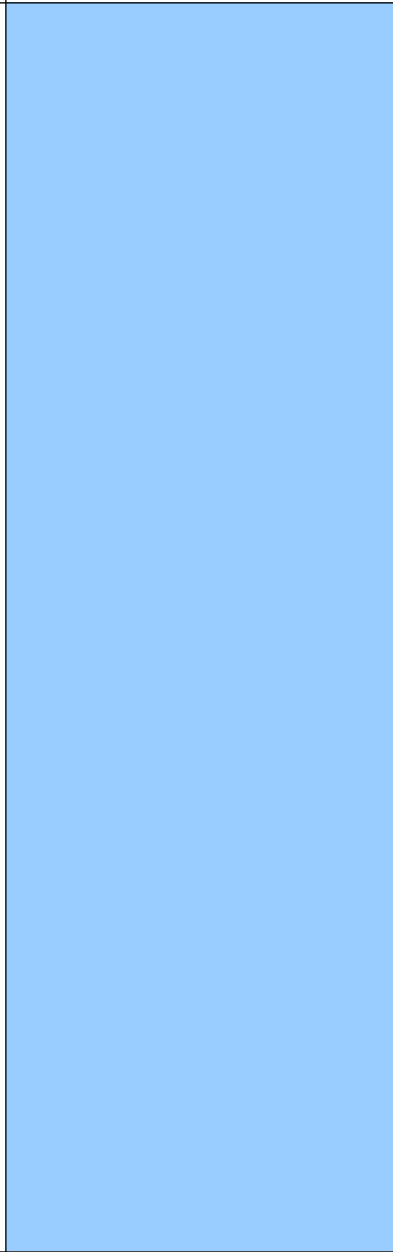


**Boundary and Annexation Survey  
Respondent Guide: Digital BAS**

Issued January 2013



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# 1. Introduction to the Digital Boundary and Annexation Survey (BAS)

## 1.1 Overview of the BAS

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

The U.S. Census Bureau uses BAS information to provide a record for reporting the results of the decennial and economic censuses, and to support the Population Estimates Program and the American Community Survey. Maintaining correct boundaries and boundary-to-feature relationships through the BAS helps ensure that the U.S. Census Bureau assigns the appropriate population to each governmental unit (GU).

In compliance with the Office of Management and Budget Circular A-16, the BAS supports the Census Bureau's spatial data steward responsibilities for the Federal Geographic Data Committee and the Geospatial One-Stop by updating the inventory and boundaries of GUs. In addition, the BAS is the source of up-to-date information on boundaries, codes, and names for the U.S. Geological Survey's (USGS) National Map and the Geographic Names Information System, as well as the source for changes in the boundaries of incorporated places, minor civil divisions (MCDs), counties (and equivalent areas), and federally recognized American Indian areas (AIAs), which include reservations and off-reservation trust lands.

## 1.2 State Specific Arrangements and Agreements

The Census Bureau has established a number of arrangements or agreements with states for reporting boundary changes. Please visit the BAS program website or call (800) 972-5651 for information regarding state agreements.

## 1.3 Legal Disputes

If it comes to the U.S. Census Bureau's attention that an area of land is in dispute between two or more jurisdictions, annexations or boundary corrections will not be made until the parties come to a written agreement, or there is a documented final court decision regarding the matter/dispute. If you have questions concerning this, contact the U.S. Census Bureau Legal Office at 301-763-9844.

## 1.4 Key Dates for Digital BAS Participants

All legal changes received by **March 1** will be reflected in the Population Estimates Program and the American Community Survey. If the U.S. Census Bureau receives your updates by **May 31**, they will be included in your BAS materials next year.

To change the method of participation in BAS from digital to paper, or to have the MTPS software mailed to you, the Census Bureau must be notified by **February 15** (for updates going into the ACS) or **April 15** (for updates to be reflected in the next year's BAS materials). Contact the Census Bureau at 800-972-5651 or email [geo.bas@census.gov](mailto:geo.bas@census.gov).

### **1.5 Digital BAS Requirements**

To participate in Digital BAS entities must meet the following requirements:

1. Have the ability to edit a Census Bureau shapefile<sup>1</sup>. Census requires that entities update Census Bureau shapefiles with boundary and feature changes, rather than submitting a shapefile from a local Geographic Information System (GIS).
2. Current information for the BAS point of contact, the person updating the shapefiles, and the highest elected official for the entity must be provided.
3. Legal documentation numbers and effective dates for all legal boundary changes (annexations and deannexations) must be provided.
4. Each non-legal boundary correction must contain proper update documentation according to boundary correction guidelines listed below, or the Census Bureau will not make the correction for this BAS cycle.

### **Important information about BAS 2013 non-legal boundary corrections:**

Due to current resource and other budgetary constraints within the Census Bureau, the Census Bureau cannot guarantee that all boundary corrections will be processed in the same year's BAS cycle, especially in the case of very large submissions with many boundary corrections. We will continue to process all legal boundary changes, regardless of the number submitted. The Census Bureau appreciates your understanding and support in this matter.

If there are any questions or concerns about the participation requirements, contact the Census Bureau at 800-972-5651 or [geo.bas@census.gov](mailto:geo.bas@census.gov).

## **2. Topological Relationships and Spatial Accuracy**

The Geography Division of the Census Bureau is responsible for developing geographic applications and executing related activities needed to support the Census Bureau in collecting and disseminating census data. For more than twenty years, the Census Bureau's TIGER database and Master Address File (MAF) have been critical resources for supporting the Census Bureau in its geographic activities.

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<sup>1</sup> The use of brand names does not represent an endorsement of a company or its products by the U.S. government. Due to the wide use of ESRI products by our partners in the GIS community, and the ubiquitous use of the shapefile format as a medium for GIS data exchange, the Census Bureau is providing this data in shapefile format. There should be no problem when importing these shapefiles into local GIS software. However, if the GIS software being used does not contain a shapefile translator, contact the Census Bureau for further instructions (301-763-1099) or e-mail [geo.bas@census.gov](mailto:geo.bas@census.gov).

The following section will describe how the Census Bureau uses a topologically integrated system and how this differs from traditional GIS systems, which use separate layers of data.

## 2.1 Topological Relationships in the MAF/TIGER Database

Topology can be described as the relationship between different levels of geography. MAF/TIGER is a geographic database in which the topological structures define the location, connection, and relationships of streets, rivers, railroads, and other features. These topological structures help define the geographic entities for which the Census Bureau tabulates data.

Instead of having a separate layer for each feature class (roads, boundaries, etc.) all MAF/TIGER information is stored in one layer or file. See Examples 2.1.1 and 2.1.2 for samples of topologically integrated files in MAF/TIGER.



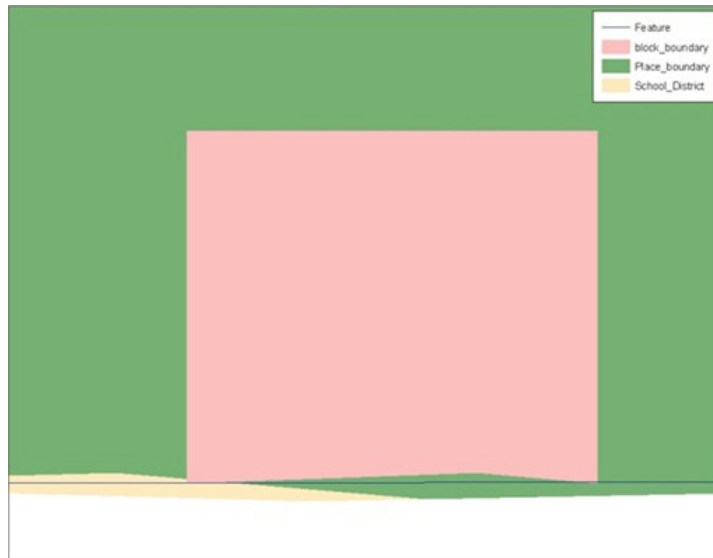
**Example 2.1.1:** This example shows how a road in MAF/TIGER can also represent a block boundary, place boundary and a school district boundary.



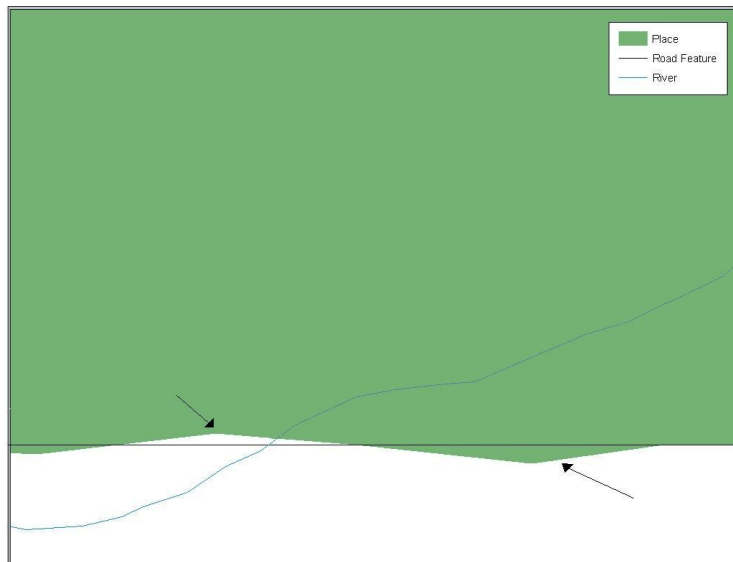
**Example 2.1.2:** This example shows how four different feature classes are topologically integrated into one layer. One road feature represents not only a road, but also a block boundary, place boundary, and a school district boundary.

## 2.2 GIS and Spatial Accuracy

In a GIS, feature classes are usually not topologically integrated: they are separated into layers. When these layers are overlaid in a GIS, there may be misalignments in the boundaries due to the nature of the data. These non-topologically integrated layers could cause issues in the MAF/TIGER database. Examples 2.2.1 and 2.2.2 show how files that are not topologically integrated might appear in a GIS when they are overlaid.



**Example 2.2.1:** This example shows an overlay of four different feature classes. Notice how the topological relationship is compromised. The block, place, and school district boundaries, which are supposed to follow the road feature, are no longer aligned with the road in several locations.



**Example 2.2.2:** This example shows a situation where a local GIS place boundary does not follow a road feature. Assuming that the boundary follows the road feature, changing the Census Bureau place boundary to match the local file exactly and become misaligned (see arrows) would dissolve the topological relationship in MAF/TIGER.

The spatial differences between local GIS data and the Census Bureau’s topologically integrated file are often very small (less than ten feet) and can create boundary-to-feature relationship issues for the Census Bureau. Section 5.6 provides instructions on how to review digital submissions for small spatial boundary corrections. It also lists some of the potential consequences of making spatial boundary corrections that dissolve the topological relationships present in the MAF/TIGER database. Examples of suggested methods for correctly making boundary changes can be found in Appendices 5A and 5B.

### 3. Census Bureau Provided Shapefiles

The Census Bureau provides all Digital BAS participants with entity layers in ESRI shapefile format. The number of polygon-based shapefiles that the Census Bureau sends to each Digital BAS participant depends on the type of entities contained within each county. However, each participant, regardless of the number of geographic entities, receives only one shapefile for the linear feature network for each county. See Table 3.1 for the names of the shapefiles.

If the files were downloaded from Census’s website, the file names will be slightly different. The prefix will begin with **PVS** (e.g., **PVS\_12\_v2\_edges\_<ssccc>.shp**). Throughout this guide, Census uses the prefix of **bas\_2013**, but the **PVS files** are exactly the same.

*BAS Shapefile Naming Conventions*

<b>Geographic Entity Type</b>	<b>Shapefile Naming Convention</b>
County	bas_2013_county_<ssccc>.shp
Minor Civil Division	bas_2013_mcd_<ssccc>.shp
Incorporated Place	bas_2013_place_<ssccc>.shp
Consolidated City	bas_2013_concity_<ssccc>.shp
Edges (Roads, Rail, Hydro, etc)	bas_2013_edges_<ssccc>.shp
Area Landmarks	bas_2013_arealm_<ssccc>.shp
Point Landmarks	bas_2013_pointlm_<ssccc>.shp
Hydro Area	bas_2013_water_<ssccc>.shp
Geographic Offsets / Corridors	bas_2013_offset_<ssccc>.shp

Table 3.1: BAS Naming Conventions (Note: <ssccc> represents the two-digit state code and three-digit county code.)

All shapefiles provided by the Census Bureau are in the following unprojected geographic-based coordinate system:

- Geographic Coordinate System – North American Datum 1983 (GCS NAD83)
- Angular Unit: Degree (0.017453292519943299)
- Prime Meridian: Greenwich (0.000000000000000000)
- Datum: D\_North\_American\_1983
- Spheroid: GRS\_1980
- Semi-major Axis: 6378137.0000000000000000
- Semi-minor Axis: 6356752.314140356100000000
- Inverse Flattening: 298.257222101000020000



## 4. Census Bureau Geocoding

Knowledge of the Census Bureau's geocoding methods is critical for creating Digital BAS submissions correctly. There are two methods: using MAF structure points to locate addresses and locating addresses using street centerlines.

Census will assign an address to a previously located structure point if possible. If not, the address will be geocoded using street centerlines.

It is important to review Digital BAS submissions to ensure that addresses will be placed correctly in relationship to the features around them, and that geographic offsets and corridors are created as needed.

## 5. Updating the Census Bureau Shapefiles

Census Bureau shapefiles can be updated to reflect boundary and/or linear feature changes that have occurred since the last BAS update. Examples of these procedures can be found in Appendices 5A and 5B.

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**Note:** If there are problems with the processing of returned files, Census will email a feedback document requesting clarification of any issues. If the problem cannot be resolved before the project deadline, the changes in question will not be made during the current BAS cycle.

---

### 5.1 General File Setup Guidelines

After receiving the shapefiles, follow these procedures before beginning actual updates:

- Open the CD to verify that it contains the correct shapefiles or download the shapefiles from the PVS download page and open the downloaded .ZIP file to verify its contents.
- Copy the shapefiles into a directory on a server/hard drive.
- Open the shapefiles with GIS software.

### 5.2 Changing the Map Projection

Census files are in GCS NAD83 format and can be projected into any local coordinate system/projection. Most GIS software packages will allow users to transform file coordinate systems and projections. For example, if using ArcView to update files, activate and utilize ArcView's **Projection Utility Wizard** extension. If using ArcGIS, use its **Project tool** in **ArcToolbox**. MAF/TIGER shapefile extracts contain defined projection information in the \*.prj file. ArcView and ArcGIS access the \*.prj file for projection information so there is no need to define these parameters before changing the file coordinate systems.

When updates are complete, participants may submit the boundary shapefile using any local coordinate system/projection provided that the shapefile contains a .prj file or spatial reference materials such as metadata.

### 5.3 Boundary Changes

In order to update MAF/TIGER, participants must create a separate change polygon layer for each updated entity type (county, MCD, place). The change polygons must be created in relation to the current MAF/TIGER boundary.

Appendices 5A and 5B provide two examples for creating annexation, deannexation, boundary correction, new entity, geographic corridor, and geographic offset change polygons. Review any boundary change polygons before submitting them (Section 5.6).

If additional shapefiles are needed, contact the Census Bureau at 800-972-5651 or [geo.bas@census.gov](mailto:geo.bas@census.gov).

#### 5.3.1 Annexations and Deannexations

The Census Bureau will accept annexations and deannexations from counties, MCDs, and incorporated places. Each annexation or deannexation change polygon must have the required attributes and corresponding change type populated, as seen in Table 5.3.1.1. The Census Bureau will snap any annexation or deannexation to a MAF/TIGER feature when it exists within **thirty** feet of that feature.

---

**Note:** Enter the name of the jurisdiction annexing or deannexing the area in the **NAME** field.

---

Annexations and Deannexations						
	NAME	CHNG_TYPE	EFF_DATE	DOCU (Not Required in GA)	AREA (Required in GA)	RELATE
Annexation	X	X('A')	X	X	* See Note	
Deannexation	X	X('D')	X	X	* See Note	

**Table 5.3.1.1 Annexations and Deannexations (Note: 'X' = Required field)**

---

**Note:** Area in acres is required for Georgia, and requested for all other areas.

---

#### 5.3.2 Boundary Corrections

The Census Bureau will also accept specific boundary corrections from counties, MCDs, and incorporated places. As with annexations and deannexations, the participant must create individual change polygons for each boundary correction. Each boundary correction must also have the required attributes and corresponding change type populated, as seen in Table 5.3.2.1, or the Census Bureau will reject them.

---

**Note:** Enter the name of the jurisdiction the boundary correction is for in the **NAME** field.

---

Boundary Corrections						
	NAME	CHNG_TYPE	EFF_DATE	DOCU	AREA	RELATE
Boundary Correction (Add Area)	X	X('B')				X('IN')
Boundary Correction (Remove Area)	X	X('B')				X('OUT')

**Table 5.3.2.1 Boundary Corrections (Note: 'X' = Required field)**

The Census Bureau uses a topologically integrated database. As a result, not all types of boundary corrections can be processed for inclusion into MAF/TIGER. The following are types of boundary corrections that the Census Bureau will accept, process, and update or reject during the current BAS cycle:

The Census Bureau **will** accept and process properly documented boundary corrections during the current BAS cycle...

- that spatially interact with (abut) other BAS legal changes (annexation, deannexation, corridor, offset) and meet both of the following two conditions:
  - in situations where the existing boundary has been digitized incorrectly or appears in the incorrect location due to Census Bureau activities.
  - where the overall shape of the geographic entity is maintained and no feature-to-boundary relationships are dissolved.

The Census Bureau **will reject** boundary corrections...

- along county boundaries unless there is a written agreement between the two counties that documents the correct location of the boundary.
- between adjacent incorporated places or adjacent MCDs unless the county submitting the changes is part of a consolidated county agreement or there is a written agreement between the two incorporated places or MCDs.
- that dissolves boundary-to-feature relationships (roads, rivers, railroads, etc.) if the difference is less than thirty feet.
- which are greater than one square mile, or not contiguous with the rest of the entity boundary. These boundary corrections may be part of annexations which were never reported to the Census Bureau. If so, effective dates and legal documentation numbers should be provided.
- that has a width of less than thirty feet over the entire polygon.

---

**Note:** Remember that the Census Bureau will snap any entity boundary correction to a MAF/TIGER feature when it exists within **thirty** feet of that feature.

---

### 5.3.3 New Incorporations

County participants may submit new incorporations for incorporated places and minor civil divisions through Digital BAS. As with other change types, an individual change polygon must be created for each new incorporation and possess the required attributes and the corresponding change type field must be populated (see Table 5.3.3.1).

---

**Note:** Enter the name of the new jurisdiction in the **NAME** field. For required documentation for new incorporations, contact the Census Bureau at 800-972-5651 or **geo.bas@census.gov**.

---

New Incorporations						
	NAME	CHNG_TYPE	EFF_DATE	DOCU	AREA	RELATE
New Incorporation	X	X('E')	X	X		

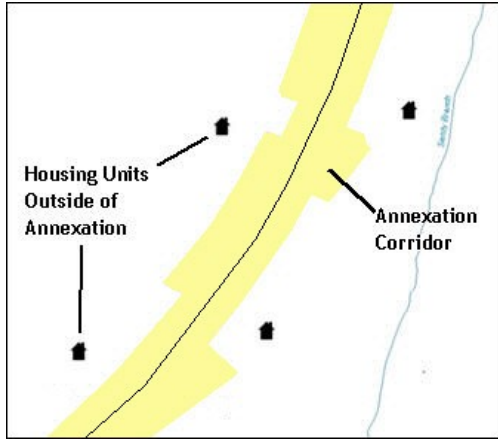
**Table 5.3.3.1 New Incorporations (Note: 'X' = Required field)**

### 5.3.4 Geographic Corridors

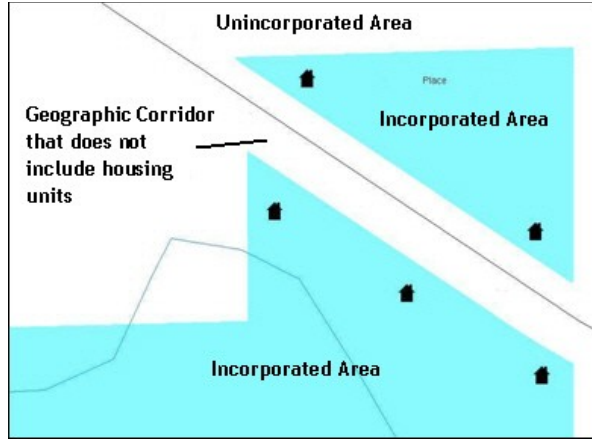
The Census Bureau sometimes geocode addresses based on the street centerline. If the geocoding of these addresses would result in the population being assigned to the incorrect geographic entity, participants should create a geographic corridor.

A **geographic corridor** is an area that includes only the road right-of-way and does not contain any structures addressed to either side of the street. Example 5.3.4.1 shows a corridor that has been created where the incorporated place owns the right-of-way but the housing units are not included in the incorporated place (shown in color).

Example 5.3.4.2 shows that the right-of-way belongs in the unincorporated area, while the housing units are included in the incorporated place (shown in color). This is important for some cities because they are portraying that the city is not responsible for road maintenance. This is not relevant for Census Bureau tabulations and is not easy to depict in the Census nationwide database. This type of corridor should not be included in a BAS response.



Example 5.3.4.1



Example 5.3.4.2

If geographic corridors are created, then individual change polygons for each geographic corridor must also be created. Each change polygon must have the required attributes and corresponding change type populated, as seen in Table 5.3.4.1. In the **NAME** field, enter the name of the jurisdiction. In the **RELATE** field, indicate whether the change is adding IN or taking OUT (removing) the corridor.

### Geographic Corridors

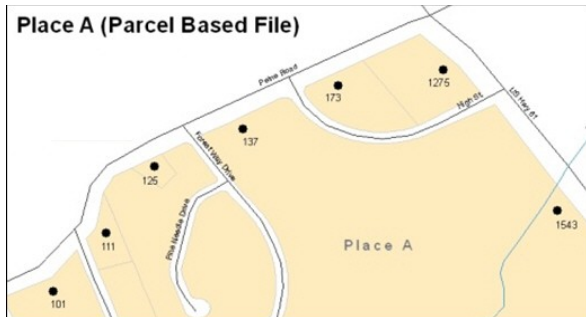
	NAME	CHNG_TYPE	EFF_DATE	DOCU	AREA	RELATE
Geographic Corridor	X	X('C')				X('IN', 'OUT')

Table 5.3.4.1 Geographic Corridors (Note: 'X' = Required field)

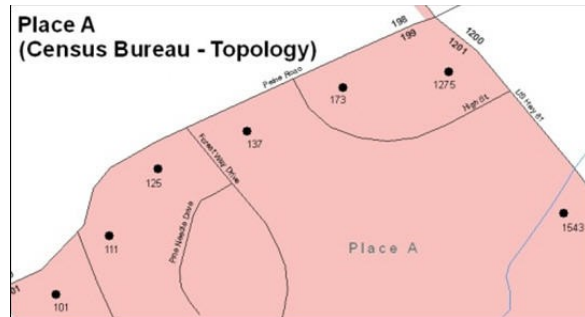
### 5.3.5 Geographic Offsets

A **geographic offset** is an area claimed by a geographic entity that is only on one side of a road and does not include structures addressed to that side of the road.

The Census Bureau is aware that many governments base their legal boundaries on cadastral (parcel-based) right-of-way mapping. Census maps are based on spatial data that is topologically integrated which makes maintenance of geographic offsets inefficient. Snapping an entity boundary to the centerline wherever applicable will help to establish more accurate population counts. If a boundary is the front lot line, Census strongly prefers that the boundary be snapped to the road. If a boundary is at the rear of a lot, then it should be depicted as such. Example 5.3.5.1 depicts a cadastral (parcel-based) boundary map and Example 5.3.5.2 shows how the boundary should be reflected when it is sent to the Census Bureau.



Example 5.3.5.1



Example 5.3.5.2

If geographic offsets are created, then individual change polygons for each geographic offset must also be created. Each change polygon must have the required attributes and corresponding change type populated, as seen in Table 5.3.5.1. In the **NAME** field, enter the name of the jurisdiction. In the **RELATE** field, indicate whether the change is adding IN or taking OUT (removing) the area represented as an offset.

### Geographic Offsets

	NAME	CHNG_TYPE	EFF_DATE	DOCU	AREA	RELATE
Geographic Offset	X	X('F')				X('IN', 'OUT')

Table 5.3.5.1 Geographic Offsets (Note: 'X' = required field)

Census has included an “offset” shapefile in the BAS materials (bas\_2013\_offset\_<ssccc>.shp), so that your jurisdiction can be checked for any existing corridors or offsets. While Census prefers that new offsets are not created, (see above), this information can be helpful in determining if current boundaries are correct.

## 5.4 Linear Feature Updates

### 5.4.1 Adding, Deleting, Renaming, and Recoding Linear Features

If linear feature modifications are needed, they may be submitted in a separate linear feature update layer. Each linear feature update must have the required attributes and corresponding change type populated, as seen in Table 5.4.1.1. In the TLID field, preserve the existing TLID for the feature.

### Linear Feature Updates

	CHNG_TYPE	TLID	FULLNAME	MTFCC
Add Feature	X('AL')		X	X
Delete Feature	X('DL')	X		
Rename Feature	X('CA')	X	X	
Recode Feature	X('CA')	X		X

Table 5.4.1.1 Linear Feature Updates (Note: 'X' = Required field)

---

**Note:** A list of MTFCC codes can be found in Appendix 6.

---

#### 5.4.2 Linear Feature Update Guidelines

- If a road, subdivision, etc. is missing from the Census Bureau’s feature network, add the feature(s) and provide the name and MTFCC.
- If a feature that does not exist is in the Census Bureau’s feature network, delete the feature.
- If a feature is in the incorrect location in the Census Bureau’s feature network, delete the feature and re-add it in the correct location. Only do this if the feature is very far off or in the wrong position relative to boundaries or other features.

#### 5.4.3 Address Range Updates

Address ranges may be submitted to the Census Bureau as part of the linear feature update layer. As with other linear feature updates, address ranges must have the required attributes and corresponding change type populated. As existing address ranges cannot be shown in our outgoing shapefiles, we recommend that participants generally only add address ranges to new features.

**Address Ranges**

	CHNG_TYPE	FULLNAME	MTFCC	LTOADD	RTOADD	LFROMADD	RFROMADD
Address Ranges	X(‘CA’)			X	X	X	X

Table 5.4.3.1 Address Ranges (Note: ‘X’ = Required field)

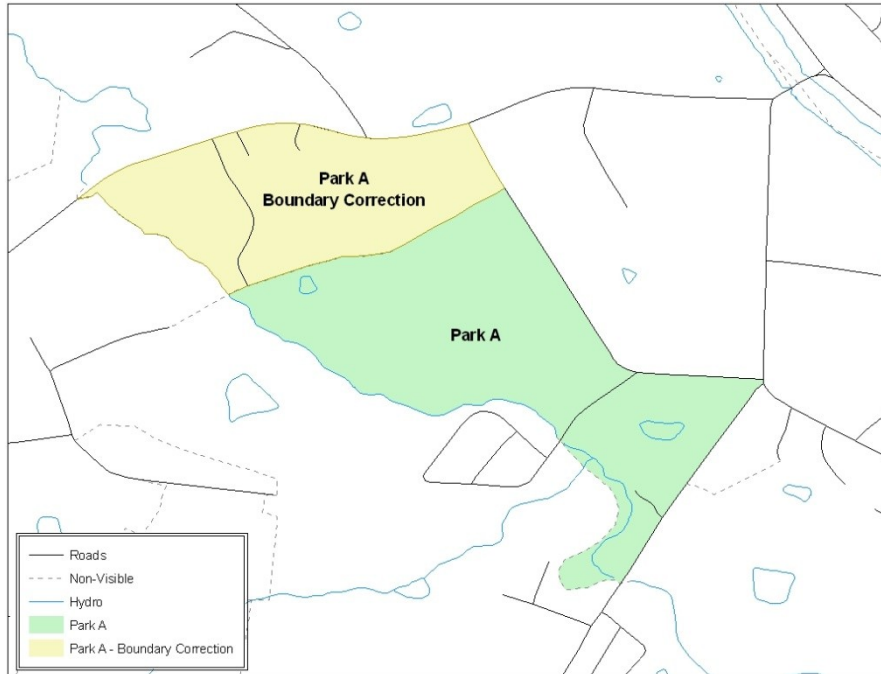
### 5.5 Area Landmarks, Hydro Areas, and Point Landmarks

#### 5.5.1 Area Landmark / Hydro Area Updates

Area landmarks and hydrographic areas are updated in a similar manner to legal boundary changes. However, area landmarks and hydro areas are not legal entities, so no documentation or effective dates are required.

In order to submit area landmark and hydro area updates, create a separate change polygon layer. Updates that can be made to area landmarks and hydro areas include:

- boundary corrections (adding and removing area)
- creating a new area landmark or hydro area
- removing an area landmark or hydro area
- changing the name



**Example 5.5.1.1:** This example shows a boundary correction to Park A. See Appendix 5 for more information on creating change polygons for area landmark and hydro areas.

Each area landmark or hydro area update must have the required attributes and corresponding change type populated. In the AREAID field, preserve the existing AREAID for the feature.

### Landmarks and Hydro Areas

	FULLNAME	CHNG_TYPE	RELATE	MTFCC	AREAID
Boundary Correction (Add Area)	X	X('B')	X('IN')		X
Boundary Correction (Remove Area)	X	X('B')	X('OUT')		X
Delete Landmark		X('D')			X
Change Landmark Name	X	X('G')			X
New Landmark	X	X('E')		X	

**Table 5.5.1.2 Landmarks and Hydro Areas (Note: 'X' = Required field)**

The examples in Appendices 5A and 5B provide information on how to create change polygons. While the sample processes are written for legal boundary changes, the same methods apply for creating change polygons for area landmarks and hydro areas.



When adding new area landmarks or hydro areas, only add the following types of areas:

- water bodies
- glaciers
- airports
- cemeteries
- golf courses
- parks

Census cannot add other types of areas at this time (although some may already exist in the database). The following are acceptable MTFCC codes for new area landmarks or hydro areas:

**Area Landmark MTFCC codes**

<b>MTFCC</b>	<b>Description</b>
H2030	Lake/Pond
H2040	Reservoir
H2041	Treatment Pond
H2051	Bay/Estuary/Gulf/Sound
H2060	Gravel Pit/Quarry filled with water
H2081	Glacier
H3025	Swamp/Marsh
K2180	Park
K2181	National Park Service Land
K2182	National Forest or Other Federal Land
K2183	Tribal Park, Forest, or Recreation Area
K2184	State Park, Forest, or Recreation Area
K2185	Regional Park, Forest, or Recreation Area
K2186	County Park, Forest, or Recreation Area
K2187	County Subdivision Park, Forest, or Recreation Area
K2188	Incorporated Place Park, Forest, or Recreation Area
K2189	Private Park, Forest, or Recreation Area
K2190	Other Park, Forest, or Recreation Area (quasi-public, independent park, commission, etc.)
K2451	Airport or Airfield
K2456	Airport – Intermodal Transportation Hub/Terminal
K2459	Runway/Taxiway
K2561	Golf Course
K2582	Cemetery

**Table 5.5.1.3: Landmark area MTFCC codes**

Due to heavy workloads for boundary changes to legal areas, changes to area landmarks and hydrographic areas may not be added to the database until after the next year’s BAS materials are created. It may take two BAS cycles in order to see these changes reflected in the materials.

### 5.5.2 Point Landmark Updates

Updates to point landmarks may also be made. In order to submit point landmark updates, create a separate point landmark update layer. Updates to point landmarks include:

- adding a new point landmark
- deleting an existing point landmark
- renaming a point landmark

Each point landmark update must have the required attributes and corresponding change type populated. In the POINTID field, preserve the existing POINTID for the feature.

<b>Point Landmarks</b>				
	<b>FULLNAME</b>	<b>CHNG_TYPE</b>	<b>MTFCC</b>	<b>POINTID</b>
New Point Landmark	X	X('E')	X	
Delete Point Landmark		X('D')		X
Change Name	X	X('G')		X

**Table 5.5.2.1 Point Landmarks (Note: 'X' = Required field)**

The following point landmark changes cannot be made due to Title 13 privacy concerns. Do not include any of the following types of landmarks in the point landmark changes file.

### Restricted MTFCCs

MTFCC	Description
K1100	Housing Unit Location
K1121	Apartment Building or Complex
K1122	Rooming or Boarding House
K1223	Trailer Court or Mobile Home Park
K1226	Housing Facility/Dormitory for Workers
K1227	Hotel, Motel, Resort, Spa, Hostel, YMCA, or YWCA
K1228	Campground
K1229	Shelter or Mission
K1232	Halfway House/Group Home
K1233	Nursing Home, Retirement Home, or Home for the Aged
K1234	County Home or Poor Farm
K1235	Juvenile Institution
K1241	Sorority, Fraternity, or College Dormitory
K1251	Military Group Quarters
K1299	Other Group Quarters Location
K2100	Governmental
K2197	Mixed Use/Other Non-residential
K2300	Commercial Workplace
K2361	Shopping Center or Major Retail Center
K2362	Industrial Building or Industrial Park
K2363	Office Building or Office Park
K2364	Farm/Vineyard/Winery/Orchard
K2366	Other Employment Center
K2464	Marina
K2500	Other Workplace
K2564	Amusement Center

**Table 5.5.2.2 Restricted MTFCCs**

Census also cannot delete or modify any point landmarks that were imported from the USGS GNIS database. Changes submitted for the following types of landmarks may be left unchanged:

- K2451 (Airport)
- K2582 (Cemetery)
- C3022 (Summit or Pillar)
- C3081 (Locale or Populated Place)
- C3061 (Cul-de-sacs)

Due to heavy workloads for boundary changes to legal areas, changes to point landmarks may not be added to the database until after the next year's BAS materials are created. It may take multiple BAS cycles in order to see these changes reflected in local materials.

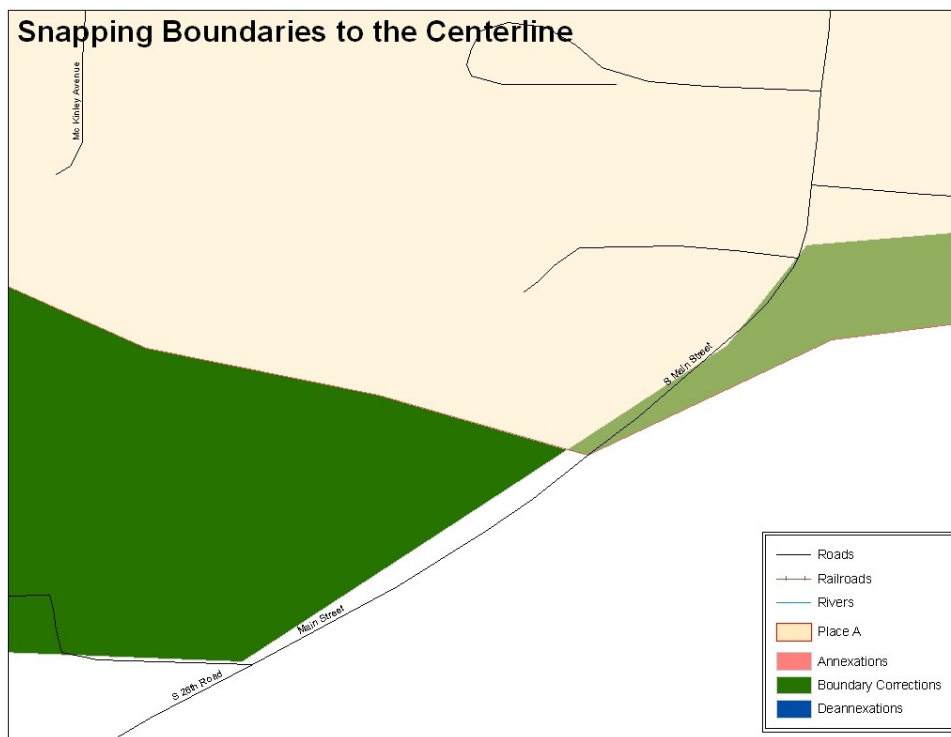
## 5.6 Reviewing Changes to the Census Bureau Shapefiles

All changes must be reviewed to ensure that they are intentional and correct.

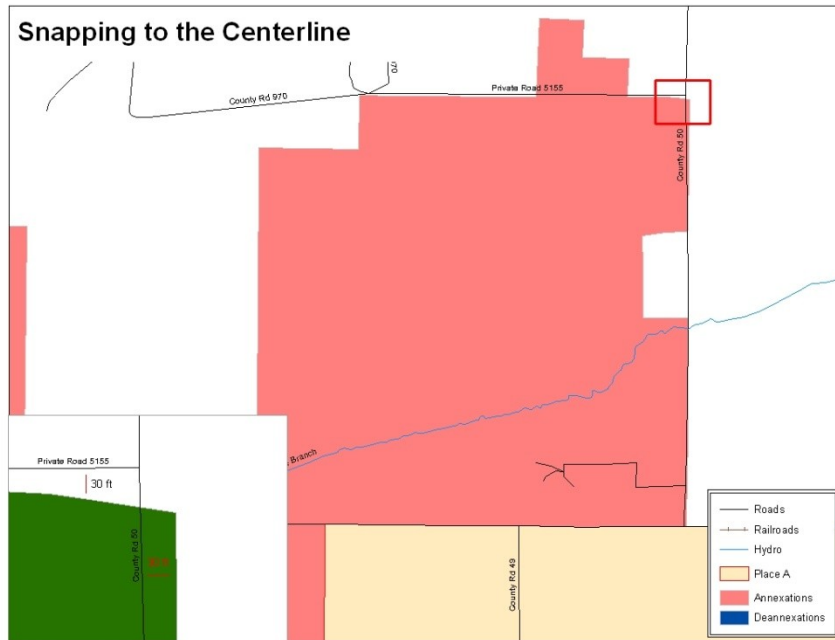
### 5.6.1 Boundary-to-Feature Relationships

Any changes must be reviewed to ensure that the correct boundary-to-feature relationships are being created or maintained. The Census Bureau is aware that many governments base their legal boundaries on cadastral (parcel-based) right-of-way mapping; however, Census bases maps on spatial data that is topologically integrated. Therefore, snap boundaries to street centerlines (or rivers, railroads, etc.) wherever applicable. This will help establish a more accurate population count for entities.

The following examples show situations where boundary changes should be snapped to existing linear features. The Census Bureau will snap boundary changes to any linear feature within **thirty** feet.

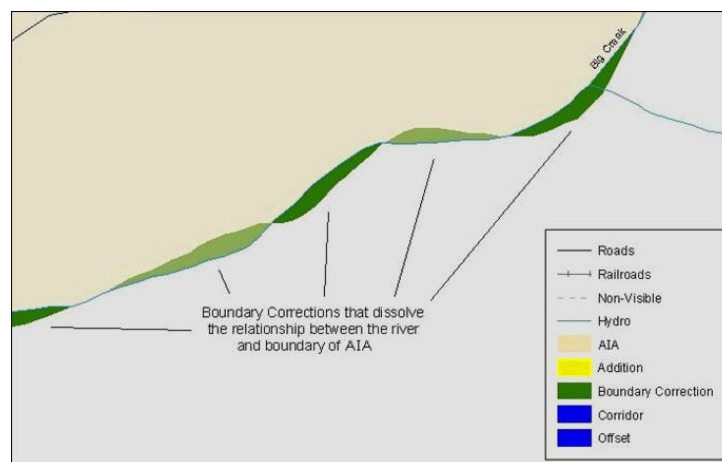


**Example 5.6.1.1:** These boundary corrections are not snapped to existing linear features in the MAF/TIGER database. Both boundary corrections should be snapped to centerlines or population may be assigned to incorrect entities.

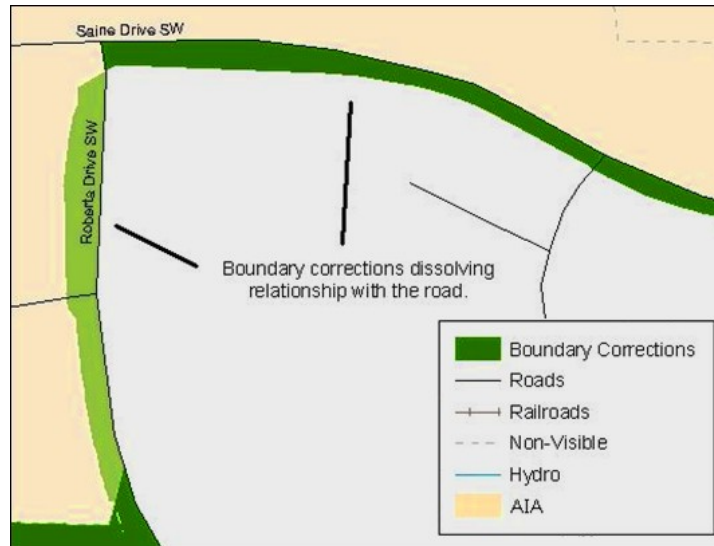


**Example 5.6.1.2:** This is an example of an annexation that has been created without snapping to existing centerlines in the MAF/TIGER database. Unless the boundary is snapped to centerlines, some of the population may be assigned to an incorrect entity.

The Census Bureau will not accept boundary corrections that dissolve the current relationship between an existing boundary and linear feature, without specific instruction that the relationship is incorrect. Any boundary corrections that create thirty feet or less of gap or overlap between the existing linear feature and boundary will not be incorporated into the MAF/TIGER database. See below for examples of changes that will not be accepted.



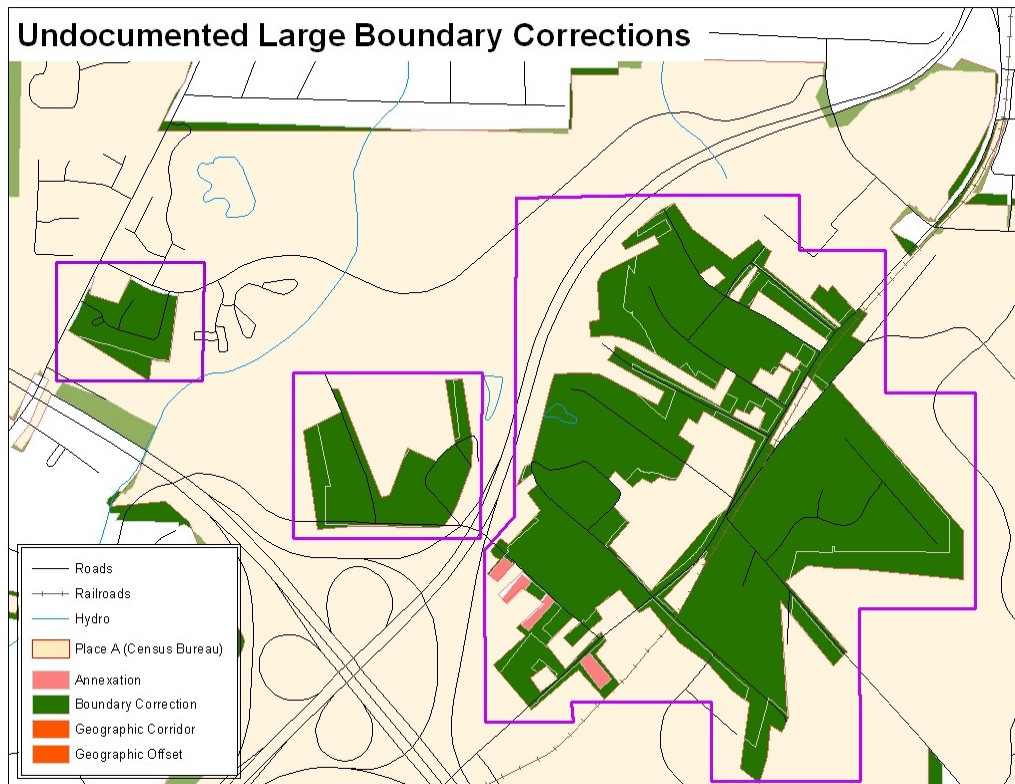
**Example 5.6.1.3:** Small spatial boundary corrections that dissolve the relationship with the river have been created. These boundary corrections will not be incorporated into the MAF/TIGER database.



**Example 5.6.1.4:** Small spatial boundary corrections that dissolve the boundary-to-feature relationship with multiple streets have been created. Incorporating these changes would affect the population counts for the area. Therefore the Census Bureau will not accept these small boundary corrections.

### 5.6.2 Large Boundary Corrections

The Census Bureau will not accept large boundary corrections to an entity without the appropriate legal documentation numbers and effective dates. These large boundary corrections may be legal boundary changes that occurred in the past and were never reported to the Census Bureau. The appropriate legal documentation number and effective date must be submitted so that changes may be incorporated into the MAF/TIGER database.



**Example 5.6.2.1:** Without the appropriate documentation, Census will not accept large boundary corrections.

---

**Note:** There may be a few instances when large boundary corrections need to be made as a result of incorrect digitizing or where the boundary appears in the incorrect location due to other Census Bureau activities.

---

### 5.6.3 Including Required Attribute Information

It is important that each change polygon be reviewed to confirm that the correct attribute information is included. Without the correct attribute information, Census will be unable to process and incorporate the changes into the MAF/TIGER database. See Section 5.3 for the required attribute information and corresponding change type codes.

### 5.6.4 Including Appropriate Metadata (Projection Information)

It is important that the appropriate projection information is included. Each update layer submitted should contain a \*.prj file so that the Census Bureau can convert the projection back to GCS\_NAD83. If the GIS being used cannot create a \*.prj file, include the projection information in metadata. This is critical for Census to be able to process the file and incorporate the updates into the MAF/TIGER database.

### 5.6.5 Linear Feature Updates

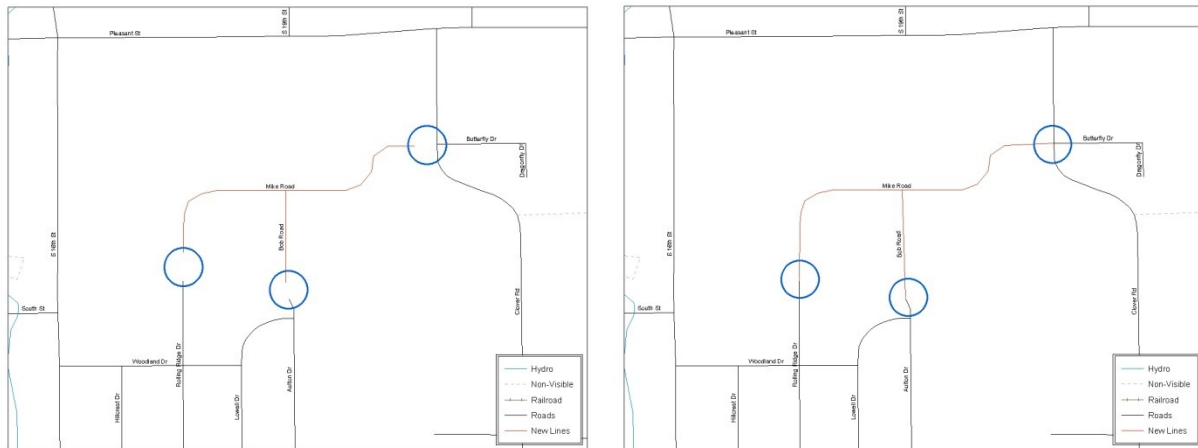
Linear feature changes should be reviewed to ensure that they align with the features currently in the MAF/TIGER database.

---

**Note:** The Census Bureau has improved the feature network using locally provided sources to assure connectivity and topology through the MAF/TIGER Accuracy Improvement Project (MTAIP).

---

If linear feature changes do not align with current MAF/TIGER linear features, the Census Bureau may not incorporate the submitted updates.



**Example 5.6.5.1:** The image on the left shows new road features that were added to the existing feature network, but do not connect to existing road features. The image on the right shows the correction connecting the new roads to the existing road features.

### 5.6.6 Additional Review Information

The Census Bureau will not make any boundary change that affects adjacent legal entities without the appropriate documentation. Review any change polygons that affect adjacent entities to determine if they are intentional, legal changes.

---

**Note:** Census Bureau will snap any annexation, deannexation, or boundary correction to a MAF/TIGER feature when it exists within **thirty** feet of that feature. This helps maintain the boundary-to-feature relationships in MAF/TIGER database and will ensure correct housing tabulation counts for entities.

---



## 5.7 Submitting Digital Data

If any changes are being reported, the Census Bureau requires that each participant submit at least one shapefile (change polygons). The total number of layers submitted depends on what types of changes need to be made. Following is a list of change layers that *may* need to be submitted:

- **Change Polygon Layers** (*County, Minor Civil Division, Incorporated Place, and Consolidated City*)
  - These layers consist of the changes that the Census Bureau needs to make to entities.
  - A layer of change polygons should be created for each level of geography (county, MCD, place, etc.) that changes are being submitted for.
- **Whole Modified Entity Layer** (*County, Minor Civil Division, Incorporated Place, and Consolidated City*)
  - These layers should only contain the complete and current boundary for the entity being updated.
  - A whole entity layer should be created for each level of geography that change polygons are being created for.
- **Local government feature network and boundary layers** (*optional*)
  - These layers will help the Census Bureau resolve any questionable change polygons and establish the correct boundary-to-feature relationships.
- **Feature Update Layer** (*only if there are feature (road, river, railroad, etc.) additions, deletions, name changes, recodes, or address range updates*)
  - Include a linear feature update layer with only feature segments that need to be corrected.
- **Area / Hydro Landmark Layer**
  - Only if there are area and/or hydro landmark updates.
- **Point Landmark Layer**
  - Only if there is point landmark updates.

### 5.7.1 County Submissions and Individual Entity Submissions (Change Polygons)

The following table provides change polygon naming conventions for county submissions, county subdivisions, incorporated places, and consolidated cities.

#### Change Polygons

Participant	Changes Submitted For:	Shape file Naming Conventions
County	County	bas13_<basID>_changes_county
County	Minor Civil Division	bas13_<basID>_changes_cousub
County	Incorporated Place	bas13_<basID>_changes_incplace
Minor Civil Division	Minor Civil Division	bas13_<basID>_changes_cousub
Incorporated Place	Incorporated Place	bas13_<basID>_changes_incplace
Consolidated City	Consolidated City	bas13_<basID>_changes_concity

**Table 5.7.1.1:** The change polygon layer naming conventions: <basID> represents your BAS entity ID, which can be found on the data CD or BAS form that you receive in the mail from the Census Bureau.

### 5.7.2 County Submissions and Individual Entity Submissions (Whole Entity Polygons)

The following table provides the whole entity polygon naming conventions for consolidated county submissions, county subdivisions, incorporated places, and consolidated cities.

#### Whole Entity Polygons

Participant:	Changes Submitted For:	Shapefile Naming Conventions
County	County	bas13_<basID>_WholeEntity_county
County	Minor Civil Division	bas13_<basID>_WholeEntity_cousub
County	Incorporated Place	bas13_<basID>_WholeEntity_incplace
Minor Civil Division	Minor Civil Division	bas13_<basID>_WholeEntity_cousub
Incorporated Place	Incorporated Place	bas13_<basID>_WholeEntity_incplace
Consolidated City	Consolidated City	bas13_<basID>_WholeEntity_concity

**Table 5.7.2.1:** The whole entity polygon layer naming conventions: <basID> represents your BAS entity ID, which can be found on the data CD or BAS form that you receive in the mail from the Census Bureau.

### 5.7.3 Linear Feature, Area Landmark / Hydro Area, and Point Landmark Updates (Not Required)

The following table provides the update layer naming conventions for the edges, area landmark, and point landmark update layers.

#### Optional Files

Participant:	Changes Submitted For:	Shapefile Naming Conventions
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All Participants	Edges	bas13_<basID>_LN_Changes
All Participants	Area / Hydro Landmarks	bas13_<basID>_Alndk_Changes
All Participants	Point Landmarks	bas13_<basID>_Plndk_Changes

**Table 5.7.3.1:** The naming conventions for the edges, area landmark, and point landmark update layers: <basID> represents your BAS entity ID, which can be found on the data CD or BAS form that you receive in the mail from the Census Bureau.

### 5.7.4 Compressing the Digital Files

Compress ALL update materials (including change polygon shapefiles, whole entity shapefiles, linear feature updates, landmark updates, local government feature network and boundary layers, and a text or other file with your contact information).

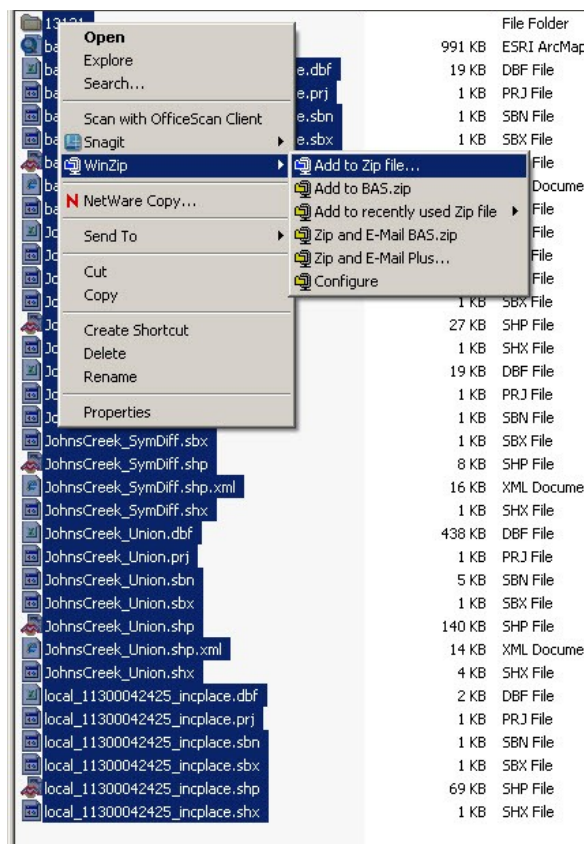
1. Navigate to the directory with the shapefiles.

---

**Note:** Centerline files or any additional information that may be helpful for Census to process your file is optional. One example where this would be helpful is if a particular polygon was not snapped to a river or road because the boundary does not follow the river or road.

---

2. Select all files and right click on the selection.
3. Select **WinZip**, and then **Add to Zip file**.



**Example 5.7.4.1:** Selecting and zipping return files.

---

**Note:** Versions of WinZip may vary so the interface may be slightly different. Software other than WinZip may be used to zip the return files.

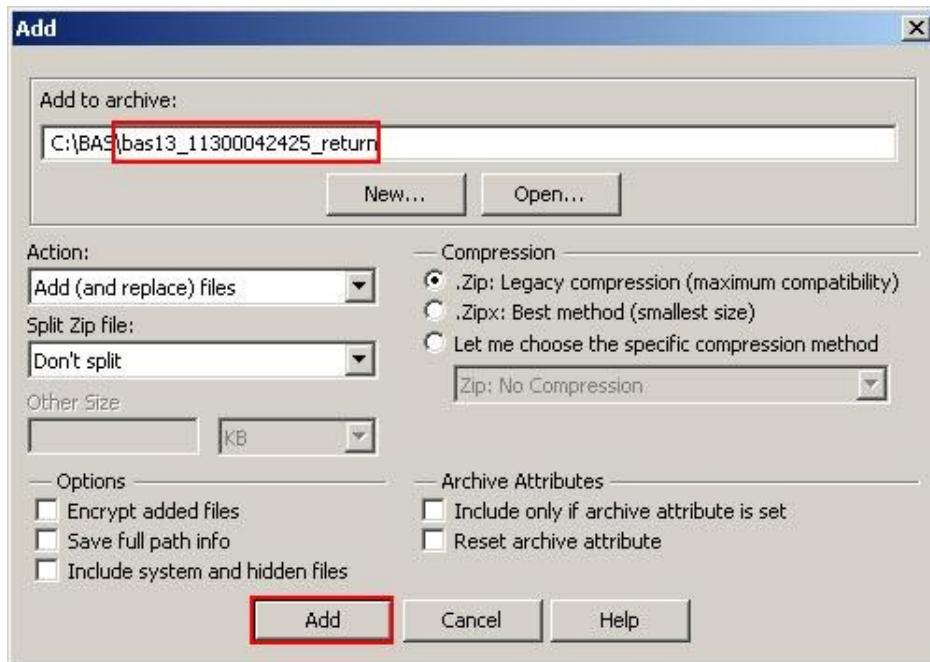
---

4. In the **Add** window, in the **Add to archive** field, type the filename in the proper naming convention: **bas<yy>\_<basID>\_return** and then click **Add**.

---

**Note:** The **basID** numbers can be found on the Census Data disc or BAS form.

---



**Example 5.7.4.2:** Naming the zip file.

5. Check the folder where the zip file was saved to verify that it was created properly. If so, the return file is ready for submission.

---

**Note:** If assistance is needed with preparing or zipping the BAS return files, call the Census Bureau at 800-972-5651.

---

### 5.7.5 Submitting Digital Files via File Transfer Protocol (FTP)

It is requested that BAS zip files be submitted using the Census Bureau's **Send a File Utility** site. Submit only the zip file. The **Send a File Utility** is located at: <https://secure.census.gov/cgi-bin/sendfile>

1. In a web browser, navigate to <https://secure.census.gov/cgi-bin/sendfile>.
2. In the password window:
  - o In the **User name** field, enter: **geobas**
  - o In the **Password** field, enter: **GEO1upload2010!**
  - o Click **OK**



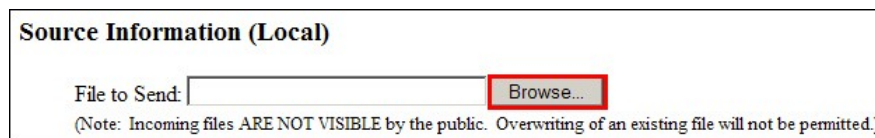
**Example 5.7.5.1:** Password window

---

**Note:** The login/password window may appear different from the example depending on the browser, but the User name and Password are always the same. Make sure to type them exactly as they appear in step 2 above.

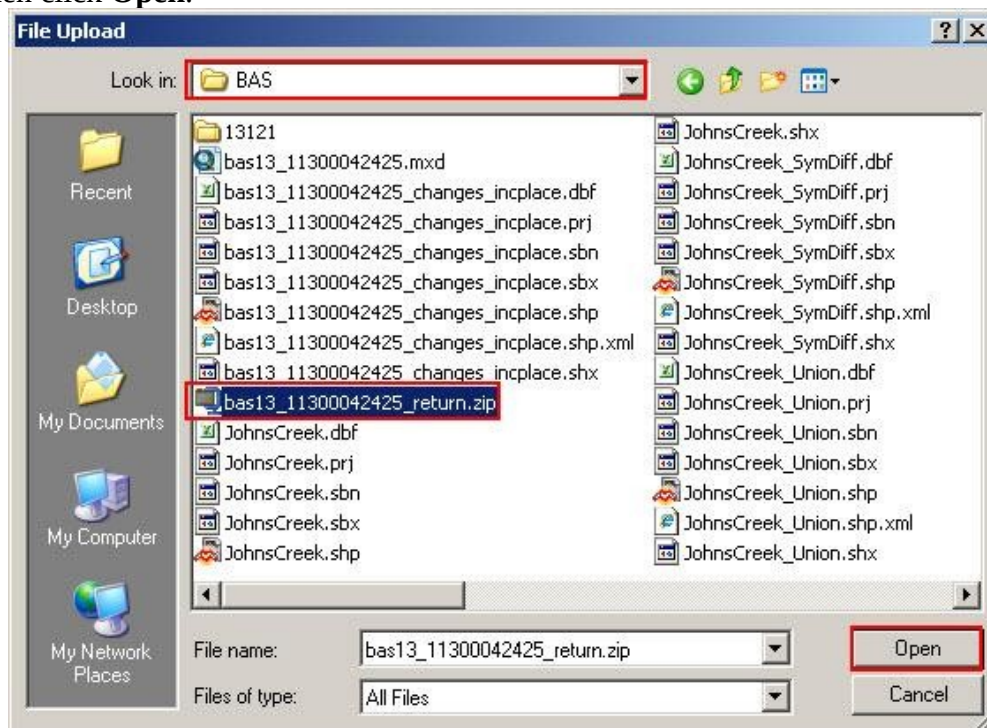
---

3. In the **Send a File Utility** window, in the **Source Information** section; next to the **File to Send** field, click **Browse**.



**Example 5.7.5.2:** Source Information section Browse button.

4. In the **Choose File** window, navigate to the appropriate folder, select the zip file, and then click **Open**.



**Example 5.7.5.3:** Choose file window

5. In the **Notify by E-mail** section:
  - o In the **Sender's Email Address** field, enter your email address
  - o In the **Census Bureau Employee's E-Mail Address** field, enter 'geo.bas@census.gov'
  - o Click **Upload**

**Notify by E-mail (Optional)**

Please note that an automated email notice will be sent to the project staff. Unless you need to send a separate notice to a specific individual, you do not need to fill out this section.

Sender's Email Address:

Census Bureau Employee's E-Mail Address:

**Example 5.7.5.4:** Filling out the Notify by E-mail section

---

**Note:** Filling out the **Notify by E-mail** section will allow Census to send notice that the return zip file has been received. If there are any questions contact the Census Bureau at 800-972-5651 or email **geo.bas@census.gov**.

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### 5.7.6 Additional Information

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The Census Bureau recommends using FIPS codes to identify entities such as counties, minor civil divisions, and incorporated places. Using a standard coding scheme facilitates the digital exchange of data.

These codes can be found in the Census Bureau shapefiles or can be obtained at: [http://geonames.usgs.gov/domestic/download\\_data.htm](http://geonames.usgs.gov/domestic/download_data.htm). If there are any questions or problems, contact the Census Bureau at 800-972-5651 or **geo.bas@census.gov**.

Due to limited staff, Census may not be able to make all updates this year. Census will prioritize updates in the following order: legal changes, boundary corrections, linear feature changes, and landmark changes. The earlier Census receives a submission, the greater the chance that Census will be able to make all of the updates. Only submit changes that occurred on or before Jan. 1, 2013. Census may not be able to make any updates effective after this date until next year's BAS.



## Appendix 1: Paperwork Reduction Project

The U.S. Census Bureau estimates that the BAS review will take most respondents from 1 to 8 hours to complete. This includes the time needed to read the instructions, assemble materials, organize and review the information, and report any needed changes. This estimate is based on 80 percent of all areas having few or no changes. However, for areas with many changes, it may take 20 hours or longer to complete the survey. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to:

Paperwork Project 0607-0151  
U.S. Census Bureau  
4600 Silver Hill Road  
Room 3K138  
Washington, DC 20233

Or you may e-mail comments to:

[paperwork@census.gov](mailto:paperwork@census.gov)

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**Note:** Use “Paperwork Project 0607-0151” as the subject.

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Include a copy of your message addressed to:

[geo.bas@census.gov](mailto:geo.bas@census.gov).

## Appendix 2: State Arrangements and Agreements

The following states have special arrangements or agreements with the Census Bureau for conducting the BAS. These agreements are described in the special notes below. If you do not see your state listed below, then the Census Bureau does not maintain a formal Memorandum of Agreement with your state. Please see the Boundary and Annexation Survey website to see your state's laws regarding boundary and status updates or changes.

(<http://www.census.gov/geo/www/bas/bashome.html>)

1. **Alaska**
  2. **Georgia**
  3. **Kentucky**
  4. **Maine**
  5. **Massachusetts**
  6. **Michigan**
  7. **Utah**
- 

### 1. **Alaska**

The Census Bureau maintains a Memorandum of Agreement with the Alaska Department of Labor and Workforce Development (DOLWD). Each year, the Census Bureau sends a letter to all entities within Alaska to notify that the state will be submitting a consolidated response for all entities during the next BAS cycle, and that any questions should be sent to the DOLWD. All legal boundary and status changes must be approved by the Local Boundary Commission. The state will provide a consolidated response to the BAS for all legal boundaries. Additionally, in all years ending in 0, the Census Bureau provides Boundary Validation Program (BVP) materials to each entity within the state for informational purposes.

If you have any questions or concerns regarding legal boundaries in Alaska, please contact the Alaska Department of Labor and Workforce Development by telephone at (907) 465-2439 or by e-mail at: [ingrid\\_zaruba@labor.state.ak.us](mailto:ingrid_zaruba@labor.state.ak.us).

## 2. Georgia

The Census Bureau maintains a Memorandum of Agreement with the Georgia Department of Community Affairs (DCA), whereby the DCA has the authority to certify annexations reported to the State of Georgia and directs the governing authorities for any municipality annexing territory to report such changes to the Census Bureau's Boundary and Annexation Survey (BAS). The DCA coordinates the delivery of the BAS by providing a list of annexing authorities for a particular year to the Census Bureau.

If you have any questions or concerns regarding legal boundaries in Georgia, please contact the Georgia Department of Community Affairs at (404) 679-4940 or by e-mail at: **terry.jackson@dca.ga.gov**.

## 3. Kentucky

The Census Bureau maintains a Memorandum of Agreement with the Kentucky Division of Geographic Information (KDGI). THE KDGI sends the Census Bureau a list of all entities within the state of Kentucky that have filed boundary changes with the Kentucky Secretary of State. The KDGI has the authority to direct any incorporated places experiencing boundary changes to submit a copy of the ordinance and a description and map defining the affected area to the Secretary of State. The KDGI uses the information reported to the Secretary of State to update the master incorporated city boundary Geographic Information System (GIS) layer and submit digital BAS responses for the entire state.

If you have any questions or concerns regarding legal boundaries in Kentucky, please contact the Kentucky Office of the Secretary of State by telephone at (502) 782-7408 or by e-mail at: **kandie.adkinson@ky.gov**.

## 4. Maine

The Census Bureau maintains a Memorandum of Agreement with the Maine Office of GIS (MEGIS), in which the state provides a list of entities with no boundary changes and submits a consolidated report of all boundary changes to the Census Bureau's Boundary and Annexation Survey (BAS). Additionally, in all years ending in 0, the Census Bureau provides Boundary Validation Program (BVP) materials to each entity within the state for informational purposes.

If you have any questions or concerns regarding legal boundaries in Maine, please contact the Maine Office of GIS at by telephone at (207) 592-1765 or by e-mail at: **oit.customer-support@maine.gov**.

## 5. Massachusetts

The Census Bureau maintains a Memorandum of Agreement with the Massachusetts Office of Geographic Information (MassGIS). Each year, the state submits a consolidated report of all changes in corporations and boundaries to the Census Bureau's Boundary and Annexation Survey (BAS) and provides the Census Bureau with a list of entities in Massachusetts with no boundary changes. In years ending in 0, the Census Bureau provides Boundary Validation Program (BVP) materials to each entity within the state for information purposes. The package will instruct entities to contact MassGIS with any comments regarding the boundaries.

If you have any questions or concerns regarding legal boundaries in Massachusetts, please contact the Massachusetts Office of Geographic Information by telephone at (617) 626-4537 or by e-mail at [massgismail@state.ma.us](mailto:massgismail@state.ma.us).

## 6. Michigan

The Census Bureau maintains a Memorandum of Agreement with the Michigan Department of Technology, Management and Budget (DTMB), which may direct any incorporated place experiencing boundary changes to report such changes to the Secretary of State. The DTMB receives a copy of all boundary changes from the Department of State and will use this data to periodically update the Boundary and Annexation Survey (BAS) edit table, which lists each place in Michigan.

If you have any questions or concerns regarding legal boundaries in Michigan, please contact the Michigan Department of Technology, Management and Budget by telephone at (517) 241-5671 or by e-mail at [LewisB7@michigan.gov](mailto:LewisB7@michigan.gov).

## 7. Utah

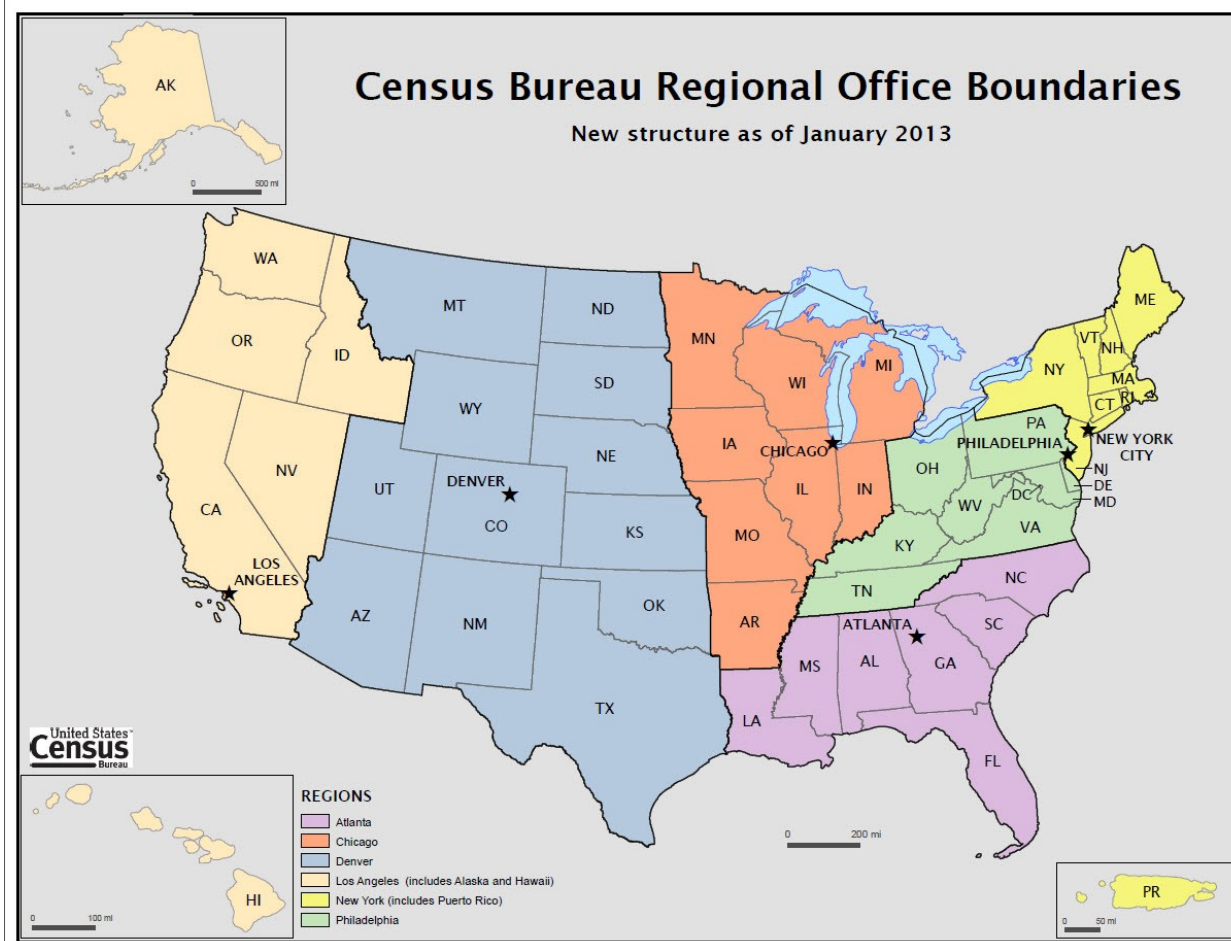
The Census Bureau maintains a Memorandum of Agreement with the Utah Automated Geographic Reference Center (AGRC). Each year, the state submits a consolidated report of all boundary changes to the Census Bureau's Boundary and Annexation Survey (BAS), and provides the Census Bureau with a list of entities in Utah with no boundary changes. In years ending in 0, the Census Bureau provides Boundary Validation Program (BVP) materials to each entity within the state for information purposes. The package will instruct entities to contact the Utah AGRC with any comments regarding the legal boundaries.

If you have any questions or concerns regarding legal boundaries in Utah, please contact the Utah Automated Geographic Reference Center by telephone at (801) 731-2979 or by e-mail at [agrc@utah.gov](mailto:agrc@utah.gov).

## Appendix 3: Census Bureau Regional Offices - Contact Information

### Census Regional Offices

<p><b>Atlanta Regional Office</b>                  101 Marietta Street N.W., Suite 3200                  Atlanta, GA 30303                  Phone: (404) 331-1339                  Fax: (404) 331-1570                  Email: <a href="mailto:atlanta.geography@census.gov">atlanta.geography@census.gov</a></p>	<p><b>Chicago Regional Office</b>                  1111 W. 22<sup>nd</sup> Street, Suite 400                  Oak Brook, IL 60523-1918                  Phone: (630) 288-9245                  Fax: (630) 288-9313                  Email: <a href="mailto:chicago.geography@census.gov">chicago.geography@census.gov</a></p>	<p><b>Denver Regional Office</b>                  6950 W Jefferson Ave, Suite 250                  Denver, CO 80235                  Phone: (720) 962-3880                  Fax: (303) 969-6777                  Email: <a href="mailto:dnro.geography.list@census.gov">dnro.geography.list@census.gov</a></p>
<p><b>Los Angeles Regional Office</b>                  15350 Sherman Way, Suite 400                  Van Nuys, CA 91406                  Phone: (818) 267-1724                  Fax: (818) 267-1700                  Email: <a href="mailto:los.angeles.geography@census.gov">los.angeles.geography@census.gov</a></p>	<p><b>New York Regional Office</b>                  395 Hudson Street, Suite 800                  New York, NY 10014                  Phone: (212) 584-3430                  Fax: (212) 584-3419                  Email: <a href="mailto:new.york.geography@census.gov">new.york.geography@census.gov</a></p>	<p><b>Philadelphia Regional Office</b>                  833 Chestnut Street, Suite 504                  Philadelphia, PA 19107-4405                  Phone: (215) 717-1830                  Fax: (215) 717-2589                  Email: <a href="mailto:philadelphia.geography@census.gov">philadelphia.geography@census.gov</a></p>



**Figure A3: Census Regional Offices**

## Appendix 4: Data Dictionary

### County and Equivalent Areas Shapefile

<u>ATTRIBUTE FIELD</u>	<u>LENGTH</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
STATEFP	2	String	FIPS state code
COUNTYFP	3	String	FIPS county code
COUNTYNS	8	String	ANSI feature code for the county or equivalent feature
NAMELSAD	100	String	Name with translated LSAD code
LSAD	2	String	Legal/Statistical Area Description code
FUNCSTAT	1	String	Functional status
CLASSFP	2	String	FIPS 55 class code describing an entity
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage
DOCU	120	String	Supporting documentation
FORM_ID	4	String	Record ID (MTPS only)
AREA	10	Double	Area of update
RELATE	120	String	Relationship description
NAME	100	String	Entity name
VINTAGE	2	String	Vintage of the data

**Table A41:** County and Equivalent Areas Shapefile

### County Subdivisions Shapefile

<u>ATTRIBUTE FIELD</u>	<u>LENGTH</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
STATEFP	2	String	FIPS state code
COUNTYFP	3	String	FIPS county code
COUSUBFP	5	String	FIPS 55 county subdivision code
NAMELSAD	100	String	Name with translated LSAD
COUSUBNS	8	String	ANSI feature code for the county subdivision
LSAD	2	String	Legal/Statistical Area Description
FUNCSTAT	1	String	Functional status
CLASSFP	2	String	FIPS 55 class code describing an entity
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage
DOCU	120	String	Supporting documentation
FORM_ID	4	String	Record ID (MTPS only)
AREA	10	Double	Area of update
RELATE	120	String	Relationship description
NAME	100	String	Entity name
VINTAGE	2	String	Vintage of the data

**Table A42:** County Subdivision Shapefile

### Incorporated Place Shapefile

<u>ATTRIBUTE FIELD</u>	<u>LENGTH</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
STATEFP	2	String	FIPS state code

COUNTYFP	3	String	FIPS county code
PLACEFP	5	String	FIPS 55 place code
NAMELSAD	100	String	Name with translated LSAD
PLACENS	8	String	ANSI feature code for the place
LSAD	2	String	Legal / Statistical Area Description
FUNCSTAT	1	String	Functional status
CLASSFP	2	String	FIPS 55 class code describing and entity
PARTFLG	1	String	Indicates if only part of a feature is represented
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage
DOCU	120	String	Supporting documentation
FORM_ID	4	String	Record ID (MTPS only)
AREA	10	Double	Area of update
RELATE	120	String	Relationship description
NAME	100	String	Entity name
VINTAGE	2	String	Vintage of the data

**Table A43:** Incorporated Place Shapefile

### Consolidated City Shapefile

<u>ATTRIBUTE FIELD</u>	<u>LENGTH</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
STATEFP	2	String	FIPS state code
COUNTYFP	3	String	FIPS county code
CONCITYFP	5	String	FIPS 55 place code
NAMELSAD	100	String	Name with translated LSAD
PLACENS	8	String	ANSI feature code for the place
LSAD	2	String	Legal/Statistical Area Description
FUNCSTAT	1	String	Functional status
CLASSFP	2	String	FIPS 55 class code describing an entity
PARTFLG	1	String	Indicates if only part of a feature is represented
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage
DOCU	120	String	Supporting documentation
FORM_ID	4	String	Record ID (MTPS only)
AREA	10	Double	Acreage of update
RELATE	120	String	Relationship description
NAME	100	String	Entity name
VINTAGE	2	String	Vintage of the data

**Table A44:** Consolidated City Shapefile

### Edges Shapefile

<u>ATTRIBUTE FIELD</u>	<u>LENGTH</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
STATEFP	2	String	FIPS state code
COUNTYFP	3	String	FIPS county code
TLID	10	Double	Permanent edge ID
TFIDL	10	Double	Permanent face ID (left)
TFIDR	10	Double	Permanent face ID (right)

MTFCC	5	String	MAF/TIGER Feature Class Code
FIDELITY	1	String	Indication to a respondent when their entity boundary has changed through spatial enhancement
FULLNAME	40	String	Decoded feature name with abbreviated qualifier, direction, and feature type
SMID	22	String	Spatial Theta ID
BBSPLG	1	String	Redistricting data project participant's submitted request of an EDGE for selection as a block boundary
CBBFLG	1	String	Indicates the status of an EDGE for a selection as a block boundary
2010_BBSP	1	String	New BBSP flag
CHNG_TYPE	4	String	Type of linear feature update
LTOADD	10	String	Left To address
RTOADD	10	String	Right To address
LFROMADD	10	String	Left From address
RFROMADD	10	String	Right From address
ZIPL	5	String	Left zip code
ZIPR	5	String	Right zip code

**Table A45:** Edges Shapefile

### Area Landmark Shapefile

<u>ATTRIBUTE FIELD</u>	<u>LENGTH</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County Code
MTFCC	5	String	MAF/TIGER Feature Class Code
FULLNAME	120	String	Area landmark name
AREAID	22	String	Object ID
ANSICODE	8	String	ANSI code for area landmarks
CHNG_TYPE	2	String	Type of area landmark update
EFF_DATE	8	Date	Effective date or vintage
RELATE	120	String	Relationship description
BAG	3	String	Block area grouping

**Table A46:** Area Landmark Shapefile

### Hydro Area Shapefile

<u>ATTRIBUTE FIELD</u>	<u>LENGTH</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
STATEFP	2	String	FIPS state code
COUNTYFP	3	String	FIPS county code
ANSICODE	8	String	ANSI code for hydrography area
MTFCC	5	String	MAF/TIGER Feature Class Code
FULLNAME	120	String	Hydro landmark name
CHNG_TYPE	2	String	Type of hydro area update



HYDROID	22	String	Object ID
RELATE	120	String	Relationship description

**Table A47:** Hydro Area Shapefile

### Point Landmark Shapefile

<u>ATTRIBUTE FIELD</u>	<u>LENGTH</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
STATEFP	2	String	FIPS state code
COUNTYFP	3	String	FIPS county code
POINTID	22	String	Object ID
MTFCC	5	String	MAF/TIGER Feature Class Code
FULLNAME	120	String	Point landmark name
CHNG_TYPE	2	String	Type of point landmark update

**Table A48:** Point Landmark Shapefile

### Geographic Offset Shapefile

<u>ATTRIBUTE FIELD</u>	<u>LENGTH</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
TFID	20	Integer	Permanent Face ID
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County Code
OFFSET	1	String	Geographic Offset / Corridor Flag
ADDEXCLUDE	1	String	Address Exclusion Indicator
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage
RELATE	120	String	Relationship description

**Table A49:** Geographic Offset Shapefile

## Appendix 5A: 2013 Digital BAS – Example Process 1

### 1. Required Files:

#### A. Census Bureau Shapefiles

- If Digital BAS materials were sent on CD, a zip file with all of the necessary shapefiles should be on the CD. Use these materials to create the Digital BAS submission for 2013.

- If Digital BAS materials were downloaded from the Census website, the file names will be slightly different. The prefix will begin with **PVS** (e.g., **PVS\_12\_v2\_edges\_<ssccc>.shp**). Throughout this guide, Census uses the prefix of **bas\_2013**, but the **PVS files** are exactly the same.

---

**Note:** Contact the Census Bureau at 800-972-5651 or **geo.bas@census.gov** with any questions.

---

Copy the data to a hard drive/server, and unzip the data to ensure that the correct data has been sent. For an incorporated place, these layers are critical:

- **bas\_2013\_place\_<ssccc>.shp**
- **bas\_2013\_edges\_<ssccc>.shp**

---

**Note:** <ssccc> represents the two-digit state code and three-digit county code.

---

The shapefiles should include the home county/counties as well as all adjacent counties.

---

**Note:** Census suggests that participants make an extra copy of the data in case an emergency backup is needed.

---

## **B. Local Data**





The minimum data necessary is a jurisdiction polygon shapefile showing only the outer boundary or boundaries. Local parcel files are not acceptable for this method. If each jurisdiction's boundaries are contiguous, the file should contain only one polygon for each entity; if some of the entities within the jurisdiction are non-contiguous, they may be saved as a multi-part polygon or consist of one polygon for each disjointed part. Other local data layers which may be helpful if available include centerline data, hydrological, railroad, or other linear feature data, and imagery.

## 2. Symbolizing layers in ArcGIS

The following are suggestions for symbolizing Census data in ArcGIS.

For the Edges layer, symbolize the linear features by grouping like MTFCC codes (codes sharing the same first character). See Table A5A.2.1:

**Suggested MTFCC Symbolization**

MTFCC 1 <sup>st</sup> Character	Linear Feature Type	Symbol
H	Hydrology	
P	Non-Visible Feature (boundary)	
R	Railroad	
S	Road	

**Table A5A.2.1:** MTFCC types and suggested symbolization.

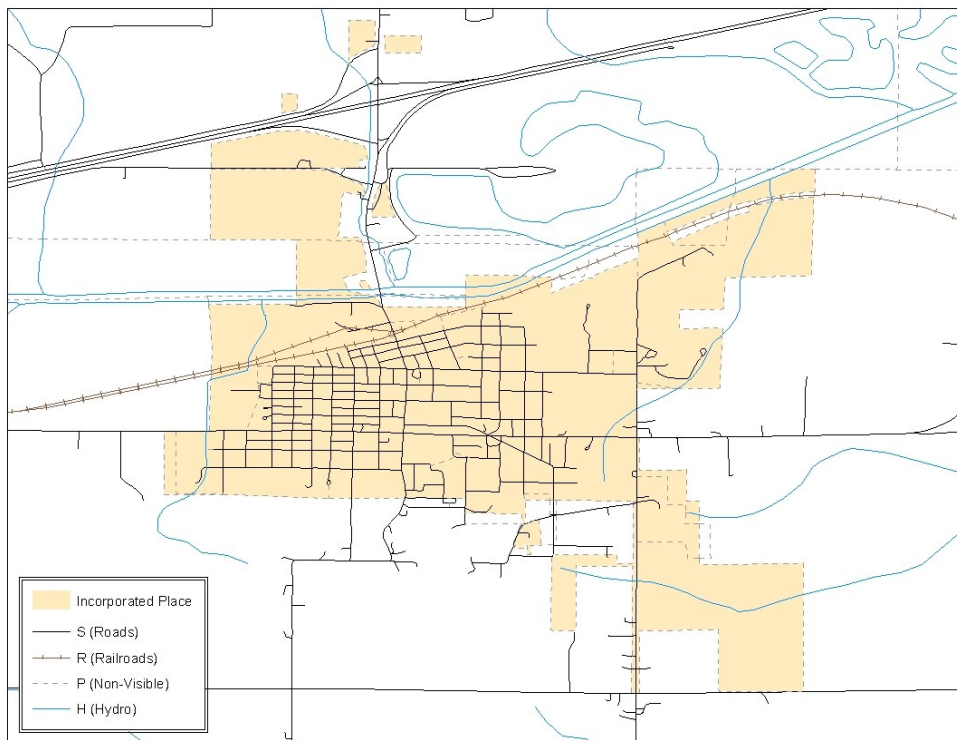
Symbolizing geographic areas:

Symbolize the place layer using Fill Color of RGB (255,235,190) with no outline.

---

**Note:** County participants with many adjacent incorporated places may want to use different colors to distinguish one place from another.

---



**Example A5A.2.2:** Suggested map symbolization.

### 3. Extracting incorporated place or MCD data from Census shapefiles

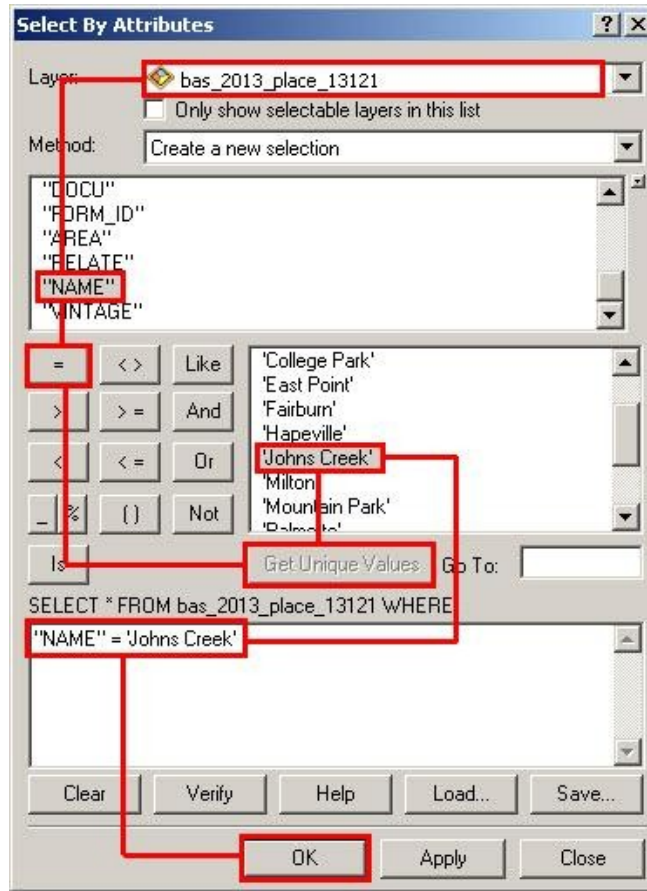
---

**Note:** County participants submitting county boundary changes can skip this step. Use the **bas\_2013\_county\_<ssccc>** shapefile which only contains the county boundary. Counties submitting for multiple incorporated places or MCDs skip ahead to Section 5.

---

#### 3.1 Filtering the data.

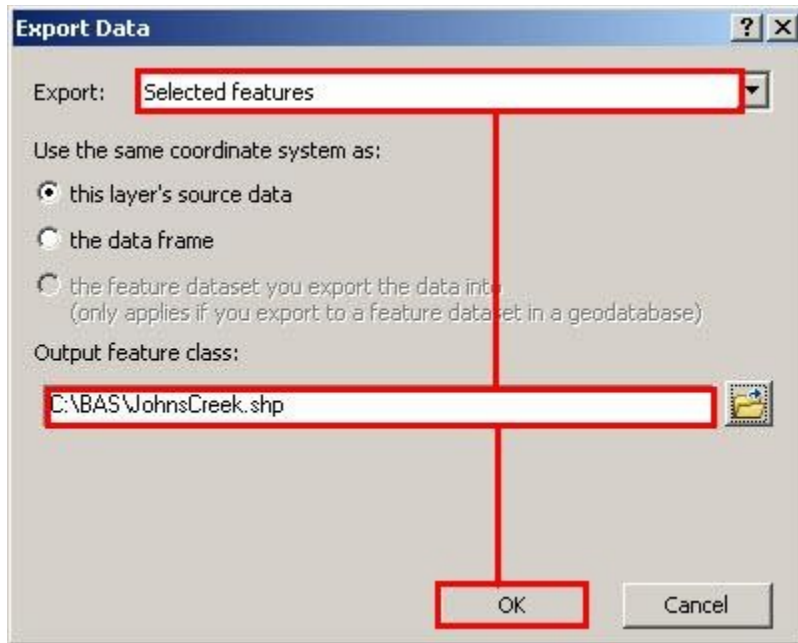
1. In ArcMap, click **Selection** and then click **Select by Attributes**.
2. In the **Select By Attributes** window:
  - From the **Layer** dropdown, select **bas\_2013\_{place|mcd}\_<ssccc>**.
  - Double click **"NAME"**
  - Left click the = button
  - Click the **Get Unique Values** button
  - In the list, locate and double click the name of the entity. (It will appear in the formula).
  - Click **OK**



Example A5A.3.1.1: Filtering data

### 3.2 Exporting the data to a new shapefile

1. In the **Table of Contents**, right click the **Incorporated Place or MCD layer**, select **Data**, and then click **Export Data**.
2. In the **Export Data** window:
  - From the **Export** dropdown, choose **Selected Features**.
  - In the **Output feature class** field, enter a location to save the shapefile.
  - Click **OK**.



Example A5A.3.2.1: Export Data Window

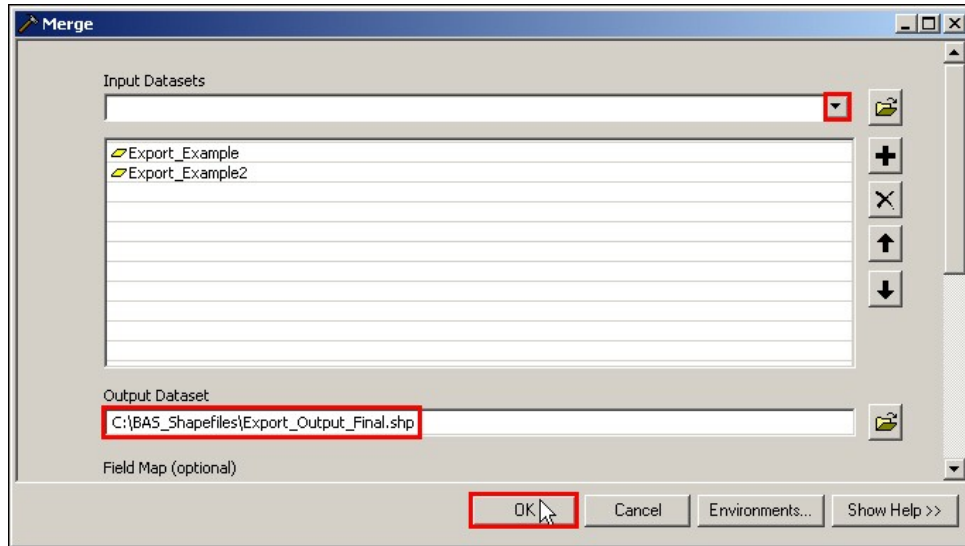
---

**Note:** If the incorporated place being checked spans more than one county, it will need to be exported from each county's place shapefile and merged. Follow the instructions in section 3.3 if the incorporated place needs to be merged, otherwise skip to section 3.4.

---

### 3.3 Merging multipart place data (See note above)

1. In **ArcToolbox**, double-click **Data Management Tools**, then double-click **General**, and then double-click **Merge**.
2. In the **Merge** window:
  - Next to the **Input Datasets** field, click the arrow and select each layer. (Or use the Browse button to the right of the field to find the layers.)
  - In the **Output Dataset** field, browse to and select a location to save the shapefile.
    - Name the shapefile **Export\_Output\_Final** or **Merged**, or anything easy to find/remember.
  - Click **OK**.



Example A5A.3.3.1: Finalizing the merge process.

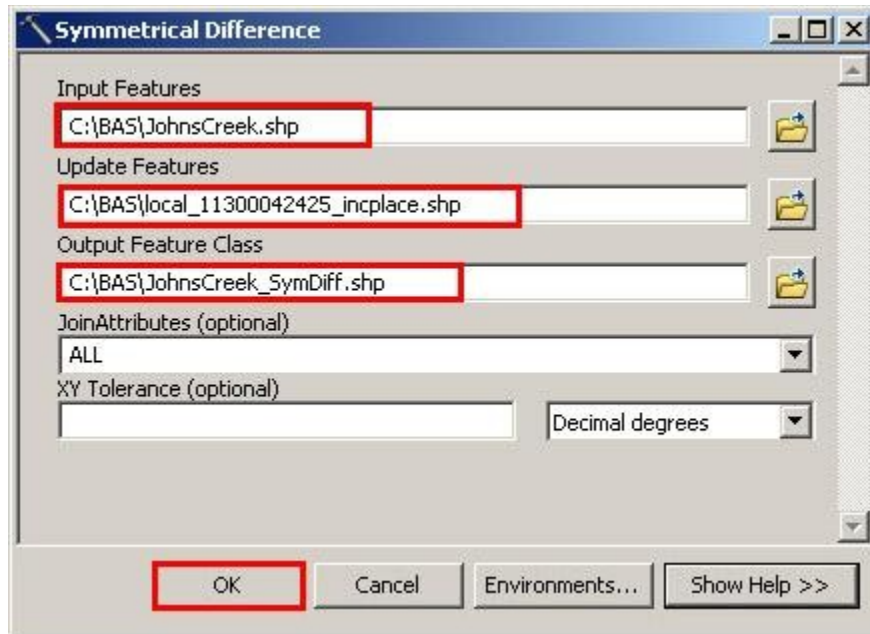
#### 4. Creating Change Polygons Using Symmetrical Difference

---

**Note:** If you do not have an ArcInfo license you may have to use the **Union** operation rather than the **Symmetrical Difference** operation. See section 5 if this is the case.

---

1. In **ArcToolbox**, double-click **Analysis Tools**, then double-click **Overlay**, and then double-click **Symmetrical Difference**.
2. In the **Symmetrical Difference** window:
  - In the **Input Features** field, click the arrow (or browse) and select the layer that was created in Section 3.
  - In the **Update Features** field, click the arrow (or browse) and select the local government boundary layer (your data).
  - In the **Output Feature Class** field, browse to and select a location to save the shapefile.
    - Name the shapefile **Differences\_between\_BAS\_local**, **Differences1**, or anything easy to find/remember.
  - Click **OK**.




**Example A5A.4.1:** Finalizing the Symmetrical Difference process.

---

**Note:** This process creates a layer that contains all of the differences between Census Bureau and local boundaries. However, the Symmetrical Difference tool creates multipart polygons that need to be broken up and individually coded.

---

3. Turn on Editing (using the **Editing** dropdown in the **Editor** toolbar). Select all of the records in the layer that was created in the Symmetrical Difference step.
4. On the **Advanced Editing** toolbar, click the **Explode** tool . The layer will now contain a separate record for each change.

The created layer shows individual change polygons representing the differences between the Census Bureau and local government entity boundaries. These differences need to be reviewed and coded appropriately.

Skip to Section 6, **Reviewing and Attributing Change Polygons**.

## 5. Creating Change Polygons Using Union

---

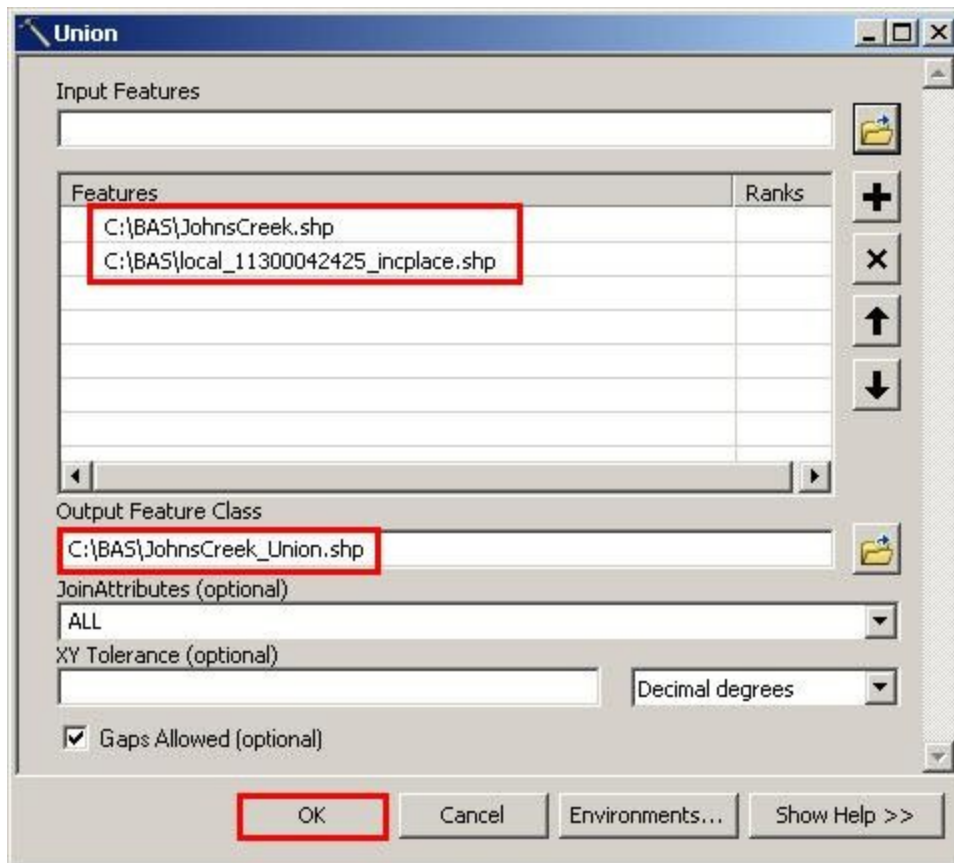
**Note:** This method should be used by counties reporting for incorporated places or MCDs or by participants who do not have an ArcInfo license.

---

1. In **ArcToolbox**, double-click **Analysis Tools**, then double-click **Overlay**, and then double-click **Union**.



2. In the **Union** window:
  - In the **Input Features** field, click the arrow (or browse) and select **bas\_2013\_{place|mcd}\_<ssccc>**, and the local incorporated place or MCD layer.
  - In the **Output Feature Class**, browse to and select a location to save the shapefile.
    - o Name the shapefile **Export\_Output\_union**, or **Union**, or anything easy to find/remember.
  - Click **OK**.

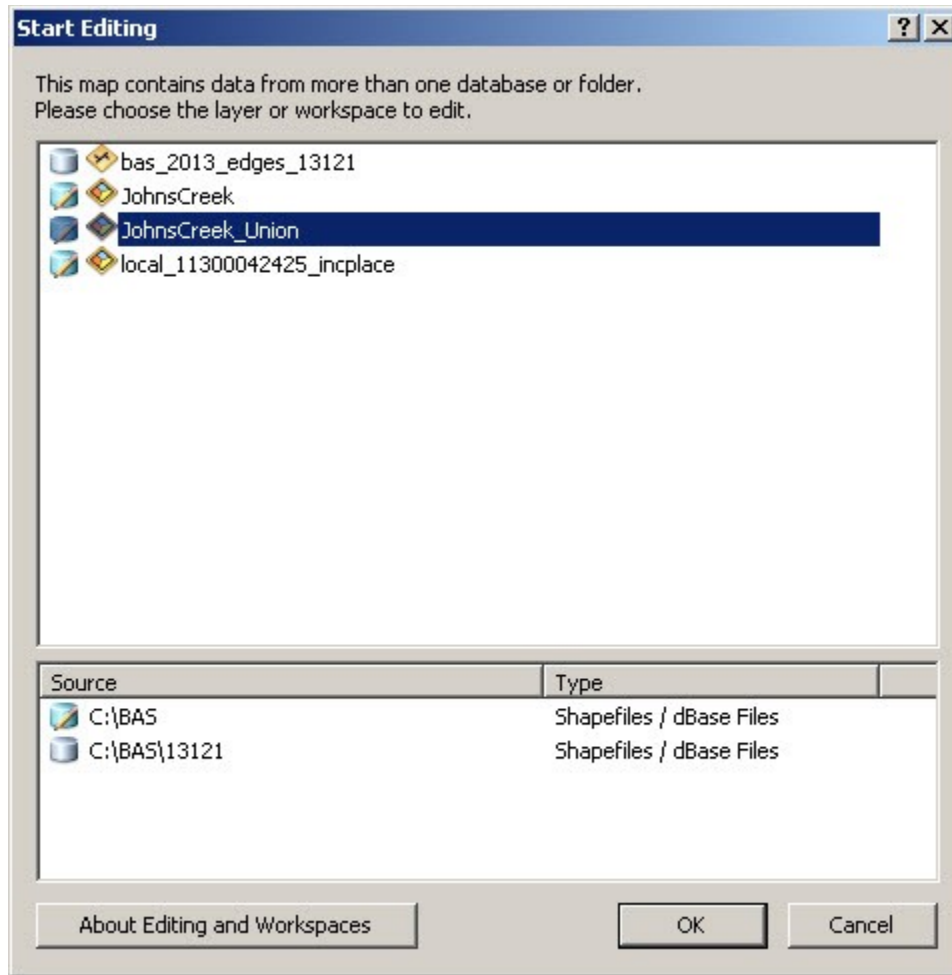


**Example A5A.5.1:** Finalizing the Union process.



The union operation will create records that contain differences as well as areas that are in common between the Census Bureau and local government boundary layers.

The next step is selecting and deleting the areas in common between the Census Bureau and local government boundary layers.

3. On the **Editor** toolbar, click **Editor**, and then click **Start Editing**.
4. If a **Start Editing** window opens, in the top pane, click to highlight the union shapefile, and then click **OK**.



**Example A5A.5.2:** Locating the union shapefile.

5. In **ArcMap**, in the **Tools** toolbar, click the **Select Features**  button.
  - Locate features on the map that the Census Bureau and the local government layers have in common.
  - Select each feature individually, or click and hold the left mouse button and drag a box to highlight the common features.
  - Press **Delete**.
  - Repeat these steps until only the features that have changed are left in the map.
6. Once all of the areas in common have been removed from the union shapefile, on the **Editor** toolbar, click **Editor**, and then click **Save Edits**.
7. Select all of the remaining records in the layer that was created in the Union step.
8. On the **Advanced Editing** toolbar, click the **Explode** tool . The layer will now contain a separate record for each change.

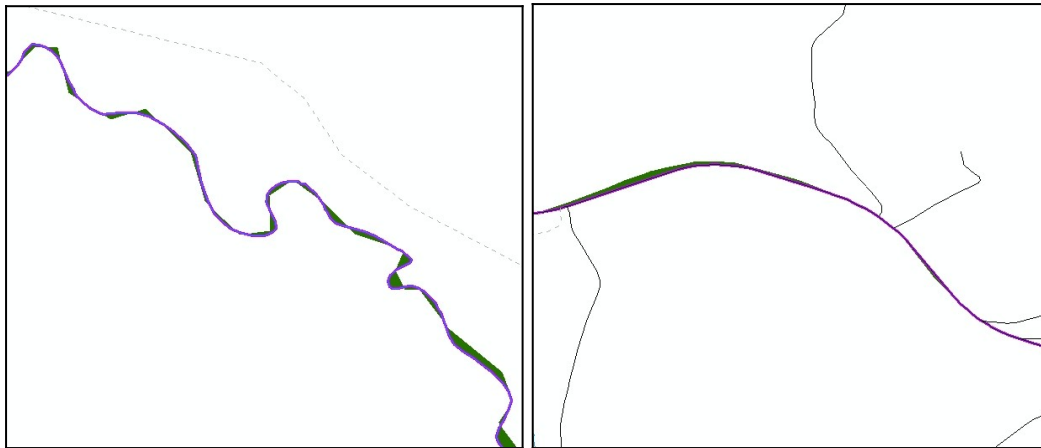
The new layer shows individual change polygons representing the differences between the Census Bureau and the local government's representation of the boundaries. These differences need to be reviewed and coded appropriately. Continue to the next section.

## 6. Reviewing and Attributing Change Polygons

After the individual change polygons have been created, each must be reviewed and appropriately coded. When reviewing the polygons, be sure to frequently refer to Section 5.6 in the main part of this guide to look for polygons that should be deleted from your submission as well as those that should be snapped to nearby visible features to maintain boundary-to-feature relationships.

### 6.1 Examples

- These examples show very small sliver polygons that should be deleted during review as they eliminate boundary-to-feature relationships with a river (left) and a road (right). Furthermore, these boundary corrections also are not located near legal changes or corridor/offset changes (type 'A', 'D', 'C', 'F'), so they should be removed from consideration.



**Example A5A.6.1.1:** Small slivers that should be deleted.

- These examples show polygons that should be snapped to roads (left) or rivers (right)



**Example A5A.6.1.2:** Polygons that should be snapped to roads or rivers.

## 6.2 Attribute Information

---



**Note:** All updates MUST be attributed.

---



### To begin updating attributes

- On the **Editor Toolbar**, click **Editor**, and then click **Start Editing**.



### Annexations

- On the **Editor Toolbar**, click the **Edit Tool**  button and select the annexation polygon.
- On the **Editor Toolbar**, click the **Attributes**  button.
- In the **Attributes** window, fill out the mandatory fields required for an annexation.
  - o **NAME**, **CHNG\_TYPE**, **DOCU** and **EFF\_DATE**.
  - o The **CHNG\_TYPE** for an annexation is **A**.





### Deannexations

- On the **Editor Toolbar**, click the **Edit Tool**  button and select the deannexation polygon.
- On the **Editor Toolbar**, click the **Attributes**  button.
- In the **Attributes** window, fill out the mandatory fields required for a deannexation.
  - o **NAME**, **CHNG\_TYPE**, **DOCU** and **EFF\_DATE**.
  - o The **CHNG\_TYPE** for an annexation is **D**.

### Corridors

- On the **Editor Toolbar**, click the **Edit Tool**  button and select the corridor polygon.
- On the **Editor Toolbar**, click the **Attributes**  button.
- In the **Attributes** window, fill out the mandatory fields required for a corridor.
  - **NAME, CHNG\_TYPE, RELATE.**
  - The **CHNG\_TYPE** for a corridor changes is **C**.
  - In the **RELATE** field, enter **IN** if the change is adding corridor area to the place or **OUT** if the change is removing corridor area.

## Offsets

- On the **Editor Toolbar**, click the **Edit Tool**  button and select the offset polygon.
  - On the **Editor Toolbar**, click the **Attributes**  button.
  - In the **Attributes** window, fill out the mandatory fields required for an offset.
    - **NAME, CHNG\_TYPE, RELATE.**
    - The **CHNG\_TYPE** for an offset change is **F**.
    - In the **RELATE** field, enter **IN** if the change is adding offset area to the place or **OUT** if the change is removing offset area.
- **Boundary Corrections**
- On the **Editor Toolbar**, click the **Edit Tool**  button and select the boundary correction polygon.
  - On the **Editor Toolbar**, click the **Attributes**  button.
  - In the **Attributes** window, fill out the mandatory fields required for a boundary correction:
    - **NAME, CHNG\_TYPE, RELATE.**
    - The **CHNG\_TYPE** for a boundary correction is **B**.
    - In the **RELATE** field, enter **IN** if the boundary correction is adding area or **OUT** if the boundary correction is removing area.

---

**Note:** If a county is reporting for adjacent incorporated places or MCDs, and a boundary correction to one entity affects another, use **RELATE = IN** and **NAME = <entity being added to>**. This is due to the fact that **RELATE = OUT** leaves a question as to whether or not there should be a gap between the two entities.

---

### To finish updating attributes

- Once all of the attribute changes have been made, in the **ArcMap** menu, click **Editor**, and then click **Stop Editing**. (In the **Save** window, click **Yes**.)

## 7. Renaming and Finalizing Change Polygons

## Renaming the shapefile

After creating and coding all change polygons, rename the change polygon layer that will be submitted to the Census Bureau. This process will need to be completed for each level of geography (county, place, MCD) that has changes.



1. In **ArcMap**, open the **ArcCatalog** tab.
2. In **ArcCatalog**, navigate to shapefile, right-click and select **Rename**.
3. Save the output shapefile in the proper naming convention:  
**bas13\_<basID>\_changes\_<entity\_type>**.

---

**Note:** The **basID** numbers can be found on the Census Data disc or BAS form.

See section 5.7.4 for instructions on zipping updates.

---

## Submitting the shapefile

It is requested that BAS zip files be submitted using the Census Bureau's **Send a File Utility** site. Submit only the zip file. The **Send a File Utility** is located at:

<https://secure.census.gov/cgi-bin/sendfile>

1. In a web browser, navigate to <https://secure.census.gov/cgi-bin/sendfile>.
2. In the password window:
  - o In the **User name** field, enter: **geobas**
  - o In the **Password** field, enter: **GEO1upload2010!**
  - o Click **OK**
3. In the **Send a File Utility** window, in the **Source Information** section; next to the **File to Send** field, click **Browse**.
4. In the **Choose File** window, navigate to the appropriate folder, select the zip file, and then click **Open**.
5. In the **Notify by E-mail** section:
  - o In the **Sender's Email Address** field, enter your email address
  - o In the **Census Bureau Employee's E-Mail Address** field, enter 'geo.bas@census.gov'
  - o Click **Upload**

---

**Note:** Filling out the **Notify by E-mail** section will allow Census to send notice that the return zip file has been received. If there are any questions contact the Census Bureau at 800-972-5651 or email [geo.bas@census.gov](mailto:geo.bas@census.gov).

---

## Appendix 5B: 2013 Digital BAS – Example Process 2

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**Note:** This example uses an incorporated place. An MCD, county, or county reporting for incorporated places and MCDs may use the same process.

---

### 1. Required Files:

#### A. Census Bureau Shapefiles

- If Digital BAS materials were sent on CD, a zip file with all of the necessary shapefiles should be on the CD. Use these materials to create the Digital BAS submission for 2013.
- If Digital BAS materials were downloaded from the Census website, the file names will be slightly different. The prefix will begin with **PVS** (e.g., **PVS\_12\_v2\_edges\_<ssccc>.shp**). Throughout this guide, Census uses the prefix of **bas\_2013**, but the **PVS files** are exactly the same.

---

**Note:** Contact the Census Bureau at 800-972-5651 or **geo.bas@census.gov** with any questions.

---

Copy the data to a hard drive/server, and unzip the data to ensure that the correct data has been sent. For an incorporated place, these layers are critical:

- **bas\_2013\_place\_<ssccc>.shp**
- **bas\_2013\_edges\_<ssccc>.shp**

---

**Note:** <ssccc> represents the two-digit state code and three-digit county code.

---

The shapefiles should include the home county/counties as well as all adjacent counties.

---

**Note:** Census suggests that participants make an extra copy of the data in case an emergency backup is needed.

---

#### B. Local Data

The minimum data necessary is a shapefile showing your jurisdiction boundary or annexations and deannexations. Other local data layers which may be helpful if available include centerline data, hydrological, railroad, or other linear feature data, and imagery.







## Symbolizing layers in ArcGIS

The following are suggestions for symbolizing Census data in ArcGIS.

For the Edges layer, symbolize the linear features by grouping like MTFCC codes (codes sharing the same first character). See Table A5B.2.1:

**Suggested MTFCC Symbolization**

MTFCC 1 <sup>st</sup> Character...	Linear Feature Type	Symbol
H	Hydrology	
P	Non-Visible Feature (boundary)	
R	Railroad	
S	Road	

**Table A5B.2.1:** MTFCC types and suggested symbolization.

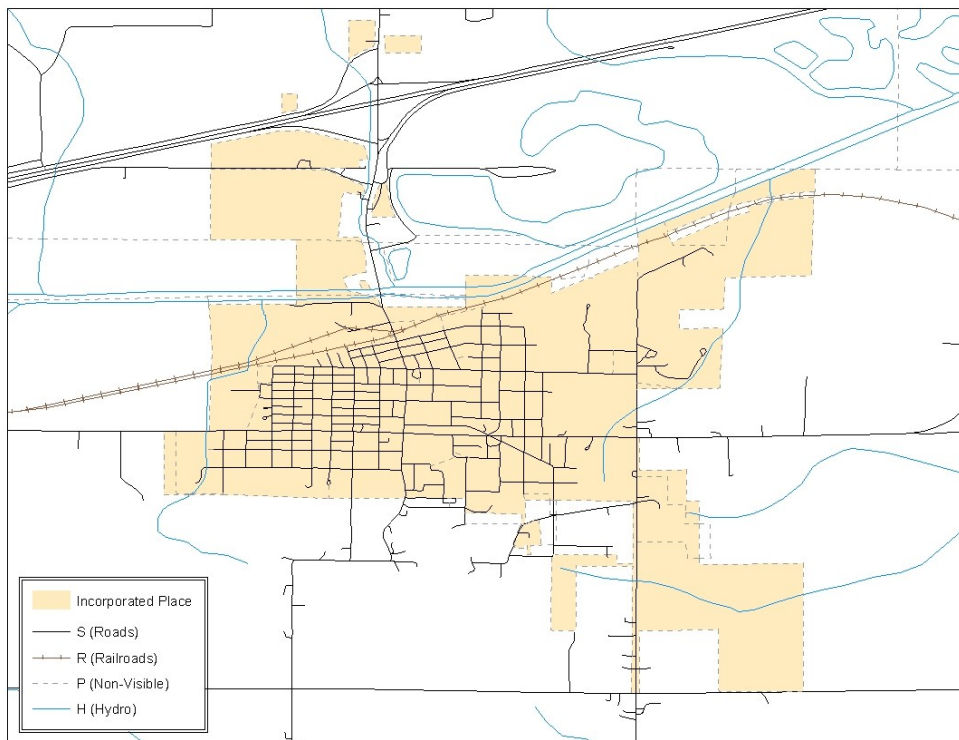
Symbolizing geographic areas:

Symbolize the place layer using Fill Color of RGB (255,235,190) with no outline.

---

**Note:** County participants with many adjacent incorporated places may want to use different colors to distinguish one place from another.

---



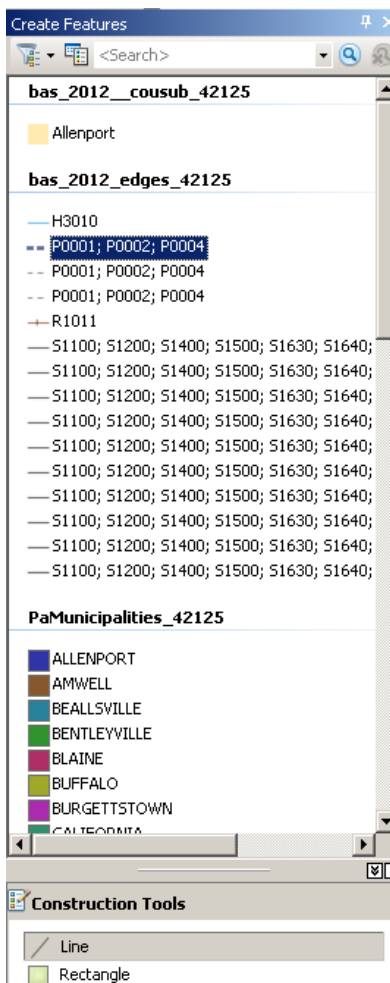
**Example A5B.2.2:** Suggested map symbolization.

## 2. Creating and Splitting Linear features

### 3.1 Creating new linear features

Some of the linear features that are needed to create change polygons may not exist in the MAF/TIGER database. Therefore it may be necessary to create and split lines when forming changes. The existing and newly created linear features will then be selected to define the boundary changes.

1. In **ArcMap**, right click the edges layer in the **Table of Contents**, click **Selection**, and then click **Make This The Only Selectable Layer**, so that the edges layer is the only one which can be selected while editing.
2. In the **Editor** toolbar, click **Editor** and then click **Start Editing**.
3. In the **Create Features** window, highlight a non-visible boundary symbolization under the edges layer: **bas\_2013\_edges\_<ssccc>**.




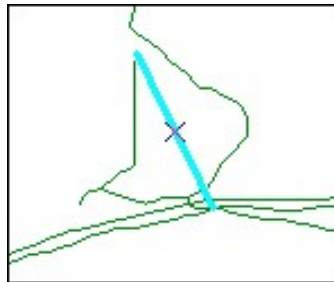
**Example A5B.3.1.1:** Create Features window.

4. In the **Editor** toolbar, click **Editor** and then click **Snapping**, then **Snapping Toolbar**.
5. On the snapping toolbar, ensure that **Point**, **Vertex**, **Edge**, and **End Snapping** are all enabled. Drop down the Snapping menu, and ensure that **Use Snapping** is checked. Snapping will ensure that newly created lines will follow existing MAF/TIGER linear features.



**Example A5B.3.1.2:** Snapping toolbar


6. For any new boundary lines that do not follow existing edges, ensure that **Line** is suggested in the **Construction Tools** pane (see Example A5B.3.1.1), and in the **Editor** toolbar, click the **Straight Segment Tool**  button and draw new features on the map by clicking to create a line. Single clicking will add vertexes to the line, and double-clicking will end the line and create the new feature. Any new feature(s) will be highlighted.



**Example A5B.3.1.3:** A newly created linear feature

### **Adding attribute data to new linear features**

After creating new linear features:

7. In the **Editor** toolbar, click the **Attributes**  button.
8. In the **Attributes** window, in the **MTFCC** field, add the appropriate MTFCC code (it should default to **P0001**, but can be changed if necessary).
  - Use **P0001** if the feature is a non-visible political boundary.
  - If the feature is visible, see **Appendix 6** for the appropriate codes.

---

**Note:** An MTFCC code must be added for each new feature. If larger scale linear feature changes are going to be submitted, it is best to create those in a separate layer. It is not necessary to submit linear feature changes for non-visible boundaries.



---

Click on **Editor** and then click **Save Edits** often so that work is not lost.

---

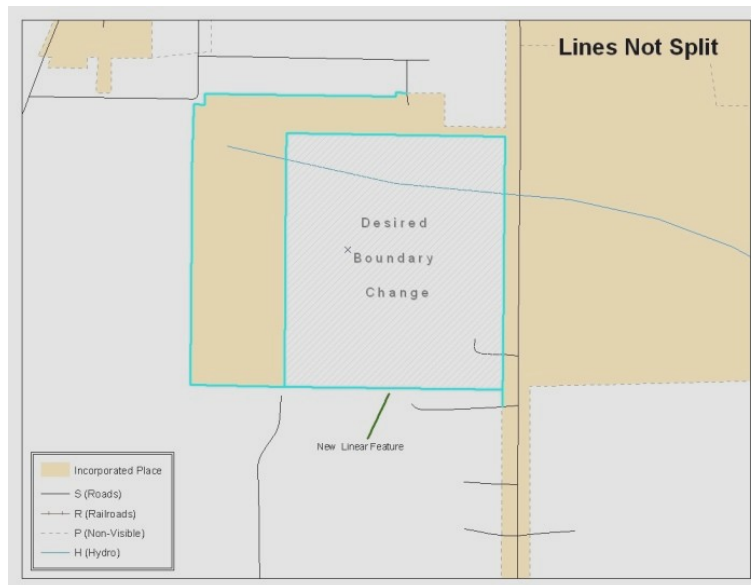
9. Once all lines are added, in the **Editor** toolbar, click **Editor** and then click **Stop Editing** (In the **Save** window, click **Yes**.)

### 3.2 Splitting linear features

1. In the **Editor** toolbar, click **Editor** and then click **Start Editing**.
2. In the **Editor** toolbar, click the **Edit Tool**  button and select a linear feature that needs to be split. The line will be highlighted when it is selected.
3. In the **Editor** toolbar, click the **Split Tool**  button. Click the line where it needs to be split.

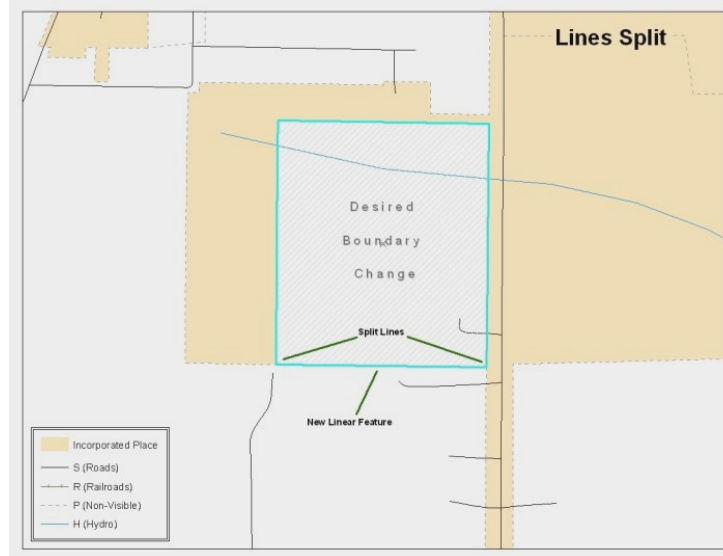
The following examples display why it may be necessary to split lines when creating change polygons.

The desired boundary change is indicated below. When selecting the lines to form the boundary change, sections of the linear features that are not a part of the boundary update are included (highlighted in blue).



**Example A5B.3.2.1:** Linear feature selection before being split

The existing linear features can be split to prevent unwanted line segments from being selected as part of the boundary update.




**Example A5B.3.2.2:** Linear feature selection after being split

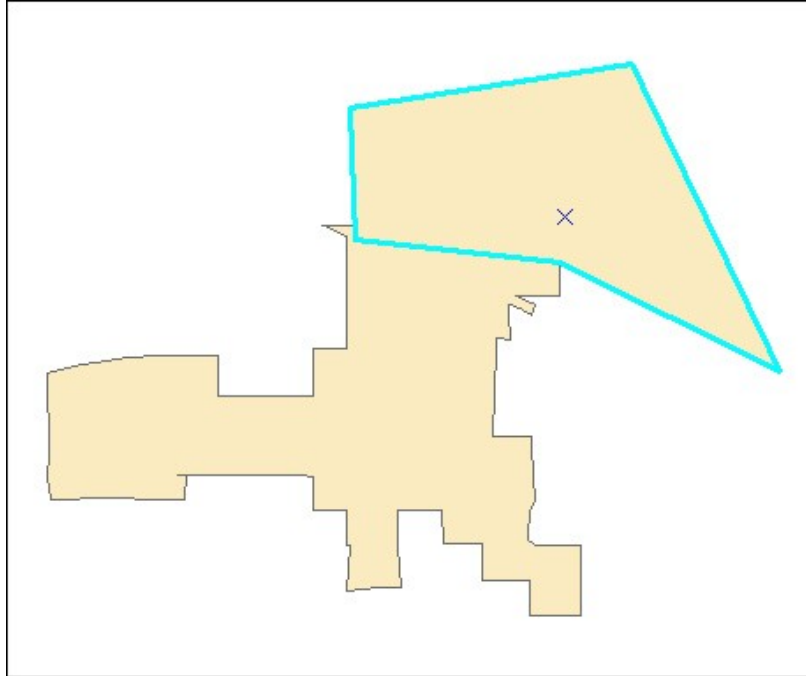
4. Once all necessary splits are made, in the **Editor** toolbar, click **Editor** and then click **Save Edits**.

### 3.3 Selecting Lines and Creating Change Polygons


After creating and/ or splitting any necessary linear features, they must be selected to form change polygons. Each change polygon must be created and coded separately.

Creating change polygons

1. If the **Topology** toolbar is not active, click the **Customize** menu, select **Toolbars**, and then select **Topology** to activate it.
2. In the **Editor** toolbar, click **Editor** and then click **Start Editing**.
3. In the **Create Features** window, switch the highlighted feature to the **place** layer: **bas\_2013\_place\_<ssccc>**.
4. In the **Editor** toolbar, click the **Edit Tool**  button and select the linear features that comprise the boundary of a change polygon (i.e. an annexation, deannexation, or incorrect area) by holding the **Shift** key while clicking each linear feature segment.



**Example A5B.3.3.1:** Selecting the linear features of a change polygon.

5. On the **Topology** toolbar, click the **Construct Features**  button.
  - In the **Construct Features** dialog box, click **OK**. (The default **Cluster Tolerance** is acceptable.)

The polygon is now part of the incorporated place layer; however, it will not have any associated attribute values (see the next section).



**Example A5B.3.3.2:** Newly created place feature.

### 3.4 Attributing Change Polygons

After each change polygon has been created, it must be correctly attributed so that the boundaries can be appropriately updated in the MAF/TIGER database. Another option is to update the attributes for each change polygon after creating all boundary changes. The following steps will explain which attributes are mandated for each type of boundary change.

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**Note:** All updates **MUST** be attributed.

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#### To begin updating attributes

- In **ArcMap**, right click the place layer in the **Table of Contents**, click **Selection**, and then click **Make This The Only Selectable Layer**, so that the place layer is the only one which can be selected while editing.
- On the **Editor Toolbar**, click **Editor**, and then click **Start Editing**.



#### Annexations

- On the **Editor Toolbar**, click the **Edit Tool**  button and select the annexation polygon.
- On the **Editor Toolbar**, click the **Attributes**  button.
- In the **Attributes** window, fill out the mandatory fields required for an annexation.
  - **NAME**, **CHNG\_TYPE**, **DOCU** and **EFF\_DATE**.
  - The **CHNG\_TYPE** for an annexation is **A**.

#### Deannexations



- On the **Editor Toolbar**, click the **Edit Tool**  button and select the deannexation polygon.
- On the **Editor Toolbar**, click the **Attributes**  button.
- In the **Attributes** window, fill out the mandatory fields required for a deannexation.
  - **NAME**, **CHNG\_TYPE**, **DOCU** and **EFF\_DATE**.
  - The **CHNG\_TYPE** for an annexation is **D**.

#### Corridors



- On the **Editor Toolbar**, click the **Edit Tool**  button and select the corridor polygon.
- On the **Editor Toolbar**, click the **Attributes**  button.
- In the **Attributes** window, fill out the mandatory fields required for a corridor.

- o **NAME, CHNG\_TYPE, RELATE.**
- o The **CHNG\_TYPE** for a corridor changes is **C**.
- o In the **RELATE** field, enter **IN** if the change is adding corridor area to the place or **OUT** if the change is removing corridor area.

### Offsets

- On the **Editor Toolbar**, click the **Edit Tool**  button and select the offset polygon.
- On the **Editor Toolbar**, click the **Attributes**  button.
- In the **Attributes** window, fill out the mandatory fields required for an offset.
  - o **NAME, CHNG\_TYPE, RELATE.**
  - o The **CHNG\_TYPE** for an offset change is **F**.
  - o In the **RELATE** field, enter **IN** if the change is adding offset area to the place or **OUT** if the change is removing offset area.

### Boundary Corrections

- On the **Editor Toolbar**, click the **Edit Tool**  button and select the boundary correction polygon.
- On the **Editor Toolbar**, click the **Attributes**  button.
- In the **Attributes** window, fill out the mandatory fields required for a boundary correction:
  - o **NAME, CHNG\_TYPE, RELATE.**
  - o The **CHNG\_TYPE** for a boundary correction is **B**.
  - o In the **RELATE** field, enter **IN** if the boundary correction is adding area or **OUT** if the boundary correction is removing area.

---

**Note:** If a county is reporting for adjacent incorporated places or MCDs, and a boundary correction to one entity affects another, use **RELATE = IN** and **NAME = <entity being added to>**. This is due to the fact that **RELATE = OUT** leaves a question as to whether or not there should be a gap between the two entities.

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#### To finish updating attributes

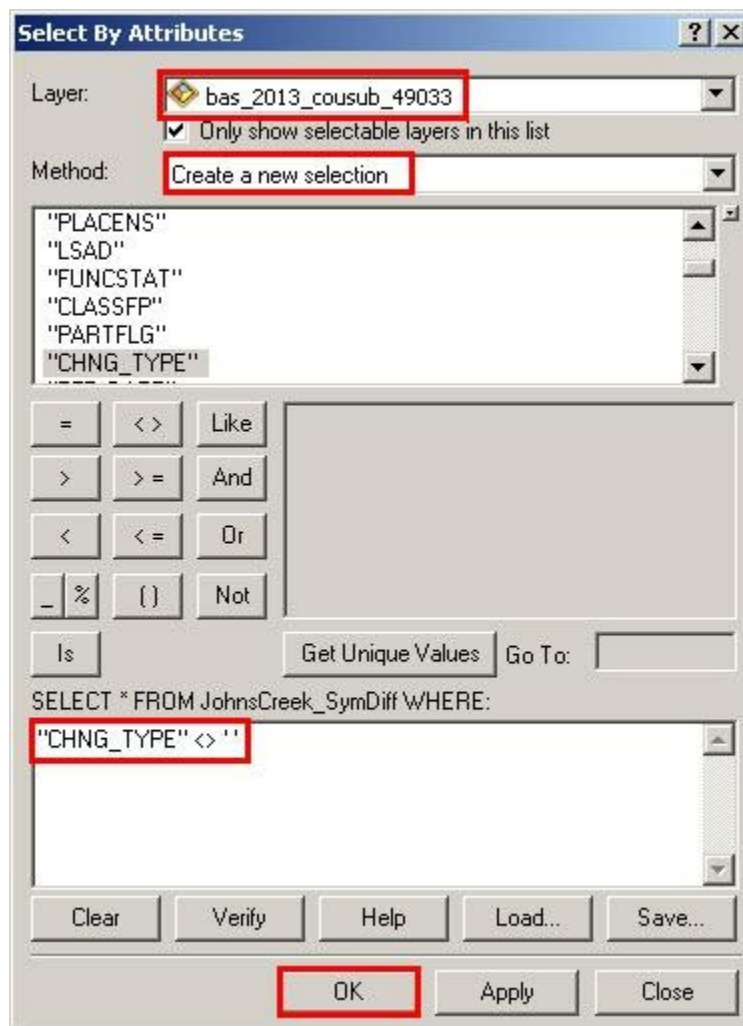
- Once all of the attribute changes have been made, on the **Editor** toolbar, click **Editor**, and then click **Stop Editing**. (In the **Save** window, click **Yes**.)

### 3.5 Exporting Change Polygons

After creating and coding the change polygons, each level of geography (county, place, MCD) that has changes must be exported to a separate change polygon layer.



1. In ArcMap, click **Selection** and then click **Select by Attributes**.
2. In the **Select By Attributes** window:
  - Set the **Layer** dropdown to the incorporated place layer: **bas\_2013\_place\_<ssccc>**.
  - Set the **Method** dropdown to **Create a new selection**.
  - In the **Select \* FROM** box, type one of the following formulas:
    - o **“CHNG\_TYPE” <> ‘ ’** This equation would select all change polygons that have any change type which have been created and coded.
    - o **“CHNG\_TYPE” = ‘A’ OR “CHNG\_TYPE” = ‘B’ OR... (etc.)** This equation can be written to select each change type for polygons that were created and coded.
- Click **OK**



**Example A5B.3.5.1:** Select all change types formula

After clicking **OK**, each change polygon that that has been created and coded should be highlighted on the map and in the attribute table.

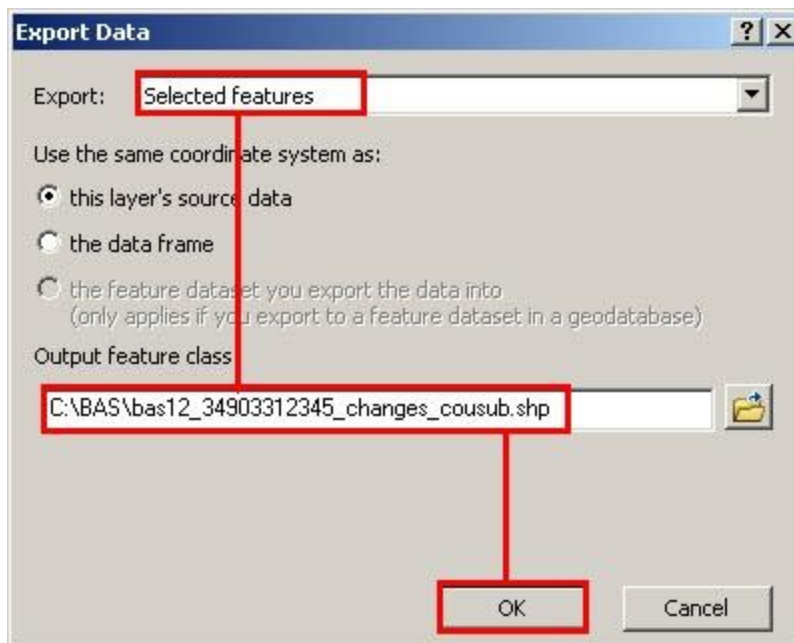
---

**Optional:** Open the attribute table and sort to verify that all change polygons with a change type code were selected.

---

### Exporting the selected change polygons

1. In the **ArcMap Table of Contents**, right-click on the incorporated place layer (**bas\_2013\_place\_<ssccc>**), select **Data**, and then click **Export Data**.
2. In the **Export Data** window:
  - From the **Export** dropdown, choose **Selected Features**.
  - In the **Output shapefile or feature class**: field, browse to and select a location to save the shapefile.
    - o Name the shapefile **bas13\_<basID>\_changes\_incplace.shp**.
  - Click **OK**.



Example A5B.3.5.2: Exporting Data

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**Note:** The **basID** numbers can be found on the Census Data disc or BAS form.

See section 5.7.4 for instructions on zipping updates.

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### Submitting the shapefile

It is requested that BAS zip files be submitted using the Census Bureau's **Send a File Utility** site. Submit only the zip file. The **Send a File Utility** is located at:  
<https://secure.census.gov/cgi-bin/sendfile>

1. In a web browser, navigate to <https://secure.census.gov/cgi-bin/sendfile>.
2. In the password window:
  - o In the **User name** field, enter: **geobas**
  - o In the **Password** field, enter: **GEO1upload2010!**
  - o Click **OK**
3. In the **Send a File Utility** window, in the **Source Information** section; next to the **File to Send** field, click **Browse**.
4. In the **Choose File** window, navigate to the appropriate folder, select the zip file, and then click **Open**.
5. In the **Notify by E-mail** section:
  - o In the **Sender's Email Address** field, enter your email address
  - o In the **Census Bureau Employee's E-Mail Address** field, enter 'geo.bas@census.gov'
  - o Click **Upload**

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**Note:** Filling out the **Notify by E-mail** section will allow Census to send notice that the return zip file has been received. If there are any questions contact the Census Bureau at 800-972-5651 or email [geo.bas@census.gov](mailto:geo.bas@census.gov).

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## Appendix 6: MTFCC Codes

### MTFCC Codes

MTFCC Code	MTFCC Description (Short)	MTFCC Description (Long)
<b>C3022</b>	Mountain Peak or Summit	Prominent elevation rising above the surrounding level of the Earth's surface
<b>C3023</b>	Island	Area of dry or relatively dry land surrounded by water or low wetland (archipelago, atoll, cay, hammock, hummock, isla, isle, key, moku, rock)
<b>C3024</b>	Levee	Natural or manmade embankment flanking a stream (bank, berm)
<b>C3026</b>	Quarry (not water-filled), Open Pit Mine or Mine	Place or area from which commercial minerals are or were removed from the Earth; not including oilfield
<b>C3027</b>	Dam	Water barrier or embankment built across the course of a stream or into a body of water to control and (or) impound the flow of water (breakwater, dike, jetty)
<b>C3061</b>	Cul de sac	A street that is closed at one end with a circular turnaround area and only one outlet
<b>C3062</b>	Traffic Circle	A circular intersection allowing for continuous movement of traffic at the meeting of roadways
<b>C3066</b>	Gate	A movable barrier across a road
<b>C3067</b>	Toll booth	A structure or barrier where a fee is collected for using a road
<b>C3070</b>	Tower/beacon	A manmade structure, higher than its diameter, generally used for observation, storage, or electronic transmission
<b>C3071</b>	Lookout Tower	A manmade structure, higher than its diameter used for observation
<b>C3072</b>	Transmission Tower including cell, radio and TV	A manmade structure, higher than its diameter used for electronic transmission
<b>C3073</b>	Water Tower	A manmade structure, higher than its diameter used for water storage
<b>C3074</b>	Lighthouse Beacon	A manmade structure, higher than its diameter used for transmission of light generally to aid in navigation
<b>C3075</b>	Tank/Tank Farm	A manmade structure(s), higher than its diameter used for liquid (other than water) or gas storage
<b>C3076</b>	Windmill Farm	A manmade structure(s) used to generate power from the wind
<b>C3077</b>	Solar Farm	A manmade structure(s) used to generate power from the sun

<b>C3078</b>	Monument or Memorial	A manmade structure to educate, commemorate, or memorialize an event, person, or feature
<b>C3079</b>	Boundary Monument Point	Material object placed on or near a boundary line to preserve and identify the location of the boundary line on the ground
<b>C3080</b>	Survey Control Point	Point on the ground whose position (horizontal or vertical) is known and can be used as a base for additional survey work
<b>C3081</b>	Locality Point	This feature represents points that identify locations and names of unbounded localities e.g., crossroads, community names, names from the Geographic Names Information System (GNIS).
<b>C3088</b>	Landfill	A disposal facility at which solid waste is placed on or in the land
<b>H2025</b>	Swamp/Marsh	A poorly drained Wetland, fresh or saltwater, wooded or grassy, possibly covered with open water (bog, cienega, marais, marsh, pocosin)
<b>H2030</b>	Lake/Pond	A natural body of inland water (backwater, lac, lagoon, laguna, pond, pool, resaca, waterhole)
<b>H2040</b>	Reservoir	An artificially impounded body of water (lake, tank)
<b>H2041</b>	Treatment Pond	An artificial body of water built to treat fouled water
<b>H2051</b>	Bay/Estuary/Gulf/Sound	A body of water partly surrounded by land (arm, bight, cove, inlet)
<b>H2053</b>	Ocean/Sea	Large body of salt water (gulf, ocean)
<b>H2060</b>	Gravel Pit/Quarry filled with water	A body of water in a place or area from which commercial minerals were removed from the Earth
<b>H2081</b>	Glacier	A body or stream 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 (ice field, ice patch, snow patch)
<b>H3010</b>	Stream/River	A linear body of water flowing on the Earth's surface (anabranch, awawa, bayou, branch, brook, creek, distributary, fork, kill, pup, rio, river, run, slough)
<b>H3013</b>	Braided Stream	A body of water flowing on the Earth's surface that is separated into multiple channels
<b>H3020</b>	Canal, Ditch or Aqueduct	A manmade waterway used by watercraft or for drainage, irrigation, mining, or water power (ditch, lateral)

<b>K1100</b>	Housing Unit Location	
<b>K1121</b>	Apartment Building or Complex	
<b>K1122</b>	Rooming or Boarding House	
<b>K1223</b>	Trailer Court or Mobile Home Park	
<b>K1225</b>	Crew-of-Vessel Location	
<b>K1226</b>	Housing Facility/Dormitory for Workers	
<b>K1227</b>	Hotel, Motel, Resort, Spa, Hostel, YMCA, or YWCA	
<b>K1228</b>	Campground	
<b>K1229</b>	Shelter or Mission	
<b>K1231</b>	Hospital/Hospice/Urgent Care Facility	One or more structures where the sick or injured may receive medical or surgical attention (infirmary)
<b>K1232</b>	Halfway House/Group Home	
<b>K1233</b>	Nursing Home, Retirement Home, or Home for the Aged	
<b>K1234</b>	County Home or Poor Farm	
<b>K1235</b>	Juvenile Institution	
<b>K1236</b>	Local Jail or Detention Center	
<b>K1237</b>	Federal Penitentiary, State Prison, or Prison Farm	
<b>K1238</b>	Other Correctional Institution	
<b>K1239</b>	Convent, Monastery, Rectory, Other Religious Group Quarters	
<b>K1241</b>	Sorority, Fraternity, or College Dormitory	
<b>K1251</b>	Military Group Quarters	
<b>K2100</b>	Governmental	
<b>K2110</b>	Military Installation	This feature represents areas owned and/or occupied by the Department of Defense for use by a branch of the armed forces, including the Army, Navy, Air Force, Marines, Coast Guard, and include state owned areas for the use of the National Guard.
<b>K2146</b>	Community Center	
<b>K2165</b>	Government Center	
<b>K2167</b>	Convention Center	
<b>K2180</b>	Park	This feature represents parklands defined and administered by Federal State and Local governments.
<b>K2181</b>	National Park Service Land	National Park Service Land
<b>K2182</b>	National Forest or Other Federal Land	National Forest or Other Federal Land
<b>K2191</b>	Post Office	An official facility of the U.S. Postal Service used for processing and distributing mail and other postal material
<b>K2193</b>	Fire Department	

<b>K2194</b>	Police Station	
<b>K2195</b>	Library	
<b>K2196</b>	City/Town Hall	
<b>K2197</b>	Mixed Use/Other Non-residential	
<b>K2300</b>	Commercial Workplace	
<b>K2361</b>	Shopping Center or Major Retail Center	
<b>K2362</b>	Industrial Building or Industrial Park	
<b>K2363</b>	Office Building or Office Park	
<b>K2364</b>	Farm/Vineyard/Winery/Orchard	Farm/Vineyard/Winery/Orchard
<b>K2366</b>	Other Employment Center	
<b>K2400</b>	Transportation Terminal	
<b>K2424</b>	Marina	
<b>K2432</b>	Pier/Dock	
<b>K2451</b>	Airport or Airfield	A manmade facility maintained for the use of aircraft (airfield, airstrip, landing field, landing strip)
<b>K2452</b>	Train Station, Trolley or Mass Transit Rail Station	
<b>K2453</b>	Bus Terminal	
<b>K2454</b>	Marine Terminal	
<b>K2455</b>	Seaplane Anchorage	
<b>K2456</b>	Airport - Intermodal Transportation Hub/Terminal	
<b>K2457</b>	Airport - Statistical Representation	
<b>K2458</b>	Park and Ride Facility /Parking Lot	
<b>K2459</b>	Runway/Taxiway	
<b>K2460</b>	Helicopter Landing Pad	
<b>K2500</b>	Other Workplace	
<b>K2545</b>	Museum, Visitor Center, Cultural Center, or Tourist Attraction	
<b>K2561</b>	Golf Course	
<b>K2564</b>	Amusement Center	
<b>K2582</b>	Cemetery	A place or area for burying the dead (burial, burying ground, grave, memorial garden)
<b>K2586</b>	Zoo	
<b>L4010</b>	Pipeline	
<b>L4020</b>	Powerline	
<b>L4040</b>	Conveyor	
<b>L4110</b>	Fence Line	
<b>L4121</b>	Ridge Line	
<b>L4125</b>	Cliff/Escarpment	A very steep or vertical slope (bluff, crag, head, headland, nose, palisades, precipice, promontory, rim, rimrock)
<b>L4130</b>	Point-to-Point Line	

<b>L4140</b>	Property/Parcel Line (Including PLSS)	
<b>L4165</b>	Ferry Crossing	
<b>P0001</b>	Nonvisible Linear Legal/Statistical Boundary	
<b>P0002</b>	Perennial Shoreline	
<b>P0003</b>	Intermittent Shoreline	
<b>P0004</b>	Other non-visible bounding Edge (e.g., Census water boundary, boundary of an areal feature)	
<b>R1011</b>	Railroad Feature (Main, Spur, or Yard)	Rail feature refers to a line of fixed rails or tracks that form railways or railroads, spurs, and rail yards. They are used for the transport of passengers and goods.
<b>R1051</b>	Carline, Streetcar Track, Monorail, Other Mass Transit Rail	Carline, Streetcar Track, Monorail, and other mass transit refer to various forms of rail transport that has one or more than one track on which monorails or streetcars run. These tracks are typically in urban areas.
<b>R1052</b>	Cog Rail Line, Incline Rail Line, Tram	Cog Rail Line, Incline Rail Line are railways with a special toothed rack rail or rack mounted on the railroad ties between the running rails. The trains are fitted with one or more cog wheels that mesh with this rack rail. This allows the trains to operate on steeply inclined slopes. A Tram is a cable car, especially one suspended from an overhead cable, or a wheeled vehicle that runs on rails and is propelled by electricity.
<b>S1100</b>	Primary Road	Primary Road
<b>S1200</b>	Secondary Road	Secondary Road
<b>S1400</b>	Local Neighborhood Road, Rural Road, City Street	Local Neighborhood Road, Rural Road, City Street
<b>S1500</b>	Vehicular Trail (4WD)	Vehicular Trail (4WD)
<b>S1630</b>	Ramp	Ramp
<b>S1640</b>	Service Drive usually along a limited access highway	Service Drive usually along a limited access highway
<b>S1710</b>	Walkway/Pedestrian Trail	Walkway/Pedestrian Trail
<b>S1720</b>	Stairway	Stairway
<b>S1730</b>	Alley	Alley
<b>S1740</b>	Private Road for service vehicles (logging, oil fields, ranches, etc.)	Private Road for service vehicles (logging, oil fields, ranches, etc.)
<b>S1750</b>	Private Driveway	Private Driveway
<b>S1780</b>	Parking Lot Road	Parking Lot Road
<b>S1820</b>	Bike Path or Trail	Bike Path or Trail
<b>S1830</b>	Bridle Path	Bridle Path
<b>S2000</b>	Road Median	Road Median



Table A6: Select MTFCC codes