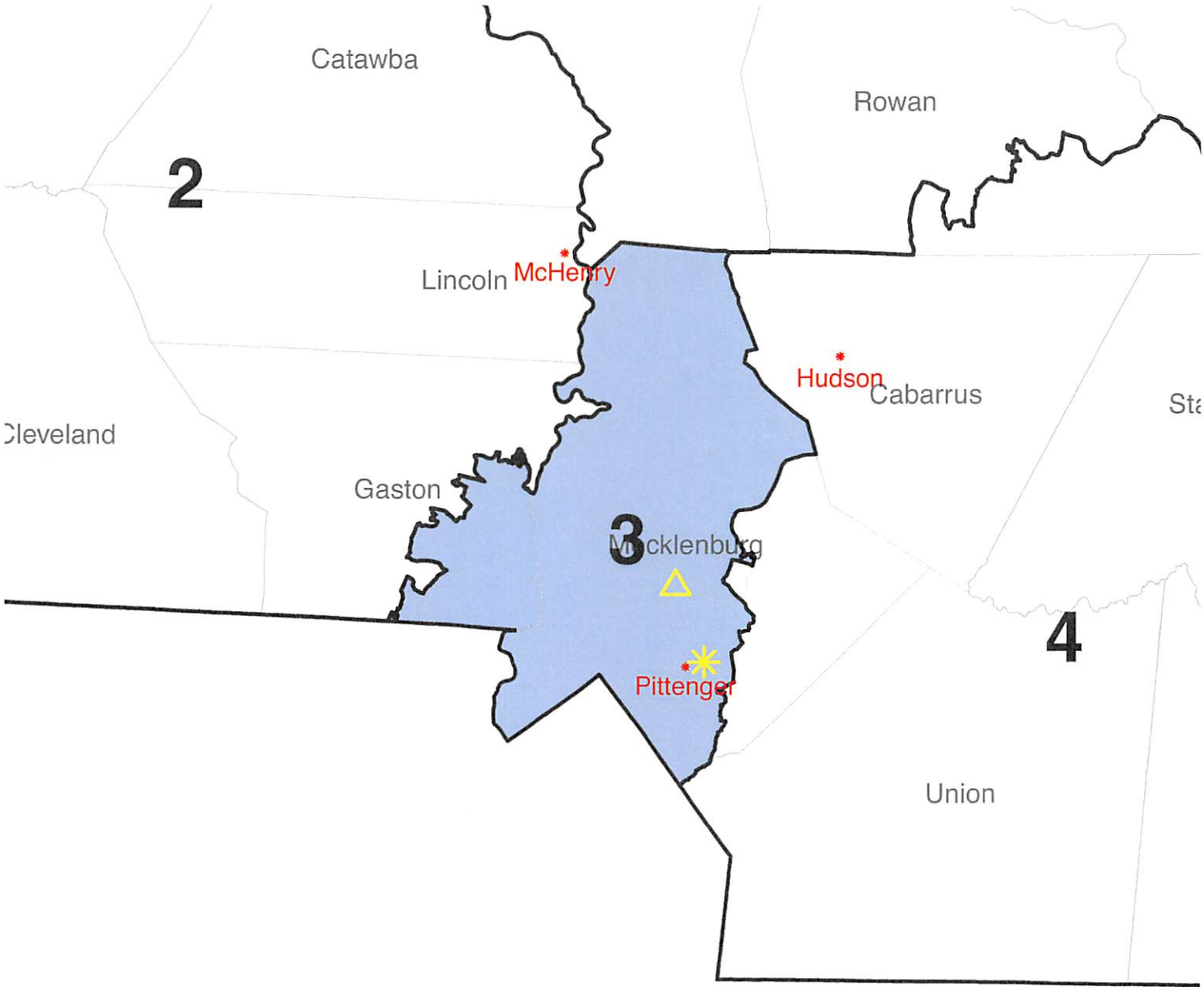


Legend:

✳ PRECINCT: 40_WEST NEWTON (CATAWBA COUNTY)

△ PRECINCT: 0001_DREXEL 01 (BURKE COUNTY)

District 3 of Plan 2–297

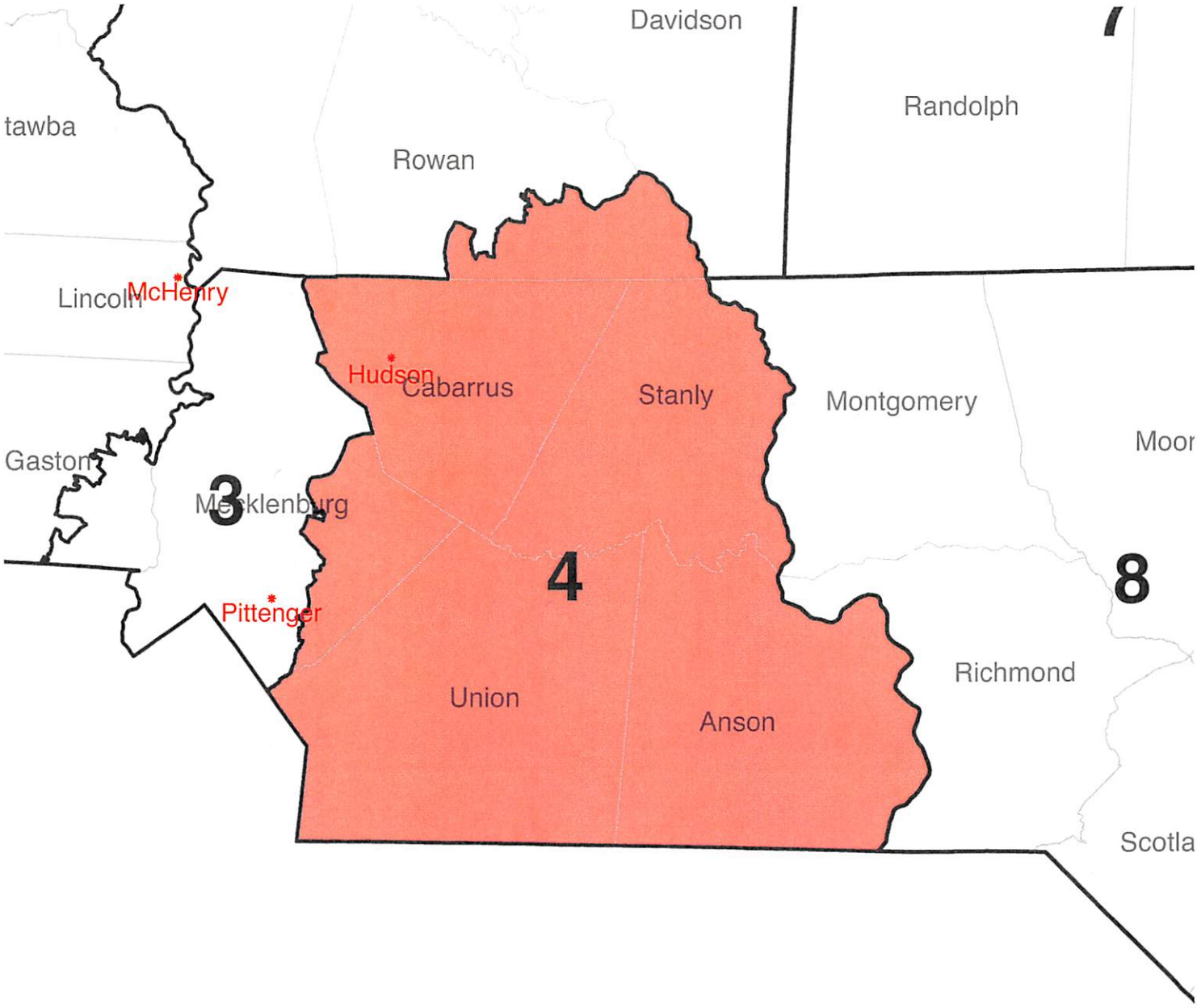


Legend:

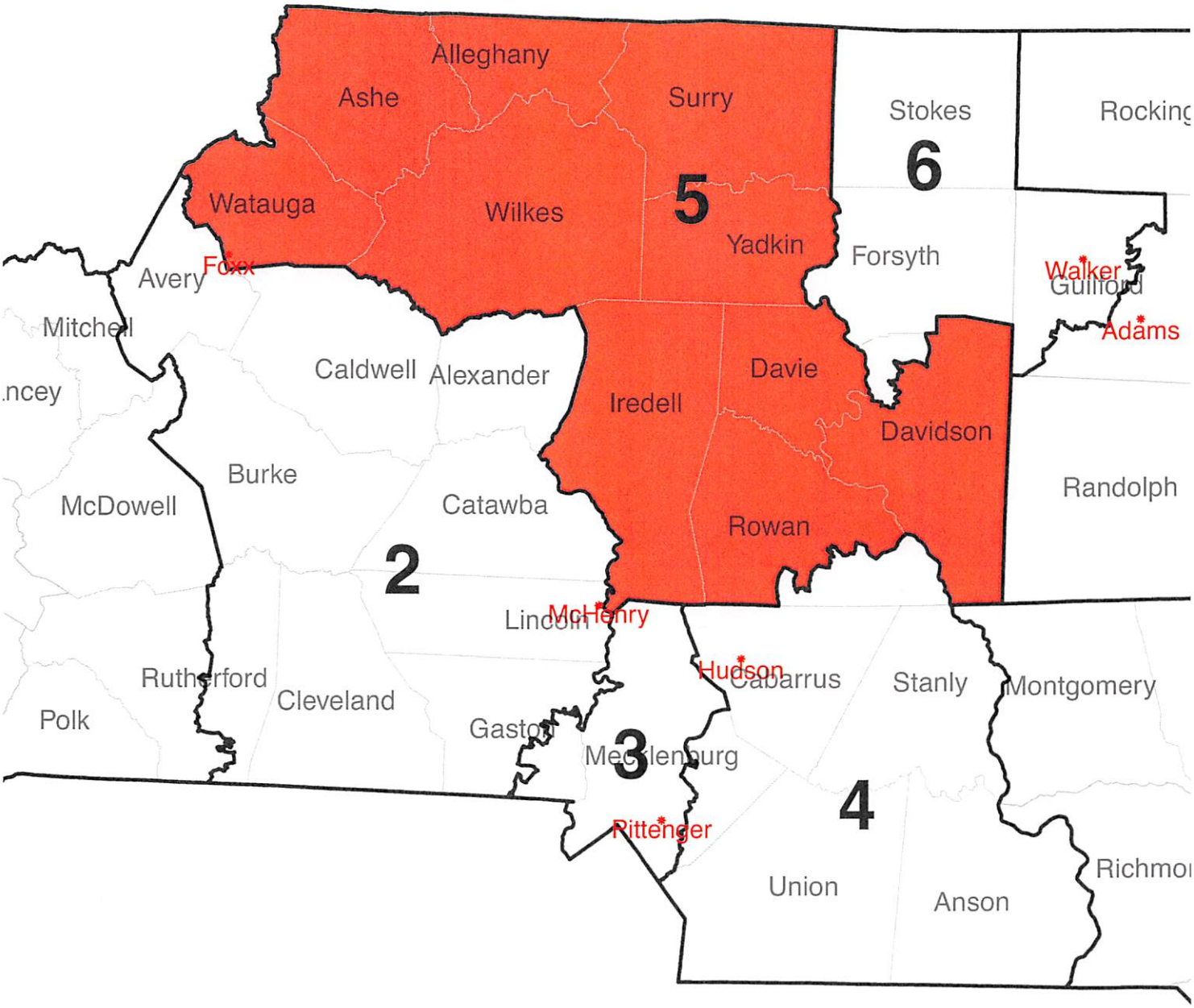
✳ PRECINCT: 086 (MECKLENBURG COUNTY)

△ PRECINCT: 020 (MECKLENBURG COUNTY)

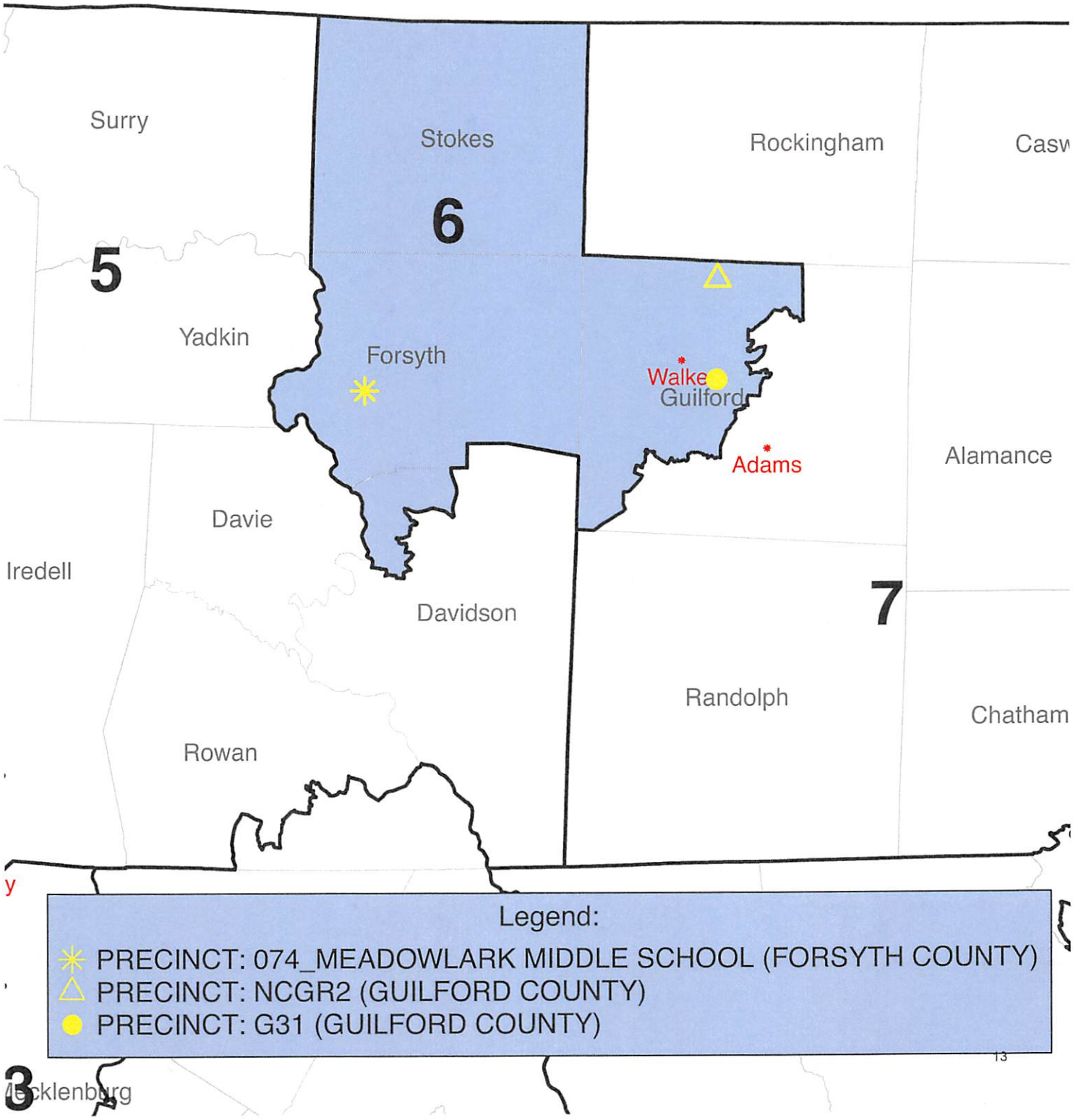
District 4 of Plan 2–297



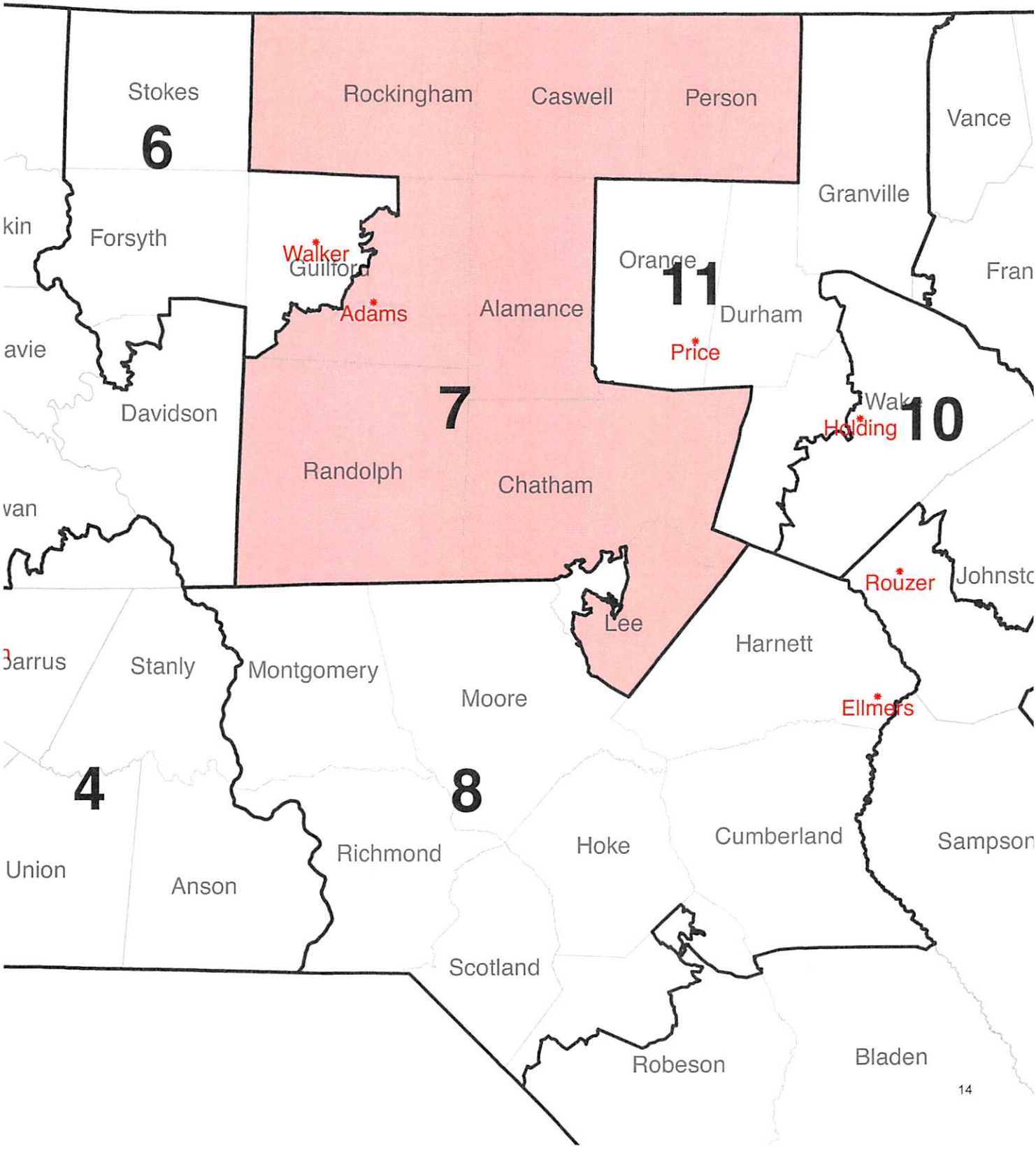
District 5 of Plan 2–297



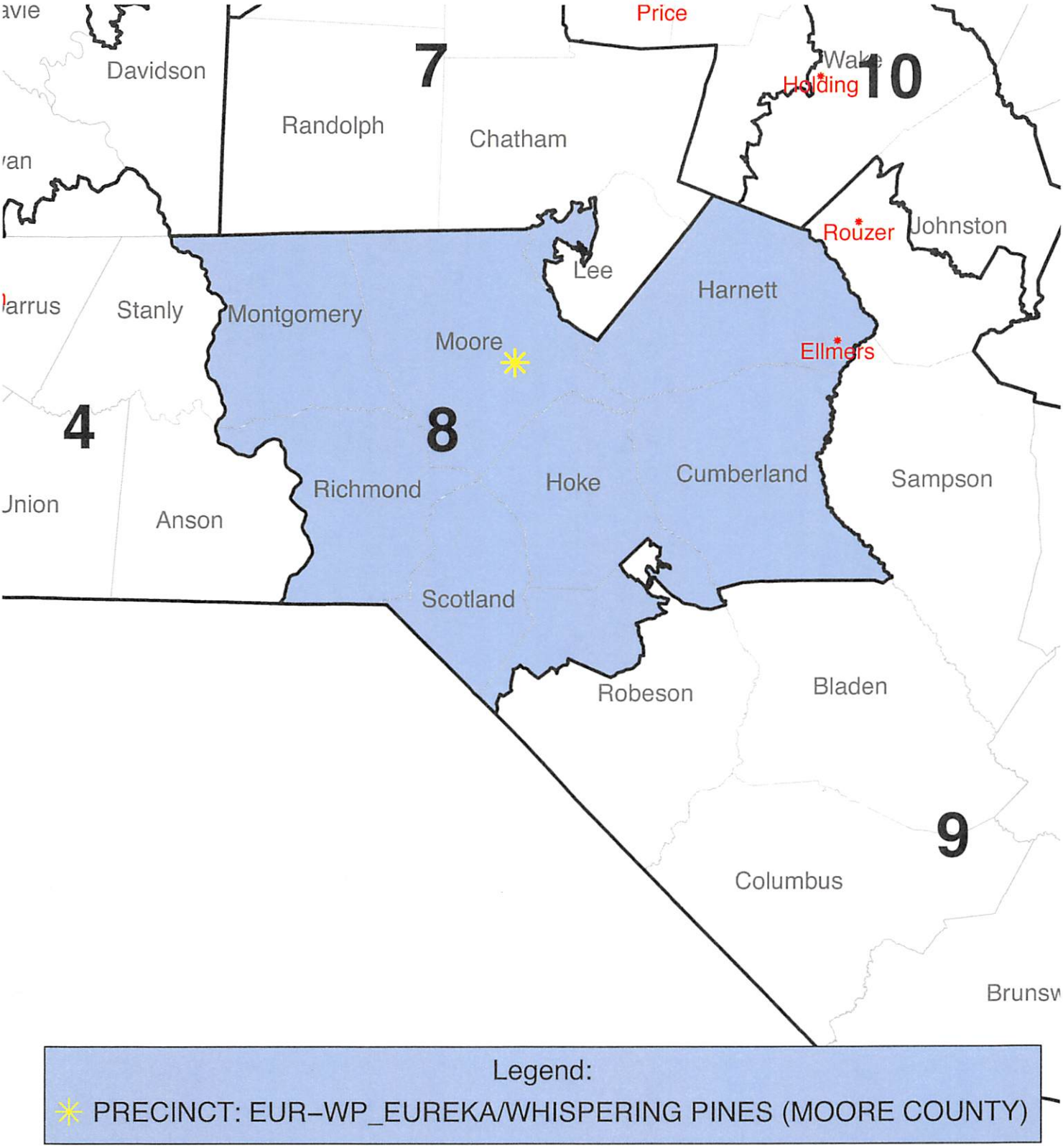
District 6 of Plan 2–297



District 7 of Plan 2–297



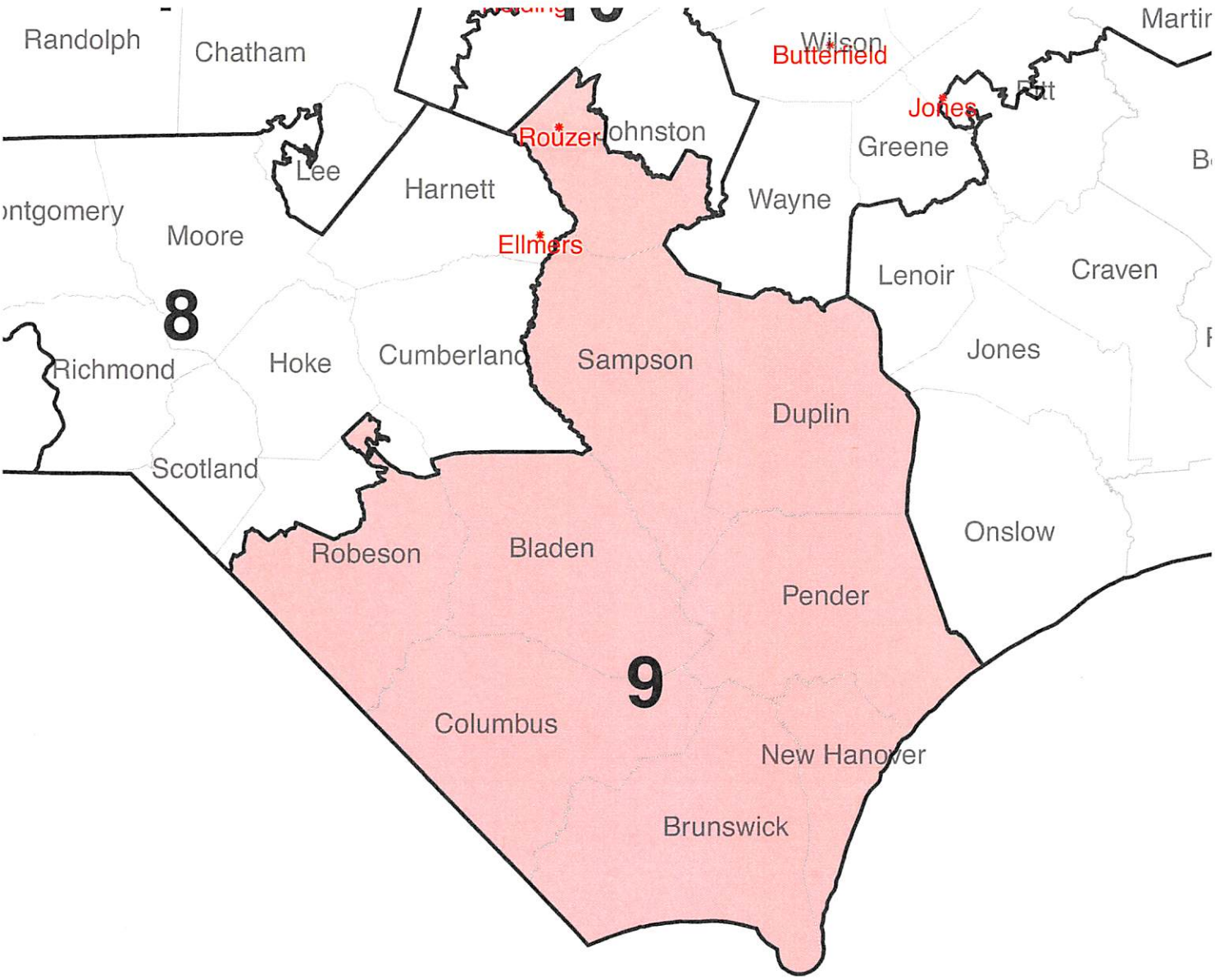
District 8 of Plan 2–297



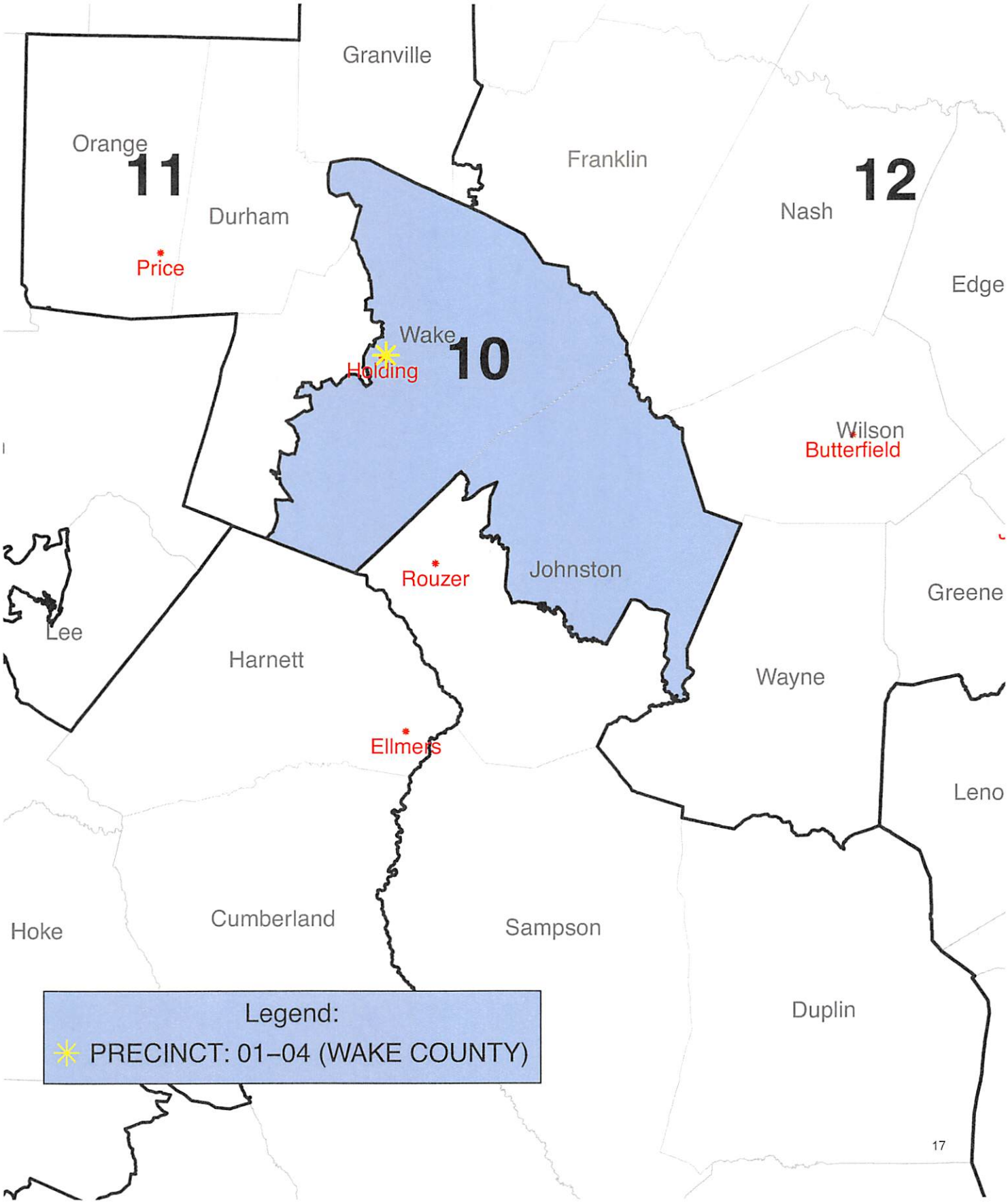
Legend:

✳ PRECINCT: EUR–WP_EUREKA/WHISPERING PINES (MOORE COUNTY)

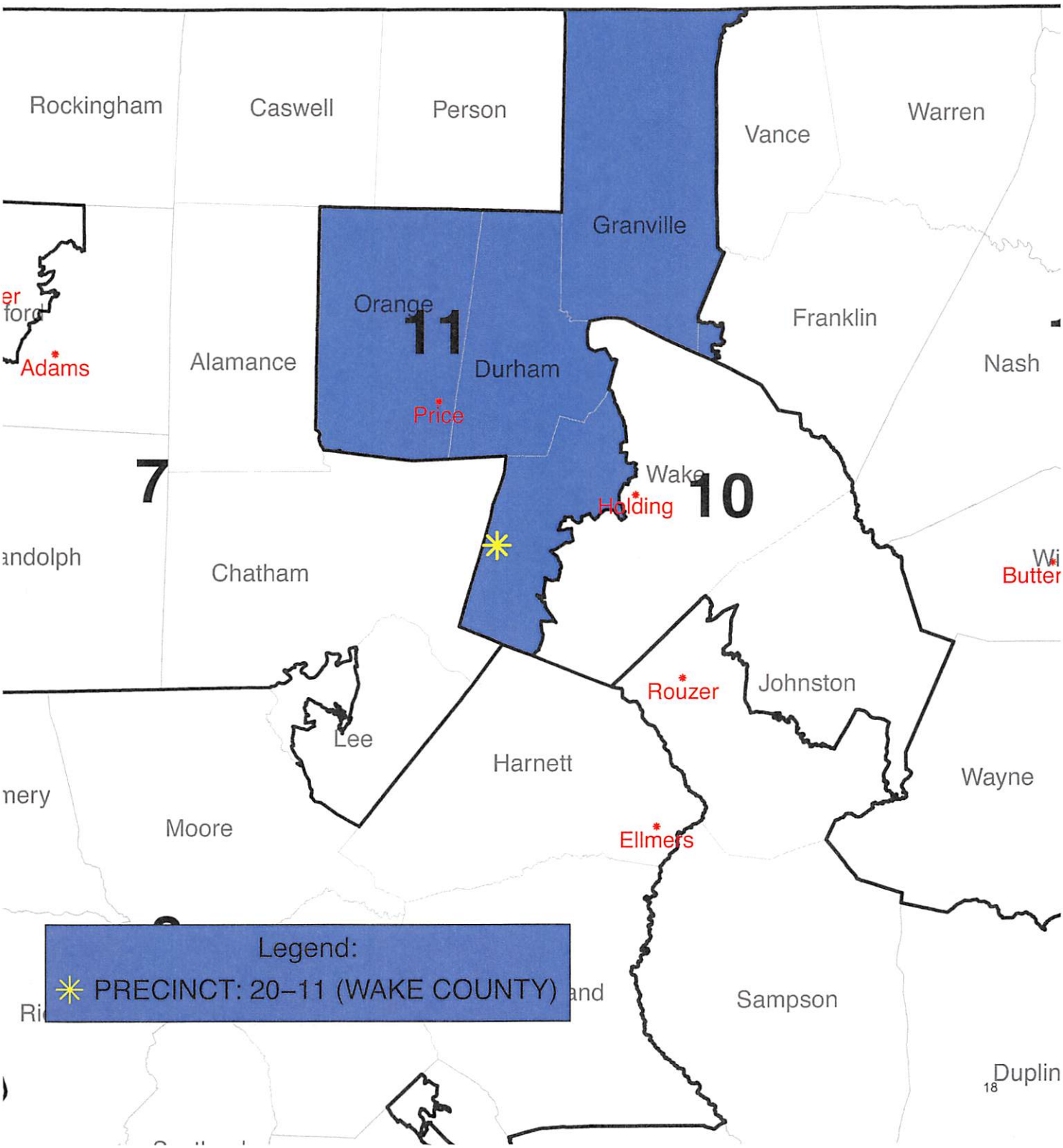
District 9 of Plan 2–297



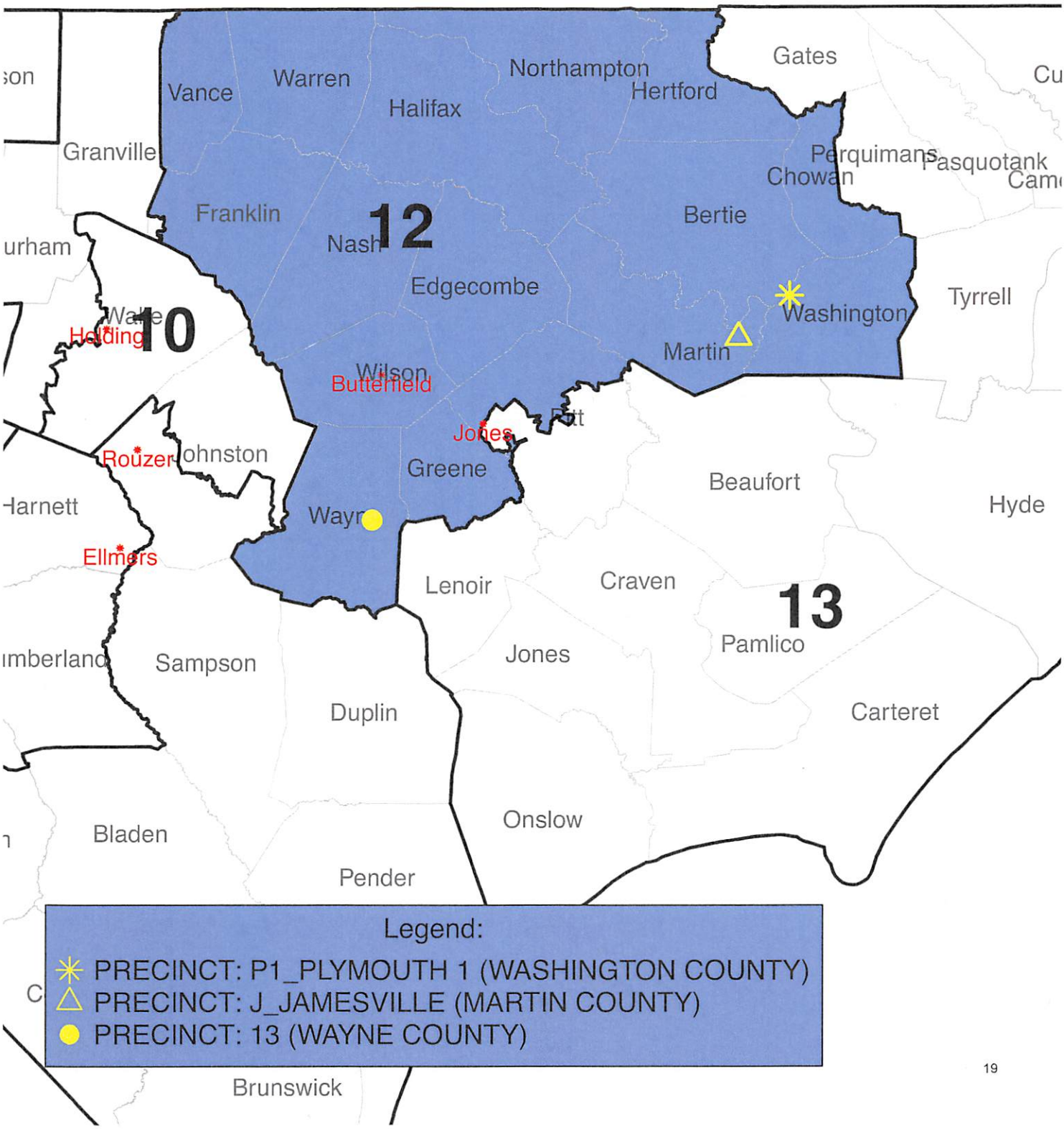
District 10 of Plan 2–297



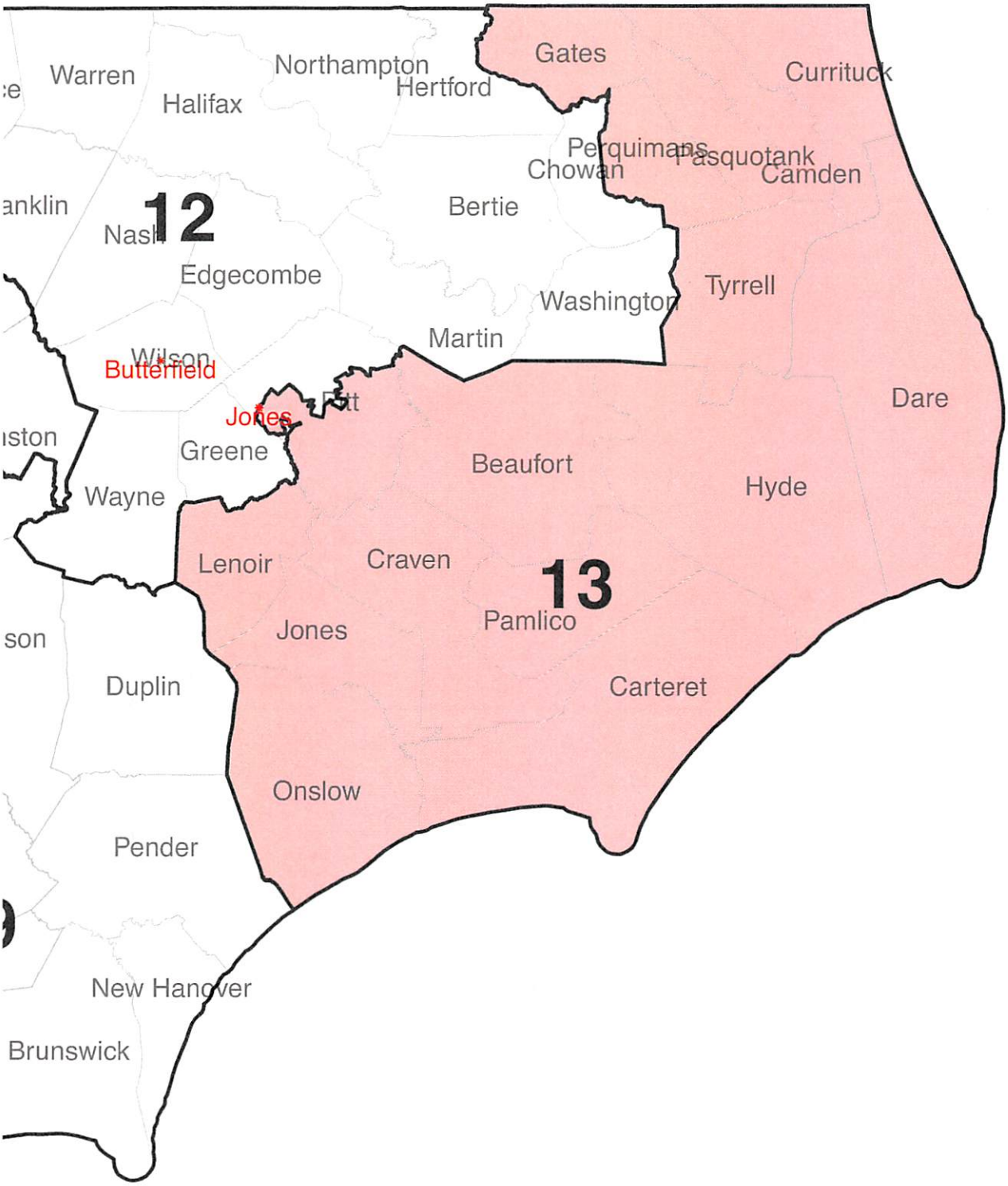
District 11 of Plan 2–297



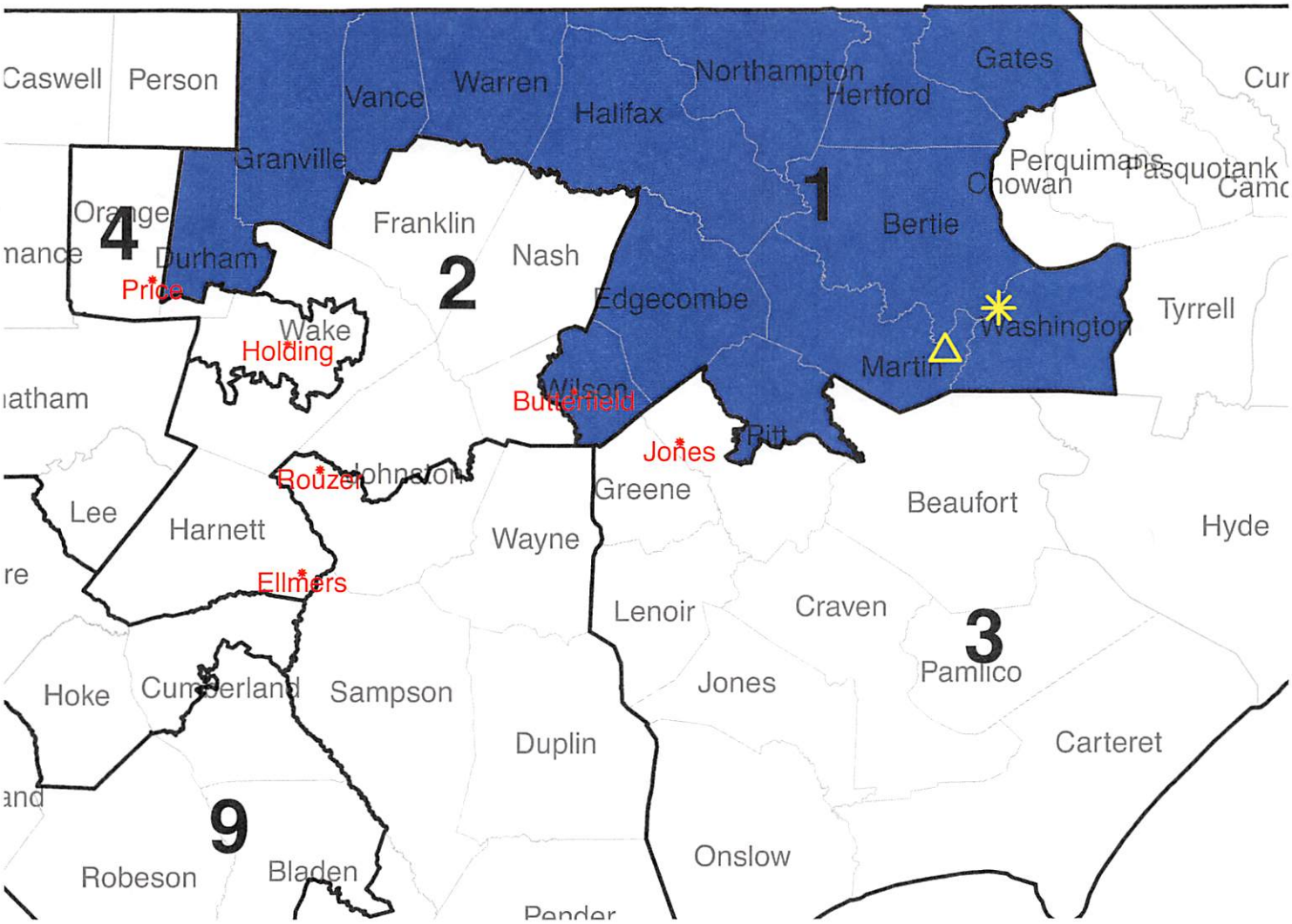
District 12 of Plan 2–297



District 13 of Plan 2–297



District 1 of the 2016 Enacted Plan

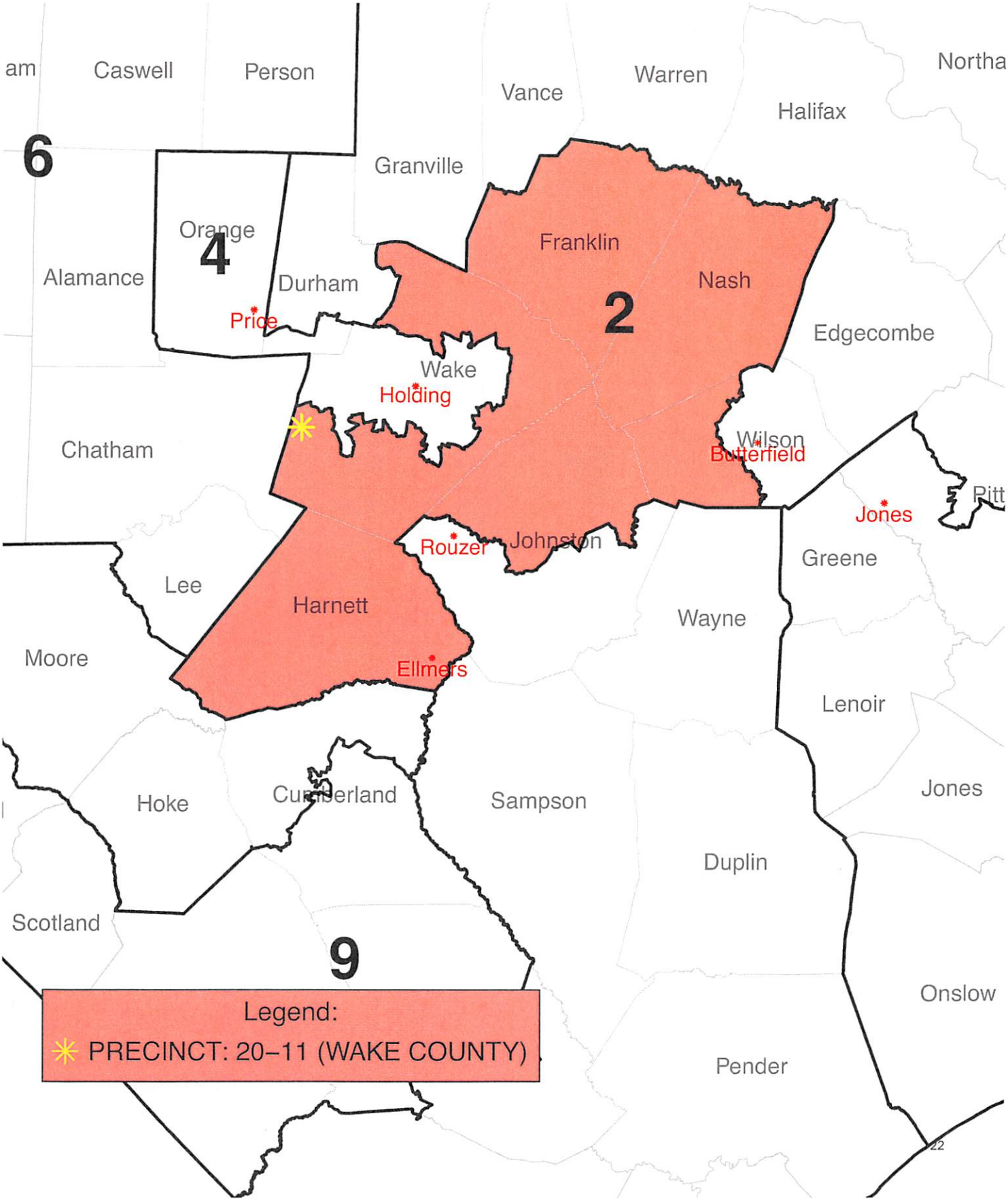


Legend:

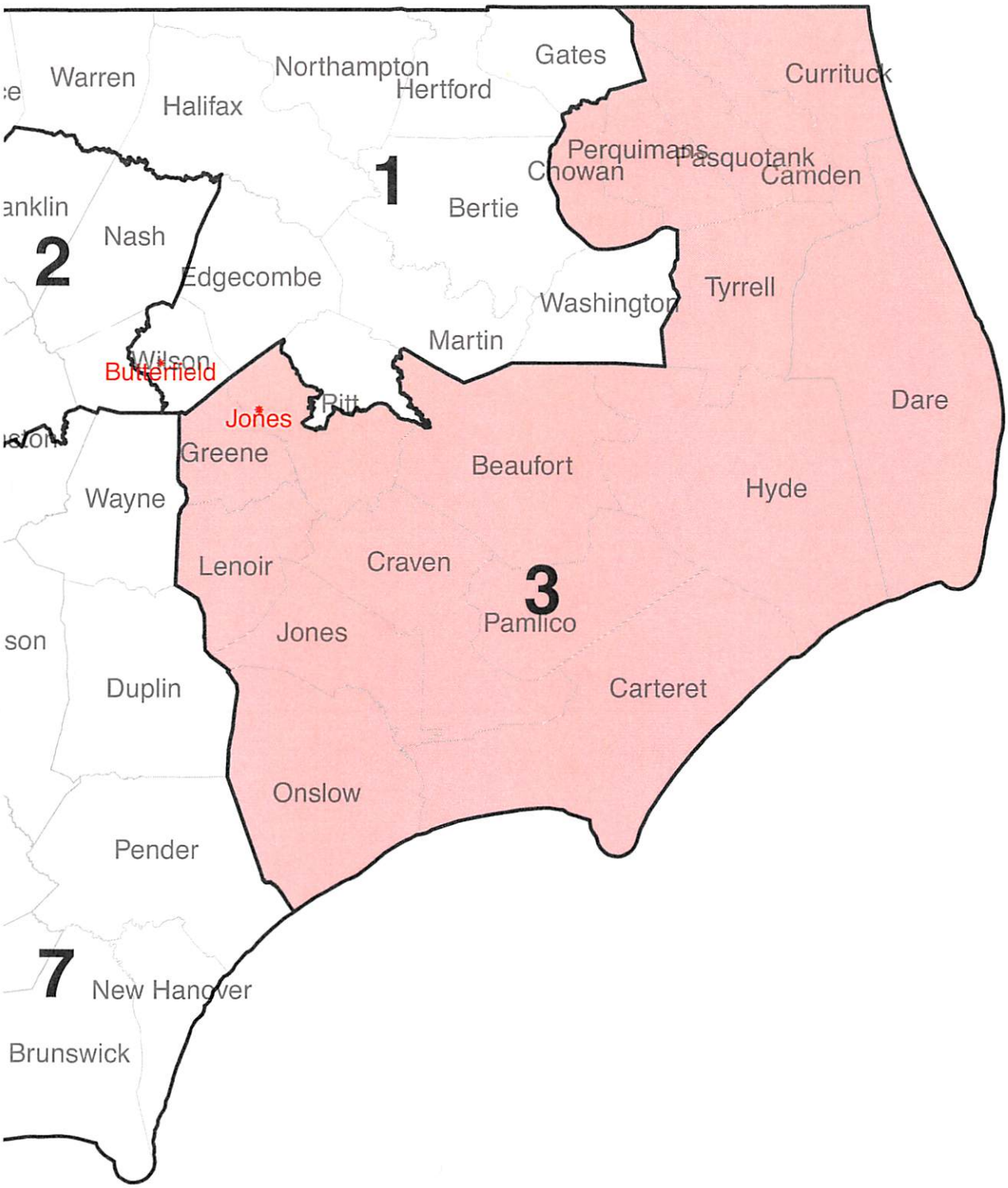
✳ PRECINCT: P1_PLYMOUTH 1 (WASHINGTON COUNTY)

△ PRECINCT: J_JAMESVILLE (MARTIN COUNTY)

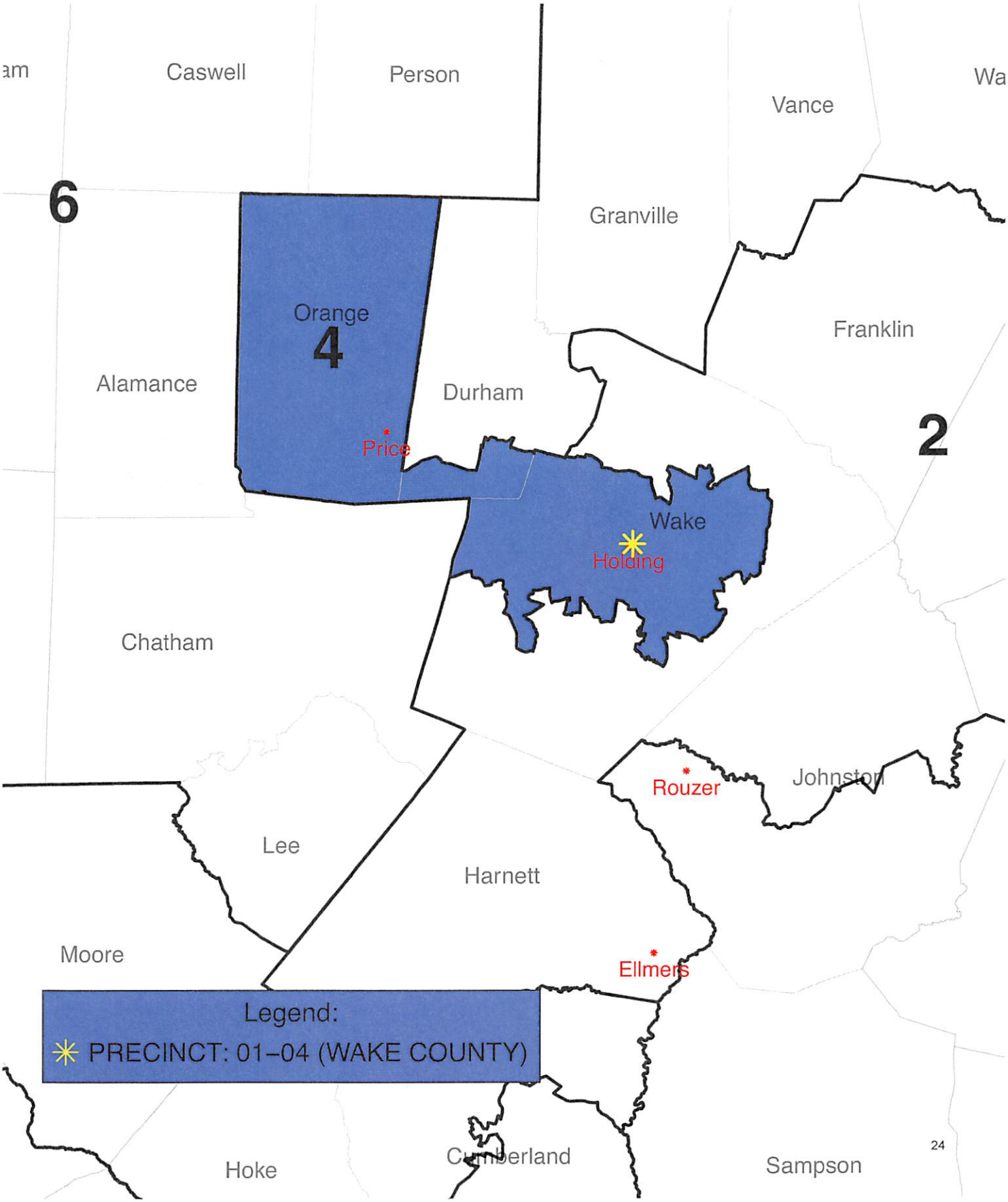
District 2 of the 2016 Enacted Plan



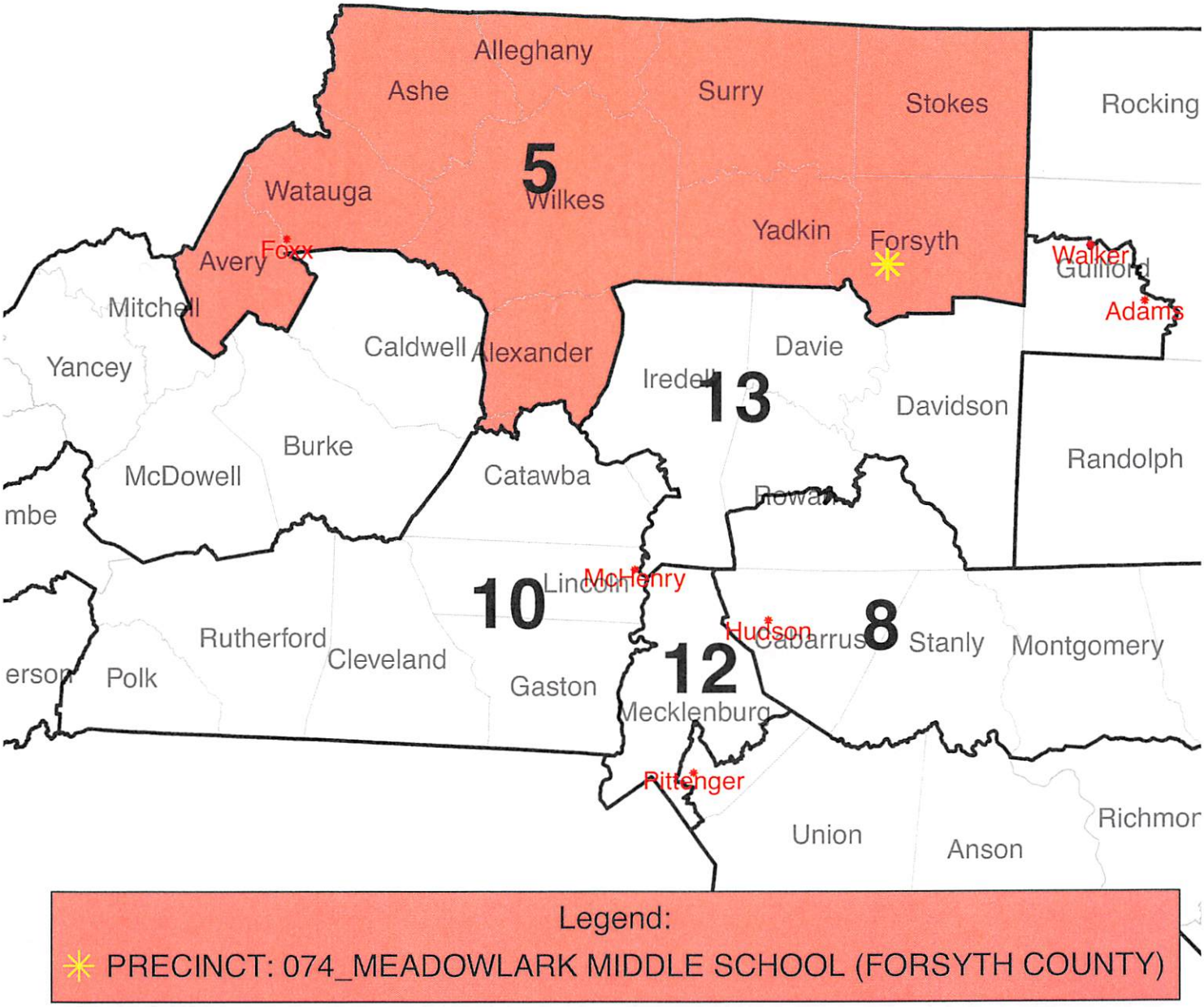
District 3 of the 2016 Enacted Plan



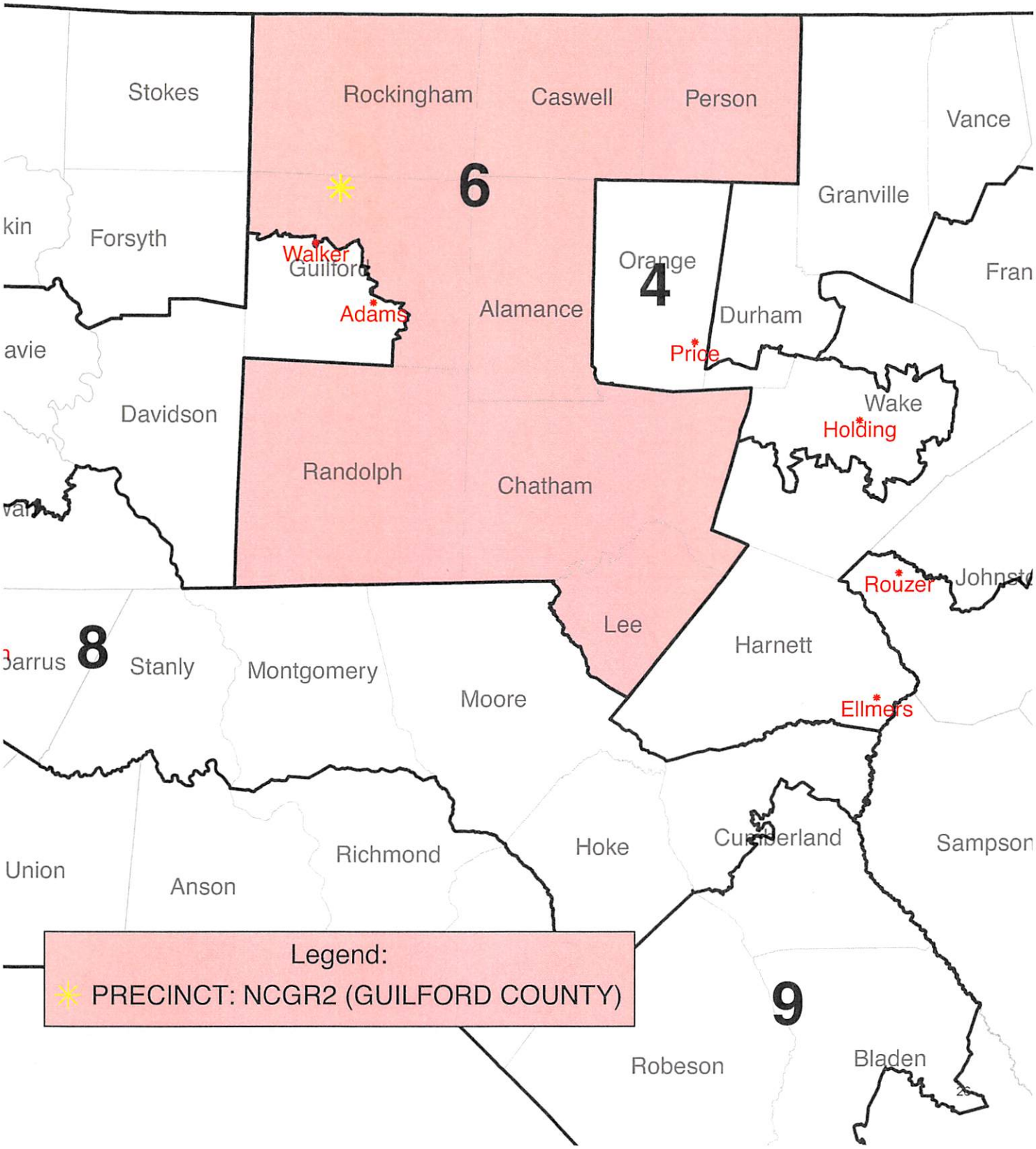
District 4 of the 2016 Enacted Plan



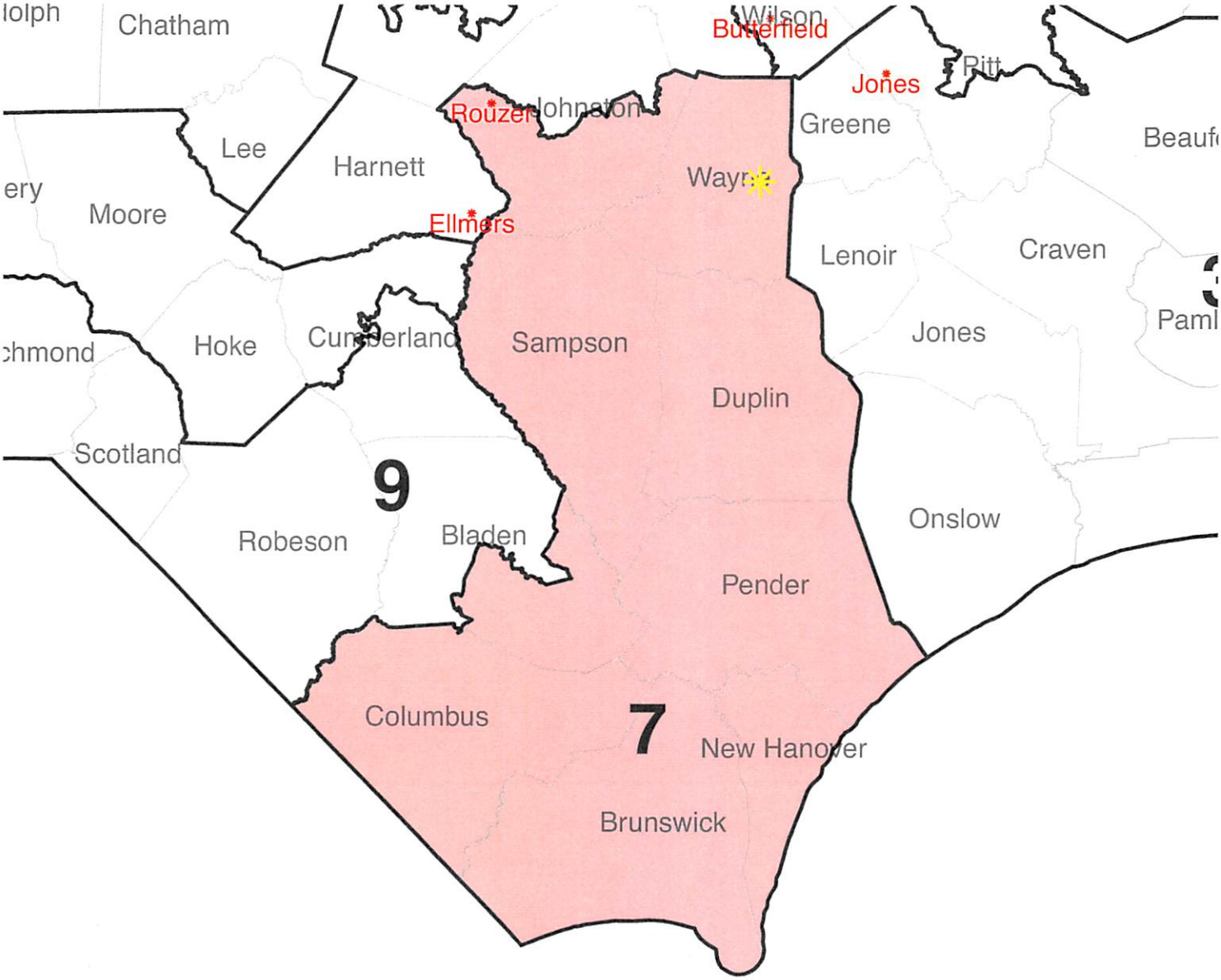
District 5 of the 2016 Enacted Plan



District 6 of the 2016 Enacted Plan

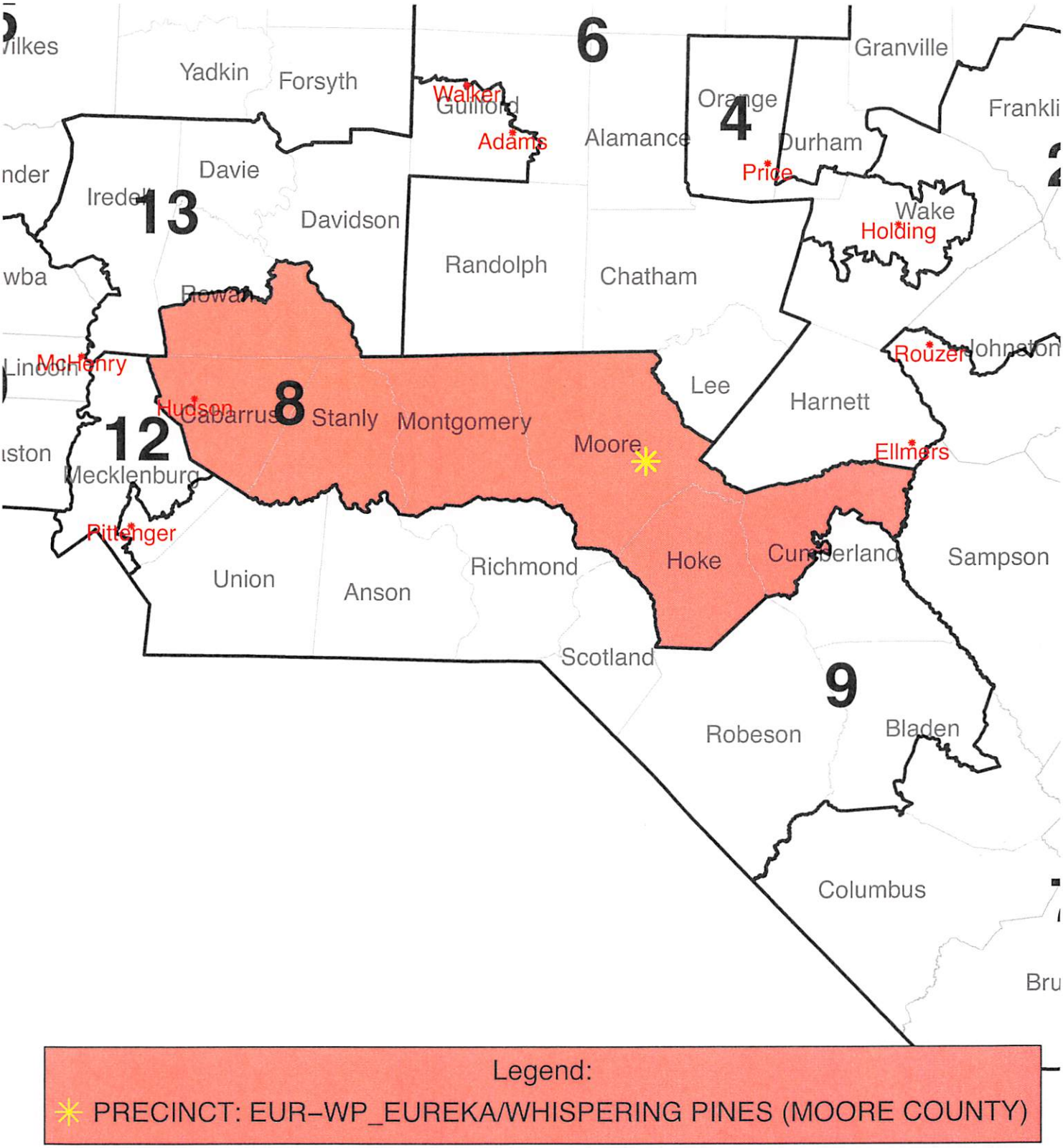


District 7 of the 2016 Enacted Plan



Legend:
✳ PRECINCT: 13 (WAYNE COUNTY)

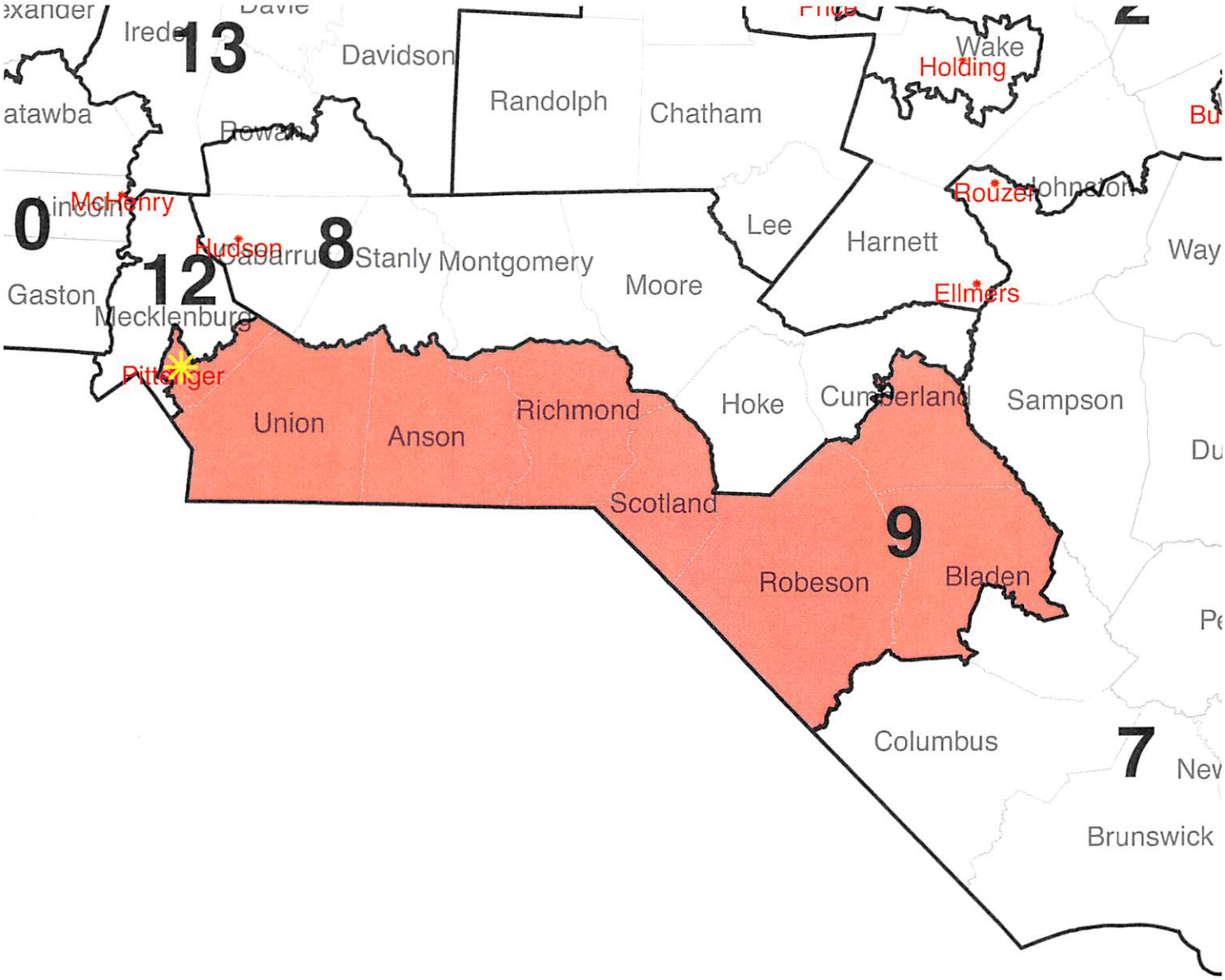
District 8 of the 2016 Enacted Plan



Legend:

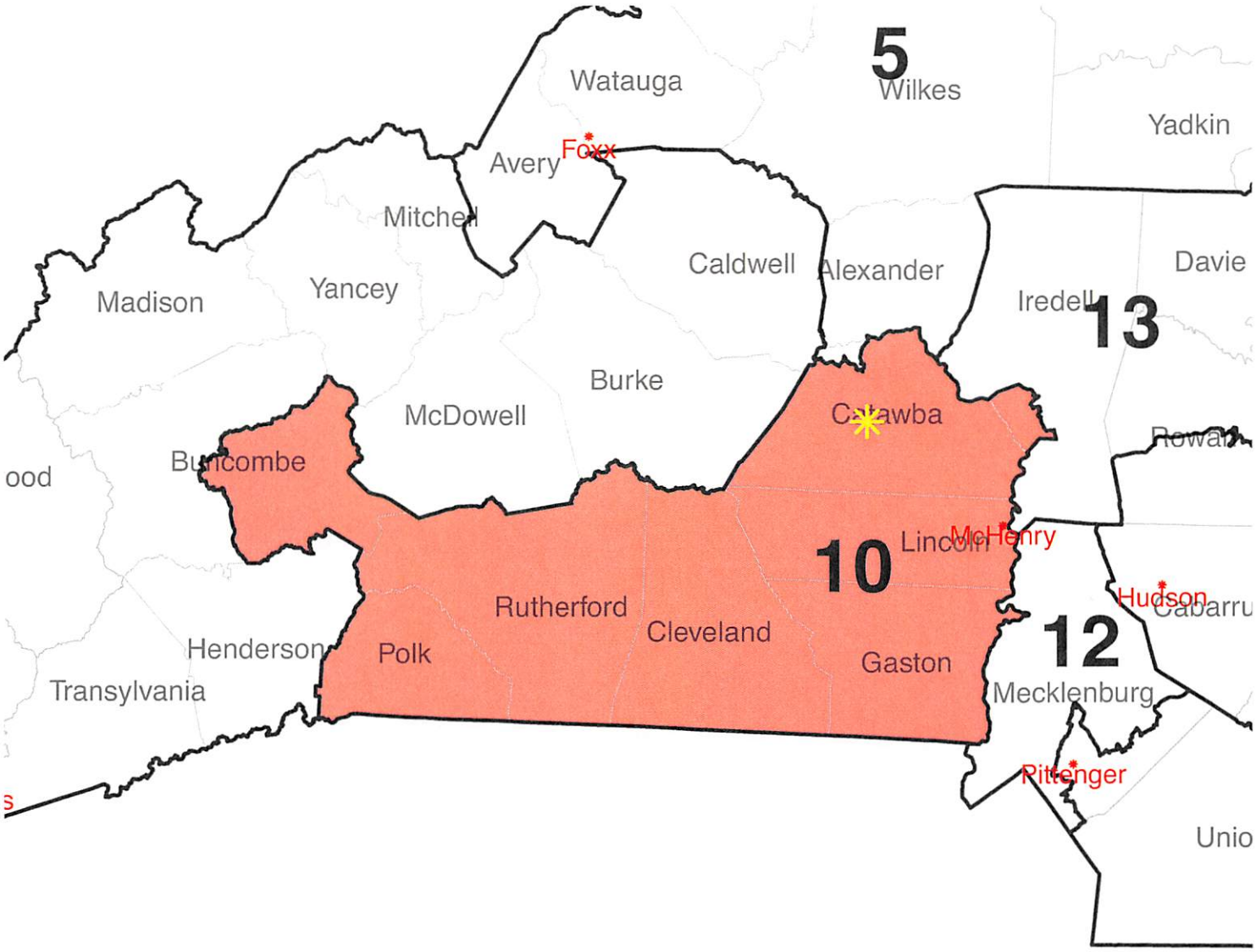
✳ PRECINCT: EUR–WP_EUREKA/WHISPERING PINES (MOORE COUNTY)

District 9 of the 2016 Enacted Plan



Legend:
✳ PRECINCT: 086 (MECKLENBURG COUNTY)

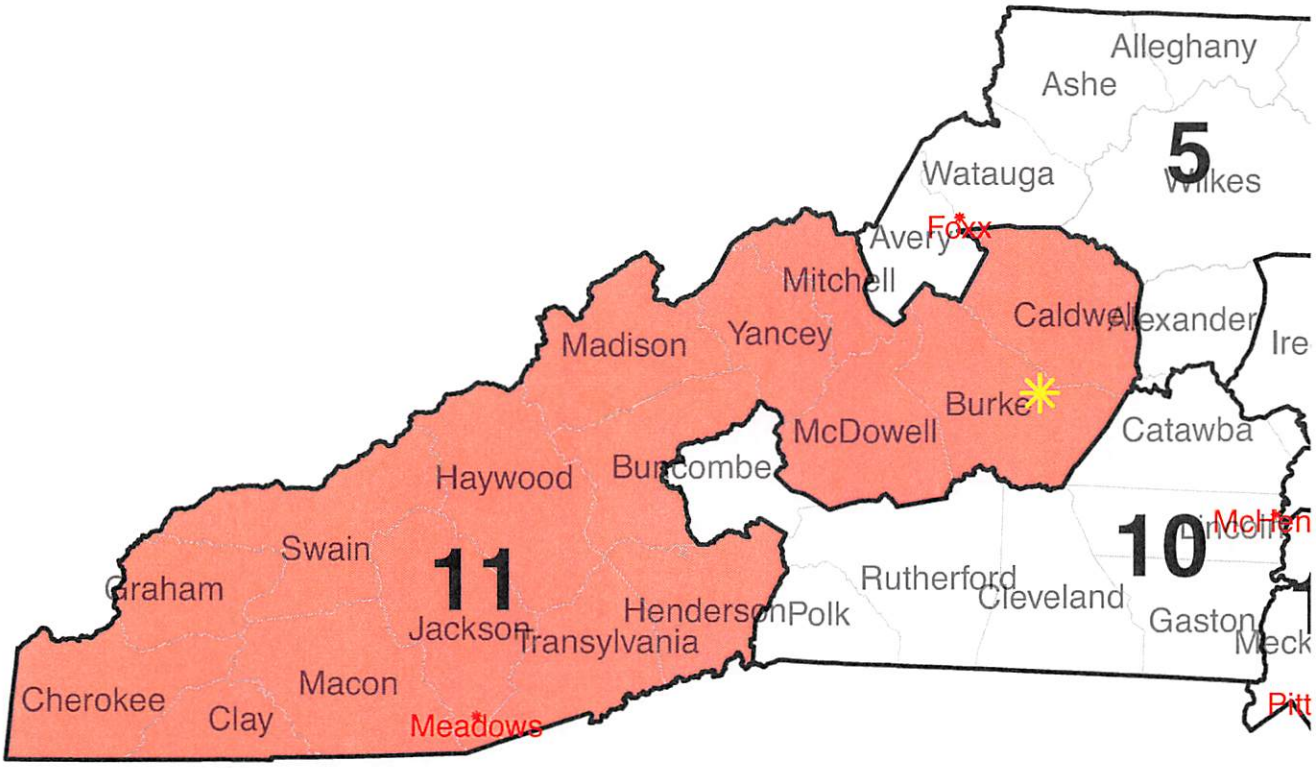
District 10 of the 2016 Enacted Plan



Legend:

✳ PRECINCT: 40_WEST NEWTON (CATAWBA COUNTY)

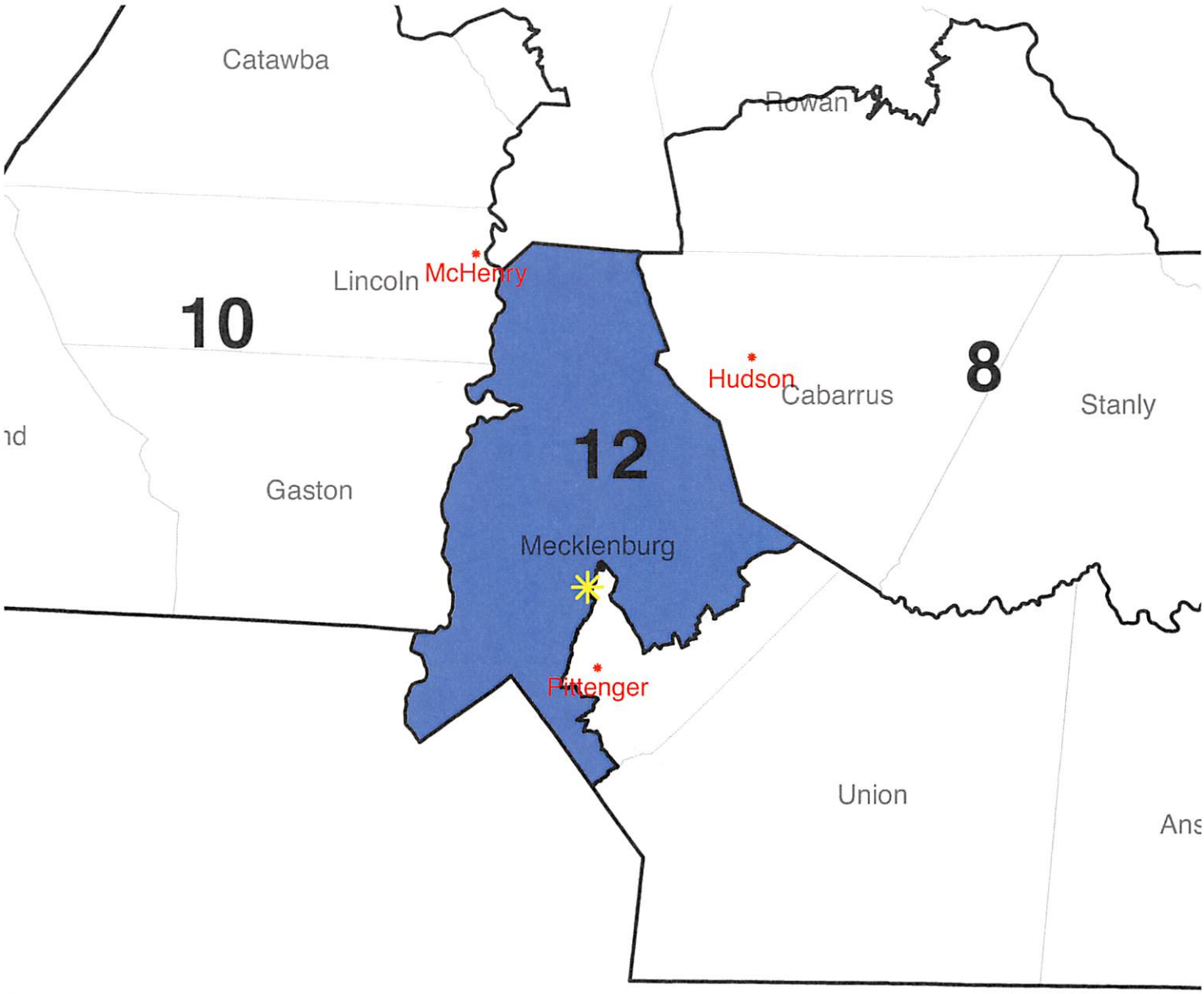
District 11 of the 2016 Enacted Plan



Legend:

✳ PRECINCT: 0001_DREXEL 01 (BURKE COUNTY)

District 12 of the 2016 Enacted Plan



Legend:
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District 13 of the 2016 Enacted Plan

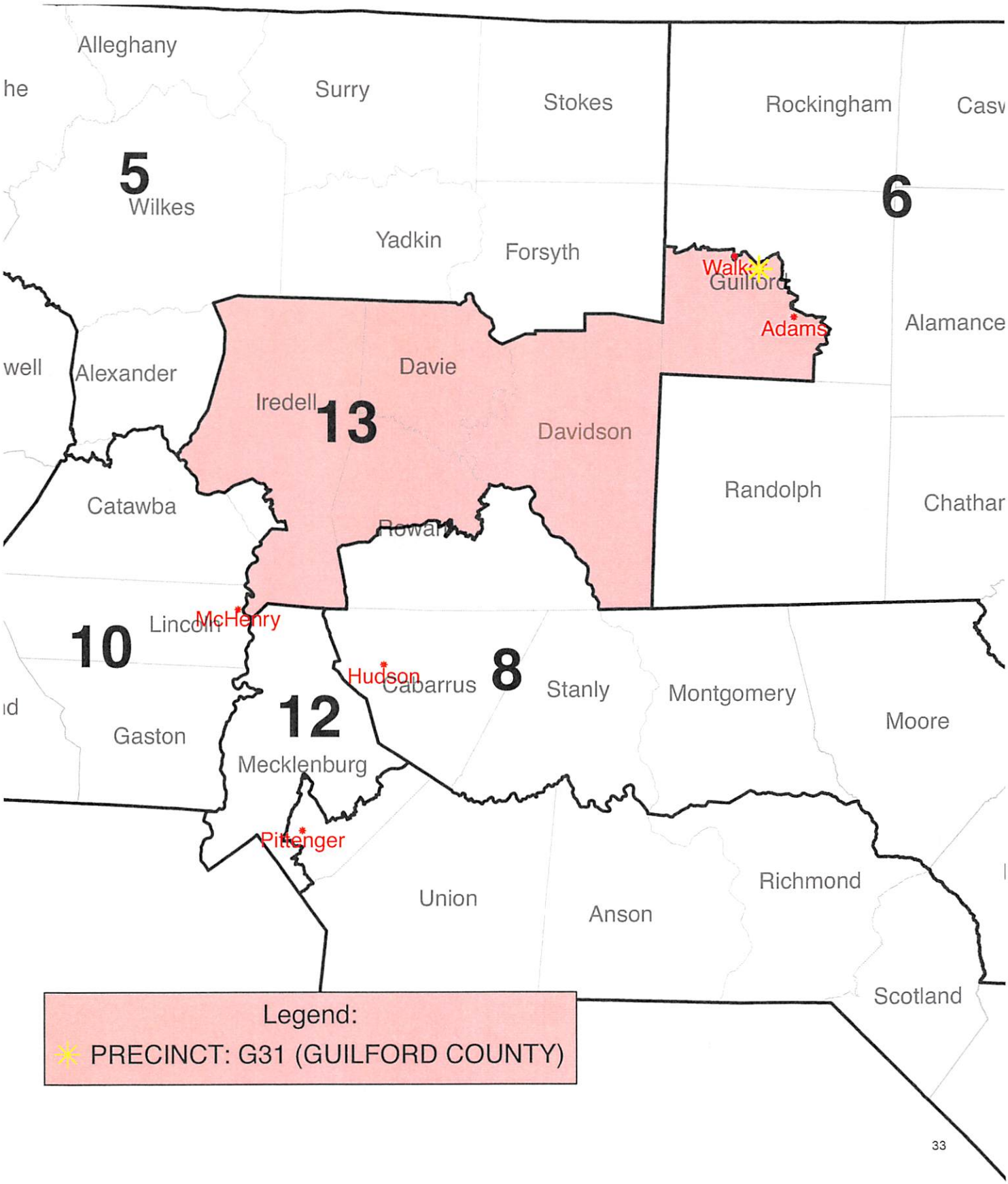


EXHIBIT 15
WIT: J. Chen
DATE: 7/30/18
DENISE MYERS BYRD

Declaration of Dr. Jowei Chen

July 11, 2018

In connection with my March 1, 2017 expert report in this litigation, I turned over all data concerning 1,000 North Carolina congressional maps created as Simulation Set 1, produced using a computer simulation process following only the non-partisan portions of the Adopted Criteria used for the 2016 Plan. I also turned over all data concerning 1,000 additional congressional maps created as Simulation Set 2, produced using a simulation process following the non-partisan portions of the Adopted Criteria and avoiding the pairing of any incumbents.

On July 4, 2018, Counsel for Common Cause plaintiffs gave to me a list of the fifteen individual plaintiffs in this litigation and their respective residential addresses. I geocoded these addresses, determining the latitude and longitude coordinates of each plaintiff's residence.

I used these geocoded addresses in the following ways. For each plaintiff, I first identified the district from the enacted 2016 Plan (SB 2) in which the plaintiff was placed. Next, I identified the district from each of the 1,000 plans in Simulation Set 1 and each of the 1,000 plans in Simulation Set 2 in which each plaintiff is located. I then compared the partisan composition of the enacted district and the 2,000 computer-simulated districts in which each plaintiff resides. I describe these comparisons below.

Figure 1 compares the partisanship of each plaintiff's district in the enacted 2016 Plan to the partisanship of the plaintiff's district in each of the 1,000 plans in Simulation Set 1. In this Figure, the partisanship of each district is measured as the Republican vote share of all votes cast in North Carolina's 20 statewide elections held during 2008-2014 (the elections specified by the Adopted Criteria). This Figure contains a separate row for each plaintiff; Plaintiffs Richard and Cheryl Lee Taft are listed on the same row because they reside at the same address. Within each row, the red star denotes the partisanship of the plaintiffs' district in the enacted 2016 Plan, while the 1,000 gray circles depict the partisanship of plaintiff's district in each of the 1,000 plans in Simulation Set 1. Hence, for example, the bottom row in Figure 1 illustrates that in the enacted 2016 Plan, Plaintiff Larry Hall resides in a district with a Republican vote share of 29.2%; by contrast, most of the Simulation Set 1 plans would have placed this plaintiff into a district with a Republican vote share of 35% to 40%.

Figure 2 also compares the partisanship of each plaintiff's enacted plan district to the partisanship of the plaintiff's district in each of the 1,000 Simulation Set 1 plans. However,

Figure 2 measures the partisanship of each district using Dr. Thomas Hofeller's seven-election formula (the "Hofeller formula"), which calculates the Republican share of votes cast in seven statewide elections held during 2008-2014.

Next, Figure 3 compares the partisanship of each plaintiff's district in the enacted 2016 Plan to the partisanship of the plaintiff's district in each of the 1,000 plans in Simulation Set 2, with district partisanship measured as the Republican vote share of all votes cast in North Carolina's 20 statewide elections held during 2008-2014. Finally, Figure 4 again compares the partisanship of each plaintiff's enacted plan district to the partisanship of the plaintiff's district in each of the 1,000 Simulation Set 2 plans. However, Figure 4 measures the partisanship of each district using the Hofeller formula.

Figure 1:

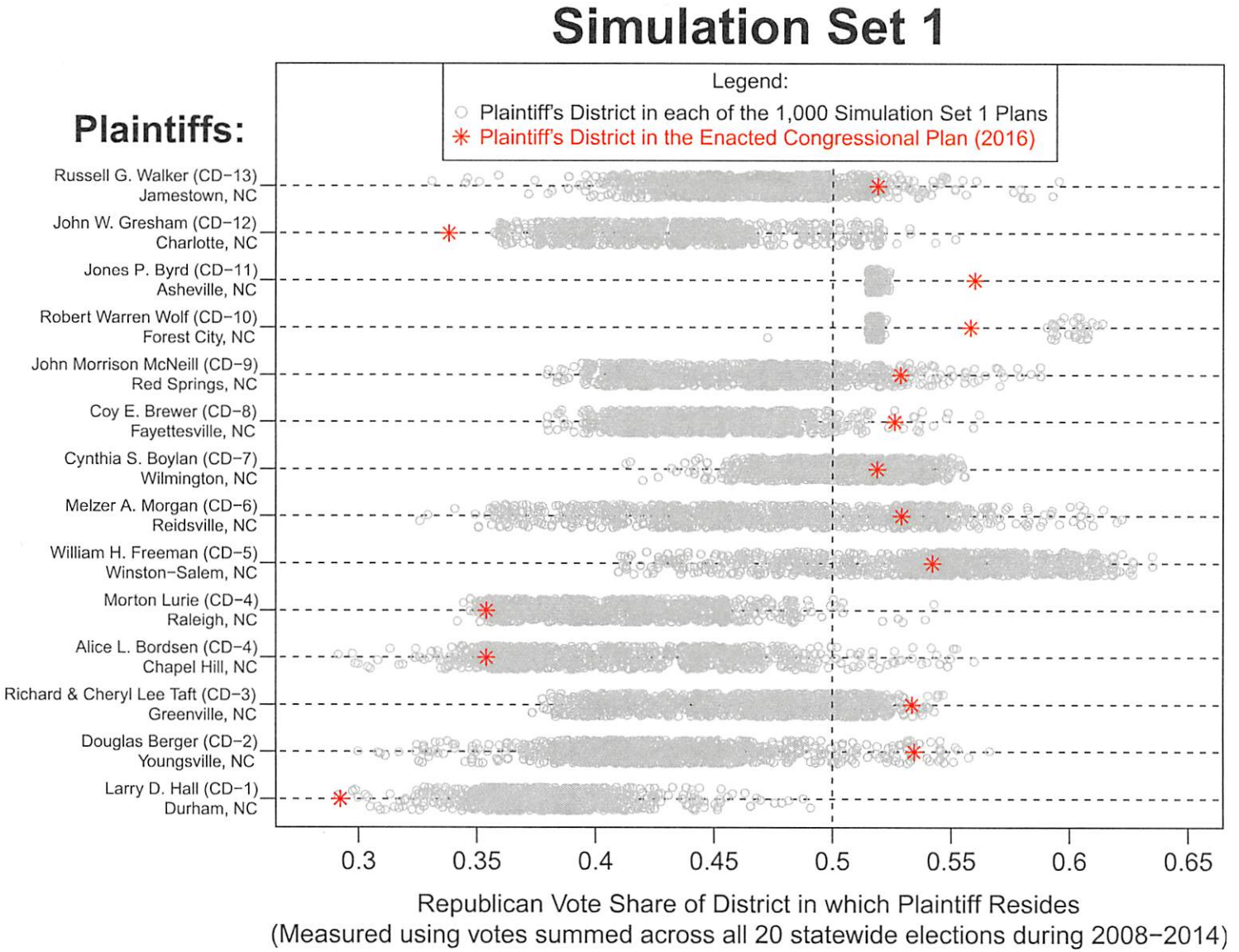

Simulation Set 1
Legend:
Plaintiff's District in each of the 1,000 Simulation Set 1 Plans
Plaintiff's District in the Enacted Congressional Plan (2016)
Plaintiffs:
Russell G. Walker (CD−13)
Jamestown, NC
John W. Gresham (CD−12)
Charlotte, NC
Jones P. Byrd (CD−11)
Asheville, NC
Robert Warren Wolf (CD−10)
Forest City, NC
John Morrison McNeill (CD−9)
Red Springs, NC
Coy E. Brewer (CD−8)
Fayettesville, NC
Cynthia S. Boylan (CD−7)
Wilmington, NC
Melzer A. Morgan (CD−6)
Reidsville, NC
William H. Freeman (CD−5)
Winston−Salem, NC
Morton Lurie (CD−4)
Raleigh, NC
Alice L. Bordsen (CD−4)
Chapel Hill, NC
Richard & Cheryl Lee Taft (CD−3)
Greenville, NC
Douglas Berger (CD−2)
Youngsville, NC
Larry D. Hall (CD−1)
Durham, NC
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
Republican Vote Share of District in which Plaintiff Resides
(Measured using votes summed across all 20 statewide elections during 2008−2014)

Figure 2:

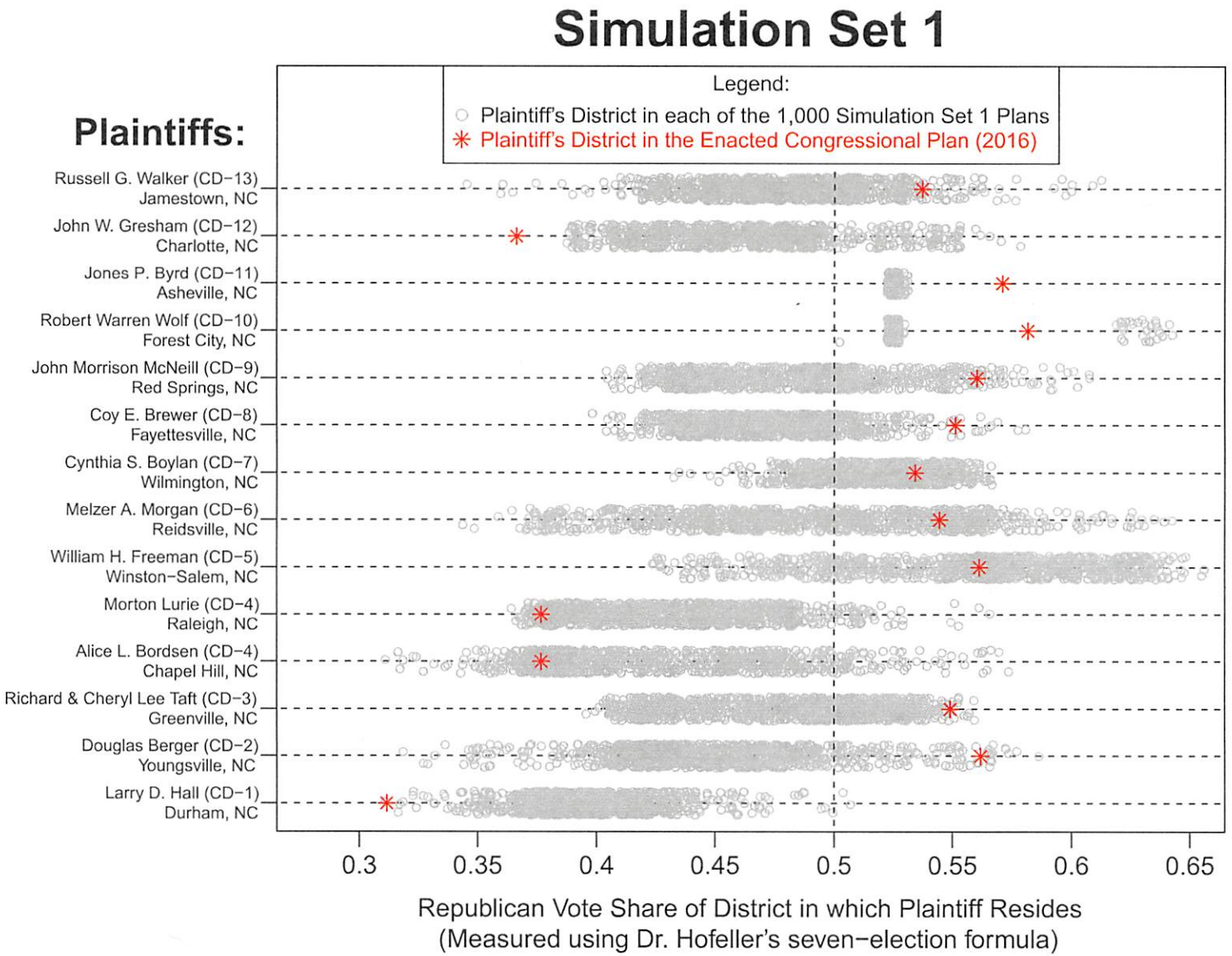

Simulation Set 1
Legend:
Plaintiff's District in each of the 1,000 Simulation Set 1 Plans
Plaintiff's District in the Enacted Congressional Plan (2016)
Plaintiffs:
Russell G. Walker (CD−13) Jamestown, NC
John W. Gresham (CD−12) Charlotte, NC
Jones P. Byrd (CD−11) Asheville, NC
Robert Warren Wolf (CD−10) Forest City, NC
John Morrison McNeill (CD−9) Red Springs, NC
Coy E. Brewer (CD−8) Fayettesville, NC
Cynthia S. Boylan (CD−7) Wilmington, NC
Melzer A. Morgan (CD−6) Reidsville, NC
William H. Freeman (CD−5) Winston−Salem, NC
Morton Lurie (CD−4) Raleigh, NC
Alice L. Bordsen (CD−4) Chapel Hill, NC
Richard & Cheryl Lee Taft (CD−3) Greenville, NC
Douglas Berger (CD−2) Youngsville, NC
Larry D. Hall (CD−1) Durham, NC
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
Republican Vote Share of District in which Plaintiff Resides
(Measured using Dr. Hofeller's seven−election formula)

Figure 3:

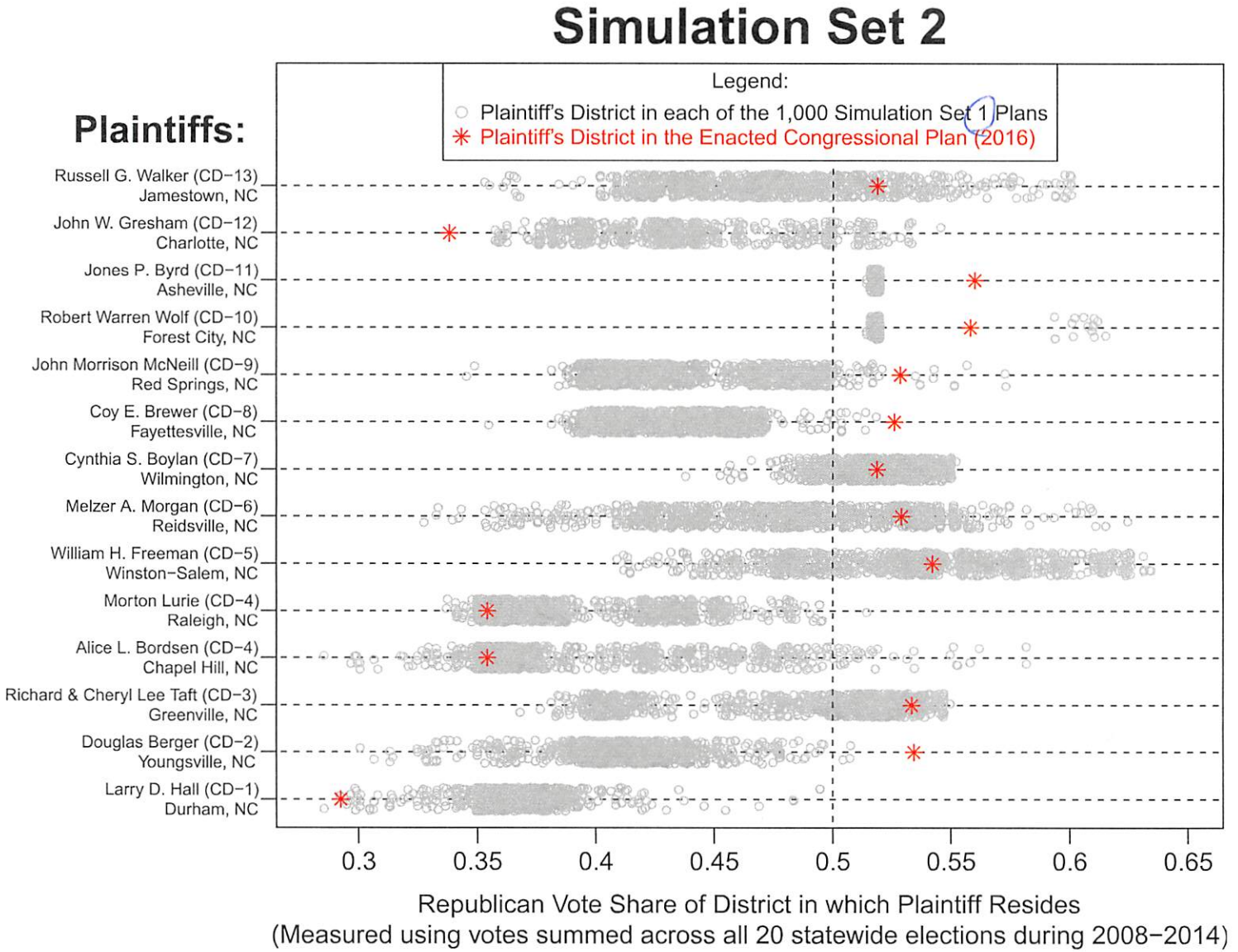
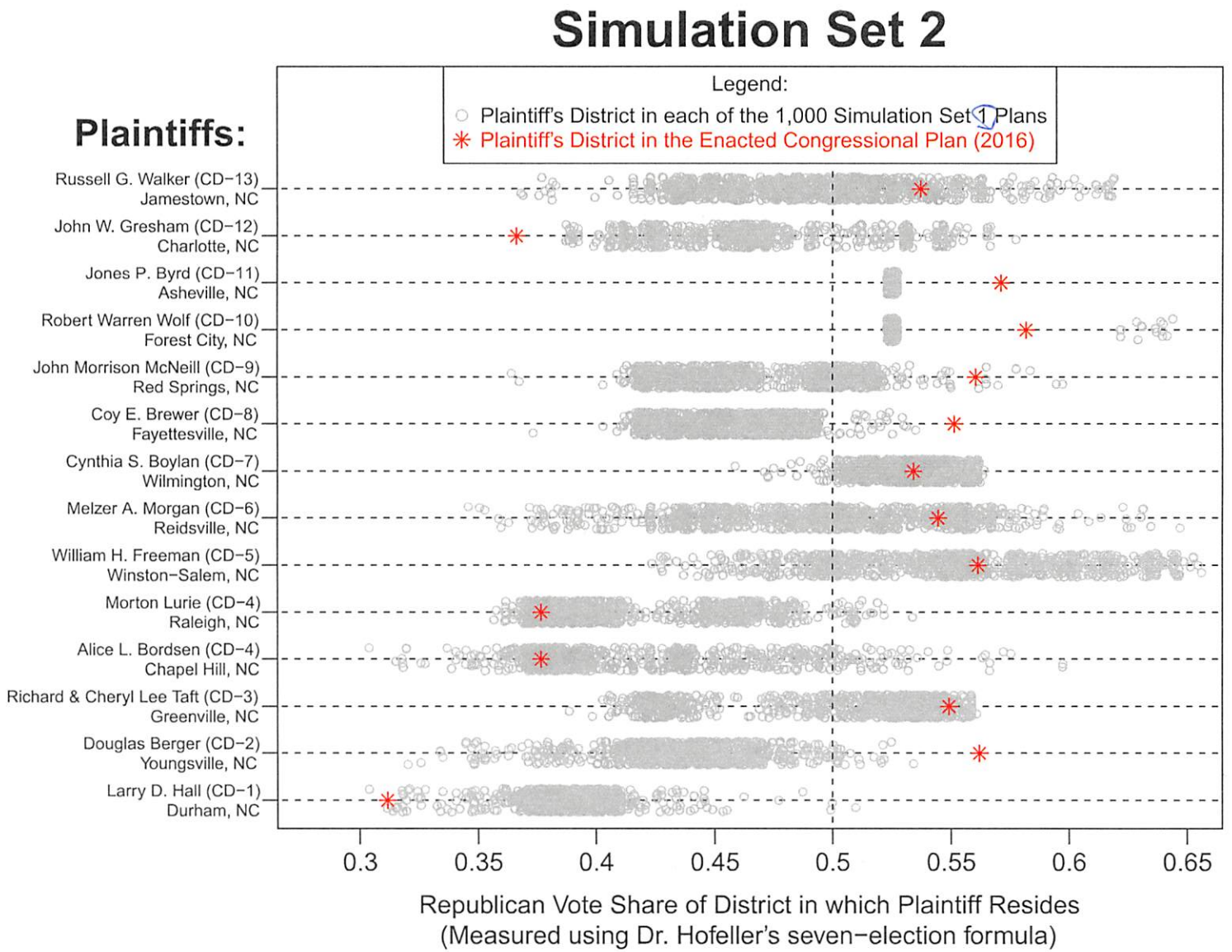

Simulation Set 2
Legend:
Plaintiff's District in each of the 1,000 Simulation Set 1 Plans
Plaintiff's District in the Enacted Congressional Plan (2016)
Plaintiffs:
Russell G. Walker (CD−13) Jamestown, NC
John W. Gresham (CD−12) Charlotte, NC
Jones P. Byrd (CD−11) Asheville, NC
Robert Warren Wolf (CD−10) Forest City, NC
John Morrison McNeill (CD−9) Red Springs, NC
Coy E. Brewer (CD−8) Fayettesville, NC
Cynthia S. Boylan (CD−7) Wilmington, NC
Melzer A. Morgan (CD−6) Reidsville, NC
William H. Freeman (CD−5) Winston−Salem, NC
Morton Lurie (CD−4) Raleigh, NC
Alice L. Bordsen (CD−4) Chapel Hill, NC
Richard & Cheryl Lee Taft (CD−3) Greenville, NC
Douglas Berger (CD−2) Youngsville, NC
Larry D. Hall (CD−1) Durham, NC
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
Republican Vote Share of District in which Plaintiff Resides
(Measured using votes summed across all 20 statewide elections during 2008−2014)

Figure 4:


Simulation Set 2
Legend:
Plaintiff's District in each of the 1,000 Simulation Set 1 Plans
Plaintiff's District in the Enacted Congressional Plan (2016)
Plaintiffs:
Russell G. Walker (CD−13) Jamestown, NC
John W. Gresham (CD−12) Charlotte, NC
Jones P. Byrd (CD−11) Asheville, NC
Robert Warren Wolf (CD−10) Forest City, NC
John Morrison McNeill (CD−9) Red Springs, NC
Coy E. Brewer (CD−8) Fayettesville, NC
Cynthia S. Boylan (CD−7) Wilmington, NC
Melzer A. Morgan (CD−6) Reidsville, NC
William H. Freeman (CD−5) Winston−Salem, NC
Morton Lurie (CD−4) Raleigh, NC
Alice L. Bordsen (CD−4) Chapel Hill, NC
Richard & Cheryl Lee Taft (CD−3) Greenville, NC
Douglas Berger (CD−2) Youngsville, NC
Larry D. Hall (CD−1) Durham, NC
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
Republican Vote Share of District in which Plaintiff Resides
(Measured using Dr. Hofeller's seven−election formula)

Comparison of Enacted and Simulated Districts for Individual Plaintiffs:

Plaintiff Larry Hall resides in Congressional District 1 of the Enacted 2016 Plan, and this enacted district has a 31.2% Republican vote share, as measured by the Hofeller formula. In Simulation Set 1, 999 of 1,000 simulated plans (99.9%) placed this plaintiff into a less Democratic-leaning district, as measured by the Hofeller formula. In Simulation Set 2, 998 of 1,000 simulated plans (99.8%) placed this plaintiff into a less Democratic-leaning district, as measured by the Hofeller formula.

Plaintiff Douglas Berger resides in Congressional District 2 of the Enacted 2016 Plan, and this enacted district has a 56.2% Republican vote share, as measured by the Hofeller formula. In Simulation Set 1, 986 of 1,000 simulated plans (98.6%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula. In Simulation Set 2, all 1,000 simulated plans (100%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula.

Plaintiffs Richard and Cheryl Taft reside in Congressional District 3 of the Enacted 2016 Plan, and this enacted district has a 54.9% Republican vote share, as measured by the Hofeller formula. In Simulation Set 1, 988 of 1,000 simulated plans (98.8%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula. In Simulation Set 2, 938 of 1,000 simulated plans (93.8%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula.

Plaintiff Alice Bordsen resides in Congressional District 4 of the Enacted 2016 Plan, and this enacted district has a 37.7% Republican vote share, as measured by the Hofeller formula. In Simulation Set 1, 829 of 1,000 simulated plans (82.9%) placed this plaintiff into a less Democratic-leaning district, as measured by the Hofeller formula. In Simulation Set 2, 770 of 1,000 simulated plans (77.0%) placed this plaintiff into a less Democratic-leaning district, as measured by the Hofeller formula.

Plaintiff Morton Lurie resides in Congressional District 4 of the Enacted 2016 Plan, and this enacted district has a 37.7% Republican vote share, as measured by the Hofeller formula. In Simulation Set 1, 959 of 1,000 simulated plans (95.9%) placed this plaintiff into a less Democratic-leaning district, as measured by the Hofeller formula. In Simulation Set 2, 864 of 1,000 simulated plans (86.4%) placed this plaintiff into a less Democratic-leaning district, as measured by the Hofeller formula.

Plaintiff William Freeman resides in Congressional District 5 of the Enacted 2016 Plan, and this enacted district has a 56.1% Republican vote share, as measured by the Hofeller formula. In Simulation Set 1, 425 of 1,000 simulated plans (42.5%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula. In Simulation Set 2, 606 of 1,000 simulated plans (60.6%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula.

Plaintiff Melzer Morgan resides in Congressional District 6 of the Enacted 2016 Plan, and this enacted district has a 54.5% Republican vote share, as measured by the Hofeller formula. In Simulation Set 1, 768 of 1,000 simulated plans (76.8%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula. In Simulation Set 2, 790 of 1,000 simulated plans (79.0%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula.

Plaintiff Cynthia Boylan resides in Congressional District 7 of the Enacted 2016 Plan, and this enacted district has a 53.4% Republican vote share, as measured by the Hofeller formula. In Simulation Set 1, 765 of 1,000 simulated plans (76.5%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula. In Simulation Set 2, 514 of 1,000 simulated plans (51.4%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula.

Plaintiff Coy Brewer resides in Congressional District 8 of the Enacted 2016 Plan, and this enacted district has a 55.1% Republican vote share, as measured by the Hofeller formula. In Simulation Set 1, 989 of 1,000 simulated plans (98.9%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula. In Simulation Set 2, 1,000 of 1,000 simulated plans (100%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula.

Plaintiff John McNeill resides in Congressional District 9 of the Enacted 2016 Plan, and this enacted district has a 56.0% Republican vote share, as measured by the Hofeller formula. In Simulation Set 1, 959 of 1,000 simulated plans (95.9%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula. In Simulation Set 2, 990 of 1,000 simulated plans (99.0%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula.

Plaintiff Robert Wolf resides in Congressional District 10 of the Enacted 2016 Plan, and this enacted district has a 58.2% Republican vote share, as measured by the Hofeller formula. In

Simulation Set 1, 970 of 1,000 simulated plans (97.0%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula. In Simulation Set 2, 985 of 1,000 simulated plans (98.5%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula.

Plaintiff Jones Byrd resides in Congressional District 11 of the Enacted 2016 Plan, and this enacted district has a 57.1% Republican vote share, as measured by the Hofeller formula. In Simulation Set 1, 1,000 of 1,000 simulated plans (100%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula. In Simulation Set 2, 1,000 of 1,000 simulated plans (100%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula.

Plaintiff John Gresham resides in Congressional District 12 of the Enacted 2016 Plan, and this enacted district has a 36.6% Republican vote share, as measured by the Hofeller formula. In Simulation Set 1, 1,000 of 1,000 simulated plans (98.6%) placed this plaintiff into a less Democratic-leaning district, as measured by the Hofeller formula. In Simulation Set 2, 1,000 of 1,000 simulated plans (100%) placed this plaintiff into a less Democratic-leaning district, as measured by the Hofeller formula.

Plaintiff Russell Walker resides in Congressional District 3 of the Enacted 2016 Plan, and this enacted district has a 53.7% Republican vote share, as measured by the Hofeller formula. In Simulation Set 1, 1,000 of 1,000 simulated plans (100%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula. In Simulation Set 2, 1,000 of 1,000 simulated plans (100%) placed this plaintiff into a more Democratic-leaning district, as measured by the Hofeller formula.

Partisanship of Plaintiffs' Districts in Plan 297 of Simulation Set 2:

At the instruction of counsel for the Common Cause plaintiffs, I report in Table 1 below the partisanship of the districts from Plan 297 of Simulation Set 2 in which each of the 15 Common Cause plaintiffs reside. Table 1 contains one row for each plaintiff. The fifth column of this table reports the partisanship of the Plan 297 district in which each plaintiff resides. The third column of this table reports the partisanship of the district in the Enacted 2016 Plan in which each plaintiff resides. As before, district partisanship is measured in this table using the Hofeller formula.

Table 1: Partisanship of Plaintiffs' Districts in Plan 2-297 and in the Enacted Plan

Plaintiff:	Plaintiff's District in Enacted Plan (SB 2):	Republican Vote Share of Plaintiff's District in Enacted Plan (Hofeller Formula):	Plaintiff's District in Plan 297 of Simulation Set 2:	Republican Vote Share of Plaintiff's District in Plan 297 of Simulation Set 2 (Hofeller Formula):
Larry D. Hall	1	31.17%	11	36.78%
Douglas Berger	2	56.20%	12	40.84%
Richard & Cheryl Lee Taft	3	54.92%	13	54.43%
Alice L. Bordsen	4	37.68%	11	36.78%
Morton Lurie	4	37.68%	11	36.78%
William H. Freeman	5	56.15%	6	49.30%
Melzer A. Morgan	6	54.46%	7	51.49%
Cynthia S. Boylan	7	53.42%	9	52.18%
Coy E. Brewer	8	55.13%	8	46.43%
John Morrison McNeill	9	56.04%	8	46.43%
Robert Warren Wolf	10	58.17%	1	52.62%
Jones P. Byrd	11	57.11%	1	52.62%
John W. Gresham	12	36.63%	3	45.82%
Russell G. Walker	13	53.71%	6	49.30%

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge.

This 11th day of July, 2018.

Jowei Chen