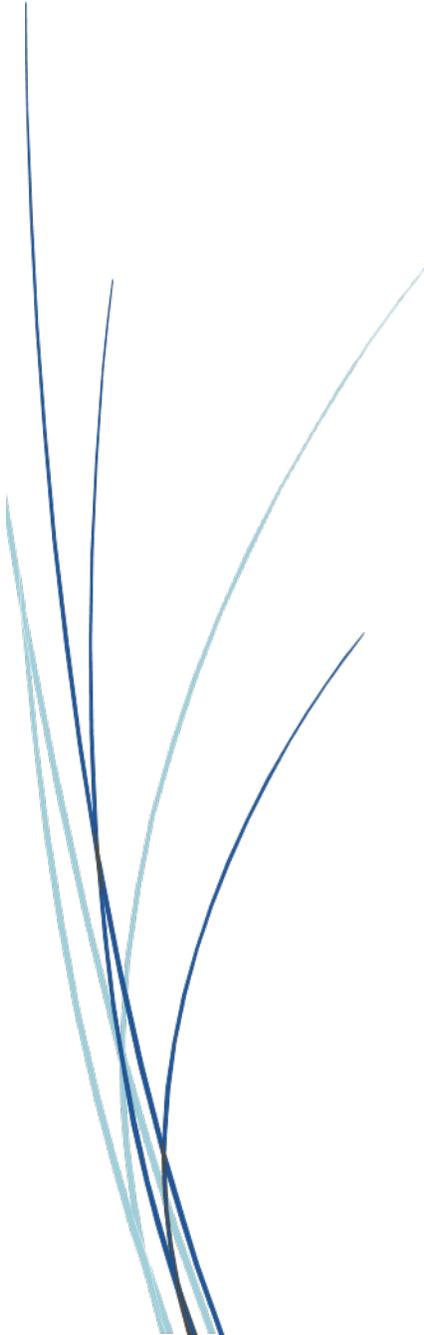# Boundary and Annexation Survey (BAS) Paper How-to Guide

Instructions for Participating in BAS Using Paper Maps

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TABLE OF FIGURES

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INTRODUCTION

A.   The Boundary and Annexation Survey

The Boundary and Annexation Survey (BAS) provides tribal, state, and local governments an opportunity to review the Census Bureau's legal boundary data ensuring the Census Bureau has the correct boundary, name, and status information. BAS also allows participants to review and provide updates to Census Designated Places (CDPs). Maintaining correct boundaries helps ensure that the Census Bureau assigns the appropriate housing and population counts to each government.

BAS fulfills the agency's responsibility as part of the National Spatial Data Infrastructure, for which the Office of Management and Budget (OMB) Circular A–16 designates the Census Bureau as the lead federal agency for maintaining national data about legal government boundaries, as well as statistical and administrative boundaries. BAS supports the spatial data steward responsibilities of the OMB E-Gov, Data.gov, the National Map, the Geographic Names Information System (GNIS), the Federal Geographic Data Committee (FGDC), and the Geospatial One-Stop. Title 13, Section 6, United States Code authorizes this survey.

The Census Bureau uses the boundaries collected in BAS to tabulate data for various censuses and surveys including the decennial census, American Community Survey (ACS), and Population Estimates Program (PEP). In addition, the Census Bureau uses the legal boundaries collected through BAS to support several other programs such as the Redistricting Data Program, the Economic Census, the Geographic Update Population Certification Program, and the Special Census program.

B.   Key Dates for Respondents

January 1   Boundary updates must be legally in effect on or before this date to be reported in the current survey year.

March 1   First BAS deadline - Boundary updates returned or postmarked by this date will be reflected in the ACS and PEP data and in next year's BAS materials.

May 31   Final BAS deadline - Boundary updates returned or postmarked by this date will be reflected in next year's BAS materials.

C.   Adjacencies and Legal Disputes

The Census Bureau will not make any boundary change that affects adjacent legal governments without the appropriate documentation. Please review any changes that affect adjacent governments to determine if they are intentional legal changes.

If the Census Bureau discovers that an area of land is in dispute between two or more jurisdictions, the Census Bureau will not make any boundary corrections until the parties come to a written agreement or there is a documented final court decision regarding the dispute.

To learn more, please contact the Census Bureau Legal Office at **1-301-763-2918**.

For disputes involving tribal areas, the Census Bureau must defer to the Office of the Solicitor at the Department of the Interior for a legal opinion. Often complicated land issues require an extended period for resolution, and in those cases, the Census Bureau will retain the current boundary in the database until a legal opinion is issued by the Solicitor's office.

D.   Contact Us

If assistance is required in preparing your BAS submission, please contact the Census Bureau at <geo.bas@census.gov> or **1-800-972-5651.**

E.   Resources

Additional resources are available on our website. Technical documentation and helpful videos are also available to walk through the BAS submission process.

Technical Documentation

For more detailed information about Census Bureau Geography, BAS Submission information, change types, and shapefiles, see the BAS Technical Guide at <https://www.census.gov/programs-surveys/bas/information/respondent-guides.html>.

Videos

The Census Bureau created training videos to give BAS participants detailed instructions and information for reporting and submitting BAS changes. These videos are available on the BAS website at: <https://www.census.gov/programs-surveys/bas/library/bas-videos.html>.

CHAPTER 1 COMPLETING A PAPER BAS SUBMISSION

Welcome to the BAS Paper How-to Guide. Use the steps and help references from this section to start your BAS submission.

1.1 Step 1: Check materials and fill out forms included in the paper package.

The Paper BAS package contains: an index map, larger scale mapsheet(s), BAS forms and inserts, and colored pencils.

Start by reviewing the BAS forms and inserts for information regarding your BAS submission. Fill-out the BAS form according to directions on the form.

Note that counties receive boundary information for all governments within their county boundary. Counties should review the names and legal status of active and inactive incorporated places and MCDs found on page 3 of the BAS-2 form.

1.2 Step 2: Update the maps with boundary and feature updates.

Compare the BAS maps to a local source for the government (e.g., a local plat map, or a county assessor's dataset). Update the map(s) if the boundaries shown do not correctly depict the boundaries in effect as of January 1 of the current survey year.

Chapter 2 and **Chapter 3** of this guide give detailed instructions on how to mark up the map using the pencils provided.

1.2.1 How to read the maps

Appendix A of this guide describes how to interpret the paper maps provided.

Viewing a digital map of the boundaries on TIGERweb before annotating the paper maps can be helpful. TIGERweb <https://tigerweb.geo.census.gov/tigerwebmain/TIGERweb_main.html> is the Census Bureau's online map viewer that can be used to see a more detailed version of boundaries alongside imagery. Instructions for using TIGERweb for BAS can be found on the BAS website at <https://www2.census.gov/geo/pdfs/partnerships/bas/TIGERwebforBAS.pdf>.

1.3 Step 3: Mail back your completed submission.

Return all updated maps and forms using the provided envelope and return label from the Paper BAS package you received, or mail the updated maps to the Census Bureau at the address listed below:

U.S. Census Bureau
National Processing Center
ATTN: BAS Returns, Bldg 63E
1201 East 10th Street
Jeffersonville, IN 47132

CHAPTER 2   MARKING UPDATES ON THE MAP: BOUNDARIES

Note: The Census Bureau only accepts Census Designated Place (CDP) updates through digital submissions. Please refer to the BAS website <https://www.census.gov/programs-surveys/bas.html> for more information.

2.1   Legal Changes

All legal changes (annexations and deannexations) must have supporting documentation. AIA legal boundary changes must have AIA legal documentation submitted with each requested change. Acceptable documents include, but are not limited to, a federal register notice, acceptance of conveyance and warranty deed, title status report, or BIA certification or letter.

Legal changes from incorporated places, MCDs, and counties must have an authorization number, such as a resolution or ordinance number, authorization type, and the effective date noted on the map and BAS form. Copies are the documentation are not required but can be included with your submission. Acceptable documents include, but are not limited to, ordinances, resolutions, changes to a local state of law, or court rulings.

2.1.1   How to Draw Legal Boundary Changes

Figure 1 and **Figure 2** illustrate the correct way to draw legal boundary changes on BAS maps.

1. Using the red pencil provided, cross-out the portion of the boundary that is no longer current with a string of "**X**s".
2. Draw the new boundary line(s) ensuring the boundary is closed.
3. Add the authorization type and number of the legal action authorizing the change, along with the effective date of each annexation or deannexation that is drawn on the map.
4. Record all legal changes in the Documentation of Changes section of the BAS form.

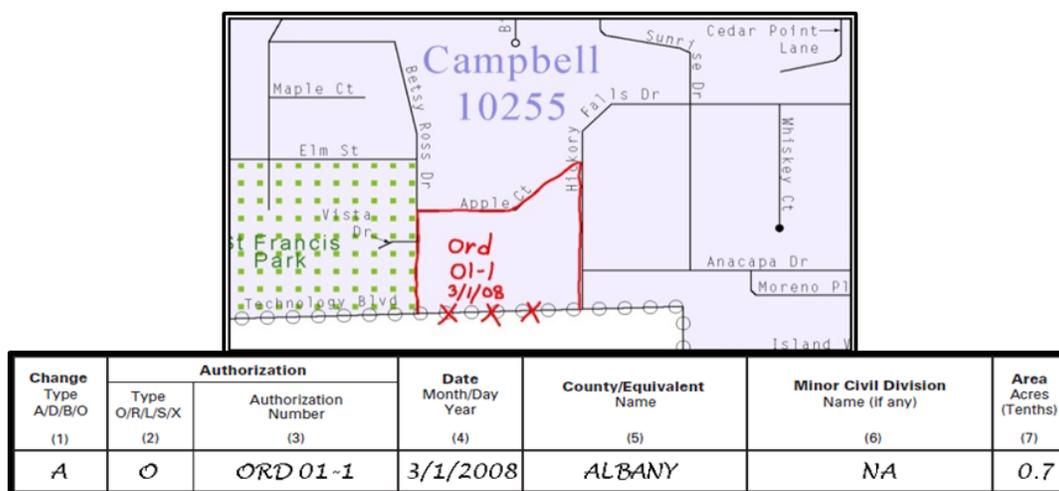| Change Type A/D/B/O	Authorization		Date Month/Day Year	County/Equivalent Name	Minor Civil Division Name (if any)	Area Acres (Tenths)
	Type O/R/L/S/X	Authorization Number				
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A	O	ORD 01-1	3/1/2008	ALBANY	NA	0.7

Figure 1. Correctly Annotating a Legal Boundary Change

Draw "Xs" with the red pencil and record the changes in the Documentation of Changes section of the BAS form.
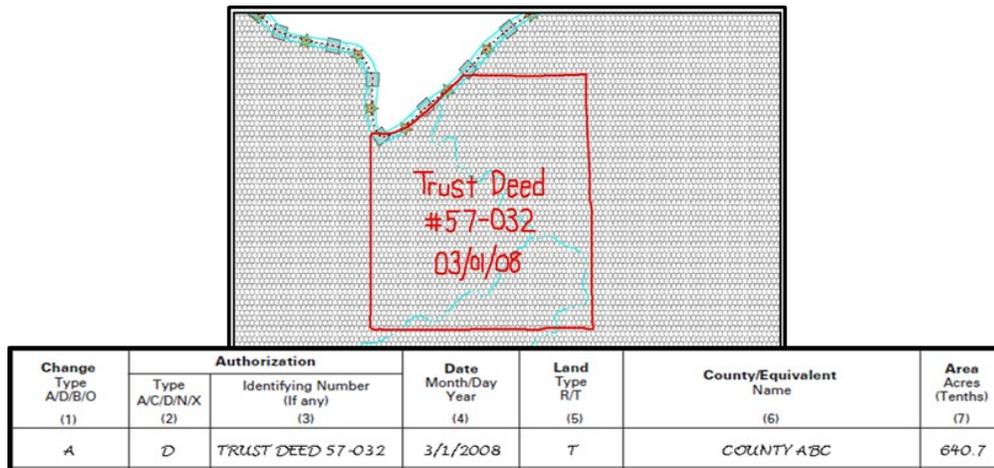
Figure 2. Correctly Annotating an AIA Trust Land

Correctly annotate an AIA trust land and record the change in the Documentation of Changes section of the BAS form. The original reservation is not deleted and therefore does not require a string of "Xs".

2.1.2   Boundary Changes Involving Coincident Features

Figure 3 illustrates how to adjust a boundary coincident with (i.e., follows exactly) a feature, such as a river or street. In the left example, the feature location is correct, but the boundary location is incorrect. In the right example, both the boundary and feature are in the incorrect location.

If the feature location is correct but the boundary location is incorrect:

1. Using the red pencil, cross-out the portion of the boundary that is no longer current using a string of "Xs".
2. Draw circles around the "Xs".
3. Draw the updated boundary.
4. Add the authorization type and number of the legal action authorizing the change, along with the effective date of each addition or deletion next to the area being changed.
5. Record all legal changes in the Documentation of Changes section of the BAS form.

If both the boundary and feature need to be moved:

1. Using the red pencil, cross-out the incorrect boundary using a string of red "Xs".
2.   Draw a red line representing the new location of the boundary and road.
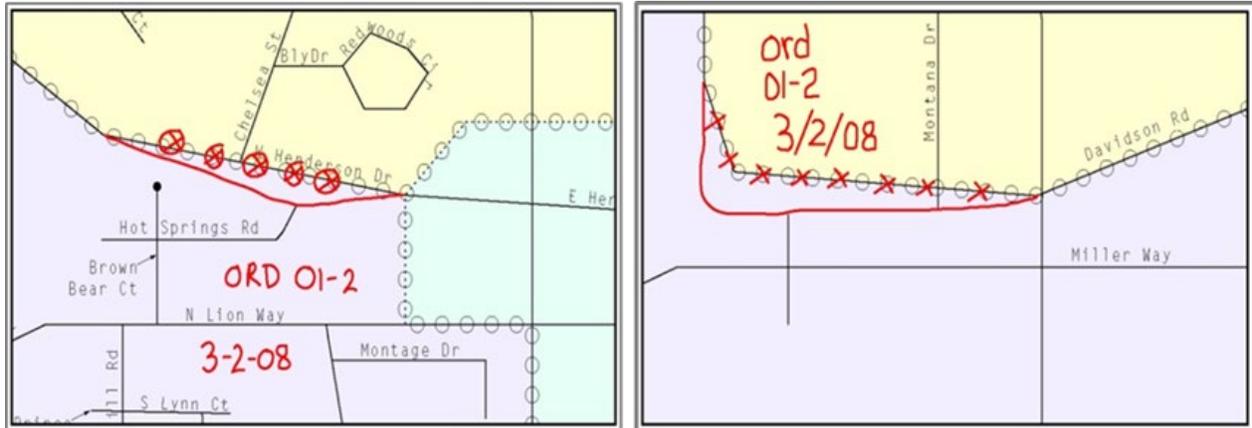
Figure 3. Annotating a Legal Change to an Incorporated Place

Annotating a legal change to an incorporated place boundary coincident
with a road feature.

Left: Only the boundary moves to the new location. The street feature
location is correct, but the boundary location is incorrect.

Right: Both the boundary and the street feature move to a new location.
Both the boundary and the street feature location are incorrect.

2.2 Boundary Corrections

A boundary correction is an adjustment correcting an error in the Census Bureau's version of
the boundary, that is not the result of a legal change. Boundary corrections should follow the
general shape of the existing boundary. The Census Bureau does not require legal
documentation when submitting a boundary correction. In addition, participants do not need to
report boundary corrections on the Documentation of Changes BAS form. **Figure 4** illustrates
how to complete a boundary correction.

1. Using the red pencil, cross-out the incorrect boundary with a string of "Xs".
2. Draw a line showing the correct boundary.
3. Print the letters "BC" inside the change to identify the update as a boundary correction rather
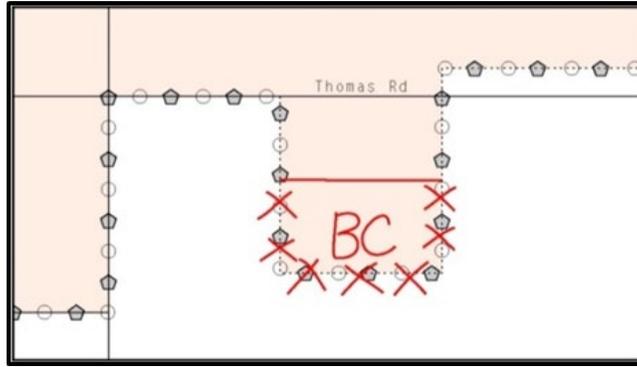   than a legal change.

Figure 4. Annotating a Boundary Correction to an Incorporated Place Boundary

2.3   Corridors and Offsets

2.3.1   Geographic Corridors

The Census Bureau does not require places and AIAs to report right-of-ways; geographic corridors are not essential to the mission of the Census Bureau, and the right-of-way should only be included if it is crucial to the place or AIA, or if state or local laws require it.

To indicate a geographic corridor on the map

1. Use the red pencil to draw a line on each side of the road.
2. Mark the beginning and end of each line with perpendicular hatch (||) marks.
3. Write the letters "GC" beside each line (**Figure 5**).
4. To remove a geographic corridor, use the red pencil to mark the beginning and end of the corridor with perpendicular hatch (||) marks and write "remove GC".

Figure 5. Indicating a Geographic Corridor

2.3.2   Geographic Offsets

To indicate a geographic offset on the map:

1. Use the red pencil to draw a line parallel to the road, along which the offset will be created.
2. Mark the beginning and end of the line with perpendicular hatch (||) marks.
3. Write the letters "OFF" on the side of the road where the geographic offset exists (**Figure 6**).
4. To remove a geographic offset, use the red pencil to mark the beginning and end of the offset with perpendicular hatch (||) marks and write "remove offset".
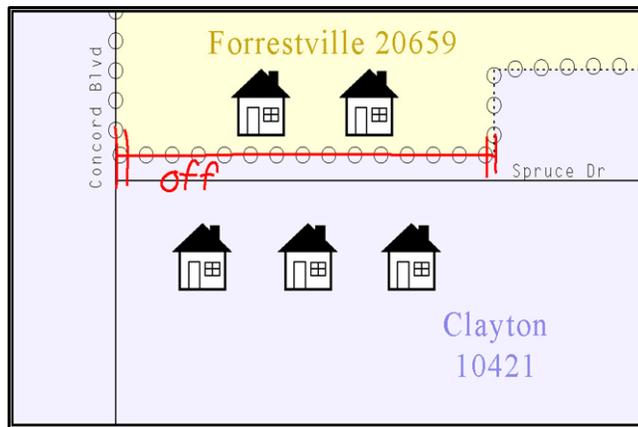
Figure 6. Depicting a Geographic Offset

2.4   Tribal Subdivisions

The Census Bureau considers any type of unit of self-government or administration in tribal areas as a tribal subdivision. A tribe may submit only one type of subdivision, even if it has more than one type of distinct administrative area that could qualify as a tribal subdivision (e.g., tribal election districts, tribal water districts, or health service areas with different boundaries). The Census Bureau recognizes two types of tribal subdivisions - active (A) or inactive (I):

- Active subdivisions are defined as having a functioning government, with elected officials, that provides programs and services.
- Inactive subdivisions have no functioning government or elected officials and receive services solely from the tribe.

2.4.1   Tribal Subdivision Program Procedures

If this is the first time that tribal subdivisions are being provided to the Census Bureau, do the following (**Figure 7**):

1. Using the blue pencil, please add the boundaries on the BAS map(s).
2. Please note: each tribal subdivision must be labeled on each map sheet with its name (e.g., "District 3," "Arlee District," "White Rock Chapter," "Parmelee Community").
3. Record the name, type, and status of each subdivision in the Tribal Names and Status Documentation section of the BAS-5 form.
4. If a tribal subdivision boundary follows a visible feature such as a stream, road, or fence line, please be sure to indicate that on the BAS map. Add the visible feature the boundary follows if it is not already shown on the map.

Figure 7. Recording New Tribal Subdivision Information

Depicting a new tribal subdivision and recording the information in the
Tribal Names and Status Documentation section of the BAS form.

2.4.2   Updating Existing Tribal Subdivisions

If tribal subdivisions were delineated during a prior survey, they are symbolized on the enclosed BAS maps by a dashed pentagon-shaped gold line. Before adding or revising tribal subdivision boundaries on the enclosed map(s):

1. Use the red pencil and note any changes to the boundary of the land base on the map(s).
2. Use the blue pencil and add and/or revise the boundaries of the tribal subdivisions on the enclosed BAS map(s).

The names and types (active or inactive) of tribal subdivisions are listed in the Tribal Names and Status Documentation section of the BAS-5 form. This information should be reviewed and updated.

2.4.3   Tribal Subdivision Documentation

New tribal subdivisions and name changes to existing tribal subdivisions require documentation, regardless of whether they are being delineated for the first time or being added to those previously reported. This documentation should be in the form of a tribal resolution or a tribal constitution. Include a copy of this documentation with the BAS maps and BAS-5 form when returning these materials to the Census Bureau.

Corrections to the Census Bureau's depiction of tribal subdivision boundaries or names do not require documentation.

2.5   New Incorporations and Disincorporations

2.5.1   New Incorporations

Newly incorporated places should provide the Census Bureau with:

1. A copy of the official new incorporation papers, including date of incorporation.
2. A map indicating the boundaries of the new incorporation.
3. Contact information for the Highest Elected Official and a contact for BAS.

2.5.2   Disincorporations

Disincorporated governments should provide the Census Bureau with a copy of the official papers of disincorporation, including the effective date.

CHAPTER 3   MARKING UPDATES ON THE MAP: FEATURES

The primary purpose of BAS is to collect legal boundary information. However, please also submit feature (e.g. streets, rivers) updates and modifications occurring near or coincident with a legal boundary through BAS. Feature modifications that are internal to the boundary of an incorporated place, county or MCD will be accepted, but are not required as part of a boundary submission.

3.1   Linear Features

3.1.1   Modifying Locations of Streets

Only correct streets that are incorrectly located, mislabeled, or distorted. The following figure illustrates how to correct the location of a street feature:

1. Using the purple pencil, please cross-out the incorrect feature location with "**X**s."
2. Please draw the feature in the correct location.
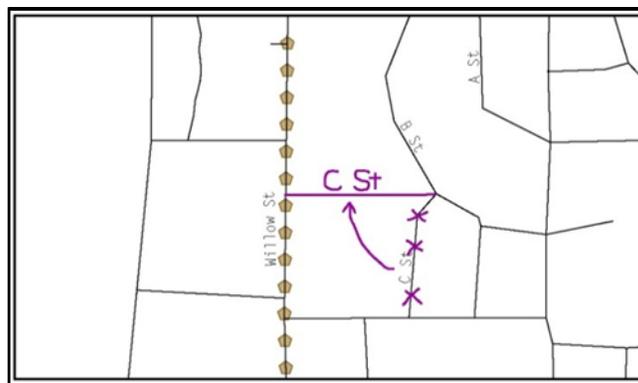3. Please print the name of the feature along the length of the feature as shown in **Figure 8**.

Figure 8. Modifying a Street Feature Location

3.1.2   Adding Streets

1. Using the purple pencil, draw the feature and its name on the map.
    Where possible, provide the address range for any new streets, only if one of the following circumstances exists:

    o   A road where house numbers, street names, and/or addresses were added or deleted.
    o   A street was added that crosses a boundary.

2. Using the purple pencil, write in the address ranges, providing the lowest and/or highest possible addresses where the road intersects a boundary. See **Figure 9.**
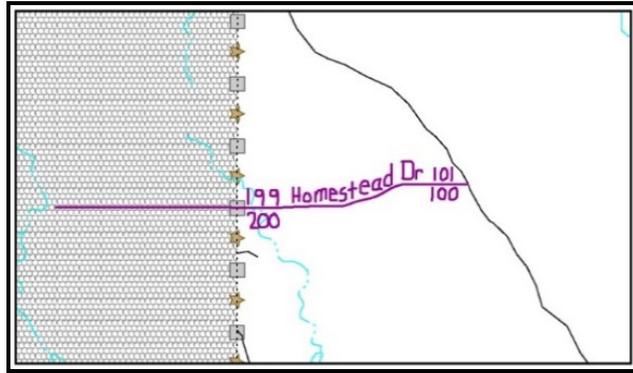
Figure 9. Adding Street Features/Annotating with Name and Address Breaks

3. Provide the MAF/TIGER Feature Class Code (MTFCC) for all new streets (**Figure 10**). The MTFCC will be S1400 for most residential streets. A full list of MTFCC codes and descriptions can be found at <https://www.census.gov/library/reference/code-lists/mt-feature-class-codes.html>.

4. Alternate street names may be written in parentheses below the primary street name. Due to the difficulty of showing multiple names for a street, only the primary street name is shown on BAS maps.
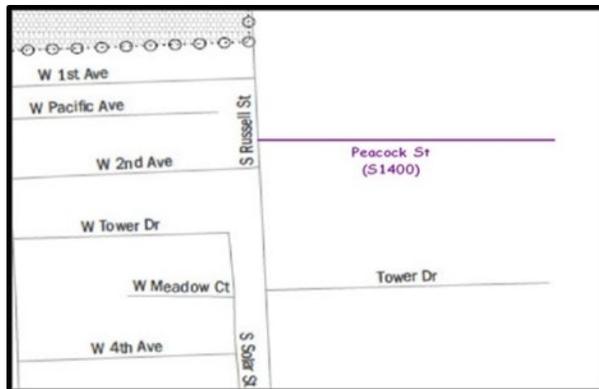

Figure 10. Adding an MTFCC Code when Adding a New Street

3.1.3   Adding Street Names in a Congested Area

1. If an area of the map is too congested to add all feature names, use the purple pencil and number each feature and list this number and the corresponding feature name in the map margin or in an uncongested spot close to the feature's actual location (**Figure 11**).

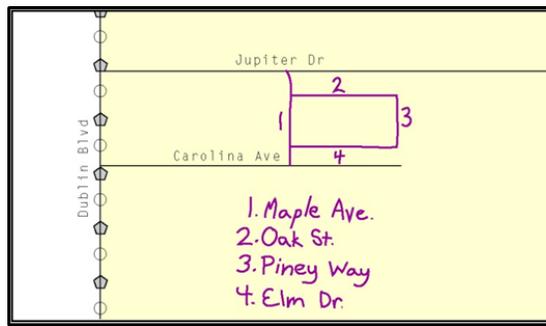2. Do not repeat numbers on a map sheet.

Figure 11. Adding Street Name Features in a Congested Area when Adding Streets

3.1.4 Correcting Street Names

1. Using the purple pencil, draw a line through the incorrect street name.
2. Print the correct street name along the feature (**Figure 12**).
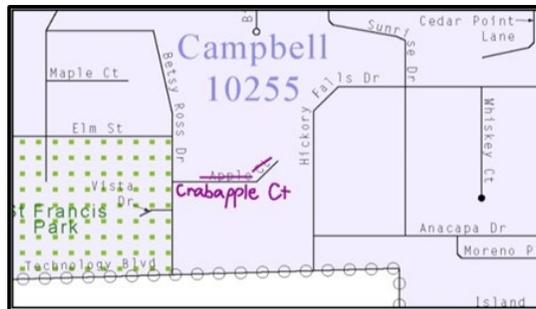

Figure 12. Correcting a Street Name

3.1.5 Deleting Streets

1. Delete street features only if they are nonexistent, or impassable. Do not delete a street because the local jurisdiction is not responsible for maintaining it.
2. Use the purple pencil and mark the beginning and end of the base feature to be deleted with hatch (**||**) marks perpendicular to the feature as shown below.
3. Cross-out the nonexistent street feature using a string of "**X**s" (**Figure 13**).
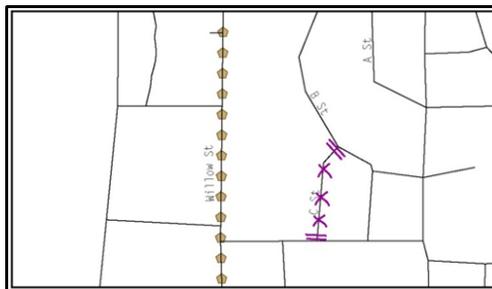

Figure 13. Deleting a Street Feature

3.1.6 Adding Cul-De-Sacs or Circles

1. Use the purple pencil and draw the feature as follows:
    a. Cul-de-sacs are entirely paved and should be drawn as a solid dot.
    b. Circles have an area of unpaved ground within them and should be drawn as an unfilled circle.

2. Print the name of the associated street leading to the cul-de-sac or circle (**Figure 14**).
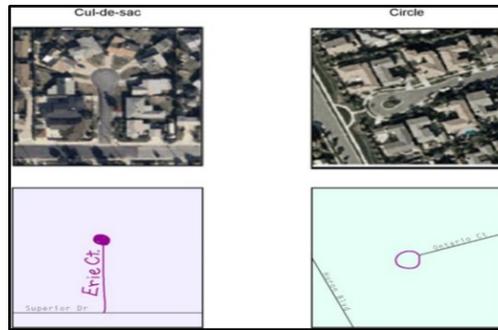

Figure 14. Adding Cul-de-sac and Circle Features

3.2 Point Landmarks

BAS maps display a select number of point landmarks (e.g., mountain peaks). Point landmarks can be updated through BAS but are not required as part of a boundary submission.

Acceptable point landmark feature updates include, but are not limited to, mountain peaks or summits, libraries, city halls, community centers, and police stations. Airports, parks, schools, golf courses, museums, and cemeteries may be submitted as either point landmarks or area landmarks.

The BAS maps also include select point landmarks taken from USGS topography maps and the USGS Geographic Names Information System (GNIS).

When adding a point landmark:

1. Use the purple pencil and place a solid dot at the location of the point landmark.
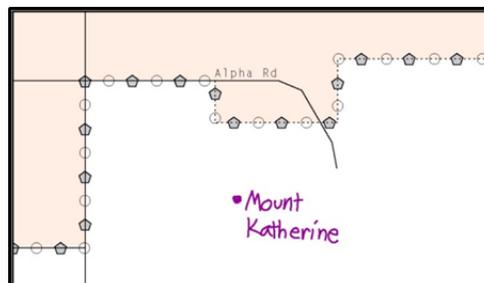2. Print the name of the landmark next to the dot (**Figure 15**).

Figure 15. Adding a Point Landmark

3.3 Area Landmarks

BAS maps display a select number of area landmarks (e.g., lakes). Like point landmarks, area landmarks can be updated through BAS, but are not required as part of a boundary submission.

Acceptable area landmark updates include, but are not limited to, water bodies, swamps, quarries, and national parks and forests. Airports, parks, schools, golf courses, museums, and cemeteries may be submitted as either area landmarks or point landmarks.

When adding an area landmark:

1. Use the purple pencil and draw the area landmark boundary in the correct location.
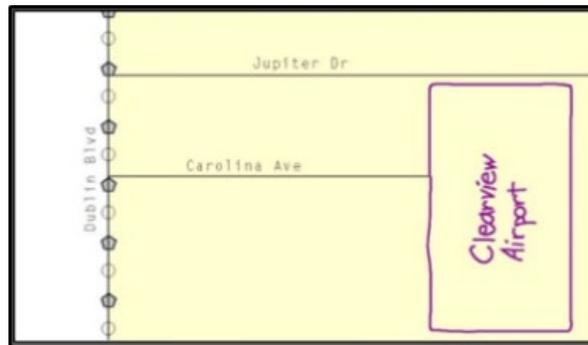2. Print the name of the landmark inside or next to the feature (**Figure 16**).

Figure 16. Adding an Area Landmark

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APPENDIX A   READING A MAP

A1   Index Maps

When deciding which map to use for a BAS submission, it is necessary to view the government as a whole and choose the correct parent map sheet based on its location within the government. Do this by referring to the index map (**Figure 17**), a relatively small-scale map that shows the entire government, and the location and number of all parent map sheets within that government. Each parent map sheet has a numerical locator, which differentiates it from the other parent map sheets associated with that government. The numbering begins with the northern and western-most parent map sheets and continues left-to-right. By referring to the index map, determine which parent map sheet(s) to use for the BAS submission, and then access it based on its number on the index map. The index map is not appropriate for BAS submissions. Its purpose is as a reference or index of parent maps, and it will not be accepted as a BAS submission.
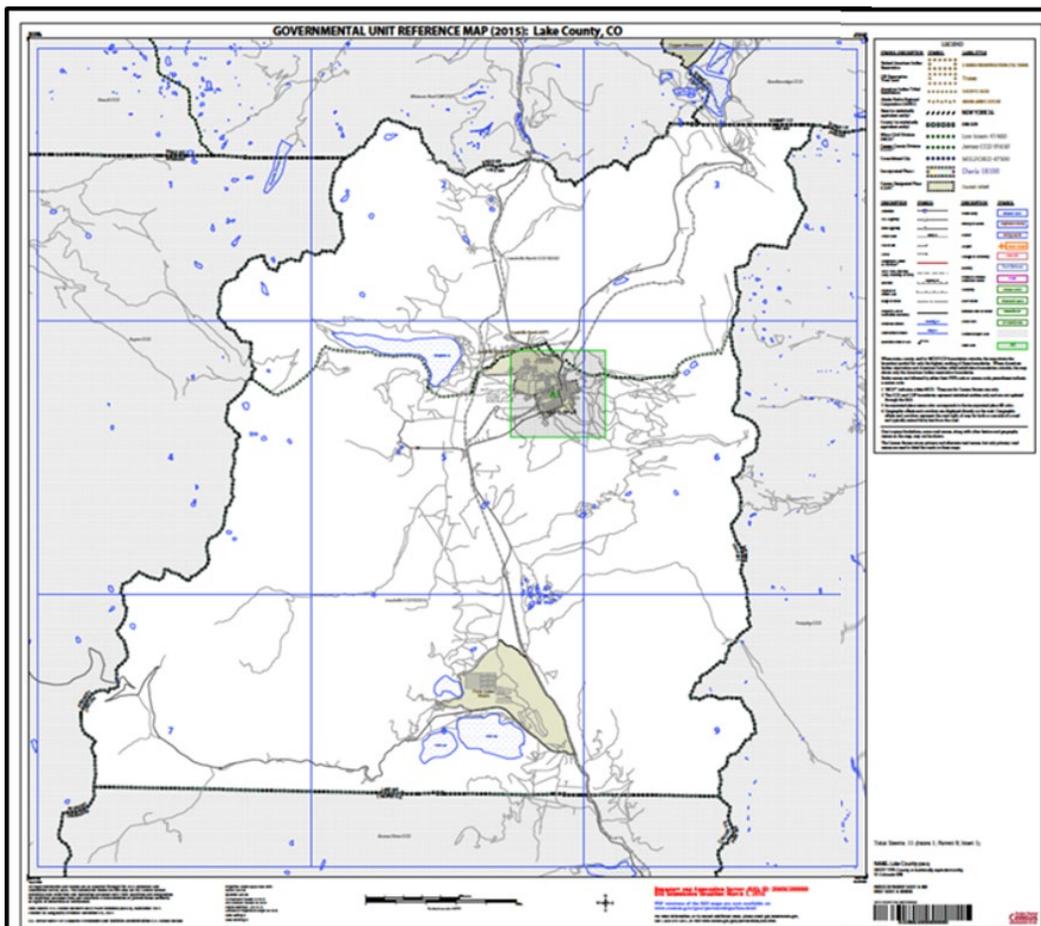

Figure 17. Index Map

The Index Map sheet shows the location of all parent map sheets and inset map sheets within a government.

A2   Parent Maps

Many governments are too large to be shown on a single map. For this reason, it is necessary to separate the government into sections, each of which has its own map, called the parent map sheet (**Figure 18**). A single government is often represented with numerous map sheets, with each parent map sheet showing a small section of the government. Each parent map is assigned a number, beginning with the number one and increasing progressively for each additional parent map sheet (i.e. 1, 2, 3, 4, etc.). This makes viewing and editing map sheets more manageable, and it becomes possible to depict an area with the level of detail necessary to make changes or challenges. In most instances, the parent map is the one that should be used for BAS submissions.
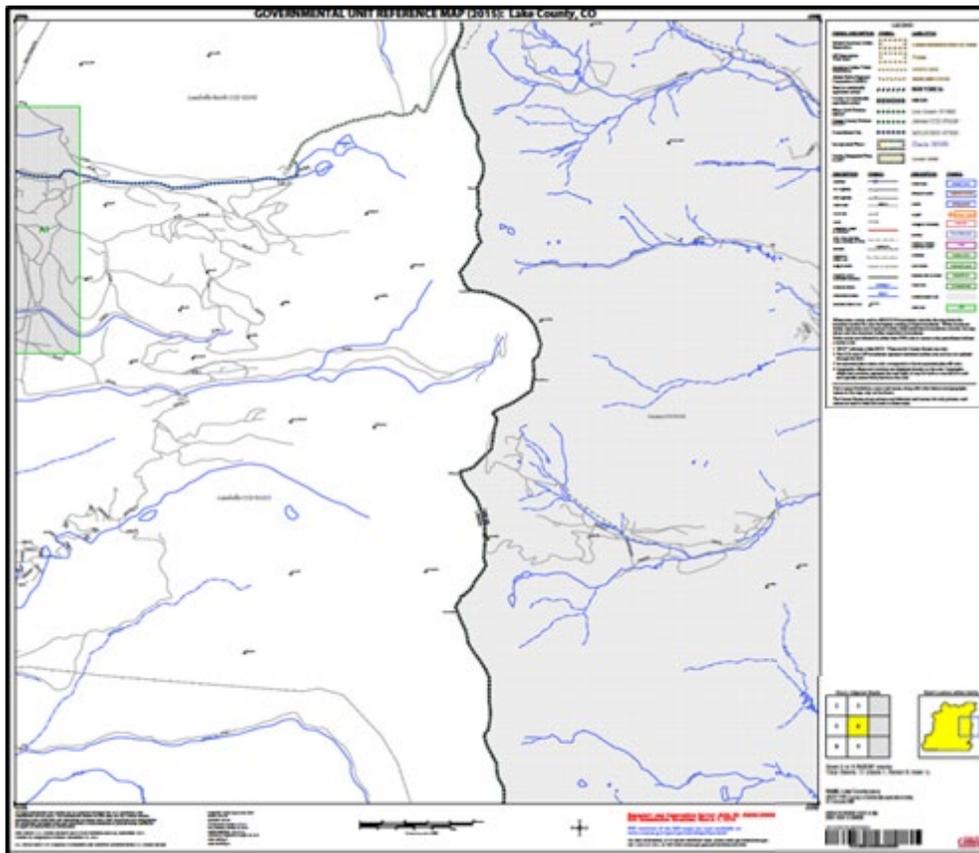

Figure 18. The Parent Map

The parent map sheet shows a section of a government at a relatively large
scale.

In the bottom right-hand corner of the parent map sheet, there is a key to the parent map sheet's location in relation to adjacent map sheets as shown in **Figure 18** above. A larger example of this key is shown in **Figure 19**. This key helps the user quickly determine which adjacent map sheet to use.

Figure 19. The Key to Adjacent Sheets

The key to adjacent sheets shows where the parent map sheet lies in
relation to adjacent sheets.

Next to the key to adjacent sheets, there is a small outline of the entire government (the inside of which is colored yellow), and a blue outline of the parent map sheet. This key displays the location of the map sheet in relation to the government as a whole (**Figure 20**).
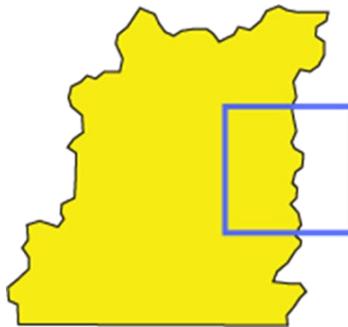

Figure 20. The Sheet Location within Government key

The sheet location within government key shows where the parent map
sheet is located within the government to which it belongs.

A3   Inset Maps

In some instances, in highly congested areas, even a parent map sheet provides insufficient detail for BAS purposes. In such cases, rather than using a parent map, the area is depicted within an inset map (**Figure 21**). This refers to a map with a very large scale, so that it displays a smaller area than the parent map sheet, but with greater detail. On the index map, an inset map is represented by a green outline, and is assigned a number preceded by a letter (i.e. A1, A2, B1, etc.), as shown in **Figure 22.** Inset maps are only found in areas with a large number of features, and as such are used less often than parent maps.

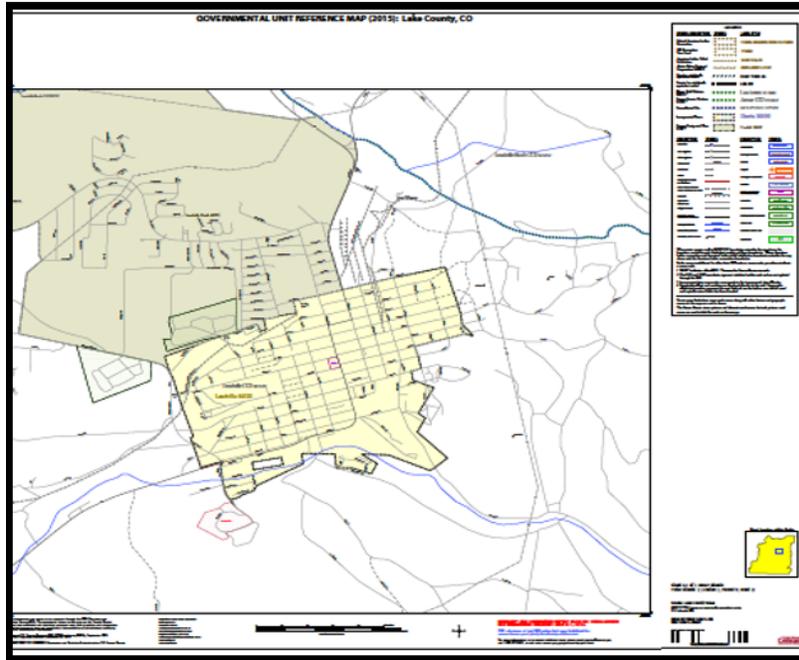**Figure 21. An Inset Map as it is Displayed on the Index Map**

Figure 22. Inset Maps

Inset maps show areas of relative congestion at a large scale, allowing a
greater amount of detail.

A4   Scales

Naturally, the map is always smaller than the area it represents, so nearly all maps are
equipped with a scale that depicts the ratio of distance on the map to the actual distance on
land. The scale can be designed any number of ways, but two of the most common scales are
ratio scales, which describe a ratio between the map and the real world (e.g., 1: 24,000), and
bar scales, which depict that relationship graphically by displaying how much a certain distance
on the map represents in the real world (**Figure 23**). In other words, if a map has a ratio scale of
1: 24,000, it means that one inch on the map represents 24,000 inches on the ground. This
works with any unit of measurement, so long as the unit being used on the map is the same as
– or properly converted from – the unit being depicted on the ground. Often a map will have
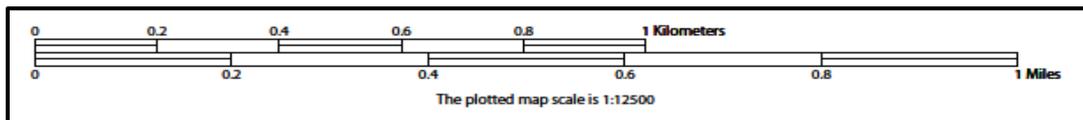both types of scale.

Figure 23. Bar Scale

The map from which this scale was taken has a ratio scale of 1:12,500. The
bar scale shows distances in kilometers and miles.

A bar scale will often be a set length (e.g., one inch), and/or represent a set distance (e.g., one
mile). The bar scale is used to determine distance on the map by using a ruler. Simply place the

ruler on the map to determine the distance on the map; then place the ruler along the bar scale, which will show how much that distance represents on the ground.

A5   Compass Rose

All maps should have some sort of diagram depicting at least one – but sometimes all – of the cardinal directions (north, south, east, and west) that the map reader can use to orient the map. This diagram is called a compass rose (**Figure 24**). It is important to check the compass rose when beginning to read a map to determine the direction in which the map is oriented (i.e., which direction is at the top of the map).

Figure 24. Compass Rose

A6   Legend

Because a map is a graphic representation of a real-world area, it is necessary, and convenient, to symbolize real world features with representative symbols. In order to describe what each symbol means, most maps have a legend (**Figure 25**). Typically, the legend will have a small example of each symbol (e.g. a line, or a picture of a tent), and next to the symbol, in text, a brief description of what is being depicted (e.g. "road", or "campground").

Figure 25. Legend Describing What Each Symbol Means

Sometimes a map needs to depict multiple features concurrently. This is because some lines are the boundaries of multiple geographies at the same time (i.e. a county boundary can also be a city boundary, a voting district boundary, and even a highway or river). Such instances can be depicted in various ways, but Census Bureau maps depict coincident lines by alternating the symbols for each type of line as shown in **Figure 26**. In other words, if a line is both a county boundary (symbolized by a series of squares) and a city boundary (a series of circles), that boundary will be depicted as a series of alternating squares and circles for the length of the concurrency.
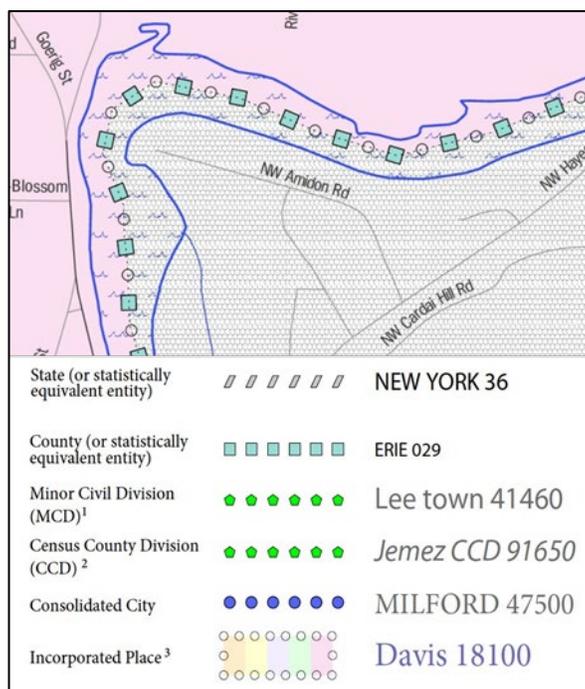
Figure 26. Map Depicting Multiple Features Concurrently

In this case, the city and the county boundaries are coincident, and run
through the middle of the river.

In situations where higher-level geographies (e.g. national, state, county, or county
subdivisions) coincide, the Census Bureau's maps display only the symbol of the highest-ranking
of these boundaries. In other words, if a particular boundary is shared by both a state and
county, only the symbol representing the state boundary will be displayed.