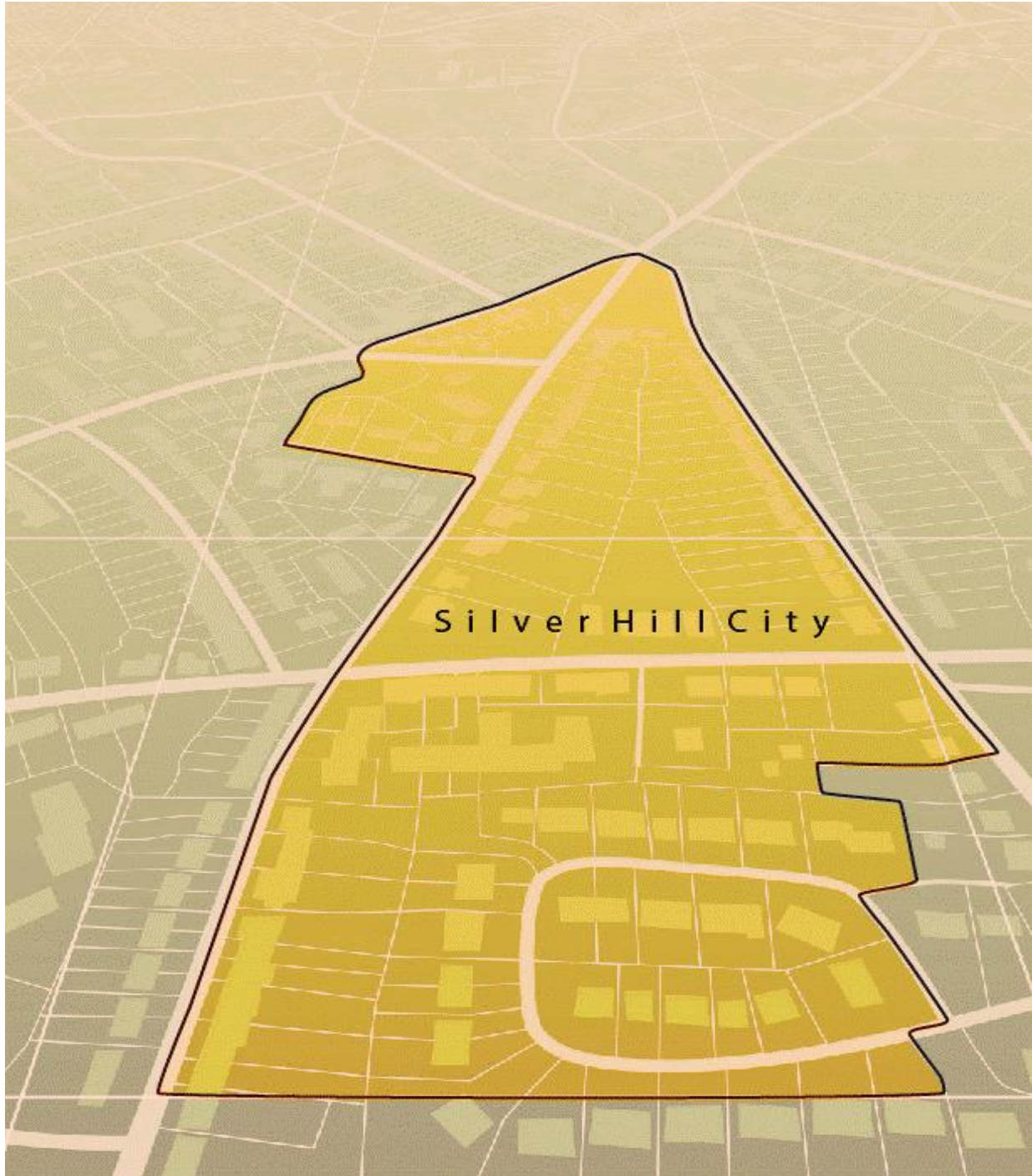


# Boundary Annexation Survey (BAS) Respondent Guide: Paper

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*Instructions for Participating in the 2021 Boundary and Annexation Survey*

Revised as of October 08, 2020



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# INTRODUCTION

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## A. The Boundary and Annexation Survey

The U.S. Census Bureau conducts the Boundary and Annexation Survey (BAS) annually to collect information about selected legally defined geographic areas, such as counties (and equivalent areas), incorporated places, minor civil divisions (MCDs), federally recognized American Indian Areas (AIAs) — including reservations, off-reservation trust lands and tribal subdivisions, and Hawaiian Homelands. BAS also provides an opportunity for participants to review the names and geographic relationships for these areas. Title 13, Section 6, United States Code authorizes this survey.

The Census Bureau uses the boundary information collected during BAS to tabulate data for the decennial and economic censuses, and to support the yearly delivery of the Population Estimates Program (PEP) and the American Community Survey (ACS) data. Maintaining correct boundaries and boundary-to-feature relationships through BAS helps ensure that the Census Bureau assigns the appropriate housing and population counts to each government.

In compliance with the Office of Management and Budget Circular A-16, BAS supports the Census Bureau’s spatial data steward responsibilities for the Federal Geographic Data Committee (FGDC) and the Geospatial One-Stop by updating the inventory and boundaries of governments.

In addition, BAS is the source of up-to-date information on changes to the boundaries, codes and names of incorporated places, MCDs, counties (and equivalent areas), Hawaiian Homelands, and federally recognized AIAs, which include reservations and off-reservation trust lands used by the U.S. Geological Survey (USGS), the National Map, and the Geographic Names Information System (GNIS). Please visit the BAS program website at <https://www.census.gov/programs-surveys/bas.html>.

For more information on BAS, please view the BAS video series on the Census Bureau’s BAS website at <https://www.census.gov/programs-surveys/bas/library/videos.html>.

## B. Key Dates for BAS Respondents

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

**March 1**—Boundary updates returned by this date will be reflected in the ACS and PEP data, and in next year’s BAS materials.

**May 31**—Boundary updates returned by this date will be reflected in next year’s BAS materials.

## C. BAS State Agreements

The Census Bureau has established a number of agreements with states for reporting boundary changes. Please visit the BAS State Agreements webpage within the BAS program website at <https://www.census.gov/programs-surveys/bas/information/state-agreements.html> or call **1-800-972-5651** for information regarding state agreements.

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**Note:** The Census Bureau can only establish BAS state agreements for states that require local governments to report boundary changes to a state agency.

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## D. Legal Disputes

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 **1-301-763-9844**.

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 of time 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.



## **PART 1 COMPLETING THE BAS FORMS**

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### **1.1 Forms Included in the BAS Package**

The forms in the BAS package should be used to verify legal names, legal status, contact information, previous legal boundary changes submitted to the Census Bureau, and to document any recent or missing legal boundary changes. There are four types of forms:

1. BAS-1 for Incorporated Places.
2. BAS-2 for Counties and Equivalent Areas.
3. BAS-3 for Minor Civil Divisions (MCDs).
4. BAS-5 for American Indian Reservations and Off-Reservation Trust Land.

### **1.2 Name or Type Changes**

Please verify that the legal name and legal status of the government or AIA are accurate. Make any necessary corrections by crossing out the error and clearly printing the correct information. Provide an effective date for name, type, or status changes. County participants should verify the list of active and inactive entities within their counties.

### **1.3 Contact Information**

Please verify that the Census Bureau has the most recent BAS, HEO, or Tribal Chief (TC) contact information for the government or AIA. Fill in any missing or incorrect information, especially blank email addresses. If the primary address of the BAS contact, HEO, or TC is a PO Box, provide the Census Bureau with a physical address that can be used for the delivery of maps. Contact changes or updates may also be provided to the Census Bureau throughout the year by email to <[geo.bas@census.gov](mailto:geo.bas@census.gov)>.

### **1.4 Legal Boundary Changes**

Please record all legal boundary changes in the Documentation of Changes section of the BAS form. Include legal boundary changes that occurred prior to **January 1** of the current survey year if they do not appear on the current BAS maps. Please include legal authorization, such as a local ordinance or resolution number, and the effective date of the legal action. If additional pages are needed to record legal changes, a copy of the Documentation of Changes is provided in the appendix.

### **1.5 Other Changes**

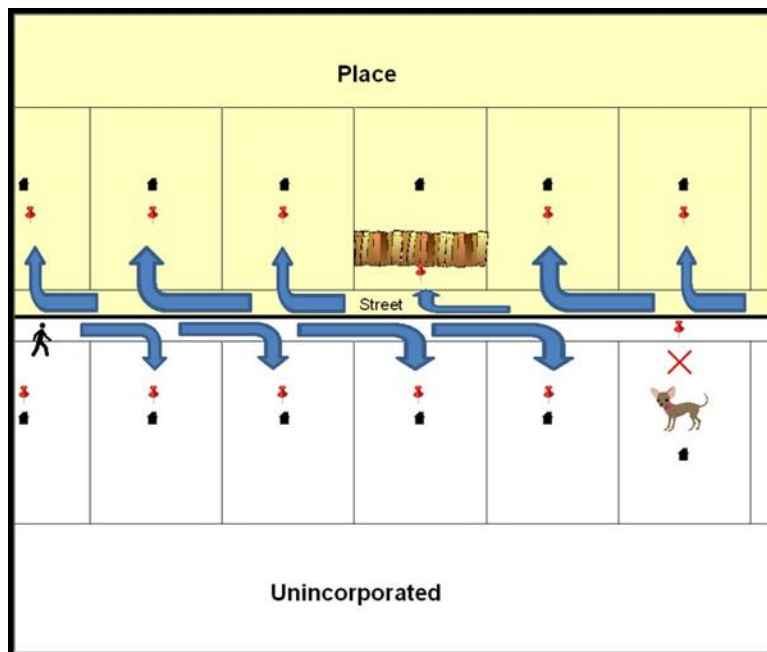
Please indicate if there are any boundary corrections or feature updates that need to be made on the BAS maps. This will assist the Census Bureau in identifying and accounting for any updates made to the maps.

## PART 2 CENSUS BUREAU GEOCODING

Geocoding is how the Census Bureau codes the location of the population within the legal boundaries of a geographic area. There are two primary methods of geocoding used by the Census Bureau, and both of these involve coding an address to a spatial polygon. One uses Global Positioning System (GPS) technology to create a Master Address File (MAF) structure point (MSP) and the other uses address ranges for geocoding.

### 2.1 MAF Structure Point (MSP) Geocoding

A field worker stands in front of a house or living quarters, and records the physical location with a GPS device (Figure 1). Usually, the GPS point should fall very close to the front door of the house. However, since GPS points are collected in the field, real-world obstacles like locked fences, poor satellite reception, or even aggressive dogs might sometimes prevent the worker from gaining access to the front door. In these circumstances, the worker may have to take the GPS coordinate from the sidewalk or side of the road.

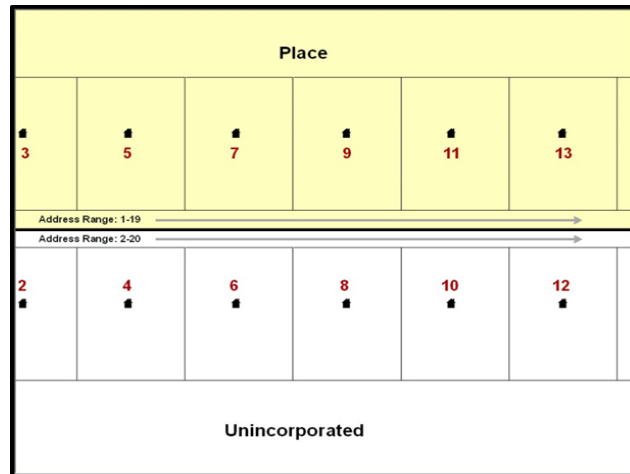


**Figure 1. GPS Method of Geocoding**

Notice that it is occasionally not possible for the field worker to go all the way to the front door, due to unforeseen circumstances, like the fence or the dog shown above. Thus, the MSP (represented by the red pins) can sometimes fall within the road or the road right-of-way.

## 2.2 Address Range Geocoding

When no MSP is available, the Census Bureau codes houses and living quarters according to a potential range of addresses associated with the adjacent stretch of road ([Figure 2](#)).



**Figure 2. Address Range Method of Geocoding**

When it is not possible to collect an MSP, houses are geocoded according to their placement along a range of potential addresses along that road. Since the address has a relationship with the road, boundaries placed on front-lot-lines will lead to mis-geocoding unless an offset flag is used.

While the two methods of geocoding differ greatly, both rely heavily on the integrated nature of the Master Address File/Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) system. These geocoding methods are affected by the way streets and boundaries are represented in relation to one another. This interdependence between streets, boundaries, and geocoding means that Census Bureau representations of legal boundaries may sometimes differ from other representations (e.g., in local or state GIS). This is especially true regarding geographic corridors and offsets that follow road right of ways (or the front-lot-lines of parcels). In both of the examples above, delineating a boundary along the front-lot-line will tend to increase the risk of incorrect geocoding. As a result, using the road centerline as a boundary is the safer method.

When completing a BAS submission in which a road or road right-of-way is owned or maintained by a place or AIA but the adjacent housing is not, the respondent should use the centerline of the road (not the front-lot-line) as the boundary whenever possible. If local or state law requires the use of the front-lot-line boundary, the respondent must explicitly designate the polygon(s) between the road centerline and the front-lot-boundary as a corridor or an offset (see [3.5.4, Geographic Corridors and Offsets](#) of this document for more details).

## PART 3 REVIEWING AND UPDATING BAS MAPS

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### 3.1 Maps Included in the BAS Package

The Census Bureau mails an index map showing the entire government or AIA, along with more detailed individual map sheets. Index maps are provided as a reference to help locate a map sheet. Governments and AIAs with more than 30 map sheets receive only an index map and the map sheets that show the boundary ring. Governments that require more than 30 boundary ring map sheets receive only the index map. Please review [Appendix C](#) for a further description of the map types.

### 3.2 Requesting Additional Maps

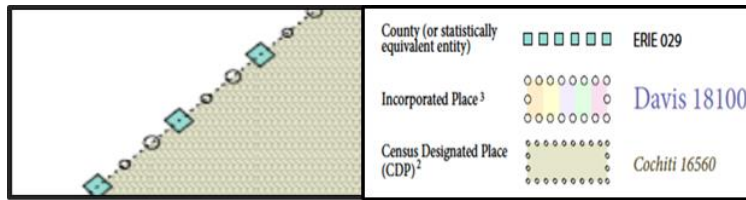
If an individual map sheet or full set of maps was not provided for a county, incorporated place, MCD, or AIA where boundary changes or feature updates need to be made, please call **1-800-972-5651** or email [<geo.bas@census.gov>](mailto:geo.bas@census.gov) to request the additional materials. **Do not make updates on the index map.**

### 3.3 Reviewing Boundaries with Imagery in TIGERweb

Governments that have requested paper maps can use TIGERweb [<https://tigerweb.geo.census.gov/tigerwebmain/TIGERweb\\_main.html>](https://tigerweb.geo.census.gov/tigerwebmain/TIGERweb_main.html) for a more detailed version of their boundaries with imagery before annotating the paper maps. Instructions for using TIGERweb for BAS can be found on the BAS website at [<https://www2.census.gov/geo/pdfs/partnerships/bas/TIGERwebforBAS.pdf>](https://www2.census.gov/geo/pdfs/partnerships/bas/TIGERwebforBAS.pdf).

### 3.4 General Guidelines for Reviewing and Updating BAS Maps

1. Colored pencils are provided in the package. The red pencil should be used to indicate legal boundary changes and non-legal boundary corrections for all counties, places, MCDs, and AIAs. The purple pencil should be used to indicate feature changes or corrections. The blue pencil should be used by AIAs to add or modify tribal subdivisions.
2. Compare the BAS maps to a local source for a 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.
3. Annexations and deannexations from previous years may be provided in addition to updates in effect as of **January 1**; however, the Census Bureau does require legal documentation when submitting these legal updates.
4. The maps show boundaries for multiple legal and statistical boundaries. If a government's legal boundaries are coextensive with another boundary, the symbols on the map will alternate. In [Figure 3](#) the county shares a boundary with an incorporated place and Census Designated Place (CDP); therefore, the symbols on the map alternate between county, incorporated place, and CDP.



**Figure 3. Shared Boundary**

The combined line represents a county, incorporated place, and CDP boundary.

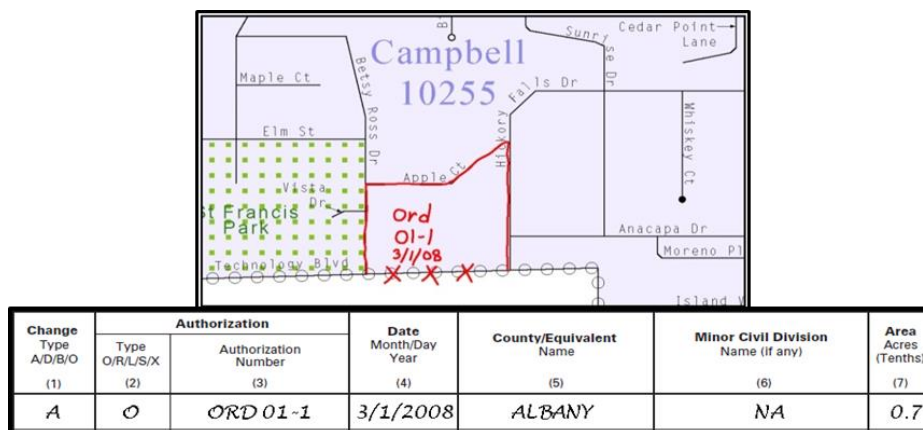
### 3.5 Legal Boundary Changes

Legal boundary changes are the result of legal actions (e.g., annexations), and documenting such changes is the primary goal of the BAS. AIA legal documentation (e.g., statute, federal court decision, trust deed) must accompany all AIA legal boundary changes, while legal boundary change submissions from incorporated places, MCDs, and counties must provide an authorization number, such as a resolution or ordinance number<sup>1</sup>, and the effective date.

#### 3.5.1 How to Draw Legal Boundary Changes

Figure 4 and Figure 5 illustrate the correct way to draw legal boundary changes on BAS maps.

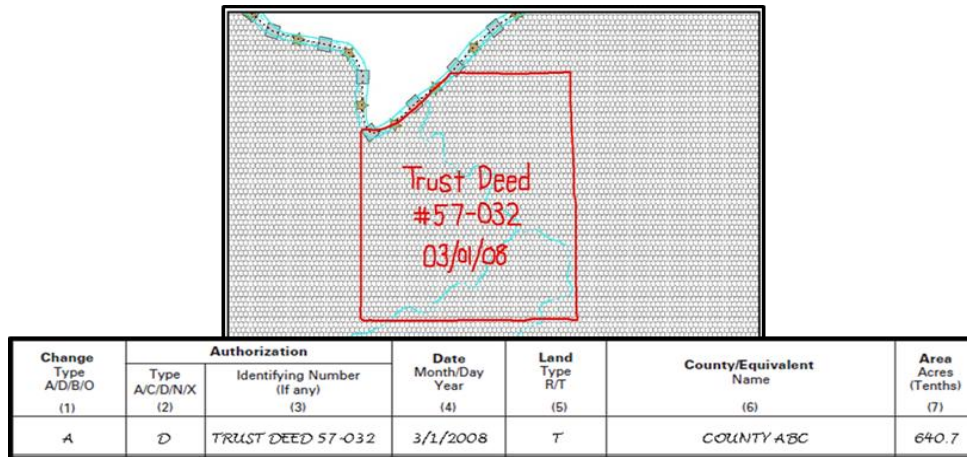
- Using the red pencil provided, cross out the portion of the boundary that is no longer current with a string of “Xs”.
- Draw the new boundary line(s) ensuring the boundary is closed.
- Add the ordinance number or other legal identifier of the action authorizing the change, along with the effective date of each annexation or deannexation that is drawn on the map.
- Record all legal changes in the **Documentation of Changes** section of the BAS form.



**Figure 4. 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.

<sup>1</sup> Legal boundary changes from the State of Georgia are the exception: a state statute requires participants to include acreage, and the Census Bureau requests that the respondent includes an authorization number.



**Figure 5. 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”.

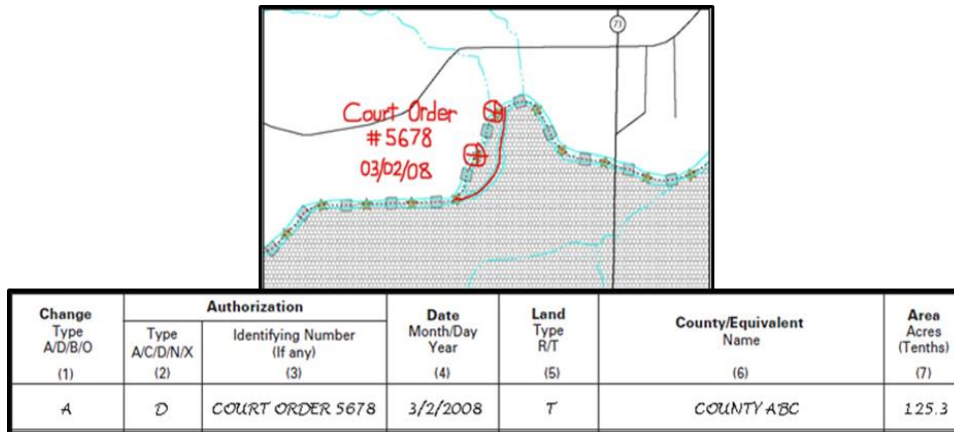
### 3.5.2 Boundary Changes Involving Coincident Features

**Figure 6** and **Figure 7** illustrate how to adjust a boundary that is coincident with (i.e., follows exactly) a feature, such as a river or street. In this case, the feature location is correct, but the boundary location is incorrect.

- Using the red pencil, cross out the portion of the boundary that is no longer current using a string of “Xs” inside circles.
- Draw the updated boundary.
- Add the authorization number or other identifier of the action authorizing the change along with the effective date of each addition or deletion.
- Record all legal changes in the **Documentation of Changes** section of the BAS form.

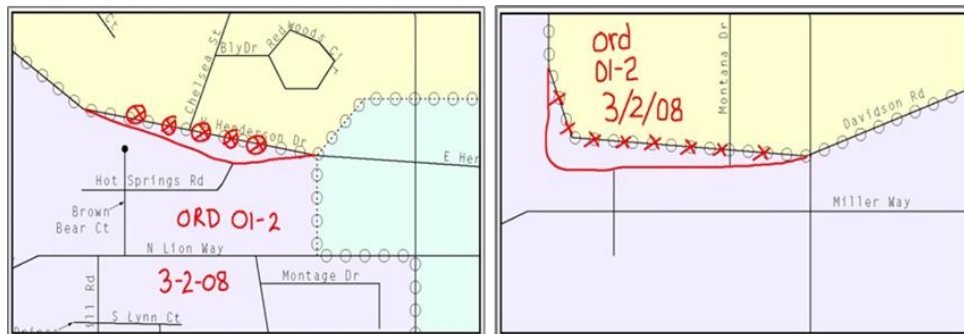
If both the boundary and feature need to be moved, cross out the incorrect boundary with a string of red “Xs” and then draw a red line representing the new location of the boundary and road.

**Figure 6** shows a change to the boundary where only the boundary moves as well as the accompanying **Documentation of Changes** form excerpt. Similarly, the left image of **Figure 7** illustrates a change where only the boundary moves, but the right image shows a boundary change where the associated feature moves along with the boundary. If these changes are the result of an annexation or deannexation, include the authorization number and effective date.



**Figure 6. Annotating a Legal Boundary Change**

Annotating a legal boundary change coincident with a river feature, where the river location does not change, but the boundary does. The legal change is also recorded in the Documentation of Changes.



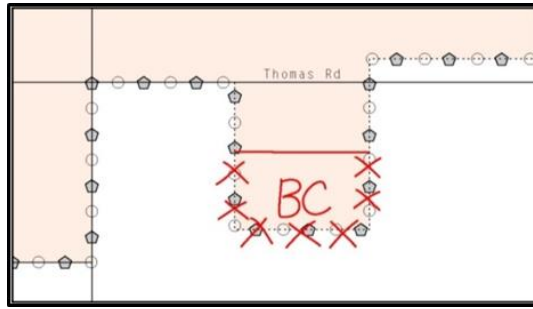
**Figure 7. Annotating a Legal Change to an Incorporated Place**

Annotating a legal change to an incorporated place boundary coincident with a road feature. The legal change is recorded in the Documentation of Changes. 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.

### 3.5.3 Boundary Corrections

A boundary correction is the adjustment of a boundary to correct an error in how the Census Bureau depicts an existing boundary. Boundary corrections should follow the general shape of the existing boundary. Legal documentation is not required when submitting a boundary correction to the Census Bureau. Boundary corrections also do not need to be reported on the Documentation of Changes BAS form. [Figure 8](#) illustrates how to complete a boundary correction.

- Using the red pencil, cross out the incorrect boundary with a string of “Xs”.
- Add a line showing the correct boundary.
- Print the letters **BC** inside the change to identify the update as a boundary correction rather than a legal change.

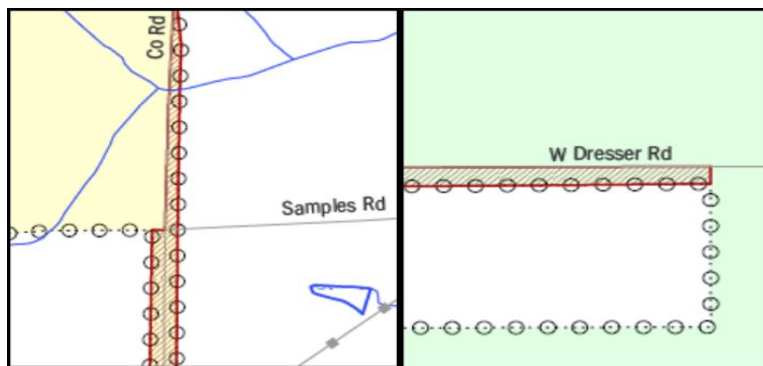


**Figure 8. Annotating a Boundary Correction to an Incorporated Place Boundary**

### 3.5.4 Geographic Corridors and Offsets

#### 3.5.4.1 Geographic Corridors

**Figure 9** shows a corridor that has been created where the incorporated place or AIA owns the right-of-way, and wishes for that ownership to be displayed on the Census Bureau’s maps, but the housing units are not included in the incorporated place or AIA (shown in color). Without a corridor, the housing units along this road would be incorrectly geocoded into the incorporated place or AIA. Thus, if it is important to the place or AIA that its ownership and/or maintenance of the road and/or its right-of-ways be displayed on Census Bureaus’ maps, a geographic corridor should be created. However, the Census Bureau does not require places and AIAs to report right-of-ways; maintaining geographic corridors in a nationwide database is 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.



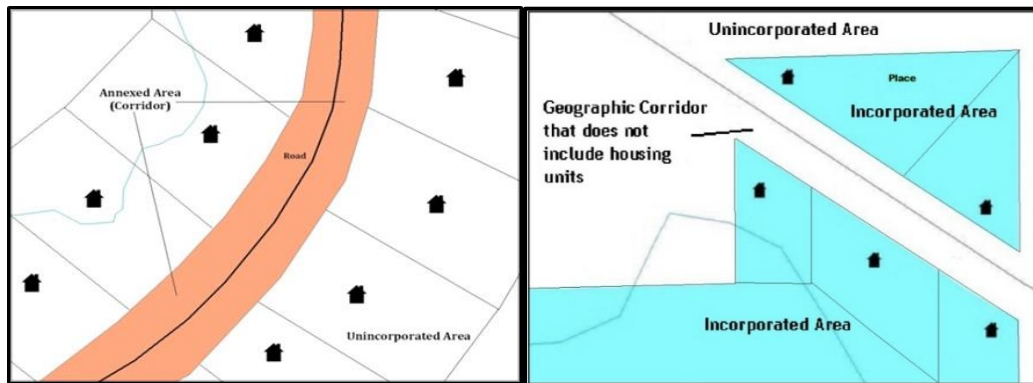
**Figure 9. Geographic Corridor and Geographic Offset**

The image on the left illustrates a geographic corridor (Co Rd, south of Samples Rd) and a geographic offset (Co Rd, north of Samples Rd). The geographic corridor and offset are both part of the incorporated place (yellow area), but dwelling units are not. The image on the right illustrates a geographic offset, designated by red diagonal lines. The offset is part of the incorporated place (green area). However, the dwelling units are counted outside of the incorporated place.



**Figure 10** below shows a case where the right-of-way belongs in the unincorporated area, while the housing units in **Figure 11** are included in the incorporated place (shown in color). While depicting this corridor may be important for local purposes, it is not relevant for Census Bureau tabulations because no house can be built in a road right-of-way. This type of corridor should **not** be included in a BAS response.

Please note that the Census Bureau does not require places or AIAs to display right-of-ways or road maintenance corridors that do not contain or potentially contain housing or population. If local or state law does not require depiction of these geographic features, the Census Bureau prefers that they be left off BAS submissions. If it is necessary for the place or AIA to depict them, they must be submitted as a geographic corridor.



**Figure 10. Where the Right-of-way Belongs in the Unincorporated Area**  
**Figure 11. Housing Units in the Unincorporated Area**

Geographic corridors can be provided to the Census Bureau if the centerline representation results in addresses being assigned to the wrong government. However, geographic corridors should only be created if the addresses along the street do not belong to the participant’s government. To indicate a geographic corridor on the map, use the red pencil to draw a line on each side of the road. Mark the beginning and end of each line with perpendicular hatch (//) marks. Write the letters “GC” beside each line (**Figure 12**). To remove a geographic corridor or offset, use the red pencil to mark the beginning and end of the corridor or offset with perpendicular hatch (||) marks and write “remove GC.”



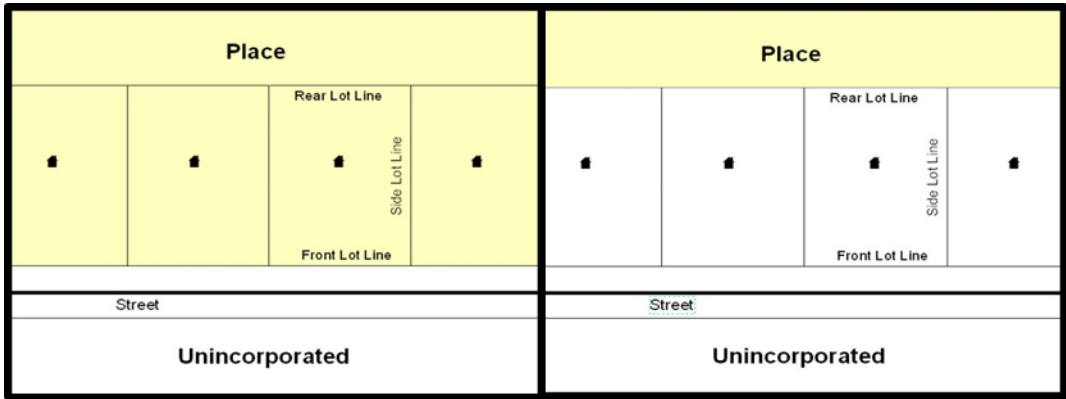
**Figure 12. Indicating a Geographic Corridor by Using a Red Pencil**

To indicate a geographic corridor on the BAS return, use the red pencil to draw a line on each side of the road. Mark the beginning and end of each line with perpendicular hatch (||) marks. Write the letters “GC” beside each line.

### 3.5.4.2 Geographic Offsets

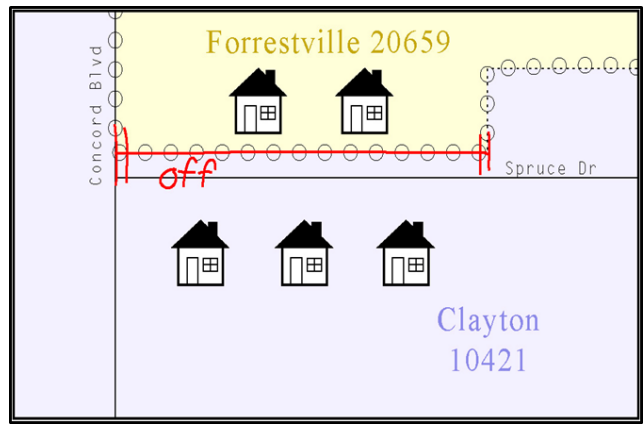
The Census Bureau is aware that many governments base their legal boundaries on cadastral (parcel-based) right-of-way mapping. The Census Bureau bases its maps on spatial data that is topologically integrated. This makes the maintenance of geographic offsets inefficient. Delineating a government boundary on the centerline wherever applicable will help to establish more accurate population counts. If a boundary is on the front-lot-line adjacent to a road on the map, the Census Bureau strongly prefers that the boundary be delineated on the road centerline already shown on the map. If a boundary is on the rear or side lot line, then it should be depicted as such. If it is unclear whether a particular line is a front-lot-line or something else, please contact the Census Bureau for assistance. Generally, if a house or other building could not conceivably be built in the area between the potential line and the centerline of the road, then the line can be considered a front-lot-line.

**Figure 13** shows a situation in which the place boundary is along the **front-lot-line**. In this example, the respondent must either delineate the boundary on the road centerline or create an offset. In **Figure 14**, the place boundary is on the **rear-lot-line**, so the respondent should not delineate it on the road centerline or create an offset; instead, the respondent should delineate a new edge that actually follows the rear-lot-line.



**Figure 13. (Left) The Place Boundary is Along the Front-lot-line**  
**Figure 14. (Right) The Place Boundary is on the Rear-lot-line**

To indicate a geographic offset on the map, use the red pencil to draw a line parallel to the road, along which the offset will be created. Mark the beginning and end of the line with perpendicular hatch (||) marks. Write the letters “OFF” on the side of the road where the geographic offset exists (**Figure 15**).



**Figure 15. Depicting a Geographic Offset on a Paper Submission**

### 3.5.5 New Incorporations

Newly incorporated places should provide the Census Bureau with:

- A copy of the official new incorporation papers, including date of incorporation.
- A map indicating the boundaries of the new incorporation.
- Contact information for the HEO and a contact for the BAS.

### 3.5.6 Disincorporations

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

### 3.5.7 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):

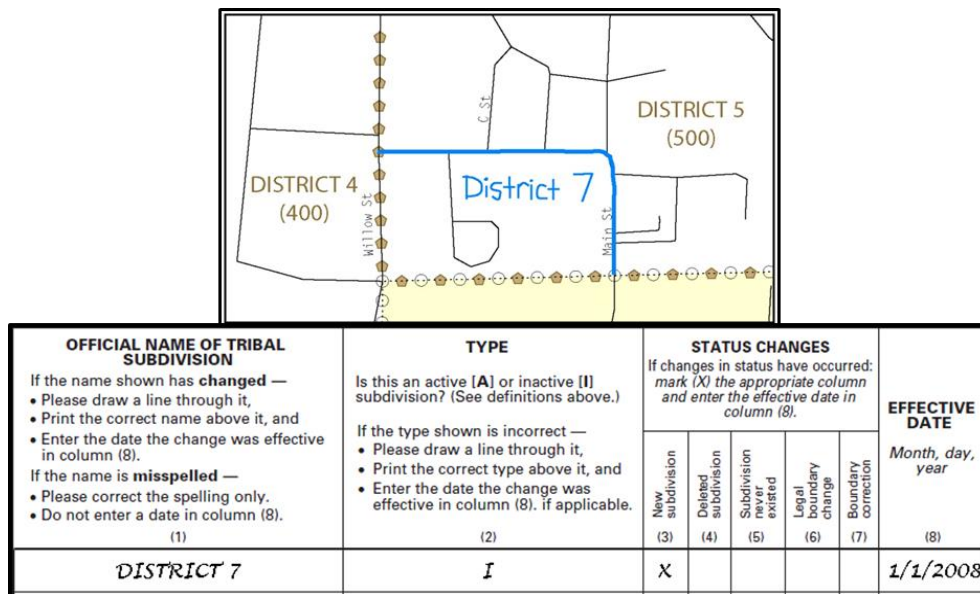
- Active subdivisions are defined as having a functioning government, with elected officials, that provides programs and services.
- Inactive subdivisions have no functioning government or elected officials and receive services solely from the tribe.
  - a) Some examples of areas submitted as tribal subdivisions are:
    - Areas used by a tribe for the election of tribal government officials (e.g., districts or precincts used for the election of tribal council members).
    - Areas used by a tribal government for tax purposes.
  - Areas used by a tribal government for the provision of general services or specified services, such as:
    - Water districts.
    - Health service areas.
    - Emergency service delivery areas (911, fire, and/or police).
    - Grazing districts or range units.
  - Historical or traditional areas recognized by a tribal government.
  - Sub-reservation tribal community governments.
    - b) Keep the following criteria in mind when defining tribal subdivisions:
      - Tribal subdivisions should cover all, or most, of a tribe's land base.
      - The delineation of tribal subdivisions is restricted to the area contained within reservations and/or associated off-reservation trust lands.
      - There is no minimum population threshold for a tribal subdivision.
      - A tribal subdivision may be noncontiguous.
      - Tribes may designate only one type of tribal subdivision. If a tribe has more than one level of tribal subdivision within its land base, the Census Bureau recommends delineating subdivisions corresponding to the lowest geographic level (those geographic areas containing the smallest area) of the tribe's administrative hierarchy.
      - Tribal subdivisions should not be based solely on land ownership or other cadastral areas, nor should they consist of divisions based on the U.S. Public Land Survey System (PLSS) of townships, ranges, and sections, if these areas have no governmental or administrative function for a tribe.
      - The following descriptions can be appended to chosen subdivision names (e.g., Red Rock Community):
        - a) District.
        - b) Community.
        - c) Area.
        - d) Chapter.
        - e) Segment.
        - f) Administrative Area.
        - g) Addition.
        - h) County District.

### 3.5.7.1 Tribal Subdivision Program Procedures

If this is the first time that tribal subdivisions are being provided to the Census Bureau (Figure 16):

- Using the blue pencil, please add the boundaries on the BAS map(s).
- 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”).
- Record the name, type, and status of each subdivision in the Tribal Names and Status Documentation section of the BAS-5 form.
- 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.

**Note:** If a full set of BAS maps has not been sent, please request them by calling the Census Bureau at 1-800-972-5651.



**Figure 16. 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.

### 3.5.7.2 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):

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

**Note:** 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.

### **3.5.7.3 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. If there are any questions or if additional maps are needed, please contact the Census Bureau at **1-800-972-5651**.

### **3.5.8 County Review and Consolidations**

Counties receive boundary information from the Census Bureau 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.

- Active governments are defined as having a functioning government, with elected officials, that provides programs and services.
- Inactive governments have no functioning government or elected officials, receive services solely from the county, and should be reviewed by the county during BAS.

Although it is not required, counties may update boundaries for incorporated places and MCDs on the county BAS maps. The Census Bureau encourages counties to establish Consolidated BAS (CBAS) agreements with local governments in order to consolidate resources, reduce the burden on local governments, and avoid duplication of work. Under a CBAS agreement, the county is responsible for reporting boundary changes to the Census Bureau. Participating local governments would no longer receive an annual BAS package. One hundred percent participation is not required, and governments may opt out of the agreement at any time. Contact the Census Bureau at <[geo.bas@census.gov](mailto:geo.bas@census.gov)> for more information on participating in a CBAS agreement or visit the CBAS webpage at <<https://www.census.gov/programs-surveys/bas/information/consolidated-bas.html>>.

### **3.5.9 Public Land Survey System**

Boundaries are often based on nonvisible features, such as Public Land Survey System (PLSS) lines (i.e. township, section, range lines, etc.). The Census Bureau is currently working on a program through which PLSS lines can be incorporated into the MAF/TIGER system. If any of the government’s existing or new boundaries are known to follow PLSS lines, this should be designated on the BAS submission by writing “PLSS” in red pencil next to (and parallel to) the appropriate boundary segments. In areas where the Census Bureau has obtained accurate PLSS shapefiles, the Census Bureau will then be able to compare these lines to those shapefiles and ensure accurate placement of the boundary.

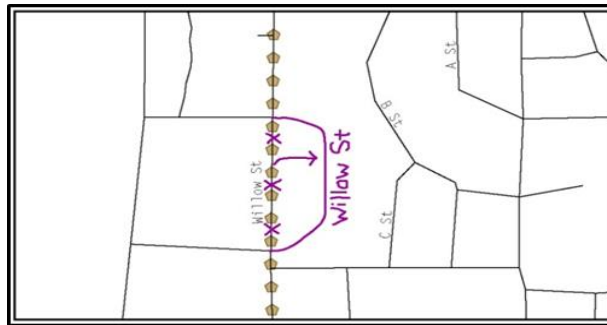
## PART 4 FEATURE MODIFICATIONS

The primary purpose of the 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 the 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 the BAS.

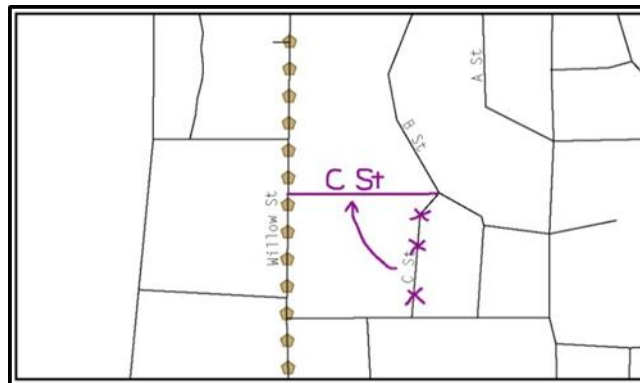
### 4.1 Modifying Locations of Streets

The following figures illustrate how to correct the location of a street feature:

- Using the purple pencil, please cross out the incorrect feature location with “Xs”.
- Please draw the feature in the correct location.
- Please print the name of the feature along the length of the feature as shown in Figure 17 and Figure 18.



**Figure 17. Modifying a Street Feature, No Boundary Movement**  
In this example, the street location moves, but the boundary does not.



**Figure 18. Modifying a Street Feature with Boundary Movement**  
In this example, both the street location and the boundary move.

The Census Bureau recently completed a nationwide program to improve the positional accuracy of all streets and other features that appear in the Census Bureau’s MAF/TIGER System. It is not necessary to make small positional corrections on the BAS maps; correct only those streets that are incorrectly located, mislabeled or distorted. Additionally, new streets may be added, and nonexistent streets may be deleted.

### 4.1.1 Adding Streets

- Using the purple pencil, please draw the feature and its name on the map.
- Where possible, please provide the address range for any new streets.
- Please provide the MAF/TIGER Feature Class Code (MTFCC) (See [Appendix B](#)) for all new streets ([Figure 19](#)).
- Alternate street names may be written in parentheses below the primary street name.

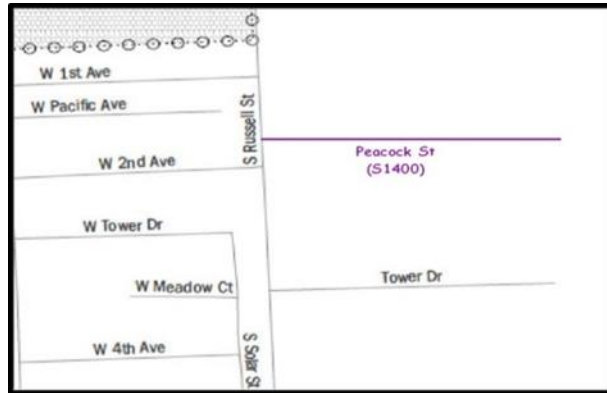


Figure 19. Adding an MTFCC Code When Adding a New Street

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**Note:** Due to the difficulty of showing multiple names for a street, only the primary street name is shown on BAS maps. Please note that, even though alternate street names are not shown on the maps, they do exist in our database. For example, US Hwy 30 may be locally known as Main St., but on the BAS map, only US Hwy 30 will be displayed; however, within our MAF/TIGER System, both names are listed. If an alternate street name has been reported in the past, it does not need to be reported to the Census Bureau again.

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### 4.1.2 Adding Street Names in a Congested Area

- If an area of the map is too congested to add all feature names, using the purple pencil, please 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 20](#)).
- Do not repeat numbers on a map sheet.

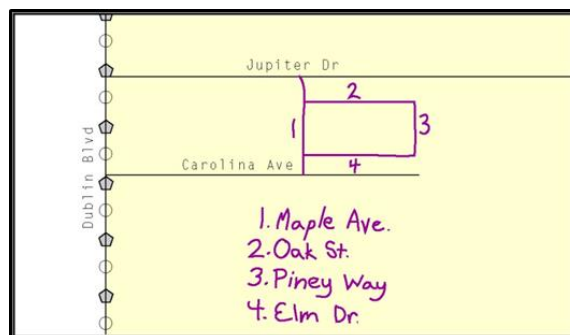


Figure 20. Adding Street Name Features in a Congested Area When Adding Streets



### 4.1.3 Correcting Street Names

- Using the purple pencil, please draw a line through the incorrect street name.
- Please print the correct street name along the feature.

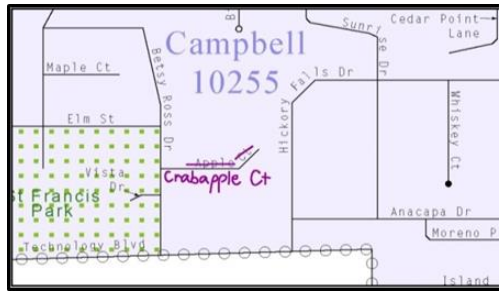


Figure 21. Correcting a Street Name

### 4.1.4 Deleting Streets

- 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.
- Using the purple pencil, please mark the beginning and end of the base feature to be deleted with hatch (//) marks perpendicular to the feature as shown below.
- Cross-out the nonexistent street feature using a string of "Xs".

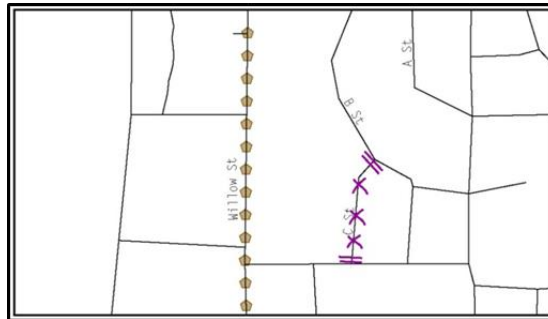


Figure 22. Deleting a Street Feature

### 4.1.5 Labeling Unnamed Streets

- Using the purple pencil, please label any unnamed streets on the maps.
- Label any unnamed private roads with "PR". Examples of private roads are driveways and unnamed roads in commercial or industrial parks.



Figure 23. Adding Unnamed Road Features

#### 4.1.6 Adding Cul-De-Sacs or Circles

- Using the purple pencil, please draw the feature as follows:
- Cul-de-sacs are entirely paved and should be drawn as a solid dot.
- Circles have an area of unpaved ground within them and should be drawn as an unfilled circle.
- Print the name of the associated street leading to the cul-de-sac or circle.

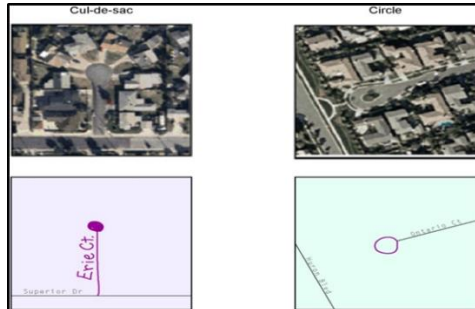


Figure 24. Adding Cul-de-sac and Circle Features

## 4.2 Annotating Address Range

Addresses are stored in the Census Bureau spatial database as potential address ranges. The BAS maps show the break in the potential address range created where a street is bisected by a boundary. These address range breaks are shown because it is important that the Census Bureau assign the correct addresses to each government.

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**Note:** Some streets on the BAS maps do not display address breaks due to space considerations.

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Add address ranges on both ends of the street **only** if one of the following circumstances exists:

1. A road where house numbers, street names, and/or addresses were added or deleted.
2. A street was added that crosses a boundary.
3. The address ranges created by a boundary are incorrect on the map.

#### 4.2.1 When Adding Address Ranges

Using the purple pencil, please add in the address ranges, providing the lowest and/or highest possible addresses where the road intersects a boundary.

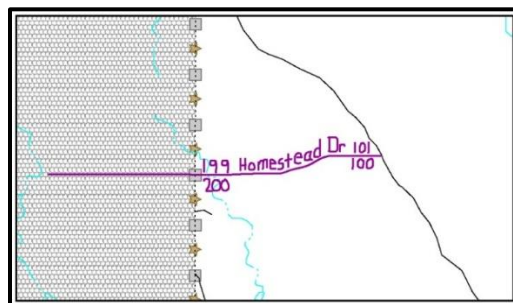


Figure 25. Adding Street Feature/Annotating with Name and Address Breaks

## 4.3 Point Landmarks

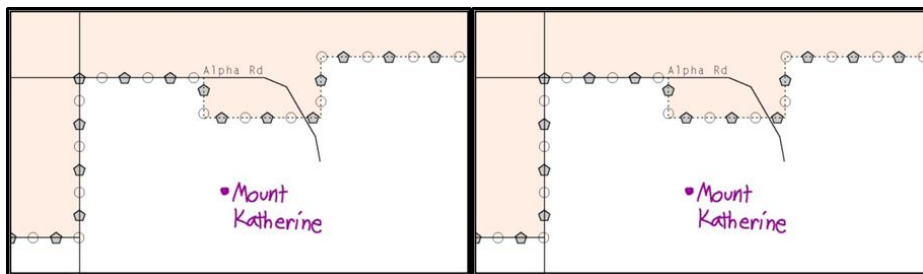
BAS maps display a select number of point landmarks (e.g., mountain peaks). Point landmarks can be updated through BAS but are not required.

Acceptable point landmark feature updates include mountain peaks or summits, libraries, city halls, community centers and police stations. Airports, parks, schools, golf courses, museums, and cemeteries may be submitted as point landmarks or area landmarks.

Features that contain residences or private business should not be added as point landmarks or area features (e.g. hotels, campgrounds, retirement homes, farms).

The BAS maps also include select point landmarks (e.g. airports, cemeteries, summits) taken from USGS topography maps and the USGS Geographic Names Information System (GNIS). These landmarks represent the official federally recognized name and will not be removed or updated without USGS verification. When adding a point landmark:

- Using the purple pencil, place a solid dot at the location of the point landmark.
- Print the name of the landmark next to the dot.



**Figure 26. Adding a Point Landmark**

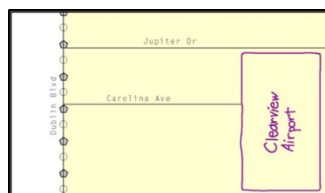
#### **4.4 Area Landmarks**

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

Acceptable area landmark updates include water bodies, swamps, quarries, national parks and forests. Airports, parks, schools, golf courses, museums, and cemeteries may be submitted as area landmarks or point landmarks.

Features that contain residences or private business should not be added as point landmarks or area features (e.g. hotels, campgrounds, retirement homes, farms). When adding an area landmark:

- Using the purple pencil, draw the area landmark boundary in the correct location.
- Print the name of the landmark inside or next to the feature.



**Figure 27. Adding an Area Landmark**

## **PART 5 RETURNING UPDATES TO THE CENSUS BUREAU**

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Return all maps with updates using the provided postage-paid return envelope included with your materials. To obtain a post-paid return envelope, contact the Census Bureau at <[geo.bas@census.gov](mailto:geo.bas@census.gov)> or 1-800-972-5651, 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

## APPENDICES

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## APPENDIX B MTFCC DESCRIPTIONS

The MAF/TIGER Feature Classification Code (MTFCC) is a 5-digit code assigned by the Census Bureau to classify and describe geographic objects or features in Census Bureau MAF/TIGER system.

MTFCC	Feature Class	Feature Class Description
C3022	Mountain Peak or Summit	A prominent elevation rising above the surrounding level of the Earth's surface.
C3023	Island	An area of dry or relatively dry land surrounded by water or low wetland [including archipelago, atoll, cay, hammock, hummock, isla, isle, key, moku and rock].
C3024	Levee	An embankment flanking a stream or other flowing water feature to prevent overflow.
C3026	Quarry (not water-filled), Open Pit Mine or Mine	An area from which commercial minerals are or were removed from the Earth; not including an oilfield or gas field.
C3027	Dam	A barrier built across the course of a stream to impound water and/or control water flow.
C3061	Cul-de-sac	An expanded paved area at the end of a street used by vehicles for turning around. For mapping purposes, the Census Bureau maps it only as a point feature.
C3062	Traffic Circle	A circular intersection allowing for continuous movement of traffic at the meeting of roadways.
C3066	Gate	A movable barrier across a road.
C3067	Toll Booth	A structure or barrier where a fee is collected for using a road.
C3070	Tower/Beacon	A manmade structure, higher than its diameter generally used for observation, storage, or electronic transmission.
C3071	Lookout Tower	A manmade structure, higher than its diameter, used for observation.
C3072	Transmission Tower including cell, radio and TV	A manmade structure, higher than its diameter, used for electronic transmission.
C3073	Water Tower	A manmade structure, higher than its diameter, used for water storage.
C3074	Lighthouse Beacon	A manmade structure, higher than its diameter, used for transmission of light and possibly sound generally to aid in navigation.
C3075	Tank/Tank Farm	One or more manmade structures, each higher than its diameter, used for liquid (other than water) or gas storage or for distribution activities.
C3076	Windmill Farm	One or more manmade structures used to generate power from the wind.
C3077	Solar Farm	One or more manmade structures used to generate power from the sun.
C3078	Monument or Memorial	A manmade structure to educate, commemorate, or memorialize an event, person, or feature.
C3079	Boundary Monument Point	A material object placed on or near a boundary line to preserve and identify the location of the boundary line on the ground.
C3080	Survey Control Point	A point on the ground whose position (horizontal or vertical) is known and can be used as a base for additional survey work.
C3081	Locality Point	A point that identifies the location and name of an unbounded locality (e.g., crossroad, community, populated place or locale).
C3085	Alaska Native Village Official Point	A point that serves as the core of an Alaska Native village and is used in defining Alaska Native village statistical areas.

C3088	Landfill	A disposal facility at which solid waste is placed on or in the land.
G2100	American Indian Area	A legally defined state- or federally recognized reservation and/or off-reservation trust land (excludes statistical American Indian areas).
G2101	American Indian Area (Reservation Only)	American Indian Area (Reservation Only)
G2102	American Indian Area (Off-Reservation Trust Land Only)	American Indian Area (Off-Reservation Trust Land Only)
G2120	Hawaiian Homeland	A legal area held in trust for the benefit of Native Hawaiians.
G2130	Alaska Native Village Statistical Area	A statistical geographic entity that represents the residences, permanent and/or seasonal, for Alaska Natives who are members of or receiving governmental services from the defining legal Alaska Native Village corporation.
G2140	Oklahoma Tribal Statistical Area	A statistical entity identified and delineated by the Census Bureau in consultation with federally recognized American Indian tribes that have no current reservation but had a former reservation in Oklahoma.
G2150	State-designated Tribal Statistical Area	A statistical geographic entity identified and delineated for the Census Bureau by a state-appointed liaison for a state-recognized American Indian tribe that does not currently have a reservation and/or lands in trust.
G2160	Tribal Designated Statistical Area	A statistical geographic entity identified and delineated for the Census Bureau by a federally recognized American Indian tribe that does not currently have a reservation and/or off-reservation trust land.
G2170	American Indian Joint Use Area	An area administered jointly and/or claimed by two or more American Indian tribes.
G2200	Alaska Native Regional Corporation	Corporate entities established to conduct both business and nonprofit affairs of Alaska Natives pursuant to the Alaska Native Claims Settlement Act of 1972 (Public Law 92-203). There are twelve geographically defined ANRCs and they are all within and cover most of the State of Alaska (the Annette Island Reserve-an American Indian reservation-is excluded from any ANRC). The boundaries of ANRCs have been legally established.
G2300	Tribal Subdivision	Administrative subdivisions of federally recognized American Indian reservations, off-reservation trust lands, or Oklahoma tribal statistical areas (OTSAs). These entities are internal units of self-government or administration that serve social, cultural, and/or economic purposes for the American Indians on the reservations, off-reservation trust lands, or OTSAs.
G2400	Tribal Census Tract	A relatively small and permanent statistical subdivision of a federally recognized American Indian reservation and/or off-reservation trust land, delineated by American Indian tribal participants or the Census Bureau for the purpose of presenting demographic data.
G2410	Tribal Block Group	A cluster of census blocks within a single tribal census tract delineated by American Indian tribal participants or the Census Bureau for the purpose of presenting demographic data.
G3100	Combined Statistical Area	A grouping of adjacent metropolitan and/or micropolitan statistical areas that have a degree of economic and social integration, as measured by commuting.
G3110	Metropolitan and Micropolitan Statistical Area	An area containing a substantial population nucleus together with adjacent communities having a high degree of economic and social integration with that core, as measured by commuting. Defined using whole counties and equivalents.

G3120	Metropolitan Division	A county or grouping of counties that is a subdivision of a Metropolitan Statistical Area containing an urbanized area with a population of 2.5 million or more.
G3200	Combined New England City and Town Area	A grouping of adjacent New England city and town areas that have a degree of economic and social integration, as measured by commuting.
G3210	New England City and Town Metropolitan and Micropolitan Statistical Area	An area containing a substantial population nucleus together with adjacent communities having a high degree of economic and social integration with that core, as measured by commuting. Defined using Minor Civil Divisions (MCDs) in New England.
G3220	New England City and Town Division	A grouping of cities and towns in New England that is a subdivision of a New England City and Town Area containing an urbanized area with a population of 2.5 million or more.
G3500	Urban Area	Densely settled territory that contains at least 2,500 people. The subtypes of this feature are Urbanized Area (UA), which consists of 50,000 + people and Urban Cluster, which ranges between 2,500 and 49,999 people.
G4000	State or Equivalent Feature	The primary governmental divisions of the United States. The District of Columbia is treated as a statistical equivalent of a state for census purposes, as is Puerto Rico.
G4020	County or Equivalent Feature	The primary division of a state or state equivalent area. The primary divisions of 48 states are termed County, but other terms are used such as Borough in Alaska, Parish in Louisiana, and Municipio in Puerto Rico. This feature includes independent cities, which are incorporated places that are not part of any county.
G4040	County Subdivision	The primary divisions of counties and equivalent features for the reporting of Census Bureau data. The subtypes of this feature are Minor Civil Division, Census County Division/Census Subarea, and Unorganized Territory. This feature includes independent places, which are incorporated places that are not part of any county subdivision.
G4050	Estate	Estates are subdivisions of the three major islands in the United States Virgin Islands (USVI).
G4060	Subbarrio (Subminor Civil Division)	Legally defined divisions (subbarrios) of minor civil divisions (barrios-pueblo and barrios) in Puerto Rico.
G4110	Incorporated Place	A legal entity incorporated under state law to provide general-purpose governmental services to a concentration of population. Incorporated places are generally designated as a city, borough, municipality, town, village, or, in a few instances, have no legal description.
G4120	Consolidated City	An incorporated place that has merged governmentally with a county or minor civil division, but one or more of the incorporated places continues to function within the consolidation. It is a place that contains additional separately incorporated places.
G4210	Census Designated Place	A statistical area defined for a named concentration of population and the statistical counterpart of an incorporated place.
G4300	Economic Census Place	The lowest level of geographic area for presentation of some types of Economic Census data. It includes incorporated places, consolidated cities, census designated places (CDPs), minor civil divisions (MCDs) in selected states, and balances of MCDs or counties. An incorporated place, CDP, MCD, or balance of MCD qualifies as an economic census place if it contains 5,000 or more residents, or 5,000 or more jobs, according to the most current data available.

G5020	Census Tract	Relatively permanent statistical subdivisions of a County or equivalent feature delineated by local participants as part of the Census Bureau's Participant Statistical Areas Program.
G5030	Block Group	A cluster of census blocks having the same first digit of their four-digit identifying numbers within a Census Tract. For example, block group 3 (BG 3) within a Census Tract includes all blocks numbered from 3000 to 3999.
G5040	Tabulation Block	The lowest-order census defined statistical area. It is an area, such as a city block, bounded primarily by physical features but sometimes by invisible city or property boundaries. A tabulation block boundary does not cross the boundary of any other geographic area for which the Census Bureau tabulates data. The subtypes of this feature are Count Question Resolution (CQR), current, and census.
G5200	Congressional District	The 435 areas from which people are elected to the U.S. House of Representatives. Additional equivalent features exist for state equivalents with nonvoting delegates or no representative. The subtypes of this feature are 106th, 107th, 108th, 109th, and 111th Congressional Districts, plus subsequent Congresses.
G5210	State Legislative District (Upper Chamber)	Areas established by a state or equivalent government from which members are elected to the upper or unicameral chamber of a state governing body. The upper chamber is the senate in a bicameral legislature, and the unicameral case is a single house legislature (Nebraska).
G5220	State Legislative District (Lower Chamber)	Areas established by a state or equivalent government from which members are elected to the lower chamber of a state governing body. The lower chamber is the House of Representatives in a bicameral legislature.
G5240	Voting District	The generic name for the geographic features, such as precincts, wards, and election districts, established by state, local, and tribal governments for the purpose of conducting elections.
G5400	Elementary School District	A geographic area within which officials provide public elementary grade-level educational services for residents.
G5410	Secondary School District	A geographic area within which officials provide public secondary grade-level educational services for residents.
G5420	Unified School District	A geographic area within which officials provide public educational services for all grade levels for residents.
G6100	Public-Use Microdata Area	A decennial census area with a population of at least 100,000 or more persons for which the Census Bureau provides selected extracts of household-level data that are screened to protect confidentiality.
G6300	Traffic Analysis District	An area delineated by Metropolitan Planning Organizations (MPOs) and state Departments of Transportation (DOTs) for tabulating journey-to-work and place-of-work data. A Traffic Analysis District (TAD) consists of one or more Traffic Analysis Zones (TAZs).
G6320	Traffic Analysis Zone	An area delineated by Metropolitan Planning Organizations (MPOs) and state Departments of Transportation (DOTs) for tabulating journey-to-work and place-of-work data.
G6330	Urban Growth Area	An area defined under state authority to manage urbanization that the Census Bureau includes in the MAF/TIGER® System in agreement with the state.
G6340	ZIP Code Tabulation Area (Three-Digit)	An approximate statistical-area representation of a U.S. Postal Service (USPS) 3-digit ZIP Code service area.
G6350	ZIP Code Tabulation Area (Five-Digit)	An approximate statistical-area representation of a U.S. Postal Service (USPS) 5-digit ZIP Code service area.

G6400	Commercial Region	For the purpose of presenting economic statistical data, municipios in Puerto Rico are grouped into commercial regions.
H1100	Connector	A known, but nonspecific, hydrographic connection between two nonadjacent water features.
H2025	Swamp/Marsh	A poorly drained wetland, fresh or saltwater, wooded or grassy, possibly covered with open water [includes bog, cienega, marais, and pocosin].
H2030	Lake/Pond	A standing body of water that is surrounded by land.
H2040	Reservoir	An artificially impounded body of water.
H2041	Treatment Pond	An artificial body of water built to treat fouled water.
H2051	Bay/Estuary/Gulf/Sound	A body of water partly surrounded by land [includes arm, bight, cove and inlet].
H2053	Ocean/Sea	The great body of salt water that covers much of the earth.
H2060	Gravel Pit/Quarry filled with water	A body of water in a place or area from which commercial minerals were removed from the Earth.
H2081	Glacier	A body of ice moving outward and down slope from an area of accumulation; an area of relatively permanent snow or ice on the top or side of a mountain or mountainous area [includes ice field and ice patch].
H3010	Stream/River	A natural flowing waterway [includes anabranch, awawa, branch, brook, creek, distributary, fork, kill, pup, rio, and run].
H3013	Braided Stream	A natural flowing waterway with an intricate network of interlacing channels.
H3020	Canal, Ditch or Aqueduct	An artificial waterway constructed to transport water, to irrigate or drain land, to connect two or more bodies of water, or to serve as a waterway for watercraft [includes lateral].
K1121	Apartment Building or Complex	A building or group of buildings that contain multiple living quarters generally for which rent is paid.
K1223	Trailer Court or Mobile Home Park	An area in which parking space for house trailers is rented, usually providing utilities and services.
K1225	Crew-of-Vessel Location	A point or area in which the population of military or merchant marine vessels at sea are assigned, usually being at or near the home port pier.
K1226	Housing Facility/Dormitory for Workers	A structure providing housing for a number of persons employed as semi-permanent or seasonal laborers.
K1227	Hotel, Motel, Resort, Spa, Hostel, YMCA or YWCA	A structure providing transient lodging or living quarters, generally for some payment.
K1228	Campground	An area used for setting up mobile temporary living quarters (camp) or holding a camp meeting, sometimes providing utilities and other amenities.
K1229	Shelter or Mission	A structure providing low-cost or free-living quarters established by a welfare or educational organization for the needy people of a district.
K1231	Hospital/Hospice/Urgent Care Facility	One or more structures where the sick or injured may receive medical or surgical attention [including infirmary].
K1233	Nursing Home, Retirement Home, or Home for the Aged	A structure to house and provide care for the elderly.
K1234	County Home or Poor Farm	One or more structures administered by a local government that serve as living quarters for the indigent.
K1235	Juvenile Institution	A facility (correctional and non-correctional) where groups of juveniles reside; this includes training schools, detention centers, residential treatment centers and orphanages.

K1236	Local Jail or Detention Center	One or more structures that serve as a place for the confinement of adult persons in lawful detention, administered by a local (county, municipal, etc.) government.
K1237	Federal Penitentiary, State Prison, or Prison Farm	An institution that serves as a place for the confinement of adult persons in lawful detention, administered by the federal government or a state government.
K1238	Other Correctional Institution	One or more structures that serve as a place for the confinement of adult persons in lawful detention, not elsewhere classified or administered by a government of unknown jurisdiction.
K1239	Convent, Monastery, Rectory, Other Religious Group Quarters	One or more structures intended for use as a residence for those having a religious vocation.
K1241	Sorority, Fraternity, or College Dormitory	One or more structures associated with a social or educational organization that serve as living quarters for college students.
K2100	Governmental	A place where employees are employed in federal, state, local, or tribal government.
K2146	Community Center	A meeting place used by members of a community for social, cultural, or recreational purposes.
K2110	Military Installation	An area owned and/or occupied by the Department of Defense for use by a branch of the armed forces (such as the Army, Navy, Air Force, Marines, or Coast Guard), or a state-owned area for the use of the National Guard.
K2165	Government Center	A place used by members of government (either federal, state, local, or tribal) for administration and public business.
K2167	Convention Center	An exhibition hall or conference center with enough open space to host public and private business and social events.
K2180	Park	Parkland defined and administered by federal, state, and local governments.
K2181	National Park Service Land	Area—National parks, National Monuments, and so forth—under the jurisdiction of the National Park Service.
K2182	National Forest or Other Federal Land	Land under the management and jurisdiction of the federal government, specifically including areas designated as National Forest, and excluding areas under the jurisdiction of the National Park Service.
K2183	Tribal Park, Forest, or Recreation Area	A place or area set aside for recreation or preservation of a cultural or natural resource and under the administration of an American Indian tribe.
K2184	State Park, Forest, or Recreation Area	A place or area set aside for recreation or preservation of a cultural or natural resource and under the administration of a state government.
K2185	Regional Park, Forest, or Recreation Area	A place or area set aside for recreation or preservation of a cultural or natural resource and under the administration of a regional government.
K2186	County Park, Forest, or Recreation Area	A place or area set aside for recreation or preservation of a cultural or natural resource and under the administration of a county government.
K2187	County Subdivision Park, Forest, or Recreation Area	A place or area set aside for recreation or preservation of a cultural or natural resource and under the administration of a minor civil division (town/township) government.
K2188	Incorporated Place Park, Forest, or Recreation Area	A place or area set aside for recreation or preservation of a cultural or natural resource and under the administration of a municipal government.
K2189	Private Park, Forest, or Recreation Area	A privately owned place or area set aside for recreation or preservation of a cultural or natural resource.

K2190	Other Park, Forest, or Recreation Area (quasi-public, independent park, commission, etc.)	A place or area set aside for recreation or preservation of a cultural or natural resource and under the administration of some other type of government or agency such as an independent park authority or commission.
K2191	Post Office	An official facility of the U.S. Postal Service used for processing and distributing mail and other postal material.
K2193	Fire Department	Fire Department.
K2194	Police Station	Police Station.
K2195	Library	Library.
K2196	City/Town Hall	City/Town Hall.
K2300	Commercial Workplace	A place of employment for wholesale, retail, or other trade
K2361	Shopping Center or Major Retail Center	A group of retail establishments within a planned subdivision sharing a common parking area.
K2362	Industrial Building or Industrial Park	One or more manufacturing establishments within an area zoned for fabrication, construction, or other similar trades.
K2363	Office Building or Office Park	One or more structures housing employees performing business, clerical, or professional services
K2364	Farm/Vineyard/Winery/ Orchard	An agricultural establishment where crops are grown and/or animals are raised, usually for food.
K2366	Other Employment Center	A place of employments not elsewhere classified or of unknown type.
K2400	Transportation Terminal	A facility where one or more modes of transportation can be accessed by people or for the shipment of goods; examples of such a facility include marine terminal, bus station, train station, airport and truck warehouse.
K2424	Marina	A place where privately owned, light-craft are moored.
K2432	Pier/Dock	A platform built out from the shore into the water and supported by piles. This platform may provide access to ships and boats, or it may be used for recreational purposes.
K2451	Airport or Airfield	A manmade facility maintained for the use of aircraft [including airstrip, landing field and landing strip].
K2452	Train Station, Trolley or Mass Transit Rail Station	A place where travelers can board and exit rail transit lines, including associated ticketing, freight, and other commercial offices.
K2453	Bus Terminal	A place where travelers can board and exit mass motor vehicle transit, including associated ticketing, freight, and other commercial offices.
K2454	Marine Terminal	A place where travelers can board and exit water transit or where cargo is handled, including associated ticketing, freight, and other commercial offices.
K2455	Seaplane Anchorage	A place where an airplane equipped with floats for landing on or taking off from a body of water can debark and load.
K2456	Airport—Intermodal Transportation Hub/Terminal	A major air transportation facility where travelers can board and exit airplanes and connect with other (i.e. non-air) modes of transportation.
K2457	Airport—Statistical Representation	The area of an airport adjusted to include whole 2000 census blocks used for the delineation of urban areas.
K2458	Park and Ride Facility/Parking Lot	A place where motorists can park their cars and transfer to other modes of transportation.
K2459	Runway/Taxiway	A fairly level and usually paved expanse used by airplanes for taking off and landing at an airport.
K2460	Helicopter Landing Pad	A fairly level and usually paved expanse used by helicopters for taking off and landing.
K2540	University or College	A building or group of buildings used as an institution for post-secondary study, teaching, and learning [including seminary].



K2543	School or Academy	A building or group of buildings used as an institution for preschool, elementary or secondary study, teaching, and learning [including elementary school and high school].
K2545	Museum, Visitor Center, Cultural Center, or Tourist Attraction	An attraction of historical, cultural, educational or other interest that provides information or displays artifacts.
K2561	Golf Course	A place designed for playing golf.
K2564	Amusement Center	A facility that offers entertainment performances or sporting events. Examples include arena, auditorium, theater, stadium, coliseum, racecourse, theme park, fairgrounds, and shooting range.
K2582	Cemetery	A place or area for burying the dead [including burying ground and memorial garden].
K2586	Zoo	A facility in which terrestrial and/or marine animals are confined within enclosures and displayed to the public for educational, preservation, and research purposes.
K3544	Place of Worship	A sanctified place or structure where people gather for religious worship; examples include church, synagogue, temple, and mosque.
L4010	Pipeline	A long tubular conduit or series of pipes, often underground, with pumps and valves for flow control, used to transport fluid (e.g., crude oil, natural gas), especially over great distances.
L4020	Powerline	One or more wires, often on elevated towers, used for conducting high-voltage electric power.
L4031	Aerial Tramway/Ski Lift	A conveyance that transports passengers or freight in carriers suspended from cables and supported by a series of towers.
L4110	Fence Line	A man-made barrier enclosing or bordering a field, yard, etc., usually made of posts and wire or wood, used to prevent entrance, to confine, or to mark a boundary.
L4121	Ridge Line	The line of highest elevation along a ridge.
L4125	Cliff/Escarpment	A very steep or vertical slope [including bluff, crag, head, headland, nose, palisades, precipice, promontory, rim and rimrock].
L4130	Point-to-Point Line	A line defined as beginning at one location point and ending at another, both of which are in sight.
L4140	Property/Parcel Line (Including PLSS)	This feature class may denote a nonvisible boundary of either public or private lands (e.g., a park boundary) or it may denote a Public Land Survey System or equivalent survey line.
L4150	Coastline	The line that separates either land or Inland water from Coastal, Territorial or Great Lakes water. Where land directly borders Coastal, Territorial or Great Lakes water, the shoreline represents the Coastline. Where Inland water (such as a river) flows into Coastal, Territorial or Great Lakes water, the closure line separating the Inland water from the other class of water represents the Coastline.
L4165	Ferry Crossing	The route used to carry or convey people or cargo back and forth over a waterbody in a boat.
P0001	Nonvisible Linear Legal/Statistical Boundary	A legal/statistical boundary line that does not correspond to a shoreline or other visible feature on the ground.
P0002	Perennial Shoreline	The more-or-less permanent boundary between land and water for a water feature that exists year-round.
P0003	Intermittent Shoreline	The boundary between land and water (when water is present) for a water feature that does not exist year-round.

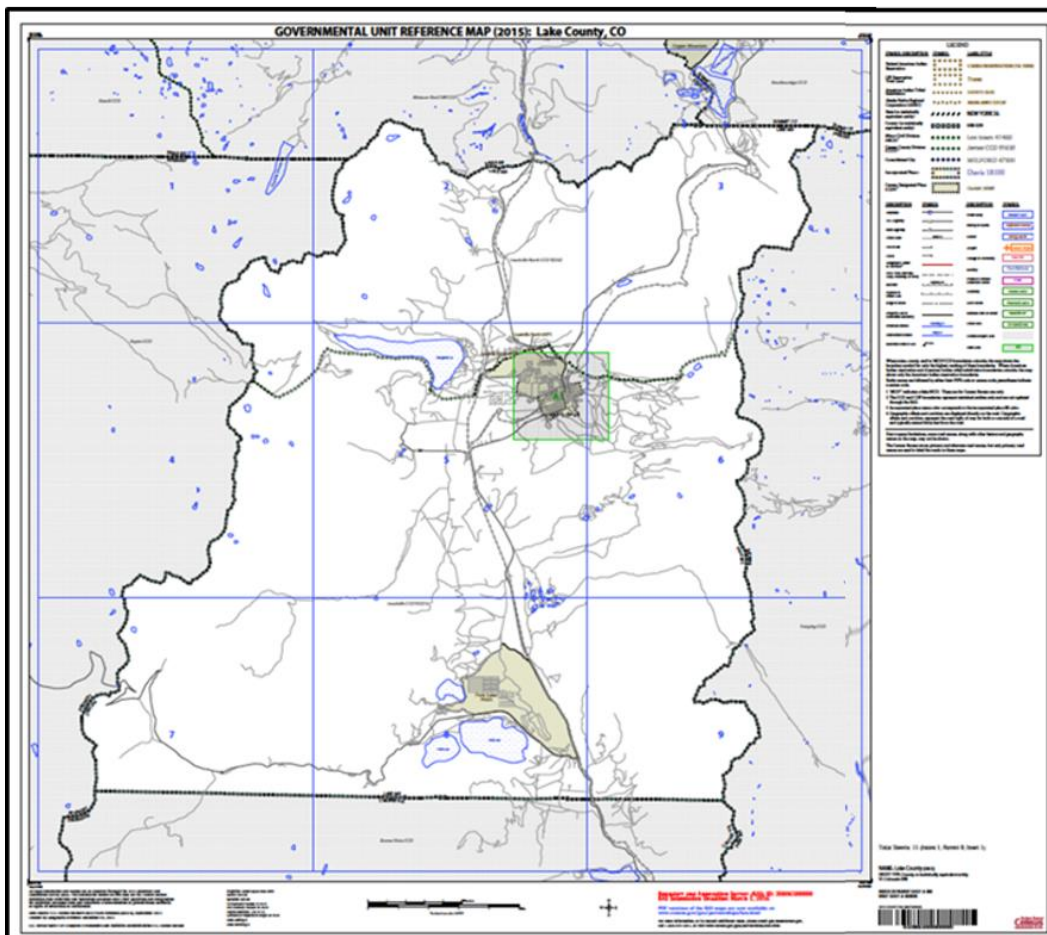
P0004	Other non-visible bounding Edge (e.g., Census water boundary, boundary of an aerial feature)	A bounding Edge that does not represent a legal/statistical boundary and does not correspond to a shoreline or other visible feature on the ground. Many such Edges bound area landmarks, while many others separate water features from each other (e.g., where a bay meets the ocean).
R1011	Railroad Feature (Main, Spur, or Yard)	A line of fixed rails or tracks that carries mainstream railroad traffic. Such a rail line can be a main line or spur line, or part of a rail yard.
R1051	Carline, Streetcar Track, Monorail, Other Mass Transit	Mass transit rail lines (including lines for rapid transit, monorails, streetcars, light rail, etc.) that are typically inaccessible to mainstream railroad traffic and whose tracks are not part of a road right-of-way.
R1052	Cog Rail Line, Incline Rail Line, Tram	A special purpose rail line for climbing steep grades that is typically inaccessible to mainstream railroad traffic. Note that aerial tramways and streetcars (which may also be called "trams") are accounted for by other MTFCCs and do not belong in R1052.
S1100	Primary Road	Primary roads are generally divided, limited-access highways within the interstate highway system or under state management, and are distinguished by the presence of interchanges. These highways are accessible by ramps and may include some toll highways.
S1200	Secondary Road	Secondary roads are main arteries, usually in the U.S. Highway, State Highway or County Highway system. These roads have one or more lanes of traffic in each direction, may or may not be divided, and usually have at-grade intersections with many other roads and driveways. They often have both a local name and a route number.
S1400	Local Neighborhood Road, Rural Road, City Street	Generally, a paved non-arterial street, road, or byway that usually has a single lane of traffic in each direction. Roads in this feature class may be privately or publicly maintained. Scenic park roads would be included in this feature class, as would (depending on the region of the country) some unpaved roads.
S1500	Vehicular Trail (4WD)	An unpaved dirt trail where a four-wheel drive vehicle is required. These vehicular trails are found almost exclusively in very rural areas. Minor, unpaved roads usable by ordinary cars and trucks belong in the S1400 category.
S1630	Ramp	A road that allows controlled access from adjacent roads onto a limited access highway, often in the form of a cloverleaf interchange. These roads are unaddressable and do not carry a name in the MAF/TIGER System.
S1640	Service Drive usually along a limited access highway	A road, usually paralleling a limited access highway, that provides access to structures along the highway. These roads can be named and may intersect with other roads.
S1710	Walkway/Pedestrian Trail	A path that is used for walking, being either too narrow for or legally restricted from vehicular traffic.
S1720	Stairway	A pedestrian passageway from one level to another by a series of steps.
S1730	Alley	A service road that does not generally have associated addressed structures and is usually unnamed. It is located at the rear of buildings and properties and is used for deliveries.
S1740	Private Road for service vehicles (logging, oil fields, ranches, etc.)	A road within private property that is privately maintained for service, extractive, or other purposes. These roads are often unnamed.
S1750	Internal U.S. Census Bureau use	Internal U.S. Census Bureau use.
S1780	Parking Lot Road	The main travel route for vehicles through a paved parking area.
S1820	Bike Path or Trail	A path that is used for manual or small, motorized bicycles, being either too narrow for or legally restricted from vehicular traffic.
S1830	Bridle Path	A path that is used for horses, being either too narrow for or legally restricted from vehicular traffic.
S2000	Road Median	The unpaved area or barrier between the carriageways of a divided road.

**Note:** The information in this table was last updated in November 2020.

## APPENDIX C READING A MAP

### C1 Index Maps

In order to decide what map to use for the 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 28**), 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, in much the same pattern as words in a book. 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.



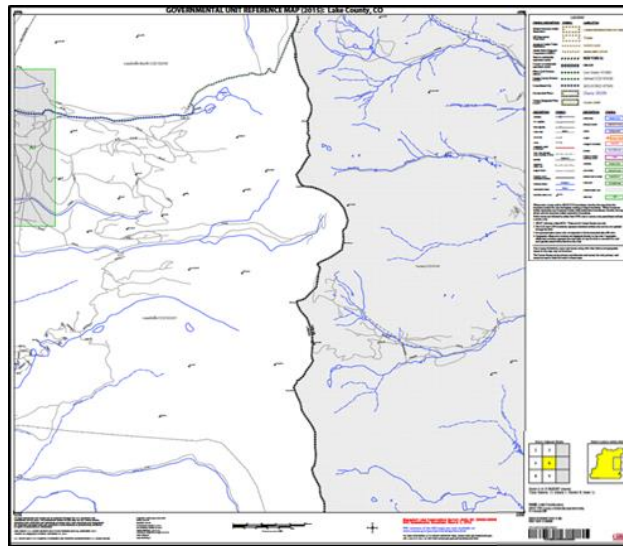
**Figure 28. Index Map**

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

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.

## C2 Parent Maps

Many governments, such as incorporated places and counties, are too large to be shown on a single map; that is, the scale is too small to allow the necessary details for BAS updates. Thus, it is necessary to separate the government into sections, each of which has its own map, called the parent map sheet<sup>2</sup> (Figure 29). Thus, 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.). In this way, viewing and editing map sheets becomes 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 29. 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 29 above. A larger example of this key is shown in Figure 30. This key helps the user quickly determine which adjacent map sheet to use.

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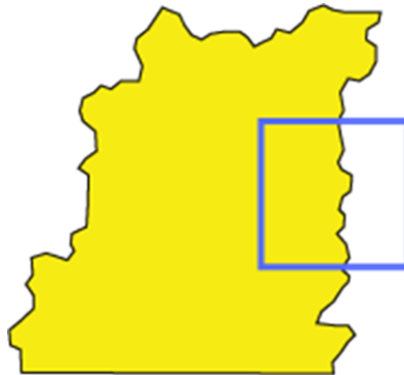
<sup>2</sup>Within the scope of BAS, the terms 'map' and 'map sheet' have the same meaning, and they are used interchangeably throughout this document.

2	3	
5	6	
8	9	

**Figure 30. 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 as is shown in [Figure 31](#).



**Figure 31. 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.

### C3 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 32](#)). 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 33](#). Inset maps are only found in areas with a large number of features, and as such are used less often than parent maps.



Figure 32. An Inset Map as it is Displayed on the Index Map

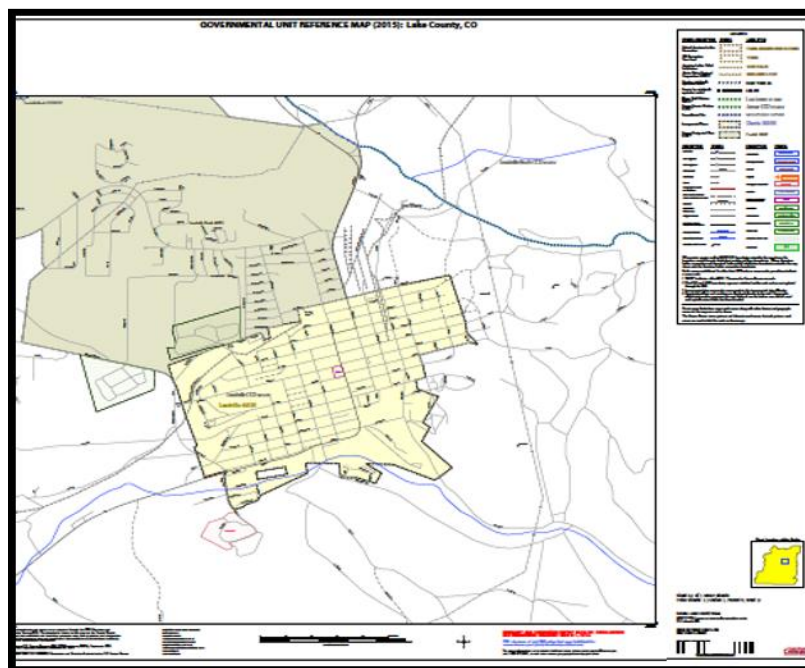
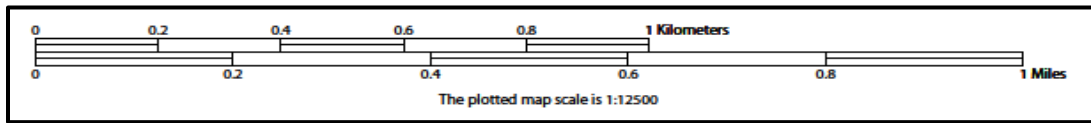


Figure 33. Inset Maps

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

## C4 Scales

A map is a paper or digital representation of an area. Naturally, the map is always smaller than the area it represents, so nearly all maps are equipped with a scale, which 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 (Figure 34), 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 34). 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.

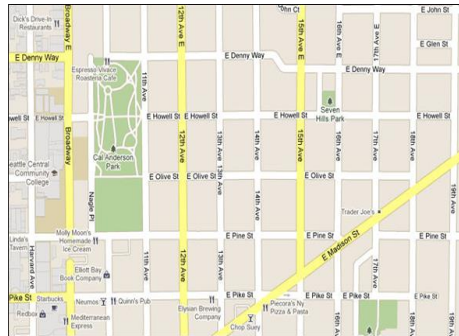


**Figure 34. Bar Scale**

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.

Maps that display a small area, but with a relatively large amount of detail, are considered large-scale maps (see [Figure 35](#)). A map that displays a large area, but shows less detail, is called a small-scale map. This is because the representative fraction of a large-scale map (e.g., 1/7,500 or 1:7,500) is a larger fraction than that of a small-scale map (e.g., 1/250,000 or 1:250,000).

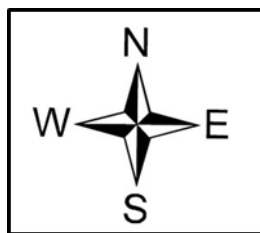


**Figure 35. Large Scale Map**

A large-scale map shows a greater amount of detail; this example displays streets, parks, churches and restaurants.

## C5 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 (see [Figure 36](#)). A compass rose can have any number of designs, and north can be shown in any direction on the map, but most maps are oriented with north at the top of the map. It is important to check the compass rose when beginning to read a map, in order to determine the direction in which the map is oriented (i.e., which direction is at the top of the map).



**Figure 36. Compass Rose**

## C6 Legend

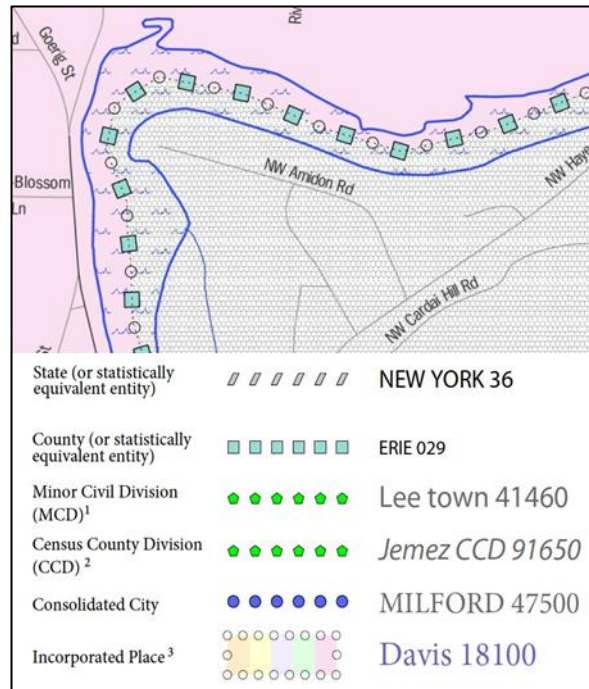
Because a map is a graphic representation of a real-world area, it is necessary, and convenient, to symbolize real world features with representative symbols. These **symbols** can take any form, so long as they are consistent within any individual map. In order to describe what each symbol means, most maps have a legend (see [Figure 37](#)). The legend is typically located on the side or bottom of the map, although they can be anywhere so long as they do not obstruct the integral parts of the map. 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”).

<u>DESCRIPTION</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>SYMBOL</u>
Interstate		Water Body	
U.S. Highway		Swamp or Marsh	
State Highway		Glacier	
Other Road		Airport	
Cul-de-sac		College or University	
Circle		Military	
Geographic Offset or Corridor <sup>4</sup>			
4WD Trail, Stairway,			

Figure 37. 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 38](#) below. 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 38. 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.