SUPREME COURT

OF THE STATE OF CONNECTICUT

SC 18907

IN RE PETITION OF REAPPORTIONMENT
COMMISSION, EX. REL.

DRAFT REPORT AND PLAN
OF THE SPECIAL MASTER

January 13, 2012

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By order dated December 30, 2011, this Court appointed me as Special Master in the above captioned matter. *See* Appendix in Support of the Report and Plan of the Special Master ("Appendix"), Appendix A, at p. 4.[1] On January 3, 2012, this Court directed me "to prepare and recommend to the Court a report, including a proposed redistricting plan for adoption by this Court for the State of Connecticut, dividing the state into 5 congressional districts in accordance with the 2010 federal census and applicable law." *See* Order Directing Special Master, Appendix B, at p. 6, ¶1 ("The Order" or "the January 3rd Order").

Contained herein is my report and proposed redistricting plan. Exhibit 1 presents a statewide map and district maps showing the five congressional districts comprising the Special Master's Plan. Large-scale versions of the entire plan and each proposed district have been provided to the Clerk of the Court. Exhibit 2 highlights the Plan's proposed changes in the boundaries from the existing congressional districts. Exhibit 3 presents demographic and population data for each proposed district and existing district, according to the U.S. Census P.L. 94-171 data file. Exhibit 4 presents a computer generated report that describes which towns and portions of towns are assigned to each proposed district. Exhibit 5 presents maps of the towns

[1] All page references to the Appendix refer to the repagination of the combined materials as indicated in the bottom right corner of each page in the Appendix.

split in the existing districts, the Special Master's Plan, and the Democrat's proposal. Exhibit 6 compares the existing districts, the Special Master's Plan, and alternative proposals according to various measures of compactness. Exhibit 7 presents, for comparison, maps of the existing congressional districts.

I. Introduction

The Court's January 3rd order directed me to fashion a congressional redistricting plan for the state to be submitted to the Court on or before January 27, 2012. Appendix B, at p. 6, ¶11. The order authorized the hiring of appropriate assistants and experts, as well as the acquisition of materials previously considered by the Redistricting Commission in its proceedings. *Id.* at ¶10. The order also barred any ex parte communications and ordered me not to have any communication outside of the Court regarding the redistricting proceedings, unless authorized by the Court. *Id.* at ¶9.

Through its order, the Court notified the public of a hearing that would take place in the Legislative Office Building at noon on January 9th, 2012. *Id.* at ¶7. Parties and the public were directed to submit by noon on Friday, January 6th, any proposed redistricting maps, accompanied by supporting documentation, data, and briefs. *Id*. at ¶5. The order also instructed that reply briefs should be submitted by 9:00 AM, January 9th, 2012. *Id*. at ¶6.

The Court's order instructed me to consider certain factors, while ignoring others, in drawing the redistricting plan. In particular, the Court instructed me:

> 2. In developing the plan, the Special Master shall modify the existing congressional districts only to the extent reasonably

> required to comply with the following applicable legal requirements:
>
> a. Districts shall be as equal in population as is practicable.
>
> b. Districts shall be made of contiguous territory.
>
> c. The plan shall comply with 42 U.S.C. § 1973(b) and with other applicable provisions of the Voting Rights Act and federal law.
>
> 3. In no event shall the plan of the Special Master be substantially less compact than the existing congressional districts and in no event shall the plan of the Special Master substantially violate town lines more than the existing congressional districts.
>
> 4. In fashioning his plan, the Special Master shall not consider either the residency of incumbents or potential candidates or other political data, such as party registration statistics or election returns.

Id. at ¶¶2-4.

II. Development of the Special Master's Plan

A. Logistical and Technical Support for Development of the Special Master's Plan

1. Personnel

The development of a redistricting plan and accompanying report requires the involvement of more than one person. In particular, people are needed to assemble the necessary background materials, assist with the hearing, provide technical assistance in the production of the maps, and produce the documents and copies necessary for the Special Master's Report. Toward that end, upon my appointment I sought assistance to perform these various functions.

The officials at the Court were indispensable in the assembly of the various materials submitted to the Special Master. In particular, I am grateful for the help provided by Michelle Angers and Pamela Brannick in the Court Clerk's office. They received and assembled the

submissions from the various parties prior to the hearings and served as an intermediary between me and the parties. In addition, Melissa Farley, Executive Director of the External Affairs Division of the Connecticut Judicial Branch, served as initial liaison between the Special Master and the various offices in the Connecticut Legislature.

On January 6, 2012, I met with various personnel in the Legislature to formalize arrangements for the hearing and the development of the Special Master's Plan. At the meeting, which was facilitated and attended by D'Ann Mazzocca, Executive Director of Office of Legislative Management of the Connecticut General Assembly, I met with the following people, who later performed the designated responsibilities. Sandra Norman-Edy and Kristin Sullivan of the Office of Legislative Research helped with the assembly of documents that had been presented to the Redistricting Committee. Ken Greene, Paul Alderucci and Rino Feole from the Office of Information Technology Services provided assistance with the Geographic Information Software and the production of maps. Eric Connery and Lou Carlisle from the Office of Legislative Management assisted with various facilities-related issues concerning the hearing before the Special Master, the office where the Special Master was to work on the plan, and the production of the map and report. Lt. Glen Richards was present to handle issues related to security. Sandra Forte, not present at the meeting, later assisted with the assembly of hearing materials and generation of the Appendix to the Special Master's Report.

2. Facilities

On January 6, 2012, I was also able to view the secure room where I was to develop the Special Master's plan. The room – Vault 9 - is located in close proximity to the Office of Information Technology Services. A new lock was placed on the door, with keys given only to

myself and the Capitol Police. The room was set up with a computer, a color printer, a plotter and a file cabinet. The computer was password protected.

3. Computer Programs and Data

The Special Master's Plan was developed using both my own laptop computer and the computer provided me in the temporary office. The plan itself was designed on my laptop using Caliper Corporation's "Maptitude for Redistricting," with use of the Census Bureau's P.L. 94-171 data file as formatted by Caliper. Except for Exhibits 3 through 6, which I prepared with Maptitude, the attached maps describing the plan were designed by Rino Feole using the programs (ArcGIS and Autobound) found on the Assembly's computers.

B. Materials Reviewed Prior to the Special Master's Hearing

Upon my appointment as Special Master I immediately began to fashion a redistricting plan that complied with the Court's order. Because of the extreme time constraints faced by the Court and the state to run its elections, I determined that even before conducting hearings I would need to acquaint myself with the demography of the state, the existing congressional districts, and possible redistricting scenarios that would comply with the Court's order. I drew several potential redistricting plans before receiving submissions in order to protect against the possibility that my thinking would be tainted by proposals submitted by the political parties.

Toward that end, I requested and received from this Court and the Office of Legislative Management many documents related to the recent history of the Connecticut redistricting process. In particular, I reviewed the transcripts of the hearings previously conducted by the Reapportionment Committee, as well as all public comments received by them. *See* Appendix L,

at pp. 291-469. I listened to the oral argument before the Connecticut Supreme Court in the case that gave rise to my appointment. I also reviewed the briefs and maps submitted in the case.

C. The January 9th Hearing

To allow for public input into the process of development of the Special Master's Plan, the Court ordered and I presided over a hearing at noon on January 9, 2012, in Room 2C of the Legislative Office Building. Parties to the related litigation, as well as the general public, were encouraged to submit to the Special Master through the Clerk's office "proposed maps, accompanied by supporting documentation, data and briefs" by noon on January 6, 2012 and reply briefs by 9:00 AM, January 9, 2012. Court's Order, Appendix B, p.6, at ¶5.

Four submissions were received initially. The submissions were as follows:

1) Brief and Map of the Republican Members of the Connecticut Reapportionment Commission in Compliance with the Court's January 3, 2012 Order, with Attached Appendix, *In Re Petition of Reapportionment Commission Ex. Rel.*, No. SC 18907, Jan. 6, 2012.
2) Brief of the Reapportionment Commission Democratic Members Martin Looney, Sandy Nafis, Brendan Sharkey, and Donald Williams in Support of Redistricting Plan Submitted to Special Master (along with Appendix), *In Re Petition of Reapportionment Commission Ex. Rel.*, No. SC 18907, Jan. 6, 2012.
3) Brief of the Coalition for Minority Representation Statewide, et al in Support of Redistricting Plan Submitted to Special Master, *In Re Petition of Reapportionment Commission Ex. Rel.*, No. SC 18907, Jan. 6, 2012.

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4) John Hartwell, Memorandum on the Redistricting Map to Be Proposed by the Special Master for the Fourth Congressional District (along with supporting petition on compact disk), *In Re Petition of Reapportionment Commission Ex. Rel.*, No. SC 18907, Jan. 6, 2012.

Copies of the submissions are provided in the Appendix C-F, pp. 8-105. Reply briefs were submitted by the Reapportionment Commission Democratic Members and the Coalition for Minority Representation. *See* Appendix G and H, pp. 106-167.

At the two-hour long hearing, twenty-three individuals testified. Individuals were notified that they could sign in to speak beginning at 11:00 AM. The sign-in sheet for the hearing, a list of the names of those appearing, and all written materials submitted are provided in Appendix I and J, pp. 168-227. A transcript of the hearing is provided in Appendix K, pp. 228-290. In addition to the parties who had submitted briefs, a variety of elected officials, party and interest group leaders, and citizens testified. Sandra Forte of the Office of Legislative Management was instrumental in organizing the hearing, keeping a list of speakers, and assembling the materials.

III. Overview of the Special Master's Plan

A. Legal Requirements

Because Connecticut law does not provide for additional legal requirements beyond those required by federal law, the relevant sections of the U.S. Constitution and the Voting Rights Act are the only legal requirements constraining the Special Master's Plan. The Court's January 3rd

order recognizes this by requiring compliance with section 2 of the Voting Rights Act, 42 U.S.C. § 1973 (b), and the one-person, one-vote rule. In particular, the Court required that the Special Master's Plan be comprised of five districts of contiguous territory that are "as equal in population as is practicable" and that comply with the Voting Rights Act and applicable federal law. Appendix B, p. 6, at ¶2a.

1. Equal Population Requirement

The constitutional requirement of equal population is particularly strict for congressional redistricting plans. That already strict requirement is even stricter for court-drawn congressional plans. As such, the Special Master's Plan attempts to draw districts that are as equal as possible, with no more than a one person deviation between districts.

The U.S. Supreme Court has read Article I, § 2 of the U.S. Constitution to require a strict rule of population equality for congressional districts. Specifically, congressional districts must be "as equal as is practicable," *Wesberry v. Sanders*, 376 U.S. 1, 7-8 (1964), meaning that the "the State make a good-faith effort to achieve precise mathematical equality." *Kirkpatrick v. Preisler*, 394 U.S. 526, 530-531 (1969). For congressional plans, population deviations even well under one percent have been rejected by the U.S. Supreme Court as violative of the one person, one vote rule. *See Karcher v. Daggett*, 462 U.S. 725, 730-31 (1983). To the extent courts might allow for some deviations from strict equality among legislatively drawn plans based on a consistently applied state policy, *see id.*, the U.S. Supreme Court has warned that court-drawn plans must be held to an even higher standard of equality. *See Chapman v. Meier*, 420 U.S. 1, 26 (1975) ("A court-ordered plan, however, must be held to higher standards than a State's own plan.")

Given this strict rule of population equality, the Special Master's Plan contains five districts that are as equal in population "as is practicable." According to the 2010 Census, the total population of Connecticut is 3,574,097. Therefore, a perfectly equal plan would have three districts, each with a population of 714,819, and two districts, each with a population of 714,820. The Special Master's Plan achieves this level of equality between districts such that no district has more than one person than any other district.

2. The Voting Rights Act

Section 2 of the Voting Rights Act, 42 U.S.C. § 1973 (2011), places certain constraints on every redistricting process. Specifically, the law prevents against race-based vote dilution, in which a districting plan either overconcentrates ("packs") or excessively disperses ("cracks") racial or language minorities. Section 2 of the VRA provides:

> (a) No voting qualification or prerequisite to voting or standard, practice, or procedure shall be imposed or applied by any State or political subdivision in a manner which results in a denial or abridgement of the right of any citizen of the United States to vote on account of race or color, or in contravention of the guarantees set forth in section 1973b(f)(2) of this title, as provided in subsection (b) of this section.
> (b) A violation of subsection (a) of this section is established if, based on the totality of circumstances, it is shown that the political processes leading to nomination or election in the State or political subdivision are not equally open to participation by members of a class of citizens protected by subsection (a) of this section in that its members have less opportunity than other members of the electorate to participate in the political process and to elect representatives of their choice. The extent to which members of a protected class have been elected to office in the State or political subdivision is one circumstance which may be considered: Provided, That nothing in this section establishes a right to have members of a protected class elected in numbers equal to their proportion in the population.

42 U.S.C. § 1973 (2011). The U.S. Supreme Court has clarified the criteria for proving illegal vote dilution under section 2. In particular, it has required, as a threshold matter, that plaintiffs demonstrate the so-called *Gingles* prongs. *See Thornburg v. Gingles*, 478 U.S. 30, 50 (1986). *Gingles*, and its progeny, limit section 2 lawsuits to situations in which (1) the "minority group is sufficiently large and geographically compact to constitute a majority" in a single-member district; (2) the minority group is politically cohesive; (3) the majority votes "sufficiently as a bloc to enable it—in the absence of special circumstances…—usually to defeat the minority's preferred candidate." *Id*., 478 U.S. at 51.

As recently as three years ago, the U.S. Supreme Court made clear that *Gingles*'s first prong requires plaintiffs seeking a section 2 VRA district to demonstrate that the minority group in question can constitute over fifty percent of the relevant population in a potential single member district. *See Bartlett v. Strickland*, 556 U.S. 1, 129 S. Ct. 1231 (2009). Although the Court may have been ambiguous as to the appropriate denominator from which to estimate the minority composition of a potential single-member district, the *majority*-minority requirement was made clear. *See id.*, 129 S. Ct. at 1245 ("the majority-minority rule relies on an objective, numerical test: Do minorities make up more than [fifty] percent of the voting-age population in the relevant geographic area? That rule provides straightforward guidance to courts and to those officials charged with drawing district lines to comply with § 2."); *id.* at 1246 ("It remains the rule, however, that a party asserting § 2 liability must show by a preponderance of the evidence that the minority population in the potential election district is greater than 50 percent.").[2]

[2] The suggestion to the contrary made in the Republican Members' brief is incorrect and cites circuit and district court authority predating *Bartlett*. *See* Brief and Map of the Republican Members of the Connecticut Reapportionment Commission in Compliance with the Court's January 3, 2012 Order, with Attached Appendix, In Re Petition of Reapportionment Commission, Ex. Rel., S.C. 18907, Appendix C at p.14 ("Federal authority is divided as to whether a colorable vote dilution challenge may be brought against a single-member redistricting plan

It is not possible to draw a compact congressional district for Connecticut in which a racial or language minority group would comprise 50 percent of the voting age population. According to the 2010 Census, there are 2,757,082 people of voting age in Connecticut. The racial breakdown of the state, according to the categories released by the census, is presented in Table 1 below. The numbers and percentages exceed the total because of individuals who check off more than one race. The data are presented in the light most maximizing of each minority group, as required by the Guidelines of the Office of Management and Budget and the Department of Justice. *See* Office of Mgmt. & Budget, Exec. Office of the Preseident, OMB Bull. No. 00-02, Guidance on Aggregation and Allocation of Data on Race for Use in Civil Rights Monitoring and Enforcement (2000) [hereinafter OMB Bull. No. 00-02], available at http://www.whitehouse.gov/omb/bulletins/b00-02.html.; Department of Justice, Guidance Concerning Redistricting and Retrogression Under Section 5 of the Voting Rights Act, 42 U.S.C. 1973c; 66 Federal Register 5412-5414 (January 18, 2001).

Table 1. Racial Breakdown of Connecticut's Voting Population

Racial Group	Voting Age Population (VAP)	Percentage of Total VAP
Non-Hispanic White	2,046,548	74.23%
Hispanic	318,947	11.57%
Black	281,143	10.20%
Asian	111,888	4.06%
American Indian or Alaska Native	21,489	0.78%
Native Hawaiian or Other Pacific Islander	3,869	0.14%
Some Other Race	155,388	5.64%

where, although minorities might not comprise more than 50 percent of a compactly drawn district, they could nevertheless determine the outcome of an election in a district where they comprise a substantial share of the population.") (citing *Metts v. Murphy*, 363 F. 3d 8 (1st Cir. 2004); *Armour v. Ohio*, 775 F. Supp. 1044 (N.D. Ohio 1991); *West v. Clinton*, 786 F. Supp. 634 (W.D. Ark. 1992); *Hastert v. State Bd. of Elections*, 777 F. Supp. 634 (N.D. Ill. 1991)).

Total	2,757,082	

Although it would be theoretically possible to create a majority-minority district given the racial distributions above, the geographic dispersion of the minority population makes a compact majority-minority district impossible. Racial minorities are not geographically concentrated enough so as to comprise fifty percent of the voting age population, let alone the citizen voting age population, of a potential congressional district. The racial breakdown of the total population and voting age population of each existing district and each district in the Special Master's Plan is provided as Exhibit 3.

B. Additional Requirements of the Court's January 3rd Order

In addition to the requirements of federal law, the Court has placed additional constraints on the Special Master's Plan. In particular, the Special Master's Plan must be made of contiguous districts that are not substantially less compact or substantially more violative of town lines than the existing congressional districts. Appendix B, p.6, at ¶3. Finally, the Special Master's Plan was not to consider incumbent or candidate residency or other political data, such as party registration statistics or election returns. *Id.* at ¶4.

1. Contiguity

The requirement that the districts be made of contiguous territory does not present much of an obstacle. The requirement merely means that all parts of the district must be connected together by either land or water.

The existing congressional districts are contiguous according to this requirement. The one issue concerns the treatment of a small, unpopulated island (Tuxis Island) in Long Island Sound

which is off the coast of Madison. The existing congressional districts, as well as both proposals received by the Special Master and the Special Master's Plan, do not assign the water blocks of much of Long Island Sound to districts. As such, Tuxis Island, which is assigned to District 2, is not technically connected to the rest of the district because the water between it and District 2 is not assigned to any district. The discontiguity appears below, as well as a satellite image of Tuxis Island. This minor, technical objection is one that should not concern the Court. However, in an abundance of caution, the Special Master's Plan is accompanied by two separate block equivalency files to the Court: the Special Master's Plan, and the Special Master's Plan with the Long Island Sound water blocks added.

Figure A. Potential Discontiguity in Existing and Proposed District 2

2. Compactness

Compactness is an aesthetic, as well as geometric quality of districts. As such, there are objective measurements of compactness, but compactness, like beauty, can also lie in the eye of the beholder. *See* Kurtis A. Kemper, *Application of Constitutional "Compactness Requirement" to Redistricting*, 114 *ALR 5th* 311 (2003) (comparing different courts' treatment of state law compactness requirements). The Special Master's Report presents evaluations of the existing districts, proposed plans and the Special Master's Plan according to the measures of compactness included with the redistricting software (Maptitude for Redistricting) used to formulate the Special Master's Plan. That guide describes the measures as follows:

> ***Reock Test***
> The Reock test is an area-based measure that compares each district to a circle, which is considered to be the most compact shape possible. For each district, the Reock test computes the ratio of the area of the district to the area of the minimum enclosing circle for the district. The measure is always between 0 and 1, with 1 being the most compact. The Reock test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan.
>
> ***Schwartzberg Test***
> The Schwartzberg test is a perimeter-based measure that compares a simplified version of each district to a circle, which is considered to be the most compact shape possible. This test requires the base layer that was used to create the districts. The base layer is used to simplify the district to exclude complicated coastlines.
>
> For each district, the Schwartzberg test computes the ratio of the perimeter of the simplified version of the district to the perimeter of a circle with the same area as the original district. The district is simplified by only keeping those shape points where three or more areas in the base layer come together. Water features and a neighboring state also count as base layer areas. This measure is usually greater than or equal to 1, with 1 being the most compact. Unfortunately, the simplification procedure can result in a polygon that is substantially smaller that the original district, which can yield a ratio less than 1 (e.g., an island has a 0 ratio). The Schwartzberg test computes one number for each district and the

minimum, maximum, mean and standard deviation for the plan.

Perimeter Test
The Perimeter test computes the sum of the perimeters of all the districts. The Perimeter test computes one number for the whole plan. If you are comparing several plans, the plan with the smallest total perimeter is the most compact.

Polsby-Popper Test
The Polsby-Popper test computes the ratio of the district area to the area of a circle with the same perimeter: 4(pi)Area/(Perimeter squared). The measure is always between 0 and 1, with 1 being the most compact. The Polsby-Popper test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan.

Length-Width Test
The length-width test computes the absolute difference between the width (east-west) and the height (north-south) of each district. The bounding box of a district is computed in longitude-latitude space, and the height and width of the box through the center point are compared. The total is divided by the number of districts to create the average length-width compactness. A lower number indicates better length-width compactness. This measure of compactness is designed for contiguous districts, since the bounding box encloses the entire district.

Population Polygon Test
The population polygon test computes the ratio of the district population to the approximate population of the convex hull of the district (minimum convex polygon which completely contains the district). The population of the convex hull is approximated by overlaying it with a base layer, such as Census Blocks. The measure is always between 0 and 1, with 1 being the most compact. The Population Polygon test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan.

Population Circle Test
The population circle test computes the ratio of the district population to the approximate population of the minimum enclosing circle of the district. The population of the circle is approximated by overlaying it with a base layer, such as Census Blocks. The measure is always between 0 and 1, with 1 being the most compact. The Population Circle test computes one number for each district and the minimum, maximum, mean and standard

> deviation for the plan.
>
> ***Ehrenburg Test***
> The Ehrenburg test computes the ratio of the largest inscribed circle divided by the area of the district. The measure is always between 0 and 1, with 1 being the most compact. The Ehrenburg test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan.

See Caliper Corporation, *Maptitude for Redistricting: Supplemental User's Guide*, 117-19 (2010) (footnotes and citations excluded).

Despite the veneer of objectivity, these measures favor some types of shapes over others, often arbitrarily so. By providing these measures, the Special Master does not mean to urge for their adoption either individually or collectively. Rather, only if proposed districts look comparatively non-compact to the naked eye should such measures be used to bolster such concerns. Moreover, compactness should be treated as a functional concept, such that more than just the shapes of districts ought to factor into the compactness evaluation. For example, bizarrely shaped districts may be more functionally compact than circular or square ones given the patterns of residential settlement, the existence of transportation networks, or commonality of interests. *Cf. LULAC v. Perry*, 548 U.S. 399, 435 (2006) ("Compactness is, therefore, about more than "style points," . . . We emphasize it is the enormous geographical distance separating the Austin and Mexican-border communities, coupled with the disparate needs and interests of these populations—not either factor alone—that renders District 25 noncompact for §2 purposes.")

Compactness is not an independent requirement of federal or Connecticut law, as the Court's order recognizes. Rather, the U.S. Supreme Court has referenced compactness in two contexts. The first concerns the "smoking out" of impermissible motive in a racial

gerrymandering case. Non-compact districts with shapes unexplainable on grounds other than race may violate the Equal Protection Clause of the Fourteenth Amendment. *See, e.g.*, Shaw *v. Reno*, 509 U.S. 630, 642 (1993); *Miller v. Johnson*, 515 U.S. 900, 917 (1995); *Bush v. Vera*, 517 U.S. 952, 958-65 (1996). Second, as discussed above, compactness of a minority community is a prerequisite for a section 2 VRA claim. Only compact minority communities that can constitute a majority in a single member district have a potential entitlement to an opportunity district under Section 2. *See Thornburg v. Gingles*, 478 U.S. 30, 50 (1986); *LULAC v. Perry*, 548 U.S. 399, 435 (2006). Other than those two contexts, compactness is primarily relevant only in those states, unlike Connecticut, that have explicit compactness requirements in state law. *See* National Conference of State Legislatures, Redistricting Law 2010, at 106-12 (2009) (identifying states with legal requirements of compactness).

3. Avoiding Splits of Town Lines

Avoiding additional violations of town lines represents a much more straightforward requirement. According to the Court's Order, the Special Master's Plan cannot break up a greater number of towns than the existing districts, unless the law requires it. Under the existing plan, the following six towns are split: Durham, Glastonbury, Middletown, Shelton, Torrington, and Waterbury. In addition to avoiding additional town splits, the Special Master's Plan endeavors not to split towns other than those already split by the existing district lines. Unifications of towns, however, should only be achieved if doing so is necessary to achieve compliance with the law. The Special Master's Plan, in other words, does not take as its goal the minimization of town splits, but rather the achievement of population equality without doing damage to town boundaries beyond that existing in the current district arrangement. As

described in further detail below, the Special Master's Plan, by uniting the town of Durham, splits one fewer town than the existing districts.

C. Summary of the Special Master's Plan

Pursuant to the Court's January 3rd Order, I set out to construct a "least-change" plan within the constraints described above. The Special Master's Plan complies with the law and the Court's Order. Its total deviation is one person: three districts have 714,819 people, and two districts have 714,820 people. It complies with the Voting Rights Act and all relevant provisions of federal law. It also complies with the letter of the Court's Order. All of the districts are made of contiguous territory. It moves only 28,975 people (0.81% of the state's population) out of their current districts, splits one fewer town than the existing congressional plan, and provides districts slightly more compact than the existing plan.

Although I interpreted the order to leave little discretion, important decisions needed to be made at the margins of the plan. Below is a summary of the districts and how I arrived at the particular configurations in the Special Master's Plan. The description of the plan is not organized numerically according to the districts, but rather proceeds according to the sequence of decisions I made in constructing the plan. Blown-up maps focusing on the boundary changes from the existing districts are presented in Exhibit 2.

1. District 2

I began with District 2, because it was the most malapportioned in the existing plan. Existing District 2 is overpopulated by 14,952 people (a deviation of 2.09%). It contains two towns (Durham and Glastonbury) that are split, one of which can be united in the plan. Perfect

population equality can be achieved merely by adjusting the borders in those two towns. The proposed district has 714,819 people.

The decision to unite Durham, instead of Glastonbury, was driven by a desire to achieve greater compactness in the underlying plan. In particular, uniting Durham into District 3 increases that district's compactness by expanding the narrow pathway that forms a "neck" just below Middlefield in the existing district. Durham is the only town split in the existing districts that is unified in the Special Master's Plan. In sum, 5,193 people in Durham are moved from District 2 into District 3,

Glastonbury remains split in the Special Master's Plan. However, the boundaries of the split are drawn so as to increase (marginally) the compactness of both District 1 and District 2. 9,759 people in Glastonbury are moved from District 2 to District 1.

2. District 4

I next redrew District 4, which was the most underpopulated in the existing plan, with 706,740 people (a negative deviation of 8,079 people or -1.13%). The only split town in District 4, which is split between District 4 and District 3, is Shelton. I moved 8,079 people in Shelton from District 3 to District 4. The precise boundaries were configured so as to achieve greater compactness in both District 3 and District 4, while achieving perfect population equality (population 714,819, zero deviation).

3. District 3

Having moved the eastern and western borders of District 3 with the alterations to Districts 2 and 4, District 3 needed to gain population to comply with one person, one vote.

District 3 in the existing plan has a negative deviation of 2,480 people or -0.35%. In addition to Durham and Shelton, Middletown and Waterbury are towns split by existing District 3. Because existing District 5, which shares Waterbury with District 3, is the district closest to population equality in the current plan (a negative deviation of only 523 people, or -0.07%), District 5 requires the least alteration to comply with the law. I, therefore, decided to move District 3 farther into Middletown in District 1, rather than into Waterbury in District 5. In addition to the changes to District 3 previously discussed, I moved 5,369 people in Middletown from District 1 to District 3, and then three people from District 3 to District 1 so as to achieve perfect population equality.

The precise borders of the split of Middletown between Districts 1 and 3 are determined by achieving greater compactness while achieving population equality. Proposed District 3 has a zero deviation, exactly 714,819 people.

4. District 1

Once the above changes are made, the only remaining population tradeoffs that need to take place are between Districts 1 and 5. Existing District 1 has a negative deviation of 3,868 people or -0.54%. After the above changes are made, District 1 has a positive deviation of 525 people. Existing District 5 has a negative deviation of 523 people or -0.07%. Therefore, 524 people need to be moved from District 1 to District 5 to achieve population equality such that both of those districts will then have a deviation of just one person.

Because Torrington is the only town split between District 1 and District 5, the necessary population tradeoffs in the Special Master's Plan between those two districts occur there. Because of the size (in population and geography) of the census blocks on the existing periphery

of Districts 1 and 5, a limited number of options are available to comply with one person one vote. The boundary of the proposed districts is the one that is most compact while achieving population equality. I moved 548 people from District 1 to District 5 and I moved 24 people from District 5 to District 1 in order to achieve population equality. The proposed district has a population of 714,820: a positive deviation of one person.

5. District 5

As described above, District 5 is the district that required the least alteration in order to comply with the legal requirements. Existing District 5 has a negative deviation of 523 people or -0.07%. The Special Master's Plan adjusts the boundaries in Torrington along the lines previously described, so that the District posts a net gain of 524 people and has a deviation of only one person. The proposed district has a population of 714,820, a positive deviation of one person.

D. Evaluation of Submitted Plans

Two complete plans were submitted to the Special Master in advance of the January 9, 2012, hearing: one from the Republican Members of the Reapportionment Commission and a second from the Democratic Members. Both plans comply with one person, one vote by achieving a deviation of no more than one person and both comply with the Voting Rights Act. For different reasons, I rejected both plans and developed the one previously described.

1. The Republicans' Plan

The plan submitted by the Republican Members of the Reapportionment Committee makes changes to the existing congressional districts beyond those "reasonably required to comply with the . . . applicable legal requirements." Appendix B, p. 6, at ¶2. It, therefore, cannot serve as a basis for the Special Master's Plan, which must comply with the Court's order. However, the plan is legal under both one person, one vote and the Voting Rights Act. It also achieves greater compactness and splits one fewer town than the Special Master's Plan, the existing districts, or the Democrats' proposal.

The Republican Proposal shifts more population, land, and towns than is reasonably necessary to comply with one person, one vote. It moves 185,726 people (or 5.2% of the state's population) out of their current district. The plan makes changes to fourteen towns, seven of which would be moved into entirely new districts. Neither the one person, one vote rule, nor the Voting Rights Act requires that such changes be made.

In addition, as became clear during the January 9th hearing, if plans such as the Republican proposal were to be adopted by the Special Master, then parties would need to be given another opportunity to submit proposals designed with a greater variety of goals than specified in the Court's Order and with comparable levels of disruption to the existing districts. *See* Transcript of January 9th Hearing, Appendix K, at 270 (statement of Aaron Bayer). For example, the proposal's move of New Britain into the same district as Hartford, while justified for community of interest reasons, drew strong objections from that town's Mayor and Representative. *Compare id.* at 252 (statement of Lawrence Cafero), *with id*. at 263-264 (statement of Mayor Timothy E. O'Brien); *id.* at 278 (statement of Rep. Bobby Sanchez). The proposed plan's highlighted advantage of increasing minority influence in District 1 was challenged by several minority representatives at the hearing. *Compare id.* at 253-254

(statement of Lawrence Cafero), with *id.* at 278 (statement of Rep. Bobby Sanchez); *id.* at 280 (statement of Hilda Santiago) ("[T]here is no justification for packing minorities . . . from three congressional districts to two congressional districts. Don't dilute the district on the backs of the minorities . . . ."); *id.* at 281 (statement of Rha-Sheen Brown); *id*. at 285 (statement of David Rosen) ("In fact, of course, and it is the aim of the Republican plan, minority influence statewide would be diluted."). Moreover, the plan's admitted fashioning of boundaries to favor certain potential candidates would prevent such a design from being adopted by the Special Master. *See id*. at 254 (statement of Representative Lawrence Cafero) ("[W]e did something, frankly, the Supreme Court said not to do. You might notice that hook, as I mentioned. The hook is there because it might be natural to dip down into Meriden or in Cheshire, but we know that there are two candidates that happen to be Democrats who are running who hail from these towns.").[3]

All of these considerations – communities of interest, minority influence beyond that required by the Voting Rights Act, and political impact – can be legitimate considerations for a redistricting process. However, these are not factors sanctioned by the Court's order for my consideration. A process that would evaluate such claims and balance among competing interests would require different criteria than those that have guided the development of the Special Master's Plan.

2. The Democrats' Plan

[3] Drawing attention to this statement is not meant to fault the proposal for its admirable attempt to achieve political fairness or suggest that political motivations were absent from the competing proposal. Doing so merely illustrates why a plan with those characteristics cannot be the basis for the Special Master's Plan, which "shall not consider either the residency of incumbents or potential candidates." Appendix B, p. 6, at ¶4.

The plan submitted by the Democrats complies with the law and the Court's order. The plan makes only those changes "reasonably required to comply with the . . . applicable legal requirements." I reject it because a slightly more compact plan, which moves fewer people but retains a comparable level of respect for town lines, is possible even within those requirements.

A comparison of the Special Master's Plan and the Democrats' plan displays the constrained set of options available to comply with the Court's order. Nevertheless, several possible plans can comply with the law and the Court's order. The Special Master's Plan moves 28,975 people out of their current district, whereas the Democrats' Plan moves 29,447 people out of their current districts: an (admittedly small) difference of 472 people. According to the criterion of minimal disruption to existing district populations, therefore, the Special Master's Plan is superior.

In addition, the Special Master's Plan achieves slightly greater compactness even while moving fewer people. A comparison of the different boundaries of the Special Master's Plan and the Democrats' Proposal is attached as Exhibit 5. Both the Special Master's Plan and the Democrats' Plan reunite Durham and split Glastonbury, Middletown, Shelton, Torrington, and Waterbury. The Democrats' Plan changes the current district boundary in Waterbury; whereas the Special Master's Plan changes the current district boundary in Torrington. Assuming no additional towns would be split or moved, one of those changes is necessary to achieve population equality in District 5. It should be noted, however, that the way one town is split in each plan affects how the other towns are split even if they are hundreds of miles away. This is due to the fact that only certain combinations of census blocks will achieve perfect population equality.

As mentioned earlier, compactness is as much an aesthetic concept as a geometric one. Reasonable observers might disagree as to the relative compactness of these two plans, and the differences between them should not be overstated. Each plan, of course, must have some irregular boundaries in order to achieve population equality with minimal disruption to the existing districts. However, the Special Master's Plan has fewer juts and slightly smoother edges than the Democrats' Plan.

These aesthetic judgments are confirmed by the compactness scores earlier described. As noted above, none of these measures should be treated as gospel, nor should geometric compactness be considered the only way of measuring the concept. The mathematical measures may bolster and give content to judgments of the naked eye, however. The differences between the plans are small, but noticeable. For example, the perimeter of every district in the Special Master's Plan is smaller than the comparable district in the Democrats' plan, as is true for the sum of the perimeters in all the districts. The Special Master's Plan does slightly better than the Democrats' Plan according to the Schwartzberg and Length-Width scores. If the Democrats' Plan appeared more compact than the Special Masters' Plan then such small differences should not be given much credence. At a minimum, however, one can say that the Democrats' Plan is not more compact than the Special Masters' Plan, such that the additional 472 people moved under the Democrats' Proposal can be excused for compactness reasons.

Table 2. Comparison of Compactness Scores of Existing Districts and Special Master's Plan*

	Special Master's Plan								Democrats' Plan							
	R	S	Perim	PP	LW	Poly	Cir	E	R	S	Perim	PP	LW	Poly	Cir	E
1	0.44	2.32	222.84	0.18	3.79	0.71	0.52	0.18	0.44	2.34	225.06	0.17	4.35	0.71	0.52	0.21
2	0.56	1.45	245.16	0.44	3.15	0.57	0.41	0.52	0.56	1.45	245.17	0.44	3.15	0.57	0.41	0.52
3	0.36	2.09	177.32	0.20	0.35	0.79	0.57	0.30	0.36	2.13	181.71	0.19	0.35	0.79	0.57	0.30
4	0.33	1.71	145.36	0.32	3.00	0.81	0.60	0.23	0.33	1.73	146.70	0.32	2.63	0.81	0.60	0.23
5	0.51	2.06	266.93	0.23	9.23	0.71	0.51	0.35	0.51	2.07	268.58	0.22	9.23	0.71	0.51	0.35
Sum	N/A	N/A	1,057.62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1067.22	N/A	N/A	N/A	N/A	N/A
Min	0.33	1.45	N/A	0.18	0.35	0.57	0.41	0.18	0.33	1.45	N/A	0.17	0.35	0.57	0.41	0.21
Max	0.56	2.32	N/A	0.44	9.23	0.81	0.60	0.52	0.56	2.34	N/A	0.44	9.23	0.81	0.60	0.52
Mean	0.44	1.92	N/A	0.27	3.90	0.72	0.52	0.32	0.44	1.94	N/A	0.27	3.94	0.72	0.52	0.32
SD	0.10	0.34	N/A	0.11	3.26	0.10	0.07	0.13	0.10	0.35	N/A	0.11	3.29	0.10	0.07	0.12

*Shaded cells indicate a better compactness score of one plan over the other. R = Reock, S = Schwartzberg, Perim = Perimeter, PP = Polsby-Popper, LW = Length-Width, Poly = Population Polygon, Cir = Population Circle, E = Ehrenburg

IV. Conclusion

The Special Master's Plan complies with the applicable provisions of federal law and the additional requirements as ordered by this Court. In drafting the plan, I considered all submitted proposals, historic redistricting maps, comments before the Redistricting Committee, briefs submitted to me and this Court, and testimony received at the Special Master's hearing on January 9, 2012. Within the confines of the Court's order and the applicable law, the Plan is superior to the submitted proposals for reasons previously described. I therefore submit to the

Court for its adoption the Special Master's Plan for congressional districts for the State of Connecticut.

Exhibits to Special Master's Plan and Report

1. Special Master's Plan, Statewide and Individual District Maps.

2. Special Master's Plan, Focused Maps with Proposed Changes from Existing Districts.

3. Racial Breakdown of Existing Districts and Proposed Districts in Special Master's Plan.

4. Town Assignment File, Special Master's Plan.

5. Focused Maps of Town Splits in Existing Districts, Special Master's Plan, and Democrats' Proposal.

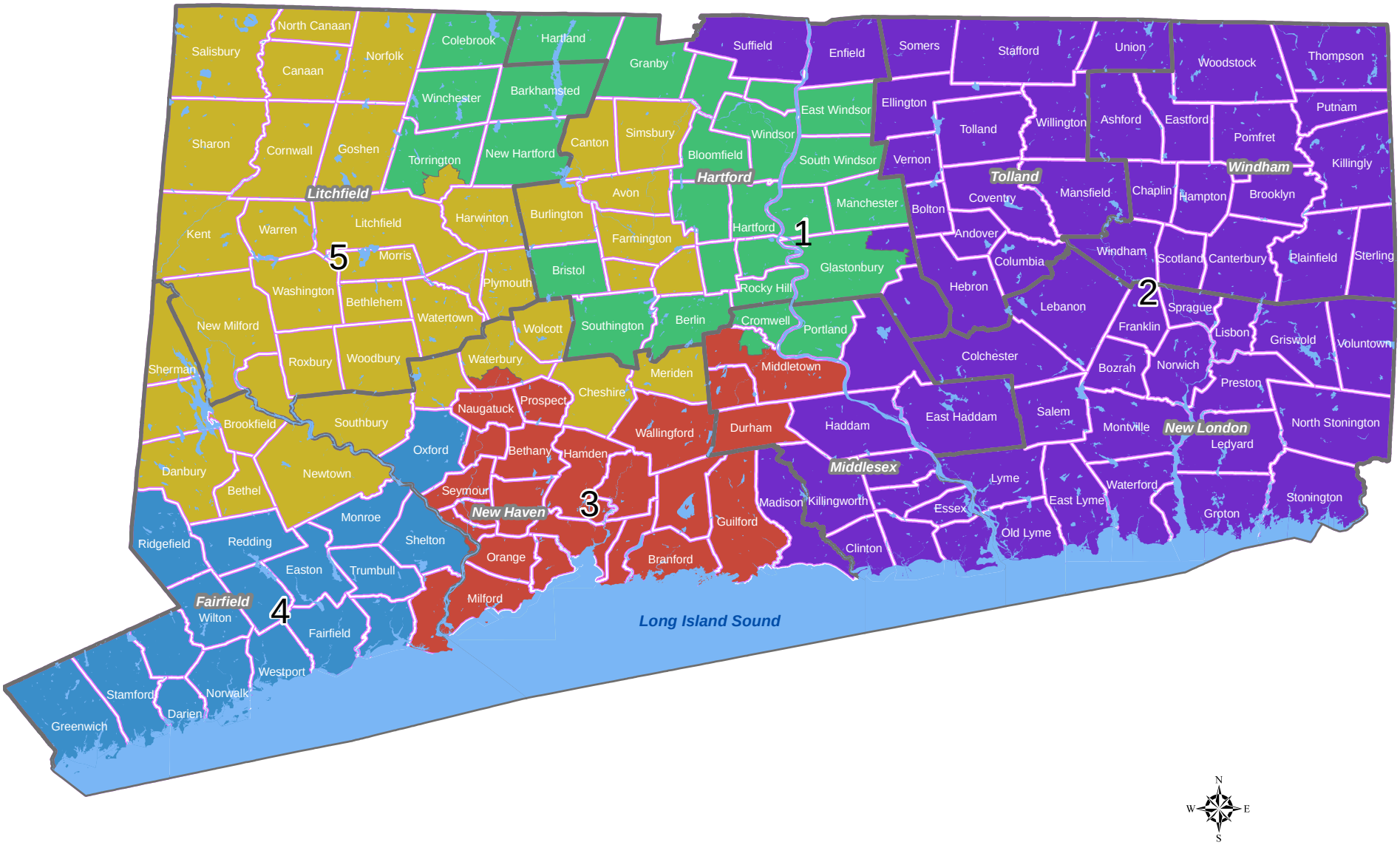
6. Compactness Scores for Existing Districts, Special Master's Plan, and Submitted Proposals.

7. Maps of Existing Congressional Districts.

Exhibit 1. Special Master's Plan, Statewide and Individual District Maps.

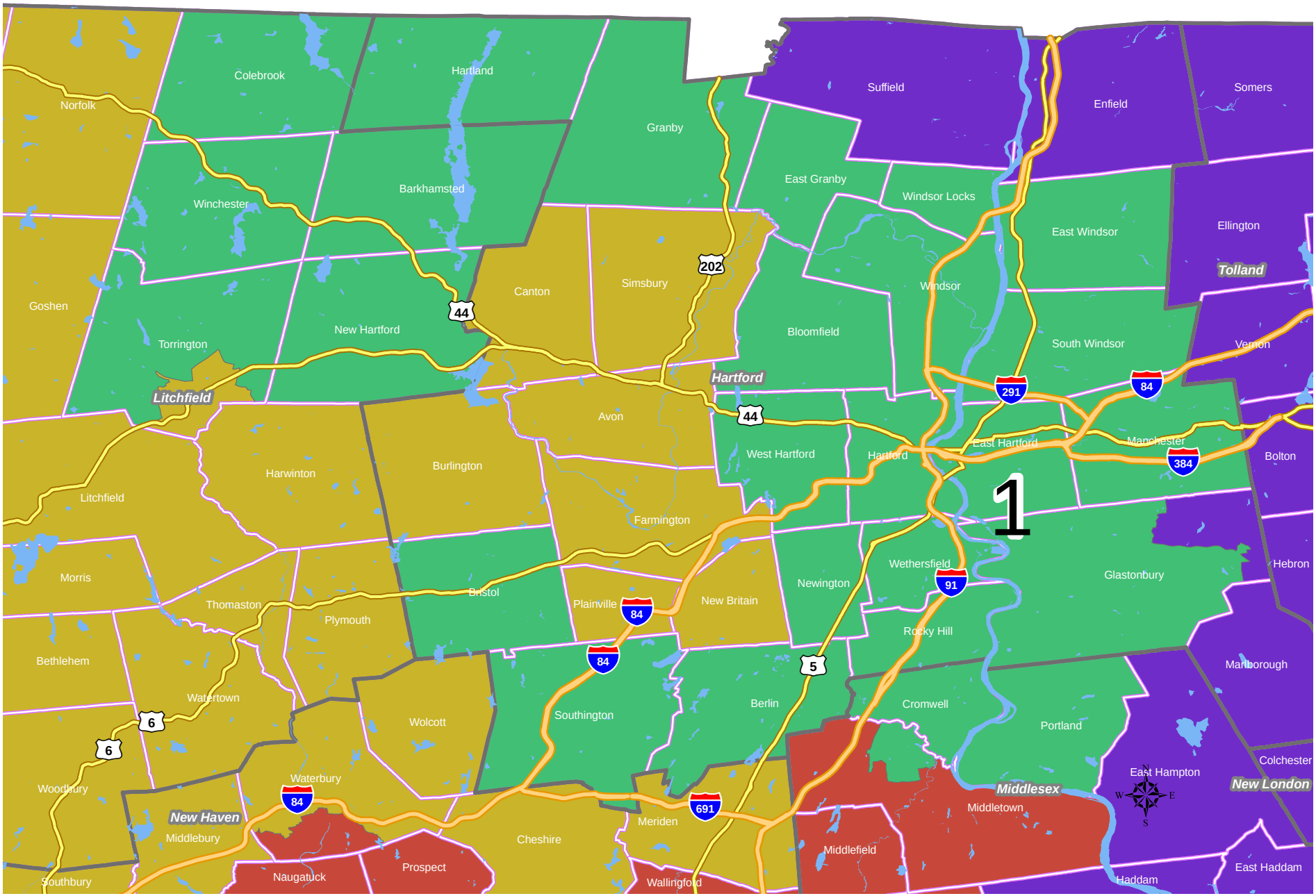
Special Master's Draft Plan

2011 Congressional Districts



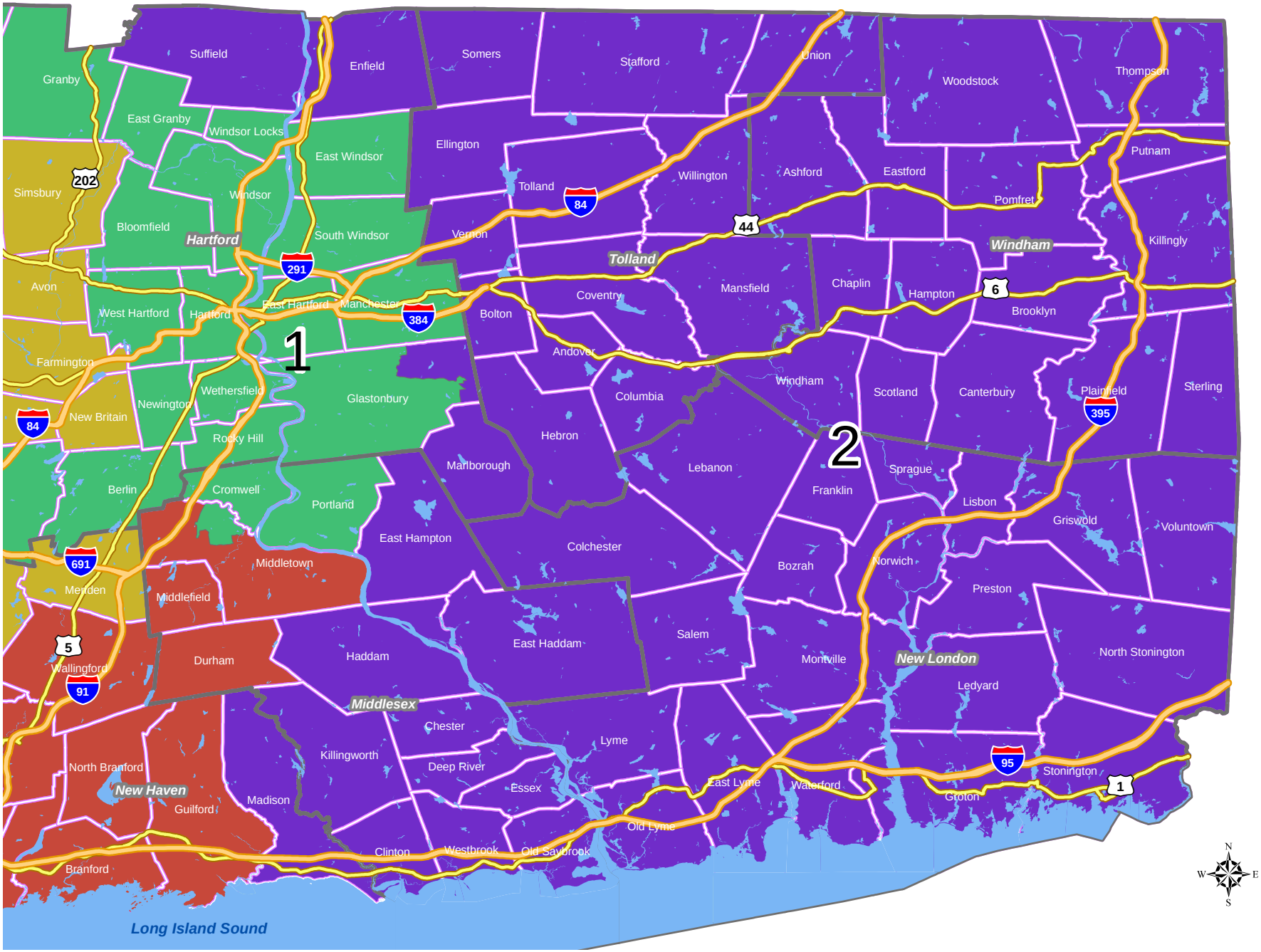
Special Master's Draft Plan

District 1



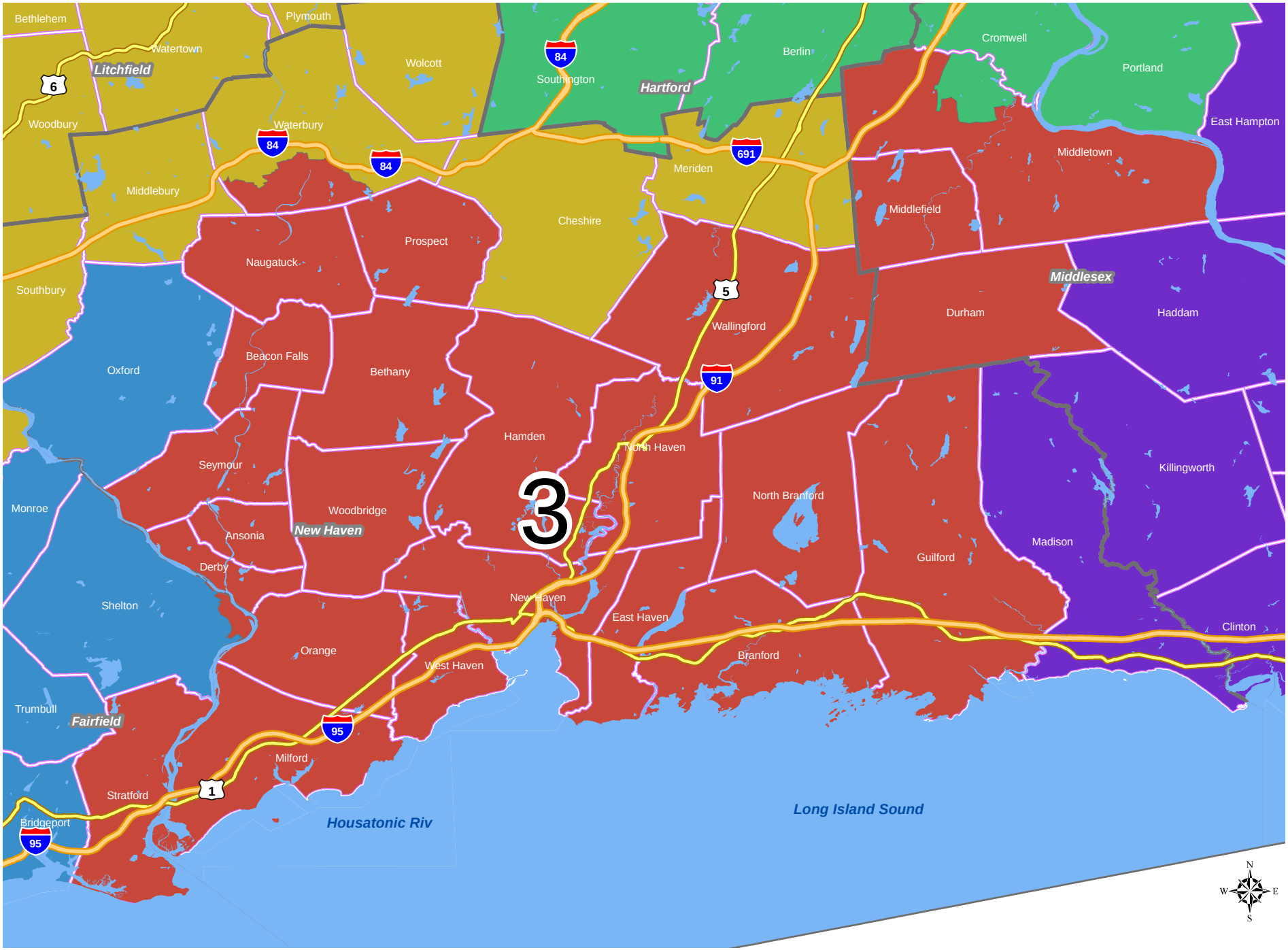
Special Master's Draft Plan

District 2



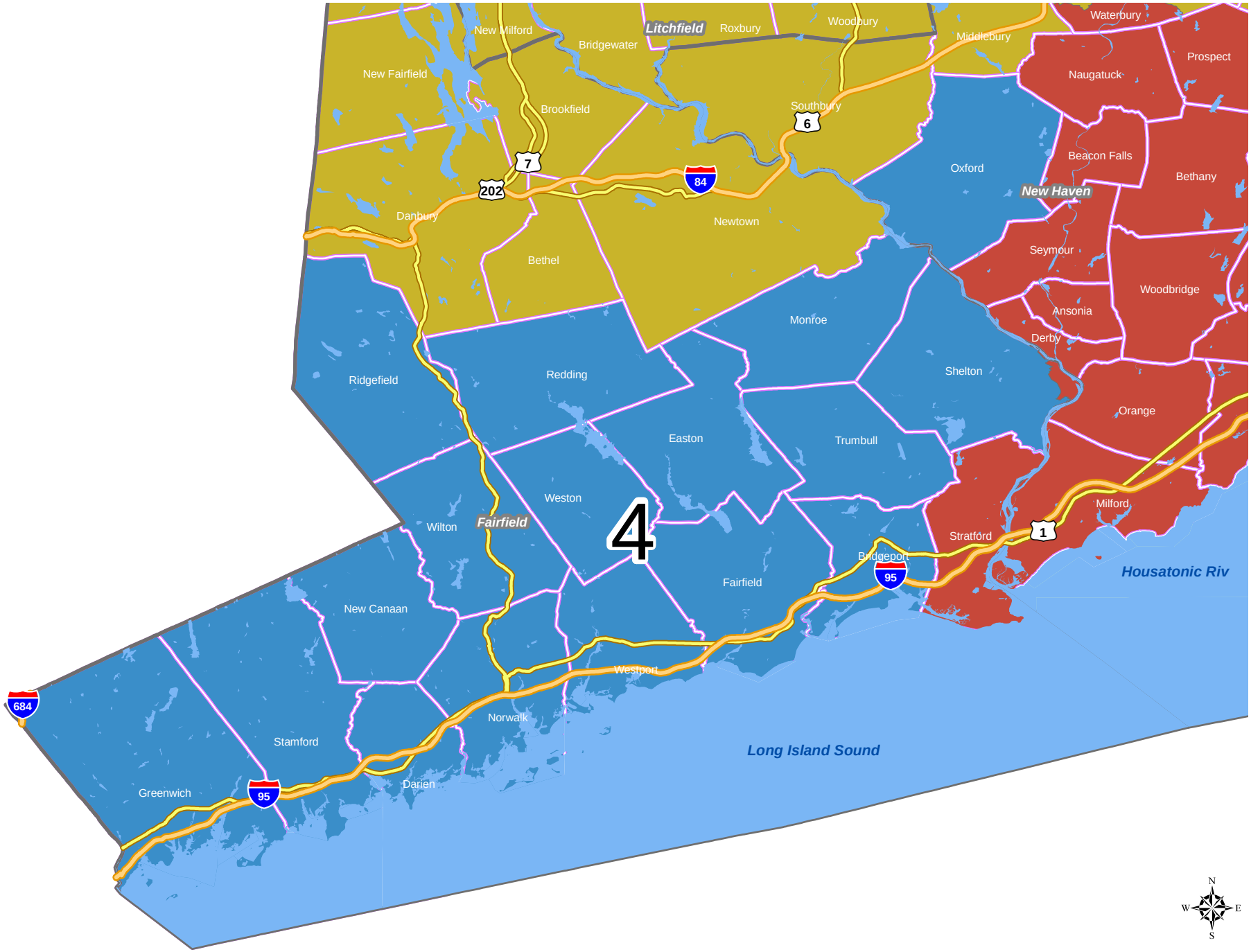
Special Master's Draft Plan

District 3



Special Master's Draft Plan

District 4



Special Master's Draft Plan

District 5

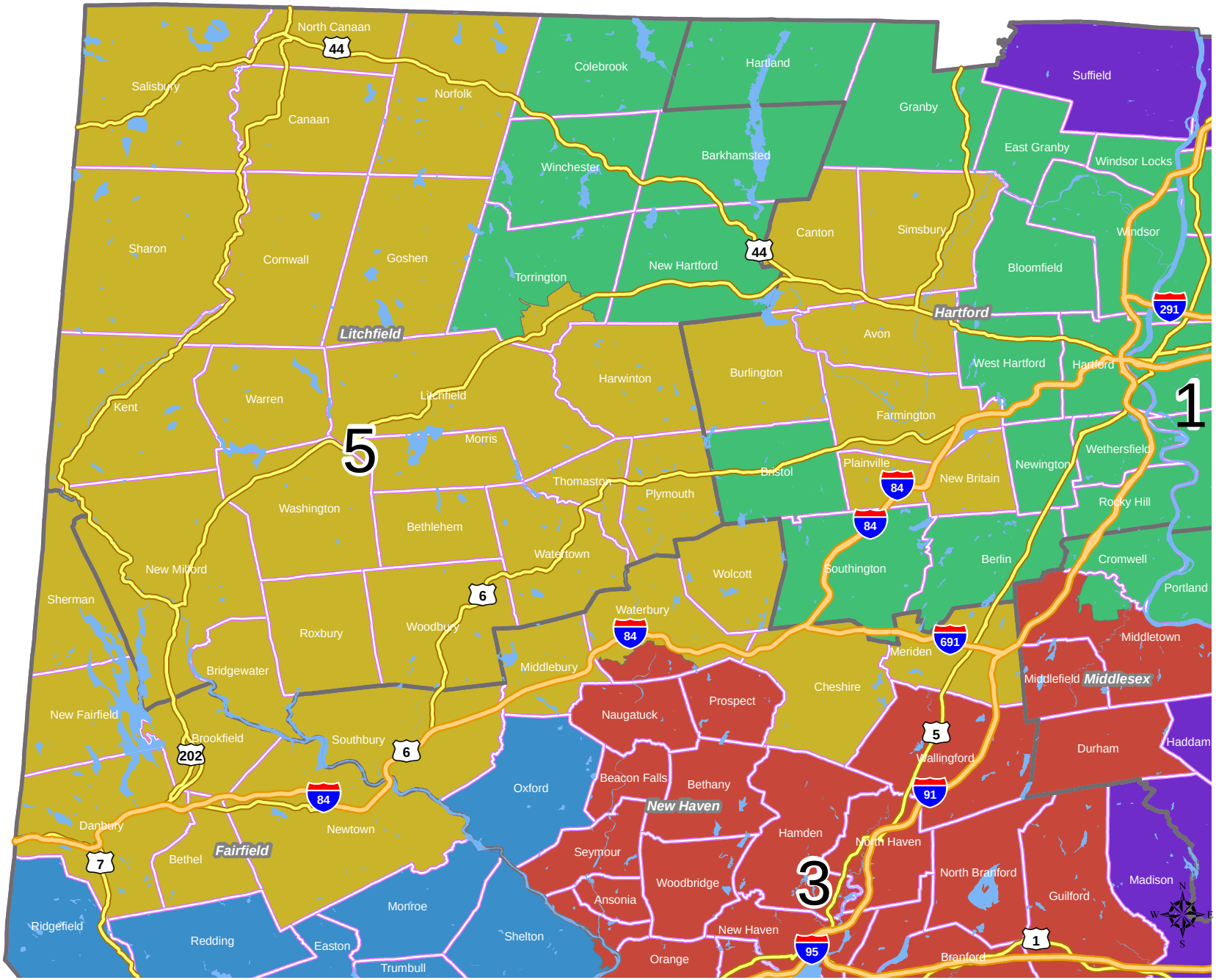
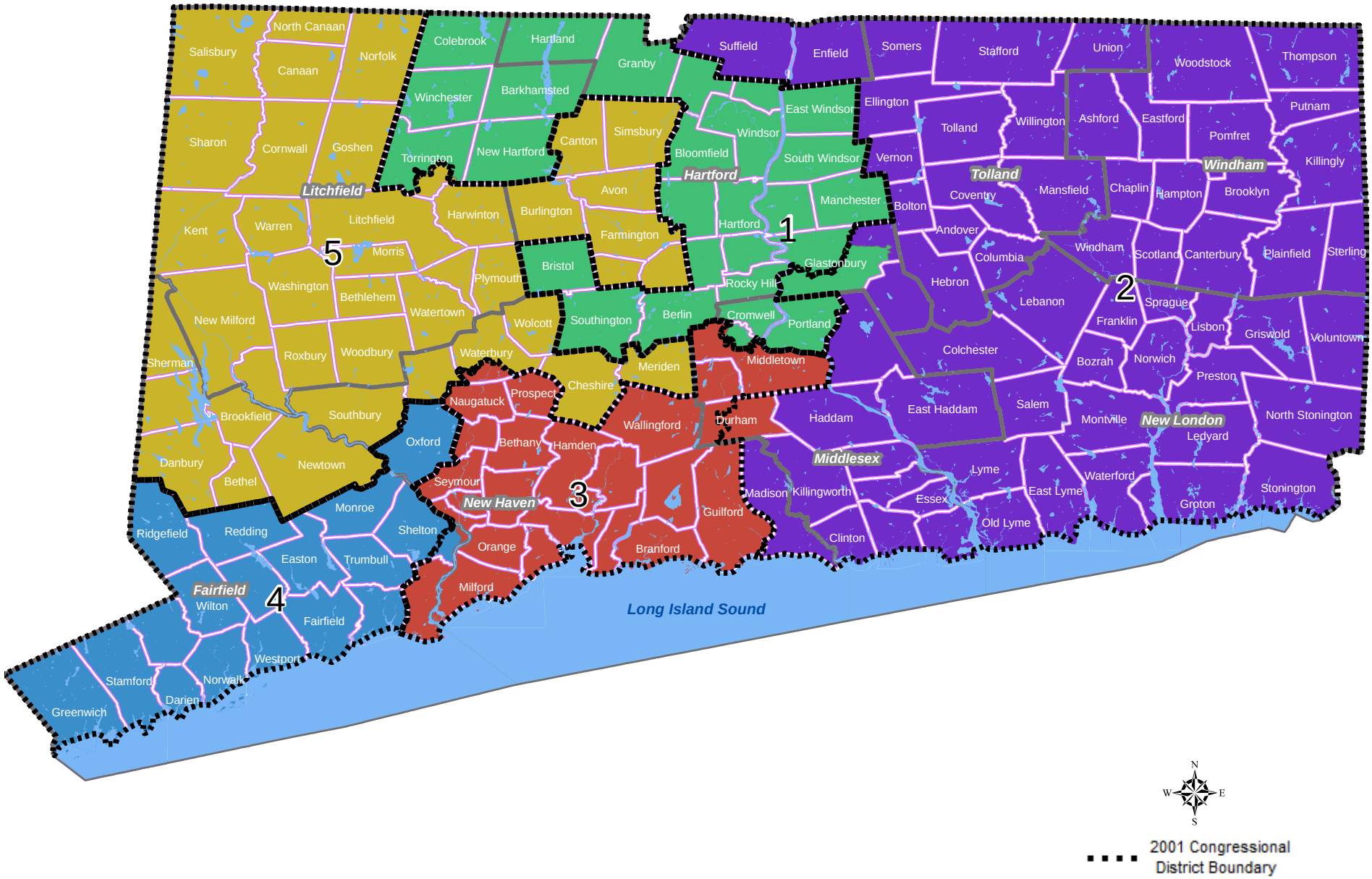


Exhibit 2. Special Master's Plan, Focused Maps with Proposed Changes from Existing Districts.

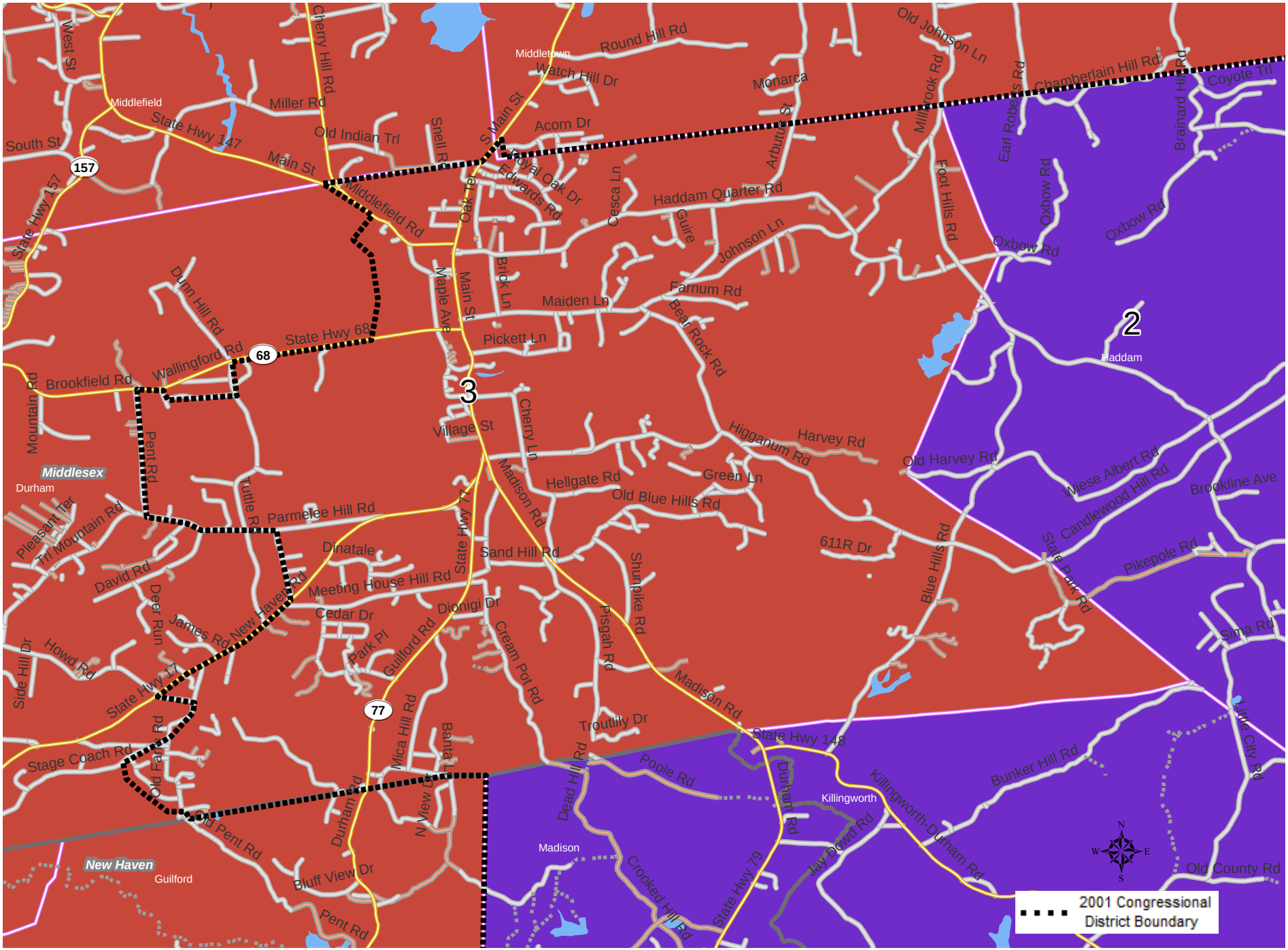
Special Master's Draft Plan

2001/2011 Congressional District Comparison



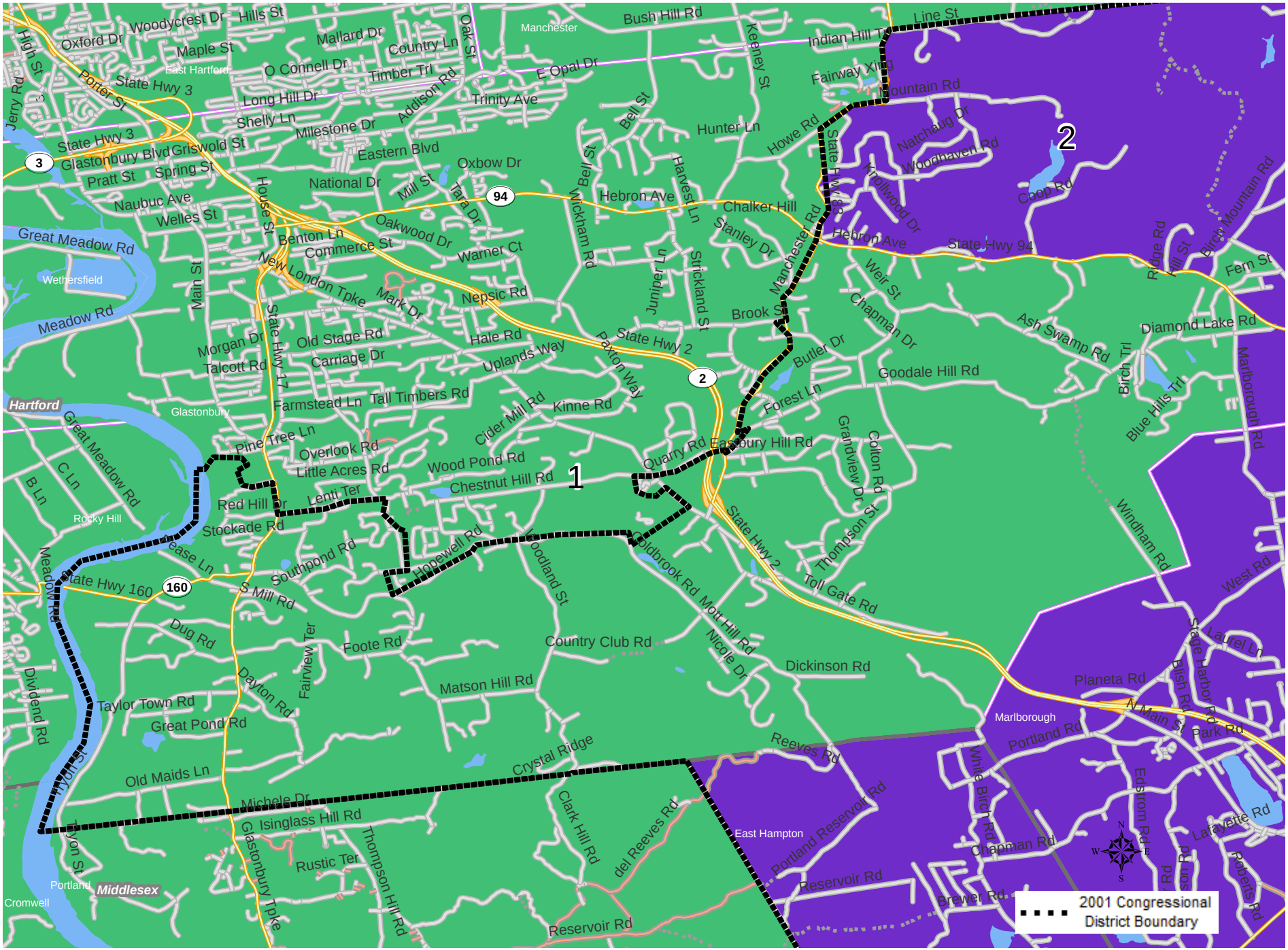
Special Master's Draft Plan

Durham



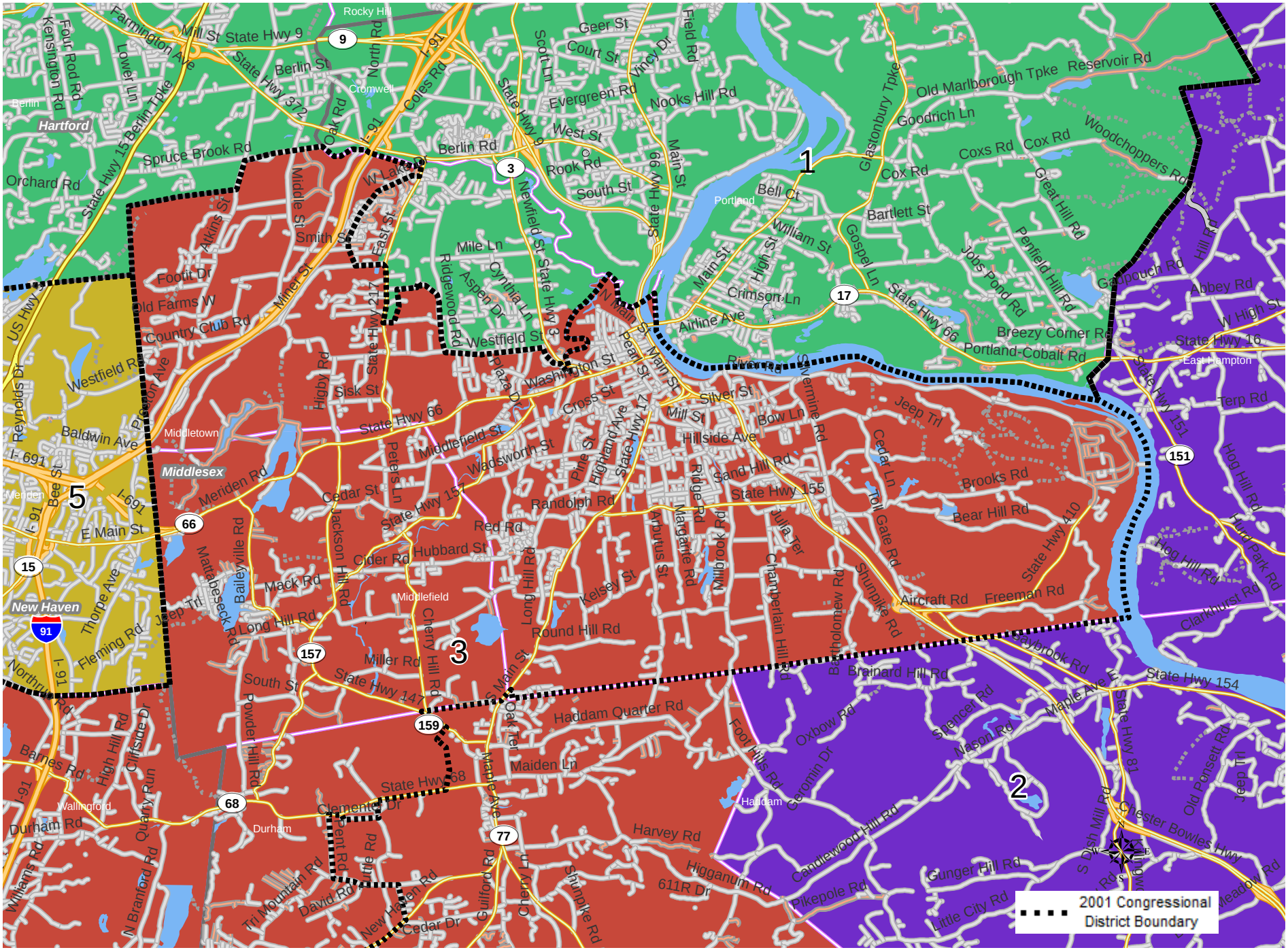
Special Master's Draft Plan

Glastonbury



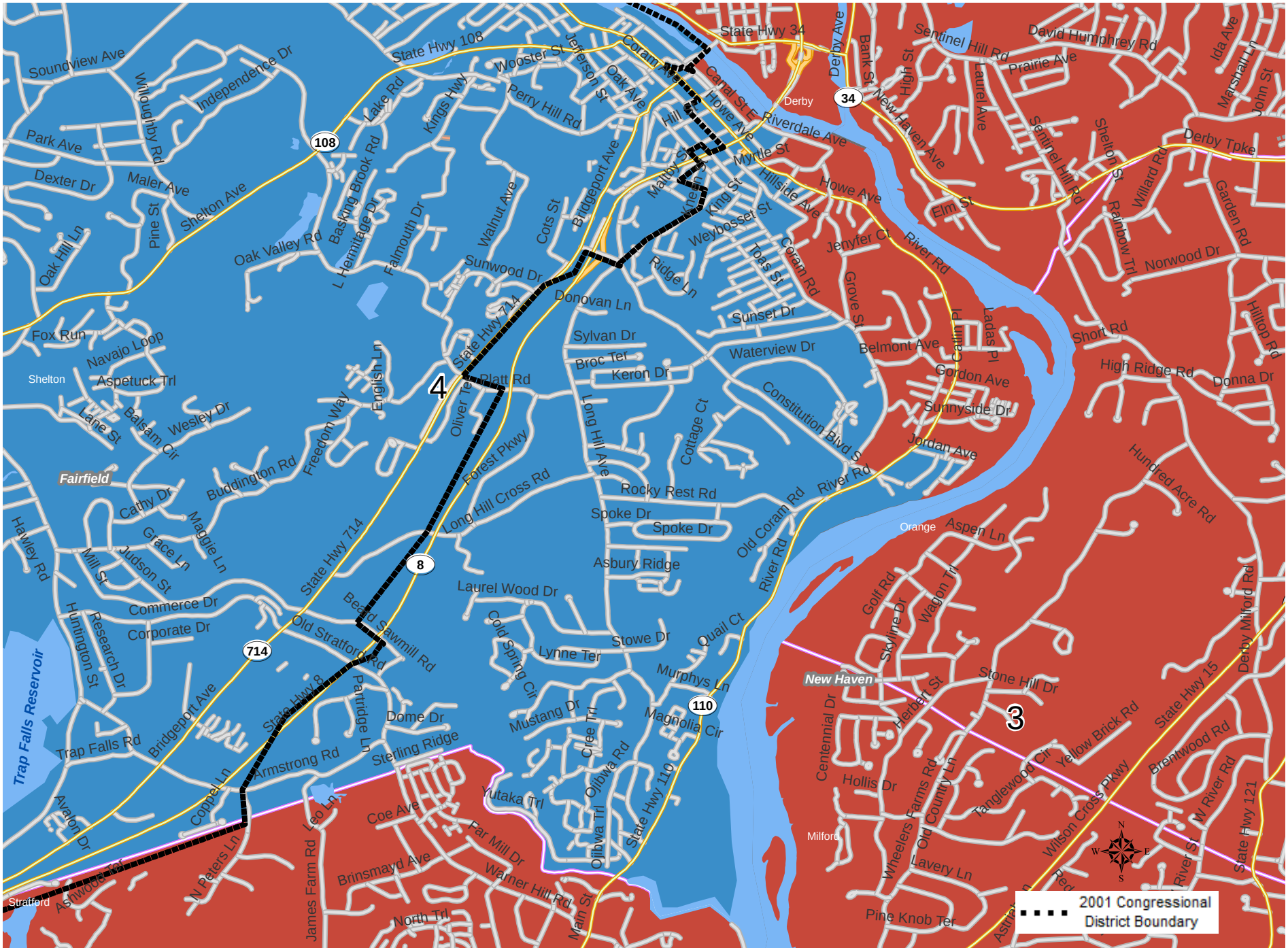
Special Master's Draft Plan

Middletown



Special Master's Draft Plan

Shelton



Special Master's Draft Plan

Torrington

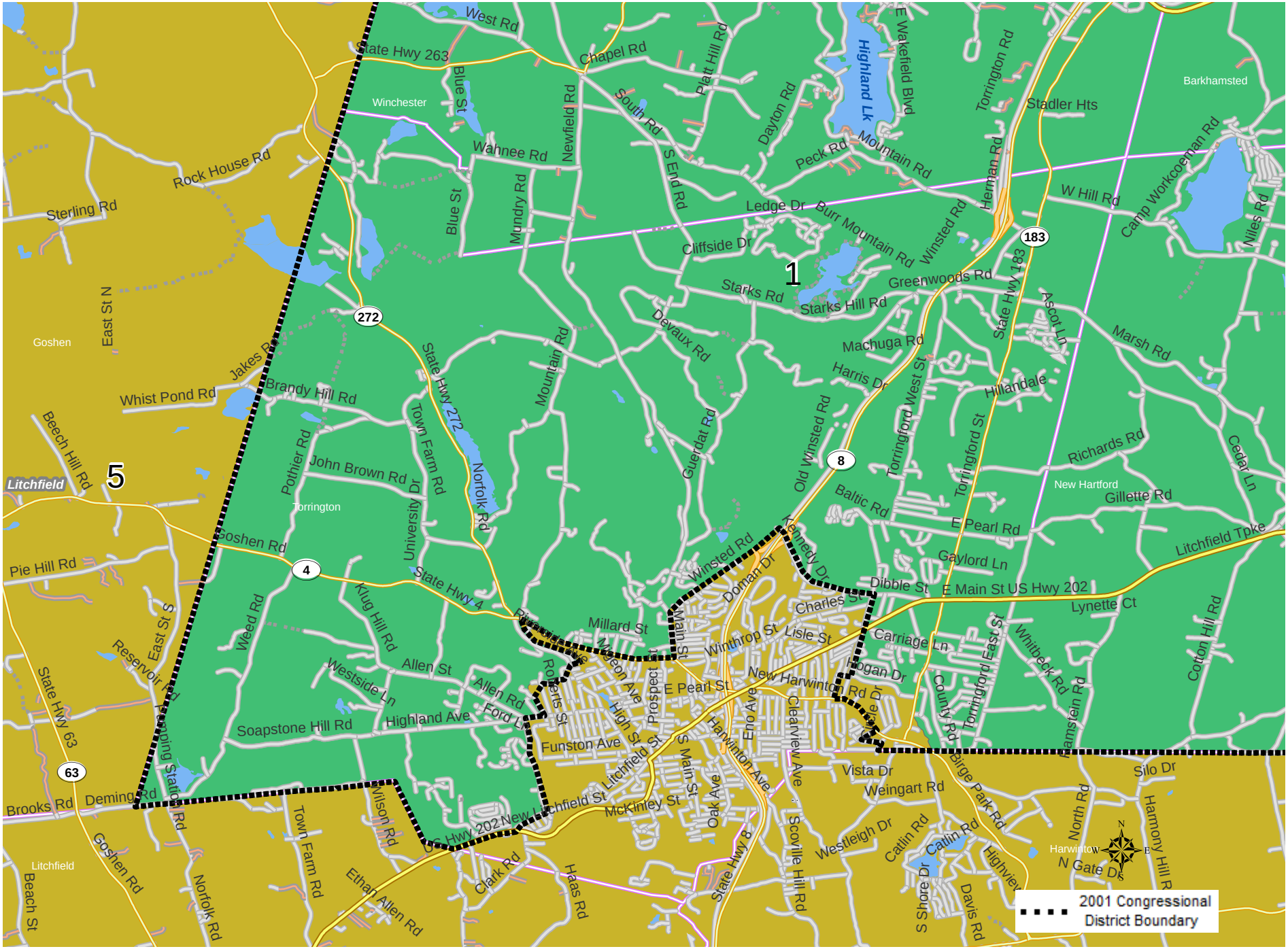


Exhibit 3. Racial Breakdown of Existing Districts and Proposed Districts in Special Master's Plan.

Demographic Breakdown of Existing and Proposed Districts According to Total Population

Existing Districts

District	Total Pop	Deviation	% Deviation	NHWhite	% NHWhite	Hisp	% Hisp	Black	% Black	Asian	% Asian	Indian	% Indian	Pac Isl	% Pac Isl	Other	% Other
1	710951	-3868	-0.54%	461039	64.85%	104848	14.75%	116193	16.34%	35873	5.05%	5918	0.83%	1141	0.16%	55797	7.85%
2	729771	14952	2.09%	615266	84.31%	48781	6.68%	36891	5.06%	25959	3.56%	9484	1.30%	1092	0.15%	22547	3.09%
3	712339	-2480	-0.35%	490247	68.82%	90670	12.73%	103914	14.59%	31481	4.42%	5531	0.78%	977	0.14%	40347	5.66%
4	706740	-8079	-1.13%	456810	64.64%	123554	17.48%	91893	13.00%	37900	5.36%	4633	0.66%	1238	0.18%	56403	7.98%
5	714296	-523	-0.07%	522900	73.20%	111234	15.57%	56709	7.94%	25875	3.62%	5574	0.78%	949	0.13%	54029	7.56%

Special Master's Plan

District	Total Pop	Deviation	% Deviation	NHWhite	% NHWhite	Hisp	% Hisp	Black	% Black	Asian	% Asian	Indian	% Indian	Pac Isl	% Pac Isl	Other	% Other
1	714820	1	0.00%	465912	65.18%	104641	14.64%	115204	16.12%	35981	5.03%	5891	0.82%	1140	0.16%	55598	7.78%
2	714819	0	0.00%	601693	84.17%	48341	6.76%	36710	5.14%	25259	3.53%	9407	1.32%	1084	0.15%	22445	3.14%
3	714819	0	0.00%	491713	68.79%	90696	12.69%	104742	14.65%	31657	4.43%	5604	0.78%	976	0.14%	40442	5.66%
4	714819	0	0.00%	463571	64.85%	124157	17.37%	92220	12.90%	38297	5.36%	4659	0.65%	1246	0.17%	56608	7.92%
5	714820	1	0.00%	523373	73.22%	111252	15.56%	56724	7.94%	25894	3.62%	5579	0.78%	951	0.13%	54030	7.56%

Total Pop = Total Population
NHWhite = Non-Hispanic White (alone)
Hisp = Hispanic or Latino
Black = Black or African American (alone or in combination with another race)
Indian = American Indian or Alaska Native (alone or in combination with another race)
Pac Isl = Native Hawaiian or other Pacific Islander (alone or in combination with another race)
Other = Some Other Race (alone or in combination with another race)

Demographic Breakdown of Existing and Proposed Districts According to Voting Age Population

Existing Districts

District	VAP	NHWVAP	% NHWVAP	HVAP	% HVAP	BVAP	% BVAP	AVAP	% AVAP	IVAP	% IVAP	PVAP	% PVAP	OVAP	% OVAP
1	550659	377715	68.59%	69087	12.55%	81027	14.71%	25537	4.64%	4136	0.75%	829	0.15%	37098	6.74%
2	571758	492620	86.16%	31918	5.58%	25525	4.46%	18719	3.27%	6342	1.11%	723	0.13%	15862	2.77%
3	560205	406406	72.55%	59627	10.64%	71840	12.82%	23337	4.17%	4022	0.72%	729	0.13%	26967	4.81%
4	527778	350875	66.48%	86433	16.38%	64894	12.30%	26589	5.04%	3228	0.61%	920	0.17%	39815	7.54%
5	546682	418932	76.63%	71882	13.15%	37857	6.92%	17706	3.24%	3761	0.69%	668	0.12%	35646	6.52%

Special Master's Plan

District	VAP	NHWVAP	% NHWVAP	HVAP	% HVAP	BVAP	% BVAP	AVAP	% AVAP	IVAP	% IVAP	PVAP	% PVAP	OVAP	% OVAP
1	552772	380668	68.87%	68940	12.47%	80323	14.53%	25517	4.62%	4121	0.75%	826	0.15%	36960	6.69%
2	560998	482708	86.04%	31667	5.64%	25412	4.53%	18276	3.26%	6288	1.12%	720	0.13%	15808	2.82%
3	561956	407375	72.49%	59627	10.61%	72447	12.89%	23516	4.18%	4064	0.72%	730	0.13%	27029	4.81%
4	534256	356484	66.73%	86820	16.25%	65093	12.18%	26860	5.03%	3251	0.61%	924	0.17%	39944	7.48%
5	547100	419313	76.64%	71893	13.14%	37868	6.92%	17719	3.24%	3765	0.69%	669	0.12%	35647	6.52%

VAP = Voting Age Population
NHWVAP = Non-Hispanic White Voting Age Population
HVAP = Hispanic Voting Age Population
BVAP = Black Voting Age Population
AVAP = Asian Voting Age Population
IVAP = Amerian Indian or Alaska Native Voting Age Population
PVAP = Native Hawaiian or other Pacific Islander Voting Age Population
OVAP = Some Other Race Voting Age Population

Exhibit 4. Town Assignment File, Special Master's Plan.

Town Assignments to Districts

County Subdivision	District	Population	%
Andover CT	2	3,303	
Ansonia CT	3	19,249	
Ashford CT	2	4,317	
Avon CT	5	18,098	
Barkhamsted CT	1	3,799	
Beacon Falls CT	3	6,049	
Berlin CT	1	19,866	
Bethany CT	3	5,563	
Bethel CT	5	18,584	
Bethlehem CT	5	3,607	
Bloomfield CT	1	20,486	
Bolton CT	2	4,980	
Bozrah CT	2	2,627	
Branford CT	3	28,026	
Bridgeport CT	4	144,229	
Bridgewater CT	5	1,727	
Bristol CT	1	60,477	
Brookfield CT	5	16,452	
Brooklyn CT	2	8,210	
Burlington CT	5	9,301	
Canaan CT	5	1,234	
Canterbury CT	2	5,132	
Canton CT	5	10,292	
Chaplin CT	2	2,305	
Cheshire CT	5	29,261	
Chester CT	2	3,994	
Clinton CT	2	13,260	
Colchester CT	2	16,068	
Colebrook CT	1	1,485	
Columbia CT	2	5,485	
Cornwall CT	5	1,420	

County Subdivision	District	Population	%
Coventry CT	2	12,435	
Cromwell CT	1	14,005	
Danbury CT	5	80,893	
Darien CT	4	20,732	
Deep River CT	2	4,629	
Derby CT	3	12,902	
Durham CT	3	7,388	
East Granby CT	1	5,148	
East Haddam CT	2	9,126	
East Hampton CT	2	12,959	
East Hartford CT	1	51,252	
East Haven CT	3	29,257	
East Lyme CT	2	19,159	
East Windsor CT	1	11,162	
Eastford CT	2	1,749	
Easton CT	4	7,490	
Ellington CT	2	15,602	
Enfield CT	2	44,654	
Essex CT	2	6,683	
Fairfield CT	4	59,404	
Farmington CT	5	25,340	
Franklin CT	2	1,922	
Glastonbury CT	1	32,546	
Glastonbury CT	2	1,881	
Goshen CT	5	2,976	
Granby CT	1	11,282	
Greenwich CT	4	61,171	
Griswold CT	2	11,951	
Groton CT	2	40,115	
Guilford CT	3	22,375	
Haddam CT	2	8,346	
Hamden CT	3	60,960	
Hampton CT	2	1,863	
Hartford CT	1	124,775	
Hartland CT	1	2,114	
Harwinton CT	5	5,642	
Hebron CT	2	9,686	
Kent CT	5	2,979	
Killingly CT	2	17,370	
Killingworth CT	2	6,525	

County Subdivision	District	Population	%
Lebanon CT	2	7,308	
Ledyard CT	2	15,051	
Lisbon CT	2	4,338	
Litchfield CT	5	8,466	
Lyme CT	2	2,406	
Madison CT	2	18,269	
Manchester CT	1	58,241	
Mansfield CT	2	26,543	
Marlborough CT	2	6,404	
Meriden CT	5	60,868	
Middlebury CT	5	7,575	
Middlefield CT	3	4,425	
Middletown CT	1	4,517	
Middletown CT	3	43,131	
Milford CT	3	52,759	
Monroe CT	4	19,479	
Montville CT	2	19,571	
Morris CT	5	2,388	
Naugatuck CT	3	31,862	
New Britain CT	5	73,206	
New Canaan CT	4	19,738	
New Fairfield CT	5	13,881	
New Hartford CT	1	6,970	
New Haven CT	3	129,779	
New London CT	2	27,620	
New Milford CT	5	28,142	
Newington CT	1	30,562	
Newtown CT	5	27,560	
Norfolk CT	5	1,709	
North Branford CT	3	14,407	
North Canaan CT	5	3,315	
North Haven CT	3	24,093	
North Stonington CT	2	5,297	
Norwalk CT	4	85,603	
Norwich CT	2	40,493	
Old Lyme CT	2	7,603	
Old Saybrook CT	2	10,242	
Orange CT	3	13,956	
Oxford CT	4	12,683	
Plainfield CT	2	15,405	
Plainville CT	5	17,716	

County Subdivision	District	Population	%
Plymouth CT	5	12,243	
Pomfret CT	2	4,247	
Portland CT	1	9,508	
Preston CT	2	4,726	
Prospect CT	3	9,405	
Putnam CT	2	9,584	
Redding CT	4	9,158	
Ridgefield CT	4	24,638	
Rocky Hill CT	1	19,709	
Roxbury CT	5	2,262	
Salem CT	2	4,151	
Salisbury CT	5	3,741	
Scotland CT	2	1,726	
Seymour CT	3	16,540	
Sharon CT	5	2,782	
Shelton CT	3	2,358	
Shelton CT	4	37,201	
Sherman CT	5	3,581	
Simsbury CT	5	23,511	
Somers CT	2	11,444	
South Windsor CT	1	25,709	
Southbury CT	5	19,904	
Southington CT	1	43,069	
Sprague CT	2	2,984	
Stafford CT	2	12,087	
Stamford CT	4	122,643	
Sterling CT	2	3,830	
Stonington CT	2	18,545	
Stratford CT	3	51,384	
Suffield CT	2	15,735	
Thomaston CT	5	7,887	
Thompson CT	2	9,458	
Tolland CT	2	15,052	
Torrington CT	1	15,418	
Torrington CT	5	20,965	
Trumbull CT	4	36,018	
Union CT	2	854	
Vernon CT	2	29,179	
Voluntown CT	2	2,603	
Wallingford CT	3	45,135	
Warren CT	5	1,461	

County Subdivision	District	Population	%
Washington CT	5	3,578	
Waterbury CT	3	19,262	
Waterbury CT	5	91,104	
Waterford CT	2	19,517	
Watertown CT	5	22,514	
West Hartford CT	1	63,268	
West Haven CT	3	55,564	
Westbrook CT	2	6,938	
Weston CT	4	10,179	
Westport CT	4	26,391	
Wethersfield CT	1	26,668	
Willington CT	2	6,041	
Wilton CT	4	18,062	
Winchester CT	1	11,242	
Windham CT	2	25,268	
Windsor CT	1	29,044	
Windsor Locks CT	1	12,498	
Wolcott CT	5	16,680	
Woodbridge CT	3	8,990	
Woodbury CT	5	9,975	
Woodstock CT	2	7,964	

Towns -- listed by District

District 1

	Population	%
Barkhamsted CT	3,799	
Berlin CT	19,866	
Bloomfield CT	20,486	
Bristol CT	60,477	
Colebrook CT	1,485	
Cromwell CT	14,005	
East Granby CT	5,148	
East Hartford CT	51,252	
East Windsor CT	11,162	
Glastonbury CT (part)	32,546	
Granby CT	11,282	
Hartford CT	124,775	
Hartland CT	2,114	
Manchester CT	58,241	

Middletown CT (part)	4,517
New Hartford CT	6,970
Newington CT	30,562
Portland CT	9,508
Rocky Hill CT	19,709
South Windsor CT	25,709
Southington CT	43,069
Torrington CT (part)	15,418
West Hartford CT	63,268
Wethersfield CT	26,668
Winchester CT	11,242
Windsor CT	29,044
Windsor Locks CT	12,498
District 1 Totals	**714,820**

District 2

	Population	*%*
Andover CT	3,303	
Ashford CT	4,317	
Bolton CT	4,980	
Bozrah CT	2,627	
Brooklyn CT	8,210	
Canterbury CT	5,132	
Chaplin CT	2,305	
Chester CT	3,994	
Clinton CT	13,260	
Colchester CT	16,068	
Columbia CT	5,485	
Coventry CT	12,435	
Deep River CT	4,629	
East Haddam CT	9,126	
East Hampton CT	12,959	
East Lyme CT	19,159	
Eastford CT	1,749	
Ellington CT	15,602	
Enfield CT	44,654	
Essex CT	6,683	
Franklin CT	1,922	
Glastonbury CT (part)	1,881	
Griswold CT	11,951	
Groton CT	40,115	

Haddam CT	8,346
Hampton CT	1,863
Hebron CT	9,686
Killingly CT	17,370
Killingworth CT	6,525
Lebanon CT	7,308
Ledyard CT	15,051
Lisbon CT	4,338
Lyme CT	2,406
Madison CT	18,269
Mansfield CT	26,543
Marlborough CT	6,404
Montville CT	19,571
New London CT	27,620
North Stonington CT	5,297
Norwich CT	40,493
Old Lyme CT	7,603
Old Saybrook CT	10,242
Plainfield CT	15,405
Pomfret CT	4,247
Preston CT	4,726
Putnam CT	9,584
Salem CT	4,151
Scotland CT	1,726
Somers CT	11,444
Sprague CT	2,984
Stafford CT	12,087
Sterling CT	3,830
Stonington CT	18,545
Suffield CT	15,735
Thompson CT	9,458
Tolland CT	15,052
Union CT	854
Vernon CT	29,179
Voluntown CT	2,603
Waterford CT	19,517
Westbrook CT	6,938
Willington CT	6,041
Windham CT	25,268
Woodstock CT	7,964

District 2 Totals	714,819

District 3	Population	%
Ansonia CT	19,249	
Beacon Falls CT	6,049	
Bethany CT	5,563	
Branford CT	28,026	
Derby CT	12,902	
Durham CT	7,388	
East Haven CT	29,257	
Guilford CT	22,375	
Hamden CT	60,960	
Middlefield CT	4,425	
Middletown CT (part)	43,131	
Milford CT	52,759	
Naugatuck CT	31,862	
New Haven CT	129,779	
North Branford CT	14,407	
North Haven CT	24,093	
Orange CT	13,956	
Prospect CT	9,405	
Seymour CT	16,540	
Shelton CT (part)	2,358	
Stratford CT	51,384	
Wallingford CT	45,135	
Waterbury CT (part)	19,262	
West Haven CT	55,564	
Woodbridge CT	8,990	
District 3 Totals	**714,819**	

District 4	Population	%
Bridgeport CT	144,229	
Darien CT	20,732	
Easton CT	7,490	
Fairfield CT	59,404	
Greenwich CT	61,171	
Monroe CT	19,479	
New Canaan CT	19,738	
Norwalk CT	85,603	

Oxford CT	12,683
Redding CT	9,158
Ridgefield CT	24,638
Shelton CT (part)	37,201
Stamford CT	122,643
Trumbull CT	36,018
Weston CT	10,179
Westport CT	26,391
Wilton CT	18,062
District 4 Totals	**714,819**

District 5

	Population	*%*
Avon CT	18,098	
Bethel CT	18,584	
Bethlehem CT	3,607	
Bridgewater CT	1,727	
Brookfield CT	16,452	
Burlington CT	9,301	
Canaan CT	1,234	
Canton CT	10,292	
Cheshire CT	29,261	
Cornwall CT	1,420	
Danbury CT	80,893	
Farmington CT	25,340	
Goshen CT	2,976	
Harwinton CT	5,642	
Kent CT	2,979	
Litchfield CT	8,466	
Meriden CT	60,868	
Middlebury CT	7,575	
Morris CT	2,388	
New Britain CT	73,206	
New Fairfield CT	13,881	
New Milford CT	28,142	
Newtown CT	27,560	
Norfolk CT	1,709	
North Canaan CT	3,315	
Plainville CT	17,716	
Plymouth CT	12,243	
Roxbury CT	2,262	

Salisbury CT	3,741
Sharon CT	2,782
Sherman CT	3,581
Simsbury CT	23,511
Southbury CT	19,904
Thomaston CT	7,887
Torrington CT (part)	20,965
Warren CT	1,461
Washington CT	3,578
Waterbury CT (part)	91,104
Watertown CT	22,514
Wolcott CT	16,680
Woodbury CT	9,975
District 5 Totals	**714,820**

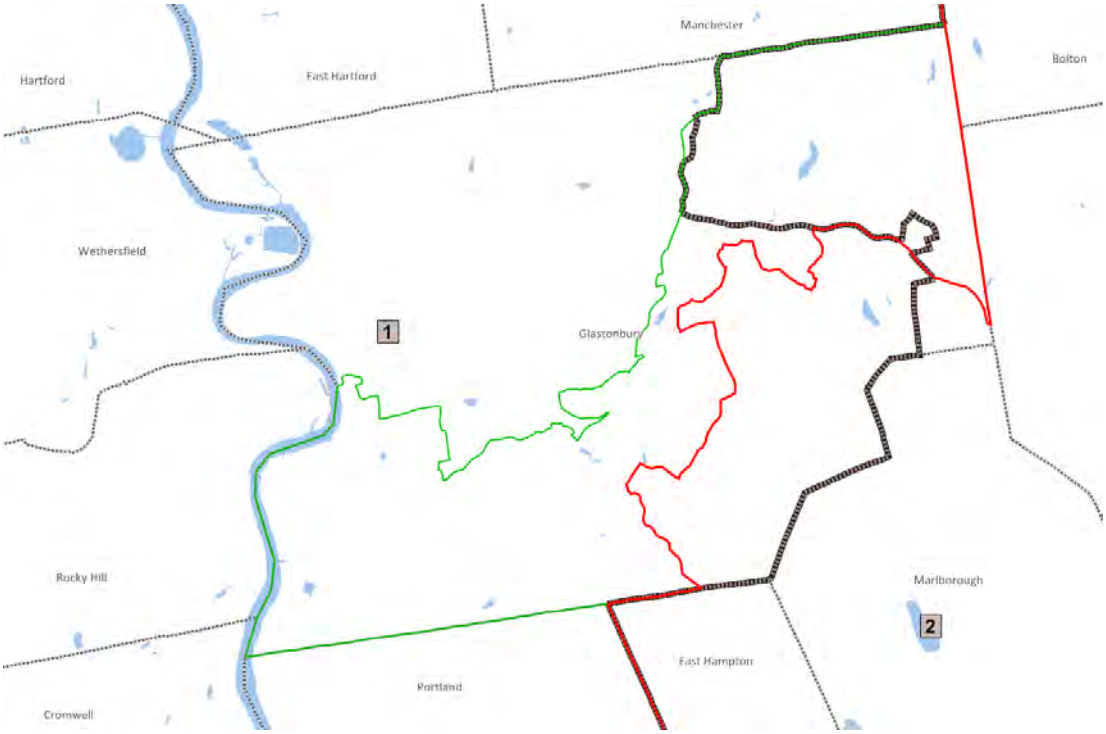
Population *%*

Summary Statistics

Number of County Subdivision not split	164
Number of County Subdivision split	5

Exhibit 5. Focused Maps of Town Splits in Existing Districts, Special Master's Plan, and Democrats' Proposal.

Exhibit 5A. Glastonbury*



* In each map, the green lines indicate the existing district boundary, the red lines indicate the Democrats' proposed district boundary, and the black lines indicate the Special Master's proposed boundary.

Exhibit 5B. Middletown

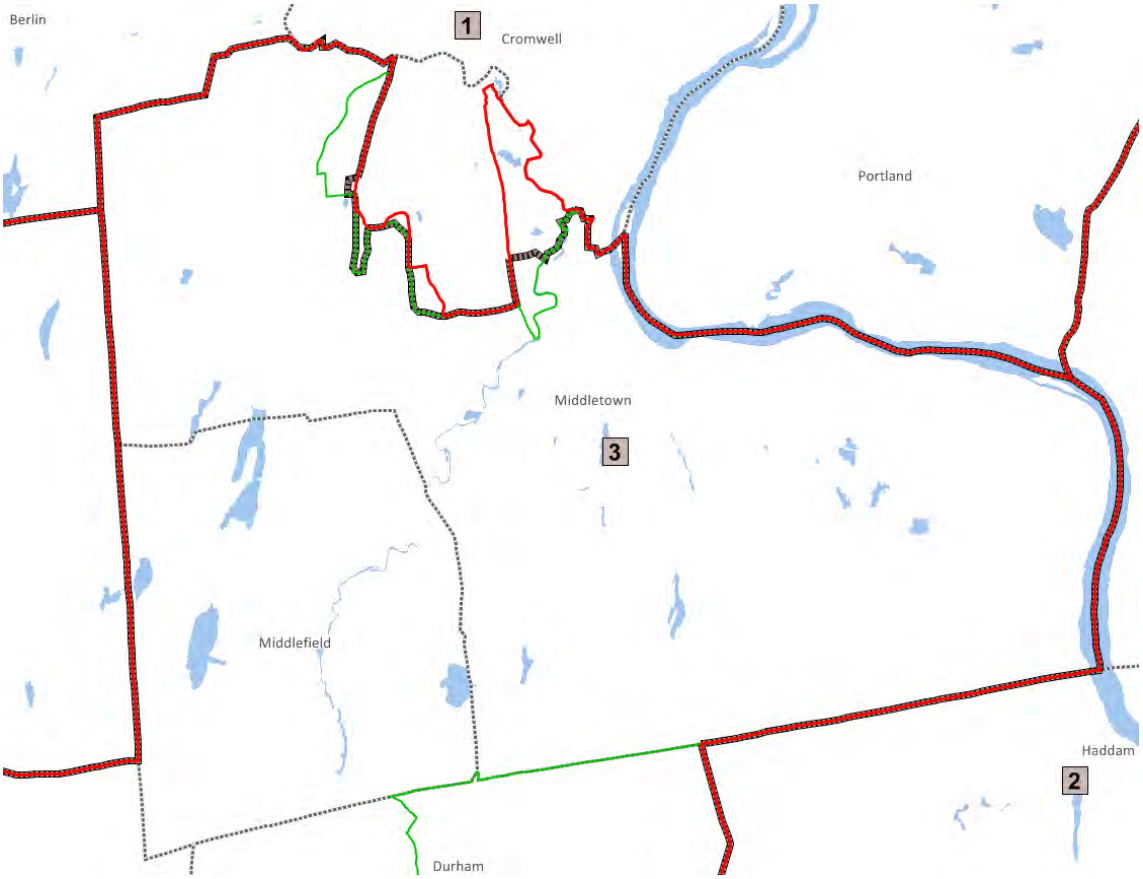


Exhibit 5C. Shelton

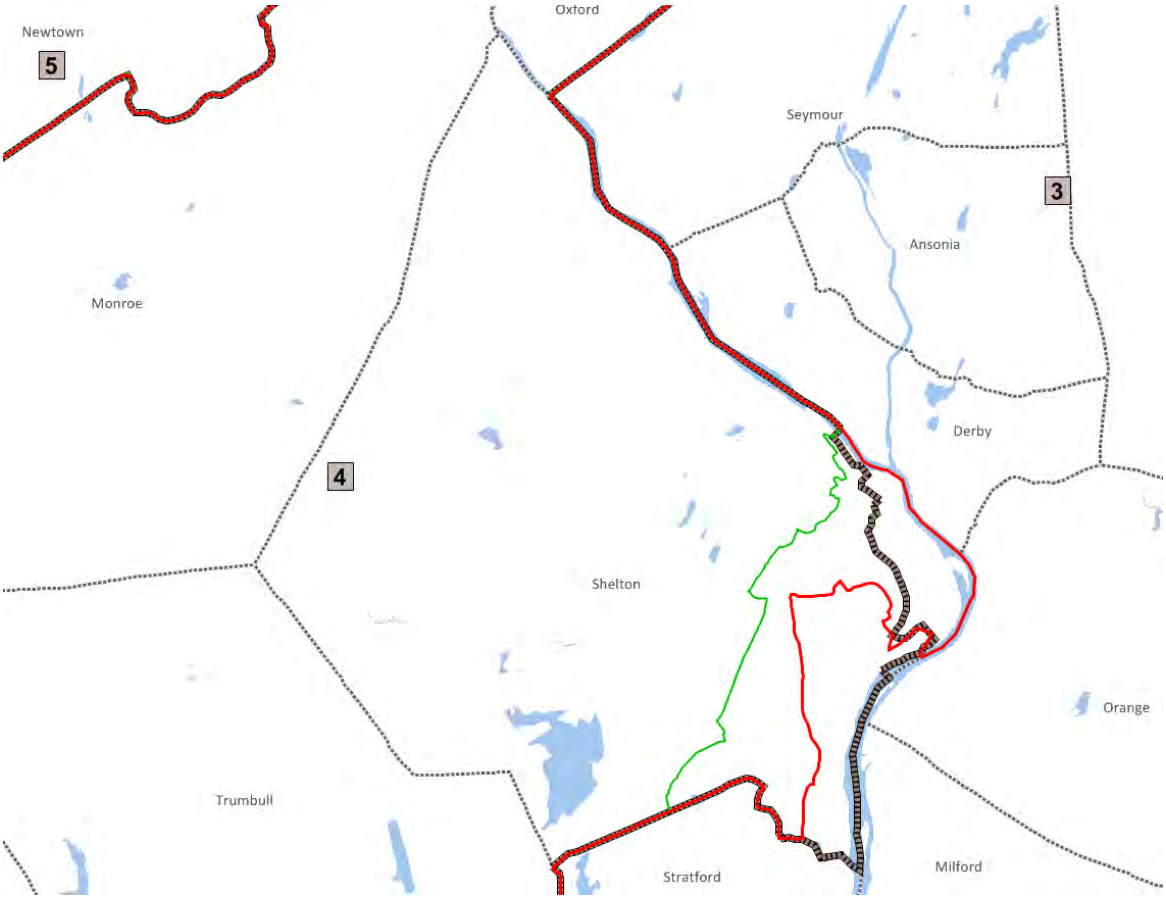


Exhibit 5D. Torrington

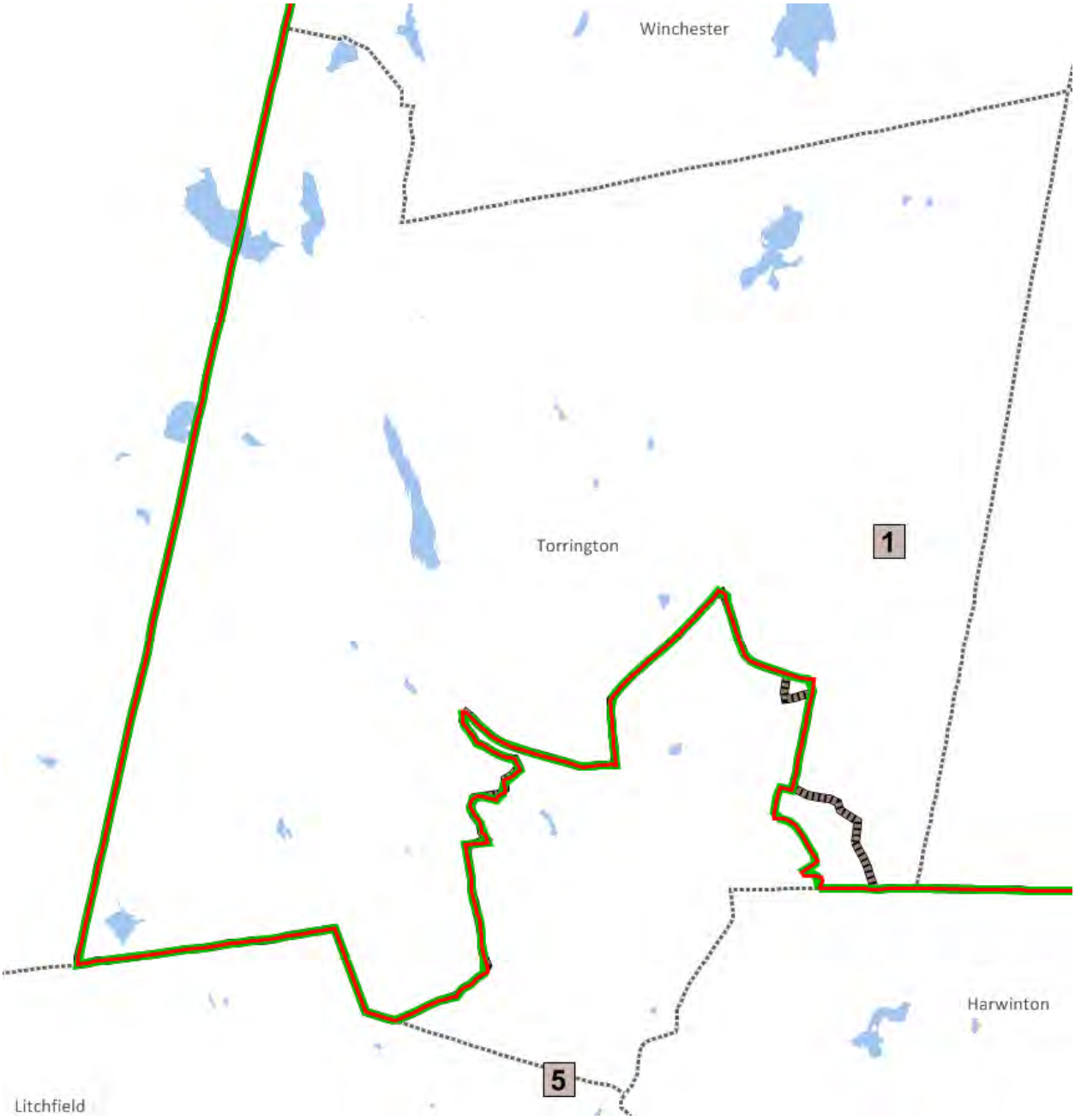


Exhibit 5E. Waterbury

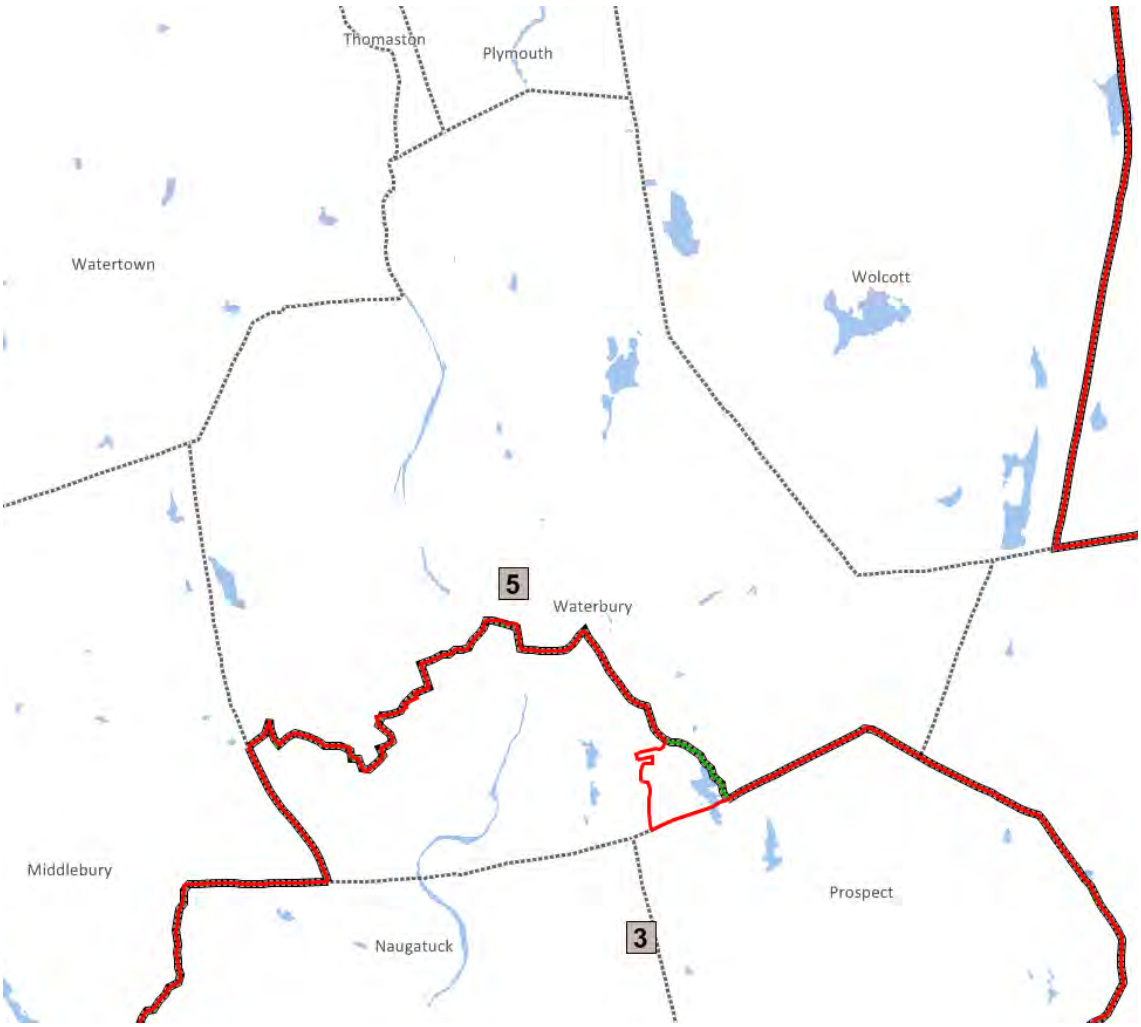


Exhibit 6. Compactness Scores for Existing Districts, Special Master's Plan, and Submitted Proposals.

Comparison of Compactness Scores of Existing Districts and Special Master's Plan*

	Existing Districts								Special Master's Plan							
	Reock	Schwartz-berg	Perimeter	Polsby-Popper	Length-Width	Pop Polygon	Pop Circle	Ehrenburg	Reock	Schwartz-berg	Perimeter	Polsby-Popper	Length-Width	Pop Polygon	Pop Circle	Ehren-burg
1	0.43	2.44	231.49	0.16	3.79	0.71	0.52	0.17	0.44	2.32	222.84	0.18	3.79	0.71	0.52	0.18
2	0.57	1.50	255.74	0.41	3.15	0.57	0.42	0.55	0.56	1.45	245.16	0.44	3.15	0.57	0.41	0.52
3	0.35	2.13	179.09	0.19	0.35	0.79	0.56	0.30	0.36	2.09	177.32	0.20	0.35	0.79	0.57	0.30
4	0.33	1.68	141.95	0.34	3.27	0.84	0.59	0.24	0.33	1.71	145.36	0.32	3.00	0.81	0.60	0.23
5	0.51	2.06	267.34	0.23	9.23	0.71	0.51	0.35	0.51	2.06	266.93	0.23	9.23	0.71	0.51	0.35
Sum	N/A	N/A	1,075.61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,057.62	N/A	N/A	N/A	N/A	N/A
Min	.33	1.50	N/A	0.16	0.35	0.57	0.42	0.17	0.33	1.45	N/A	0.18	0.35	0.57	0.41	0.18
Max	.57	2.44	N/A	0.41	9.23	0.84	0.59	0.55	0.56	2.32	N/A	0.44	9.23	0.81	0.60	0.52
Mean	.44	1.96	N/A	0.26	3.96	0.72	0.52	0.32	0.44	1.92	N/A	0.27	3.90	0.72	0.52	0.32
SD	.10	0.37	N/A	0.11	3.24	0.10	0.07	0.14	0.10	0.34	N/A	0.11	3.26	0.10	0.07	0.13

*Shaded boxes indicate scores where one plan achieves greater compactness than the other.

Comparison of Compactness Scores of Special Master's Plan and Submitted Proposals*

	Special Master								Democrats								Republicans							
	R	S	Perim	PP	LW	Poly	Cir	E	R	S	Perim	PP	LW	Poly	Cir	E	R	S	Perim	PP	LW	Poly	Cir	E
1	0.44	2.32	222.84	0.18	3.79	0.71	0.52	0.18	0.44	2.34	225.06	0.17	4.35	0.71	0.52	0.21	0.46	1.85	142.93	0.27	4.56	0.83	0.66	0.30
2	0.56	1.45	245.16	0.44	3.15	0.57	0.41	0.52	0.56	1.45	245.17	0.44	3.15	0.57	0.41	0.52	0.56	1.46	246.72	0.43	3.15	0.57	0.41	0.51
3	0.36	2.09	177.32	0.20	0.35	0.79	0.57	0.30	0.36	2.13	181.71	0.19	0.35	0.79	0.57	0.30	0.36	2.09	178.55	0.20	0.35	0.78	0.57	0.29
4	0.33	1.71	145.36	0.32	3.00	0.81	0.60	0.23	0.33	1.73	146.70	0.32	2.63	0.81	0.60	0.23	0.33	1.76	148.96	0.31	2.63	0.81	0.60	0.23
5	0.51	2.06	266.93	0.23	9.23	0.71	0.51	0.35	0.51	2.07	268.58	0.22	9.23	0.71	0.51	0.35	0.55	1.66	235.50	0.35	9.23	0.70	0.39	0.48
Sum	N/A	N/A	1,057.62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1067.22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	952.66	N/A	N/A	N/A	N/A	N/A
Min	0.33	1.45	N/A	0.18	0.35	0.57	0.41	0.18	0.33	1.45	N/A	0.17	0.35	0.57	0.41	0.21	0.33	1.46	N/A	0.20	0.35	0.57	0.39	0.23
Max	0.56	2.32	N/A	0.44	9.23	0.81	0.60	0.52	0.56	2.34	N/A	0.44	9.23	0.81	0.60	0.52	0.56	2.09	N/A	0.43	9.23	0.83	0.66	0.51
Mean	0.44	1.92	N/A	0.27	3.90	0.72	0.52	0.32	0.44	1.94	N/A	0.27	3.94	0.72	0.52	0.32	0.45	1.76	N/A	0.31	3.98	0.74	0.53	0.36
St Dev	0.10	0.34	N/A	0.11	3.26	0.10	0.07	0.13	0.10	0.35	N/A	0.11	3.29	0.10	0.07	0.12	0.11	0.23	N/A	0.09	3.30	0.11	0.12	0.12

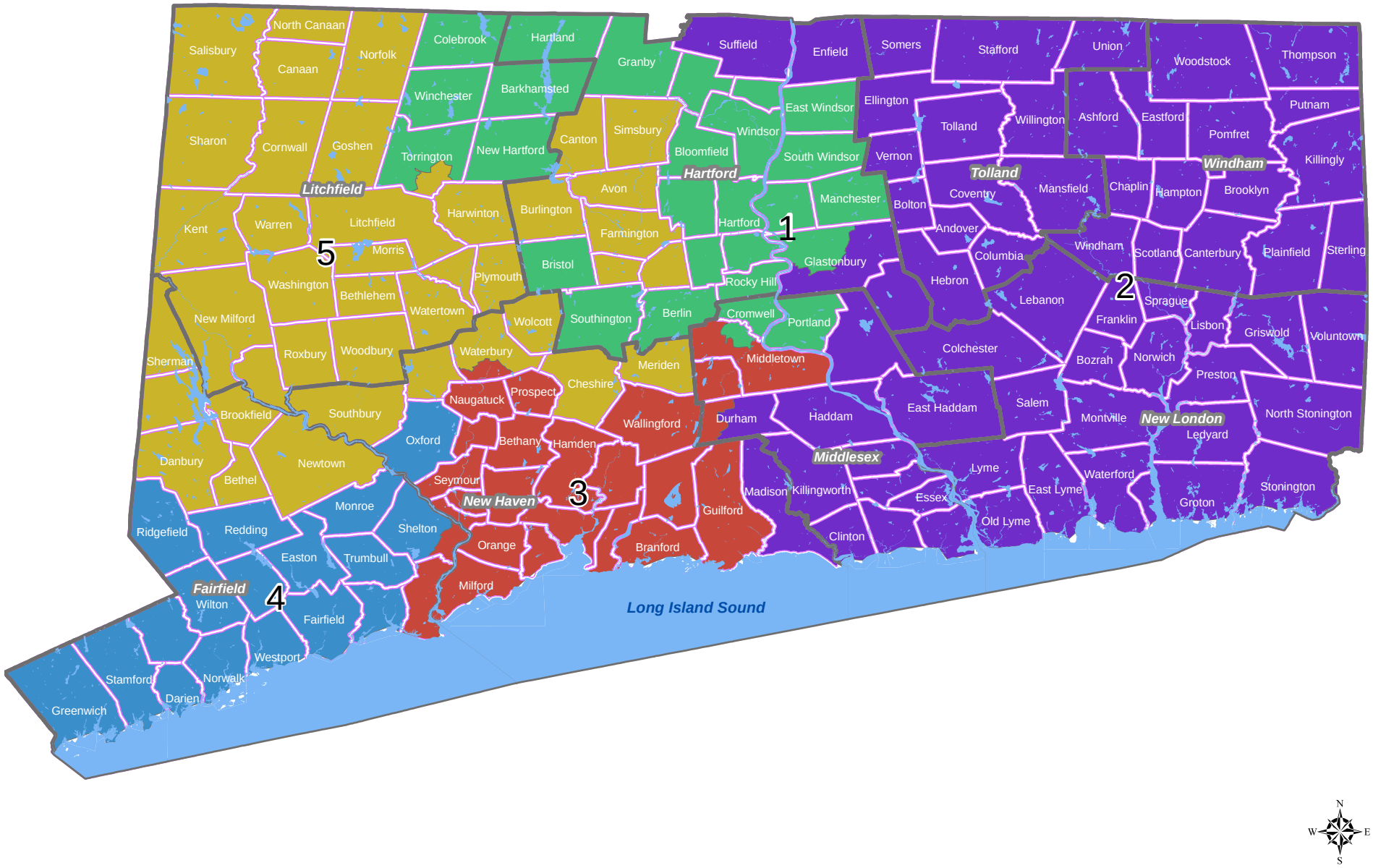
R = Reock
S = Schwartzberg
Perim = Perimeter
PP = Polsby-Popper
LW = Length-Width
Poly = Population Polygon
Cir = Population Circle
E = Ehrenburg

*Shaded boxes indicate scores where one plan achieves greater compactness than the other two plans.

Exhibit 7. Maps of Existing Congressional Districts.

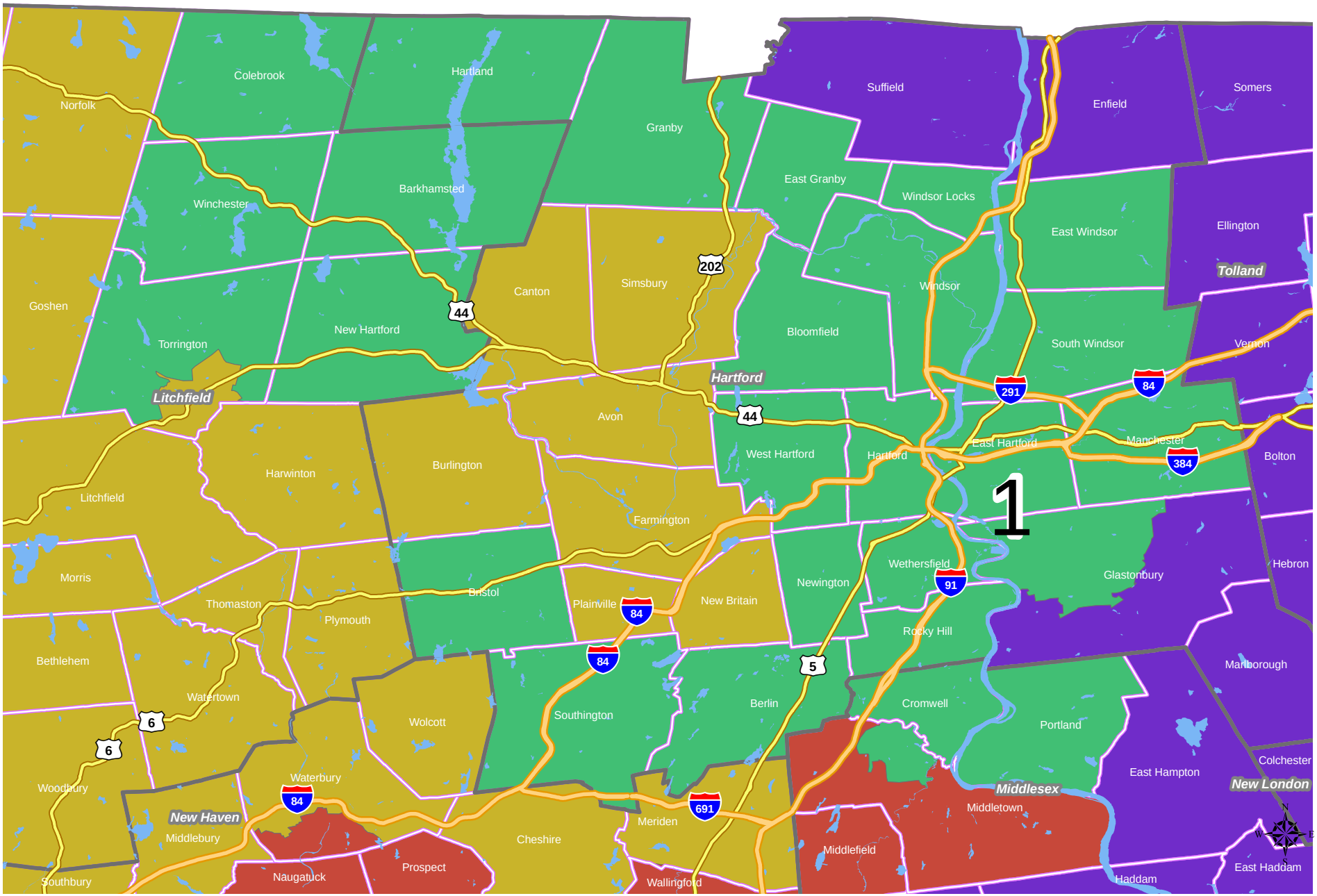
Existing Congressional Districts

2001 Congressional Districts



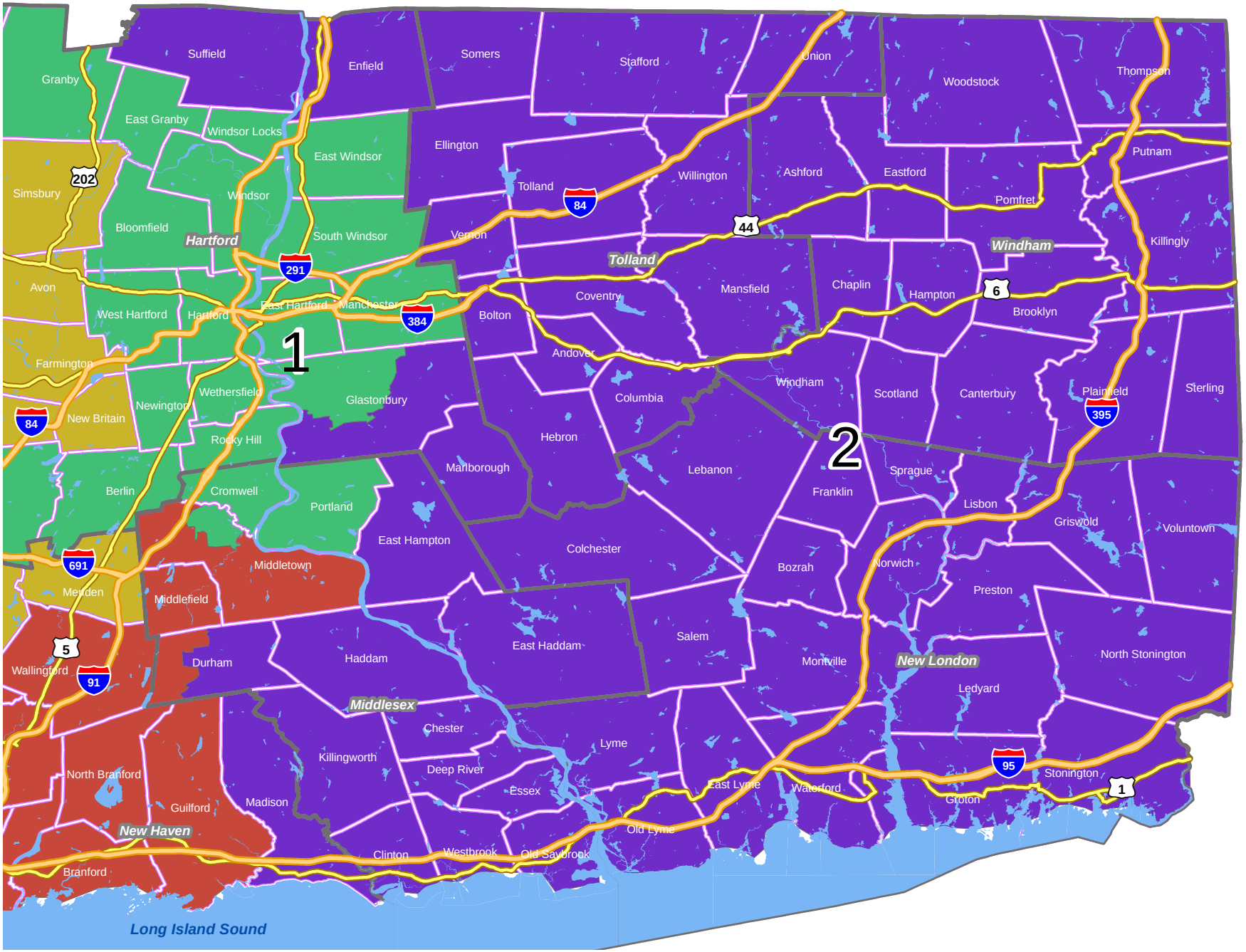
Existing Congressional Districts

District 1



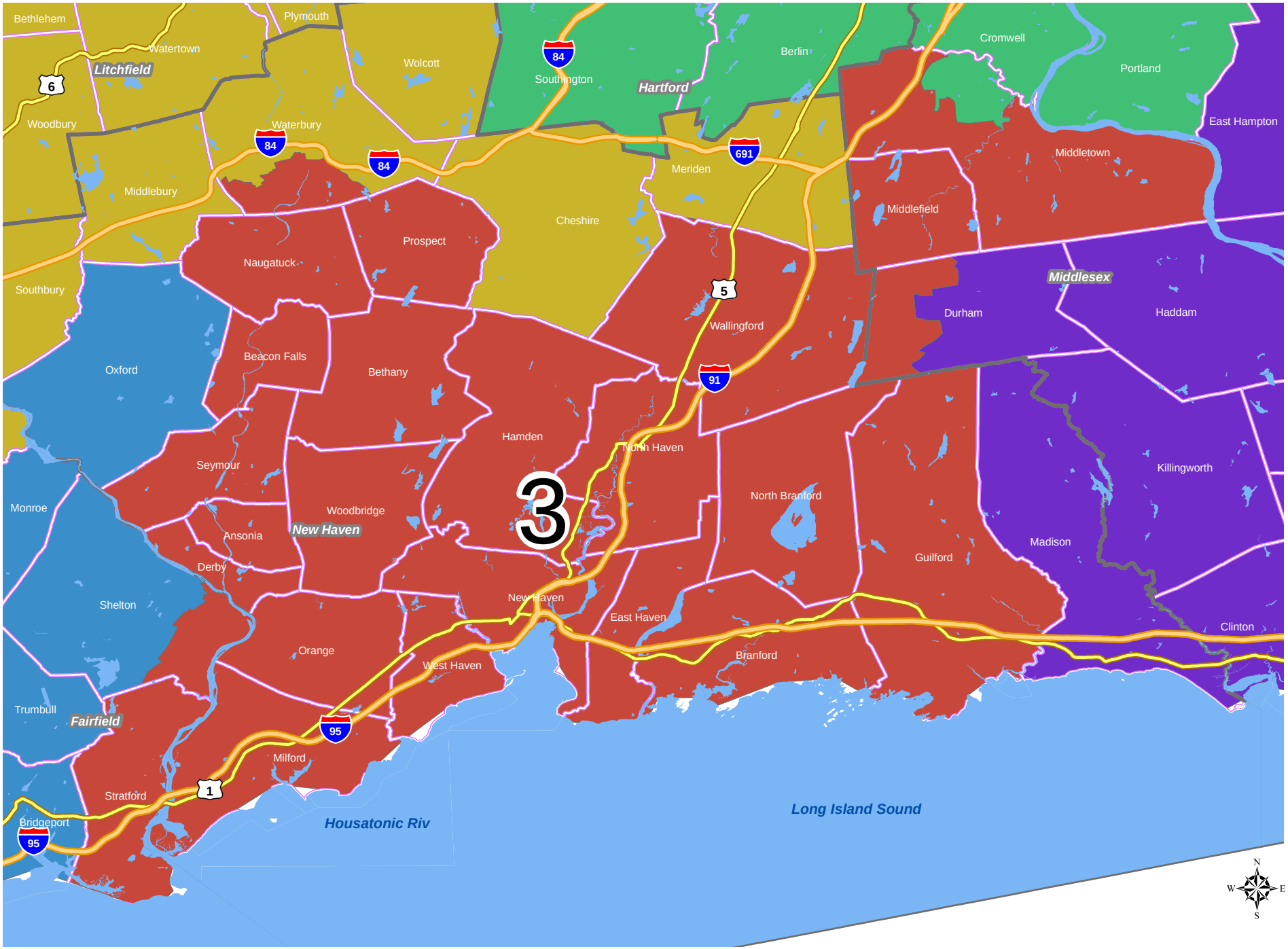
Existing Congressional Districts

District 2



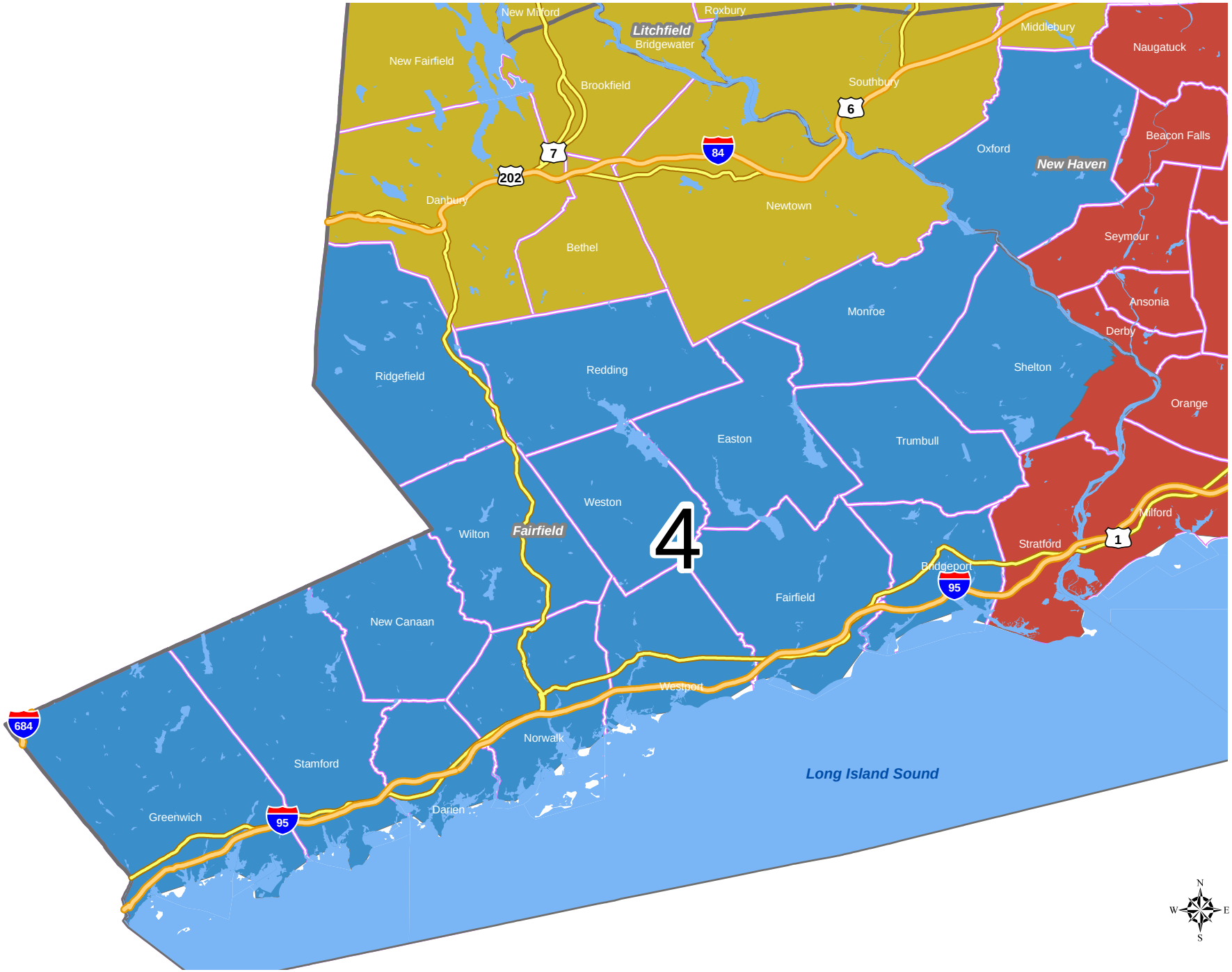
Existing Congressional Districts

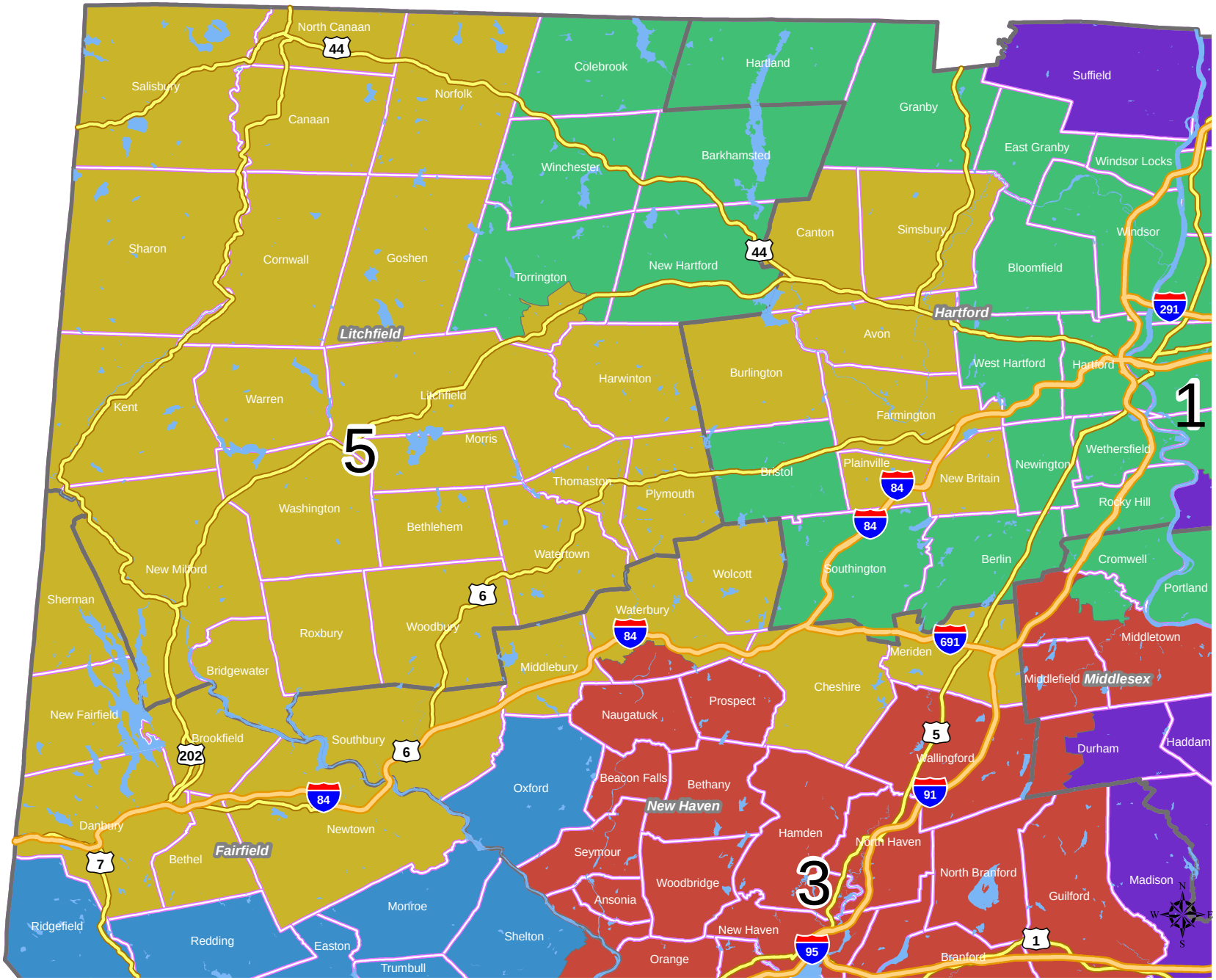
District 3



Existing Congressional Districts

District 4



Existing Congressional Districts

District 5