

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

Issued August 2009

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

1.1 Overview of the BAS

The 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), and 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.

BAS information is used 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 appropriate population is assigned to each entity. 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 of, and boundaries for, governmental units. 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. The BAS is also the source for changes in the boundaries of incorporated places, minor civil divisions (MCDs), counties (and equivalent areas), and federally recognized American Indian areas, 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. It is very important that you review Appendix 2 to see if your state has special requirements.

1.3 Legal Disputes

If it comes to our attention that areas of land are in dispute between two or more jurisdictions, we will not make annexations or boundary corrections 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, please contact the Census Bureau Legal Office at 301-763-2918.

1.4 Key Dates for Digital BAS Participants

All changes received by **March 1st** will be reflected in the Population Estimates Program and the American Community Survey. If the Census Bureau receives your updates by **April 30th**, they will be included in your BAS materials next year, as well as the 2010 Census.

To change your method of participation in BAS from Digital BAS to paper, you must notify the Census Bureau by January 15th. You can contact the Census Bureau by phone at (800) 972-5651 or by email at geo.bas@census.gov. (Note: To change from Digital BAS to MAF/TIGER

Partnership Software (MTPS), simply use the MTPS program disc provided along with the instructions found in the MTPS Respondent Guide, which can be found on the data disc or on the BAS website.)

Additionally, to participate in Digital BAS your entity must meet the following requirements:

1. You must have the ability to edit a Census Bureau shapefile¹ extract of your entity. We require that you update the Census Bureau shapefile with boundary and boundary-related feature changes, rather than submit a shapefile from your own local Geographic Information System (GIS).
2. You must provide information for the BAS point of contact, the person updating the shapefiles, and the highest elected official for your entities.
3. You must provide legal documentation numbers and effective dates for all legal boundary changes (annexations and deannexations).

If you have any questions or concerns about the participation requirements, please contact the Geography Division Legal Areas Team at 301-763-1099 or email 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 the geographic and cartographic activities needed to support the Census Bureau in collecting and disseminating census data. For the past twenty years, the Census Bureau's TIGER and Master Address File (MAF) have become the two most critical geographic resources for supporting the Census Bureau in its collection and dissemination of data.

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

2.1 Topological Relationships in the MAF/TIGER Database

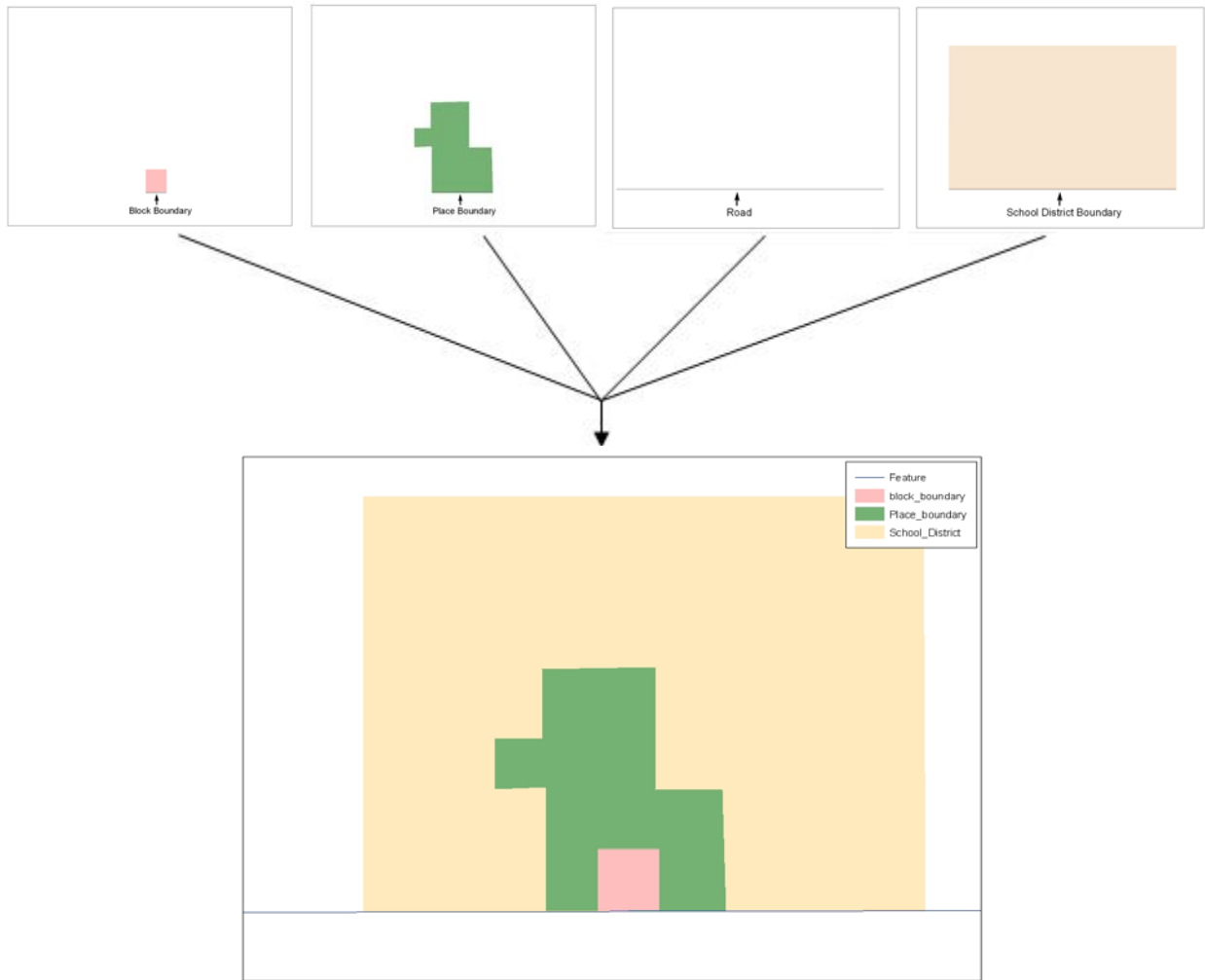
For its use in MAF/TIGER, topology can be described as the relationship between different levels of geography. MAF/TIGER is a topologically integrated geographic database in which the topological structures define the location, connection, and relative relationship of streets, rivers, railroads, and other features to each other, and to the numerous geographic entities for which the Census Bureau tabulates data for its censuses and sample surveys. Instead of having a layer for each feature class (i.e. roads, block boundaries, place boundaries, and school district boundaries)

¹ 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. You should encounter no problems when importing these shapefiles into your local GIS software. However, if you are using GIS software that does not contain a shapefile translator, please contact the Census Bureau for further instructions (301-763-1099) or e-mail geo.bas@census.gov.

all information is stored in one layer or file. Examples 2.1.1 and 2.1.2 provide a visual interpretation of how a file is topologically integrated 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.



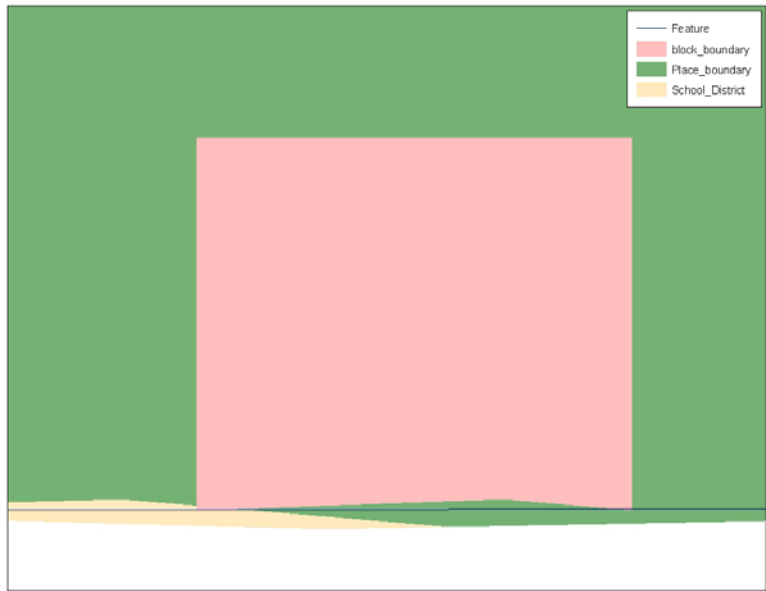
Example 2.1.2: This example shows four different feature classes are topologically integrated into one layer. The file is topologically integrated so that the one road represents not only a road, but also a block boundary, place boundary, and a school district boundary.

2.2 GIS and Spatial Accuracy

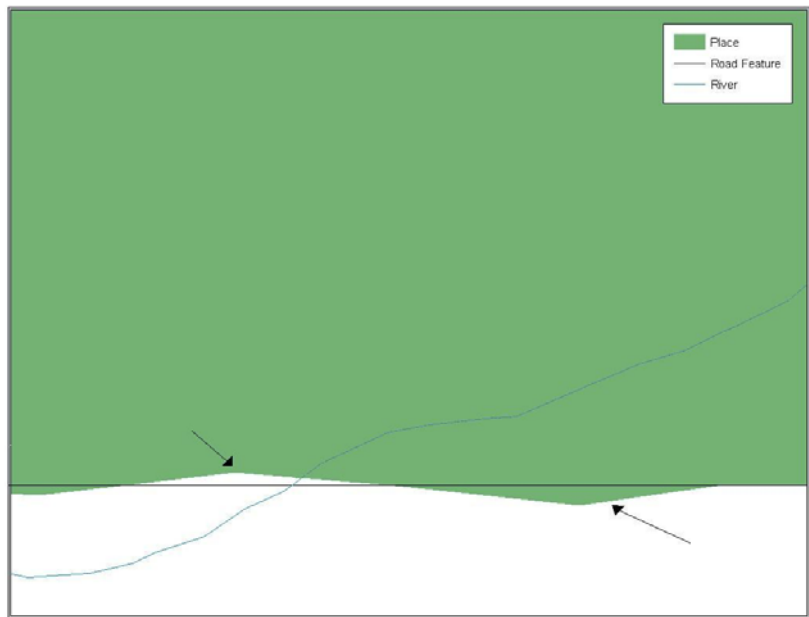
In a GIS, feature classes are not often topologically integrated. Instead feature classes stand alone in separate layers that contain a high level of spatial or coordinate accuracy. When overlaying these layers in a GIS one may find that the layers may not be coincident with one another as they are in the MAF/TIGER database. Examples 2.2.1 and 2.2.2 show how files that are not integrated may appear in a GIS when they are overlaid on top of one another.

The spatial differences found between the local GIS file and the Census Bureau’s integrated file are often very small (i.e. often less than five or ten feet) and can create boundary-to-feature relationship issues for the Census Bureau. Section 5.6 provides instructions on how to review your digital submission for small spatial boundary corrections, as well as some of the potential consequences of making spatial boundary corrections that dissolve the topological relationships

present in the MAF/TIGER database. An example process detailing a suggested method for making your boundary changes correctly can be found in Appendix 5.



Example 2.2.1: This example shows four different feature classes, each with a high level of spatial accuracy, overlaid. Notice how the topological relationship is compromised. The block, place, and school district boundaries, which are supposed to be coincident with the road feature, are now not aligned with this feature in several locations.



Example 2.2.2: This example depicts a situation where a local GIS place boundary is not coincident (topologically related) with a road feature. Assuming that the Census Bureau boundary is coincident with the road feature, making the changes represented by the arrows would dissolve the topological relationship in MAF/TIGER. Later sections will describe how to review these spatial boundary corrections, as well as discuss some of the consequences of dissolving the relationships in MAF/TIGER.

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 that you will be receiving.

Geographic Entity Type	Shapefile Naming Convention
County	bas_2010_county_<ssccc>.shp
Minor Civil Division	bas_2010_mcd_<ssccc>.shp
Incorporated Place	bas_2010_place_<ssccc>.shp
Consolidated City	bas_2010_concity_<ssccc>.shp
Edges (Roads, Rail, Hydro, etc)	bas_2010_edges_<ssccc>.shp
Area Landmarks	bas_2010_arealm_<ssccc>.shp
Point Landmarks	bas_2010_pointlm_<ssccc>.shp
Hydro Area	bas_2010_water_<ssccc>.shp

Table 3.1

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 two of the Census Bureau’s geocoding methods is critical for creating your Digital BAS submission correctly. These two methods include using a MAF structure point to geocode an address, and geocoding addresses based on the street centerline (feature matching).

When a MAF structure point is available, the Census will geocode to the location of the structure point which was originally captured using GPS during an earlier Census Bureau operation. However, if there is no structure point available, the Census Bureau will geocode to the street centerline.

Based on the geocoding methods used by the Census Bureau, it is very important to review your Digital BAS submission to ensure that your changes are topologically related to features where appropriate, and to create and code geographic offsets and corridors wherever necessary.

5. Updating the Census Bureau Shapefiles

The following section will describe how to update the Census Bureau shapefiles to reflect any boundary changes or linear feature changes that have occurred since the last BAS survey. There will also be a brief discussion of the procedures that should be followed to submit boundary changes and associated documentation. (An example process can be found in Appendix 5 to supplement this brief description.) Furthermore, there will be a short section on steps that should be taken to review your digital file before submitting it to the Census Bureau.

If the Census Bureau has any problems processing the submitted boundary or feature file, you will receive a feedback document, by email, requesting clarification of the issue(s). If we cannot resolve the problem prior to our project deadline, your updates will not be incorporated into MAF/TIGER. We will continue to work with you to resolve these issues before the next BAS cycle.

5.1 General File Setup Guidelines

When you receive your shapefiles, follow these guidelines before beginning actual updates:

- Open the CD to verify that it contains the correct shapefiles for the entity that you will be updating.
- Copy the shapefiles into a directory on your server/hard drive.
- Open the shapefiles in a GIS.

5.2 Changing Our Coordinate System to Match Yours

Our files are in GCS NAD83 format. Please feel free to project these files into your local coordinate system/projection. Most GIS software packages contain projection wizards, or something similar, that allow the user to transform file coordinate systems and projections. For example, if your office uses ArcView to update files, please activate and utilize ArcView's 'Projection Utility Wizard' extension. If using ArcGIS, please use its 'Projection Utilities' in ArcToolbox. MAF/TIGER shapefile extracts contain defined projection information in the *.PRJ file. Both ArcView and ArcGIS access the *.PRJ file for projection information; therefore, there is no need for you to define these parameters before changing the file coordinate systems.

After completing your updates, you may submit the boundary shapefile using your local coordinate system/projection provided that the shapefile's coordinate system contains a defined projection file (i.e., *.PRJ file) or spatial reference materials (i.e., metadata).

5.3 Boundary Changes

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

Appendix 5 provides an example process for creating annexation, deannexation, boundary correction, new entity, geographic corridor, and geographic offset change polygons. The Census Bureau also requests that you review any boundary changes (change polygons) that you create. Section 5.6 contains information on what to look for when reviewing your change polygons.

If a boundary update crosses into a new county and additional shapefiles are needed, please contact the Census Bureau’s geographic Legal Areas Team at 301-763-1099 or e-mail geo.bas@census.gov.

5.3.1 Annexations and Deannexations

The Census Bureau will accept annexations and deannexations from counties, MCDs, and incorporated places. Individual change polygons must be created in relation to the MAF/TIGER database. 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.

	NAME	CHNG_TYPE	EFF_DATE	DOCU (Not Required in GA)	AREA (Required in GA)	RELATE
Annexation	X	‘A’	X	X	Georgia only	
Deannexation	X	‘D’	X	X	Georgia only	

Table 5.3.1.1

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, individual change polygons must be created for each boundary correction that is made. Each boundary correction must also have the required attributes and corresponding change type populated, as seen in Table 5.3.2.1.

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

Table 5.3.2.1

Because the Census Bureau uses a topologically integrated database, not all types of boundary corrections can be processed for inclusion into MAF/TIGER. The list below provides an outline of the types of boundary corrections that we will and will not be able to accept through Digital BAS.

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

- in situations where the existing boundary has been digitized incorrectly or appears in the incorrect location due to other Census Bureau processes.
- where the overall shape of the geographic entity is maintained, and no feature-to-boundary relationships are dissolved.

The Census Bureau **will not** accept 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 dissolve boundary-to-feature relationships (i.e. roads, rivers, railroads, etc.) if the difference is less than thirty feet.
- which are greater than one square mile. 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 have a width of less than thirty feet (over the entire polygon).

Please remember that the Census Bureau will snap any 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. Each change polygon must have the required attributes and corresponding change type populated, as seen in Table 5.3.3.1.

	NAME	CHNG_TYPE	EFF_DATE	DOCU	AREA	RELATE
New Incorporation	X	'E'	X	X		

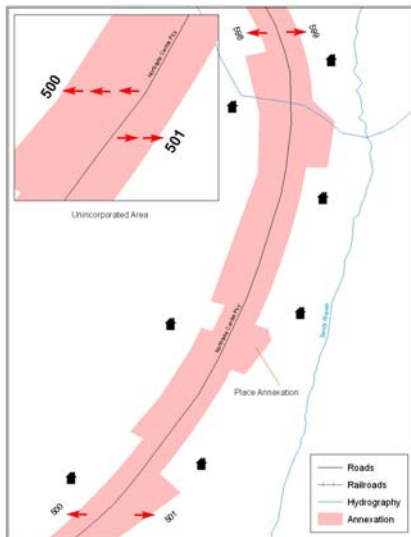
Table 5.3.3.1

Please contact the BAS unit at 1-800-972-5651 for the required documentation for new incorporations.

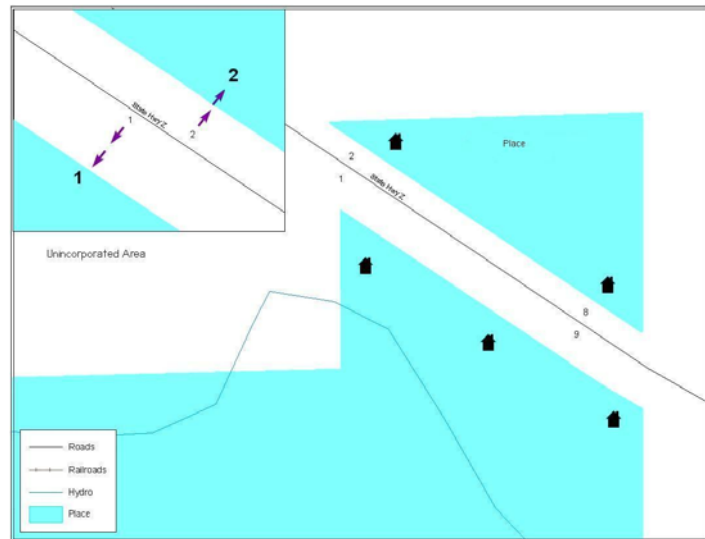
5.3.4 Geographic Corridors

The Census Bureau geocodes addresses based on the street centerline. If the geocoding of these addresses would result in the population being assigned to the incorrect geographic entity, we recommend the creation of 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 being created where the incorporated place owns the right-of-way but the housing units are not included in the incorporated place. 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. In both examples the incorporated place is shown in color.



Example 5.3.4.1



Example 5.3.4.2

As with all other types of geographic changes, individual change polygons must be created for each geographic corridor that is created. Each geographic corridor change polygon must have the required attributes populated and corresponding change type, as seen in Table 5.3.4.1. In the RELATE field, please provide the distance between the centerline and the entity boundary (e.g. “(30,30)” for 30 feet on each side of the centerline).

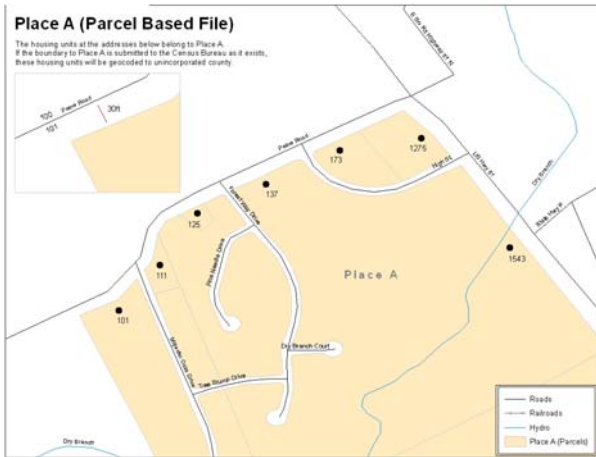
	NAME	CHNG_TYPE	EFF_DATE	DOCU	AREA	RELATE
Geographic Corridor	X	'C'				Distance

Table 5.3.4.1

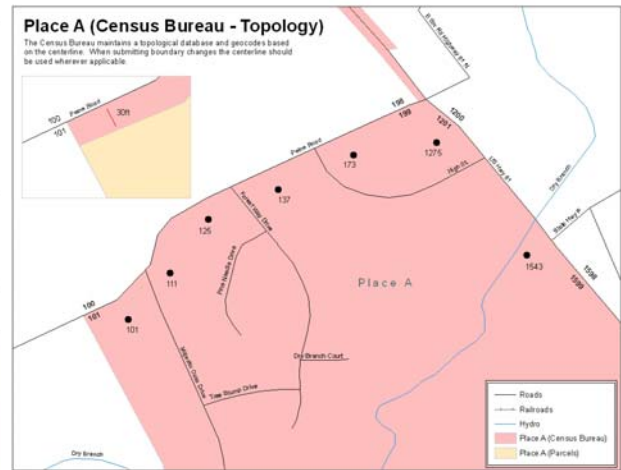
5.3.5 Geographic Offsets

A **geographic offset** is an area claimed by a geographic entity that is only on one side of the 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. Our maps are based on spatial data that is topologically integrated, and this makes maintenance of geographic offsets inefficient. Snapping your entity boundary to the centerline wherever applicable will also help to establish more accurate population counts. 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

Ultimately, if you do prefer to create geographic offsets, you must create individual change polygons to represent each geographic offset. Each geographic offset change polygon must have the required attributes and corresponding change type populated, as seen in Table 5.3.5.1. In the RELATE field, please provide the distance between the centerline and the entity boundary (e.g. “(30)” for 30 feet).

	NAME	CHNG_TYPE	EFF_DATE	DOCU	AREA	RELATE
Geographic Offset	X	'F'				Distance

Table 5.3.5.1

5.4 Linear Feature Updates

5.4.1 Adding, Deleting, Renaming, and Recoding Linear Features

If you have reviewed your features using our linear feature network, and have determined that the Census Bureau needs to add, remove, rename or recode a linear feature you may submit your modifications 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

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

Table 5.4.1.1

A list of MTFCC codes can be found at:

http://www.census.gov/geo/www/tiger/cfcc_to_mtfcc.xls

5.4.2 Special Note Regarding Linear Feature Updates for the 2010 Census

Please note that the Census Bureau has spent the last six years improving the spatial accuracy of the roads in our MAF/TIGER database through the MTAIP project. Many organizations throughout the country who maintain geographic information in digital form have worked with us on this project.

At this point, the Census Bureau is moving forward with our 2010 Census field canvassing and collection activities. This means that we are no longer processing widespread spatial corrections to our street network. What is critical for the success of the 2010 Census data tabulation is the location of roads relative to the entity boundary. As long as the road is within the correct entity, the population and housing will be properly reported. The guidelines below explain what types of linear feature updates we can accept at this point in time.

Street Update Guidelines

- If a road is missing and it forms the boundary for the area you are defining, add the road and provide the name.
- If you cannot correctly delineate the boundary for an entity you are updating because the feature you need to follow is incorrectly located, mislabeled or distorted in the Census Bureau's file, we request that you put the boundary on the problematic feature in our file. This will establish for us what feature you want the boundary to follow. In addition, we request that you report the problem area to the Census Bureau by sending information to geo.bas@census.gov describing the incorrect feature including the TIGER Line Identifier

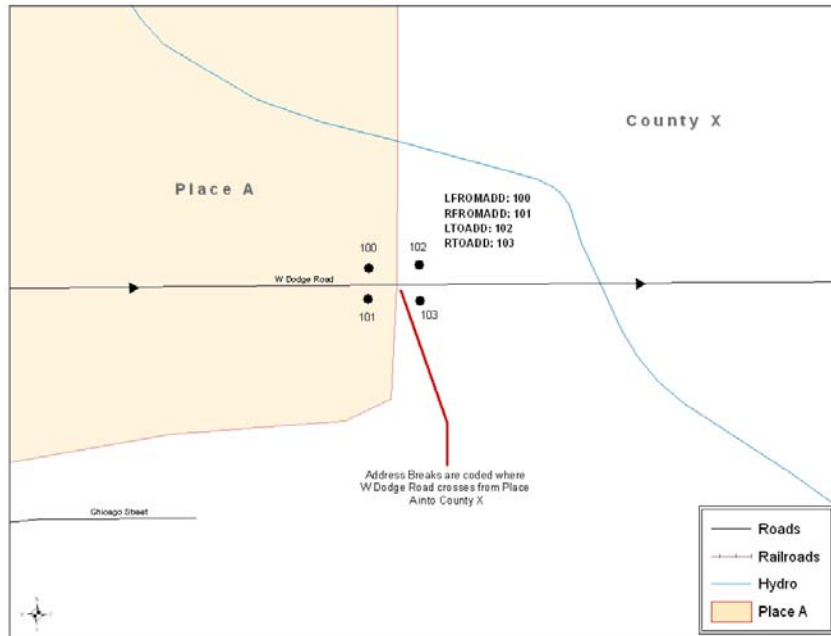
(TLID) and the specific entity boundary affected. This can be done using an image file, PDF, or other medium showing the appropriate correction.

- **Do not** spatially realign street features by merging your roads into our spatial file and flagging your roads as adds and our roads as deletes.
- You may add new subdivisions that are not in our database.

5.4.3 Address Range Break Updates

An address range break is a notation indicating the addresses that fall within the boundaries of a governmental entity. This information will not be displayed on your map but can be inserted when you move a boundary that intersects a street, or you add a street that intersects a boundary. This will help the Census Bureau to assign the correct addresses to your jurisdiction.

Address breaks may be submitted to the Census Bureau as part of the linear feature update layer. See Example 5.4.3.1 for more information on what an address break would look like. As with other linear feature updates, address breaks must have the required attributes and corresponding change type populated, as seen in Table 5.4.3.2.



Example 5.4.3.1: This example depicts where a participant would record an address break. In the Census Bureau’s ‘Edges’ layer please be sure to fill in the correct attribute fields to show the location of the address range break. This would include the CHNG_TYPE, LTOADD, RTOADD, LFROMADD, and RFROMADD fields.

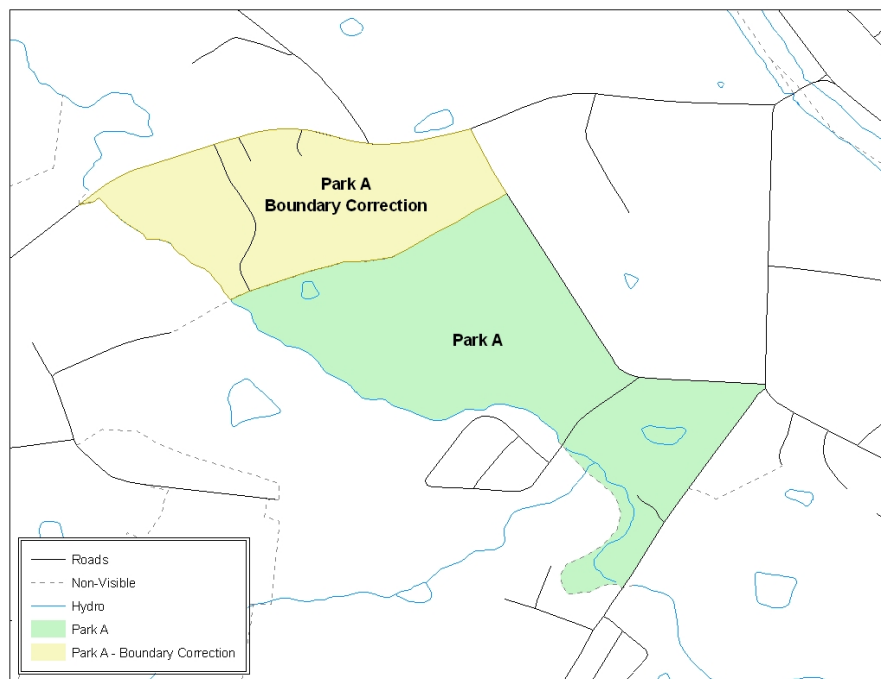
	CHNG_TYPE	FULLNAME	MTFCC	LTOADD	RTOADD	LFROMADD	RFROMADD
Address Breaks	‘CA’			X	X	X	X

Table 5.4.3.2

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 (i.e. annexations, deannexations, etc.). 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 please 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, or changing the name. Refer to Example 5.5.1.1 for what a sample boundary correction to an area landmark would look like.



Example 5.5.1.1: This example shows an example boundary correction to Park A. Please refer to the example process in Appendix 5 for more information on how to create change polygons for area landmark and hydro areas. *Note: While the example process in Appendix 5 refers to legal boundary changes the process used to create the change polygons for area landmarks and hydro areas is the same.*

Each area landmark or hydro area update must have the required attributes and corresponding change type populated, as seen in Table 5.5.1.2.

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

Table 5.5.1.2

The example process in Appendix 5 will provide you with the information on how to create change polygons. While the sample process is written for legal boundary changes, the same methods apply for creating change polygons for area landmarks and hydro areas.

Please be advised that 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. You may need to wait two BAS cycles in order to see these changes reflected in your materials.

5.5.2 Point Landmark Updates

Updates to point landmarks may also be made. In order to submit point landmark updates, please create a separate point landmark update layer. The updates to point landmarks include: adding a new point landmark, deleting an existing point landmark, and renaming a point landmark. Each point landmark update must have the required attributes and corresponding change type populated, as seen in Table 5.5.2.1.

	FULLNAME	CHNG_TYPE	MTFCC
New Point Landmark	X	'E'	X
Delete Point Landmark		'D'	
Change Name	X	'G'	

Table 5.5.2.1

Please be advised that 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. You may need to wait two BAS cycles in order to see these changes reflected in your materials.

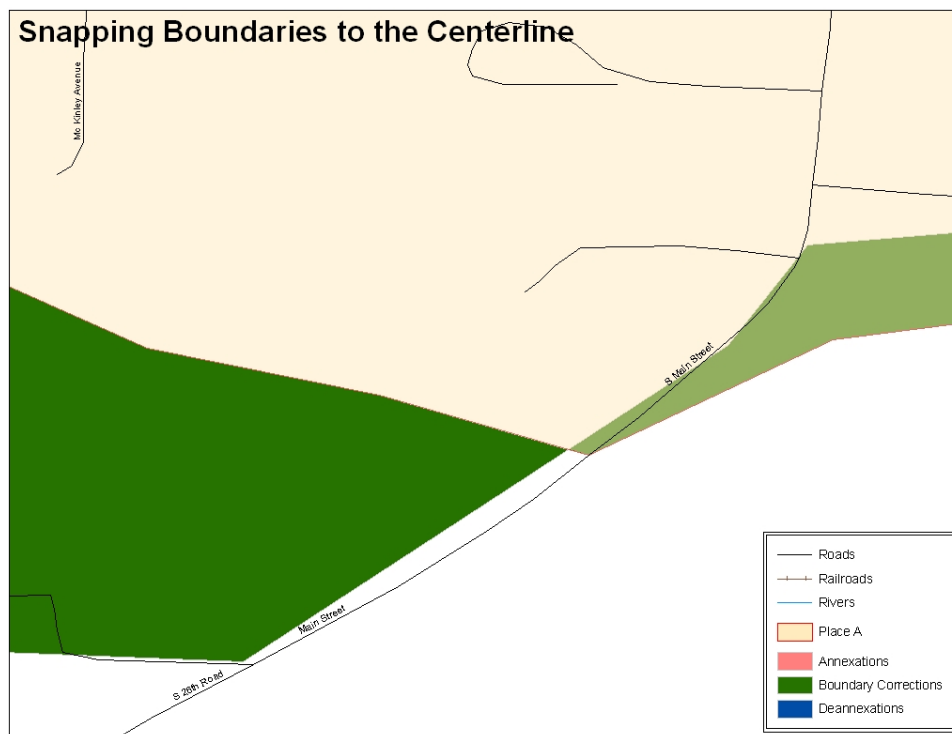
5.6 Reviewing Changes to the Census Bureau Shapefiles

A comprehensive review of each change polygon and feature update layer is an important aspect of your Digital BAS submission. Any annexation, deannexation, or boundary correction must be reviewed to ensure that it is an intentional change. This section will cover critical items that are important to that review.

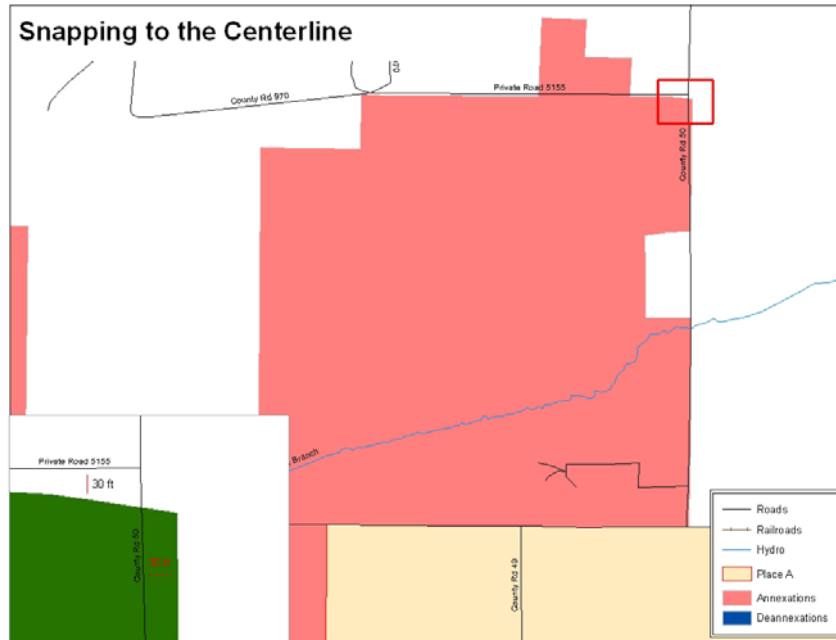
5.6.1 Boundary-to-Feature Relationships

Each annexation, deannexation, and boundary correction change polygon should be reviewed to determine if 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 we base our maps on spatial data that is topologically integrated. Therefore we encourage you to snap boundaries to street centerlines (or rivers, railroads, etc.) wherever applicable. This will help to establish a more accurate population count for your entity.

The following examples show situations where the boundary changes should be snapped to existing linear features. As a reminder, the Census Bureau will snap any boundary change that is created within thirty feet of an existing linear feature to that feature.



Example 5.6.1.1: Both the boundary correction adding area and the boundary correction removing area are not snapped to existing linear features in the MAF/TIGER database. Both boundary corrections should be snapped to the centerline or population may be assigned to the incorrect entity.



Example 5.6.1.2: This is an example of an annexation that has been created without snapping to the existing centerline in the MAF/TIGER database. The boundary of the annexation should be snapped to the centerline; otherwise, the population may be assigned to the incorrect entity.

The Census Bureau will not accept “spatial” boundary corrections that dissolve the current relationship between an existing boundary and linear feature. Any boundary correction that creates thirty feet or less of gap or overlap between the existing linear feature and boundary will not be able to be incorporated into the MAF/TIGER database. The examples below display the types of “spatial” boundary corrections that will not be accepted.



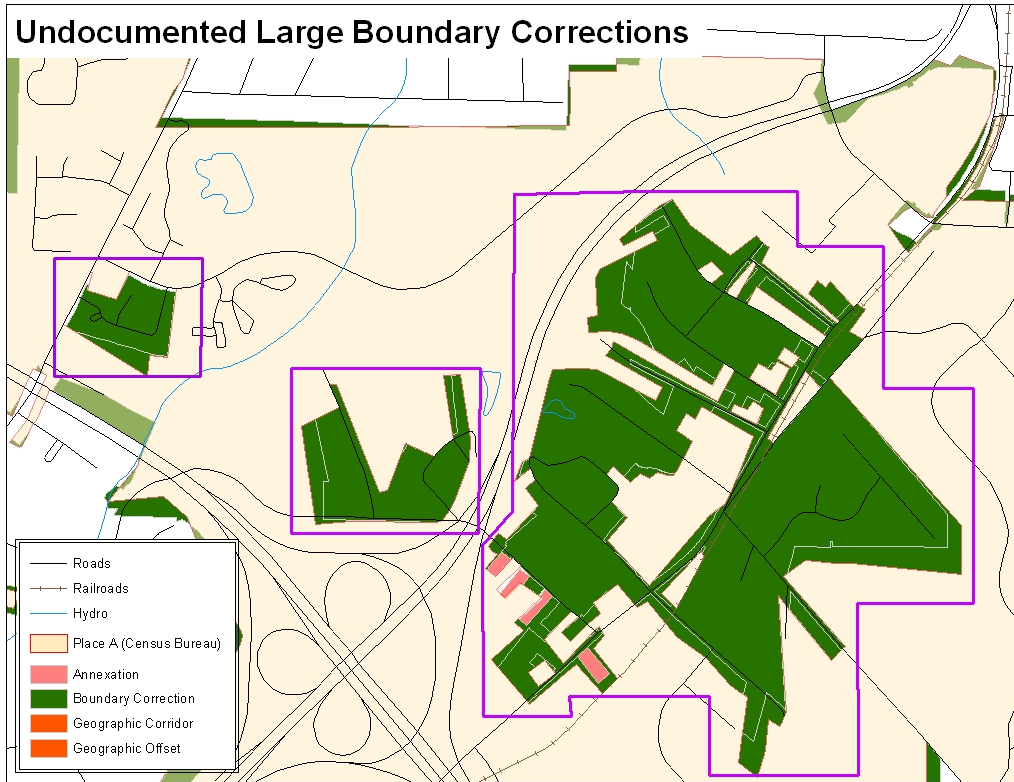
Example 5.6.1.3: In the image above the participant has created very small “spatial” boundary corrections that dissolve the relationship with the river. These boundary corrections will not be incorporated in to MAF/TIGER.



Example 5.6.1.4: In the image above the participant has created very small “spatial” boundary corrections that are dissolving the boundary-to-feature relationship with multiple streets. Incorporating these changes would affect the population counts for the entity. Therefore the Census Bureau will not accept these small “spatial” 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. Oftentimes these large boundary corrections may be legal boundary changes that occurred in the past and were never reported to the Census Bureau. However, we still do require that you submit the appropriate legal documentation number and effective date so that we may incorporate your change into the MAF/TIGER database. See Example 5.6.2.1 for an example of some large boundary corrections that we would not be able to accept without the appropriate documentation.



Example 5.6.2.1: Without the appropriate documentation we will not accept large boundary corrections like those highlighted in the above image.

Please note that there may be a few instances when large boundary corrections do need to be made as a result of incorrect digitizing or where the boundary appears in the incorrect location due to other Census Bureau processes, such as MTAIP, which could have rubbersheeted your boundaries.

5.6.3 Required Attribute Information Included

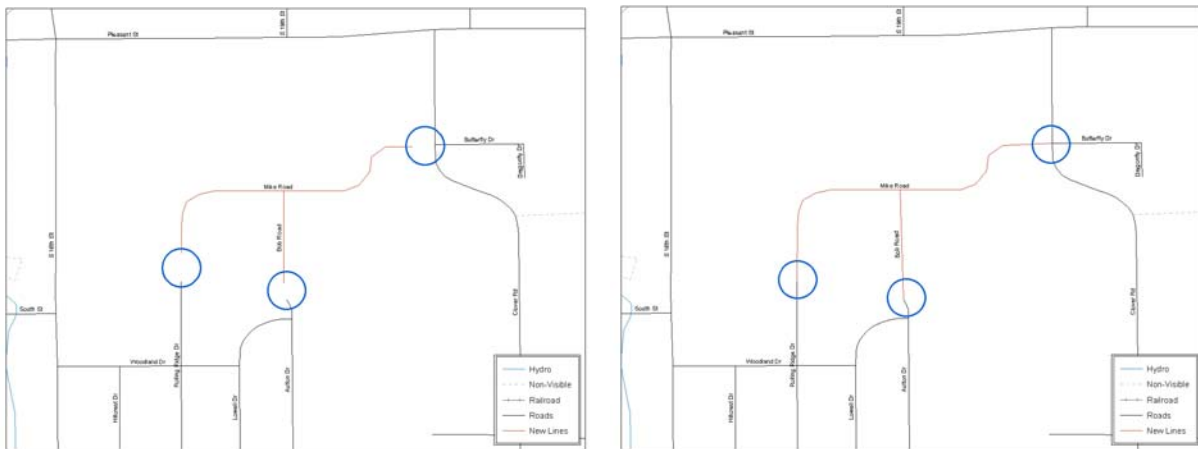
It is important that each change polygon is reviewed to determine that the correct attribute information is included. Without the correct attribute information we will be unable to process your file and incorporate the changes into the MAF/TIGER database. Reference Section 5.3 for the required attribute information and corresponding change type codes for each type of update that you make.

5.6.4 Appropriate Metadata Included (Projection Information)

It is important that the appropriate projection information in the metadata is included. Each update layer submitted must also contain a *.prj file so that the Census Bureau can convert the projection back to GCS_NAD83 when necessary. This is critical for us to be able to process the file and incorporate the updates into the MAF/TIGER database.

5.6.5 Linear Feature Updates

The Census Bureau also asks you to review your feature changes to ensure that all changes align with the features currently in the MAF/TIGER database. As a reminder, the Census Bureau has improved the feature network using a locally provided source to assure connectivity and topology through the MAF/TIGER Accuracy Improvement Project (MTAIP). If your linear feature changes do not align with current MAF/TIGER linear features, the Census Bureau may not be able to incorporate the linear feature updates that you have submitted. Example 5.6.5.1 shows something you should look for when reviewing your linear feature updates.



Example 5.6.5.1: The image on the left depicts 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 and how the new roads now connect to the existing road features.

5.6.6 Additional Review Information

As documented in Section 5.3, the Census Bureau will not make any boundary change that affects an adjacent legal entity without the appropriate documentation. We ask that you please review any change polygon that affects an adjacent entity to determine if this is an intentional, legal change.

It is important to emphasize that the 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 to maintain the boundary-to-feature relationships in MAF/TIGER and will ensure correct housing tabulation counts for your entity.

5.7 Submitting Digital Data

The Census Bureau requires that each participant submit at least two shapefiles, with the potential of more depending on which types of changes need to be made. These layers are described below:

- *Change Polygon Layers (County, Minor Civil Division, Incorporated Place, and Consolidated City)*
 - These layers consist of the changes that you would like the Census Bureau to make to your entity(s).
 - A layer of change polygons should be created for each level of geography 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.
- *Feature Update Layer (required only if there are feature (road, river, railroad, etc.) additions, deletions, name changes, recodes, or address range breaks)*
 - If you have linear feature updates that you would like the Census Bureau to make, include a linear feature update layer with only the feature segments that you would like us to correct.
- *Area / Hydro Landmark Layer (required only if there are area / hydro landmark updates)*
 - If you have area landmark updates, please include an area landmark / hydro area update layer with only the area landmark changes that you would like us to make.
- *Point Landmark Layer (required only if there are point landmark updates)*
 - If you have point landmark updates, please include a point landmark update layer with only the point landmark changes that you would like us to make.

5.7.1 County Submissions and Individual Entity Submissions (Change Polygons)

Table 5.7.1.1 provides the change polygon naming conventions for county submissions, county subdivisions, incorporated places, and consolidated cities.

Participant	Changes Submitted For:	Shapefile Naming Conventions
<i>County</i>	County	bas<yy>_<basID>_changes_county
<i>County</i>	Minor Civil Division	bas<yy>_<basID>_changes_cousub
<i>County</i>	Incorporated Place	bas<yy>_<basID>_changes_incplace
<i>Minor Civil Division</i>	Minor Civil Division	bas<yy>_<basID>_changes_cousub
<i>Incorporated Place</i>	Incorporated Place	bas<yy>_<basID>_changes_incplace
<i>Consolidated City</i>	Consolidated City	bas<yy>_<basID>_changes_concity

Table 5.7.1.1: The change polygon layer naming conventions: <yy> represents the BAS year, and <basID> represents your BAS entity ID, which can be found on the data CD.

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

Table 5.7.2.1 provides the whole entity polygon naming conventions for consolidated county submissions, county subdivisions, incorporated places, and consolidated cities.

Participant:	Changes Submitted For:	Shapefile Naming Conventions
<i>County</i>	County	bas<yy>_<basID>_WholeEntity_county
<i>County</i>	Minor Civil Division	bas<yy>_<basID>_WholeEntity_cousub
<i>County</i>	Incorporated Place	bas<yy>_<basID>_WholeEntity_incplace
<i>Minor Civil Division</i>	Minor Civil Division	bas<yy>_<basID>_WholeEntity_cousub
<i>Incorporated Place</i>	Incorporated Place	bas<yy>_<basID>_WholeEntity_incplace
<i>Consolidated City</i>	Consolidated City	bas<yy>_<basID>_WholeEntity_concity

Table 5.7.2.1: The whole entity polygon layer naming conventions: <yy> represents the BAS year, and <basID> represents your BAS entity ID, which can be found on the data CD.

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

Table 5.7.3.1 provides the update layer naming conventions for the edges, area landmark, and point landmark update layers.

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

Table 5.7.3.1: The naming conventions for the edges, area landmark, and point landmark update layers: <yy> represents the BAS year, and <basID> represents your BAS entity ID, which can be found on the data CD.

5.7.4 Compressing the Digital Files

Please compress ALL update materials (including change polygon shapefiles, whole entity shapefiles, linear feature updates, landmark updates, and a text or other file with your contact information) into a single ZIP formatted file named **bas<yy>_<basID>_return** (where <yy> represents the BAS year and <basID> represents your BAS entity ID, which can be found on the data CD).

5.7.5 Submitting Digital Files via File Transfer Protocol (FTP)

We request that you submit your Digital BAS response through the Census Bureau's "Send A File" FTP utility. The "Send A File" utility is located at:

<http://www2.census.gov/cgi-bin/basupload>

Source Information >> File to Send: >> Browse

Browse to the location where your file is stored to submit it to the Census Bureau.

Notify by Email >> Census Bureau Employee's E-Mail Address:

Please type geo.bas@census.gov so that the Legal Areas Team is notified whenever a file is submitted to the FTP site. **Please also include your e-mail address in the *Sender's E-Mail Address* field** so that we can notify you that we have received your file.

Enter the *Verification Code* seen on the screen and click the *Upload* button to FTP your Digital BAS file to the Census Bureau. If you have any questions on the "Send A File" FTP utility please contact the Legal Areas Team at 301-763-1099 or email geo.bas@census.gov.

5.7.6 Additional Information

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

If you have any questions or problems, please contact the Legal Areas Team at 301-763-1099 or email geo.bas@census.gov.

Appendix 1: Paperwork Reduction Project

The U.S. Census Bureau estimates that the BAS review will take most respondents from 1 to 6 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. Please 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

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

Please include a copy of your message addressed to:

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. Additional agreements may be posted to our BAS website (<http://www.census.gov/geo/www/bas/bashome.html>) if they are finalized after posting this guide.

1. Alaska
 2. California
 3. Georgia
 4. Kentucky
 5. Louisiana
 6. Michigan
 7. Minnesota
 8. New York
 9. Puerto Rico
 10. Virginia
 11. West Virginia
 12. Wisconsin
-

1. Alaska

Alaska Statutes (AS 29 and AS 44) stipulate that the Local Boundary Commission be involved in the development of all boundary changes to incorporated places including annexations, incorporations, or dissolutions. The Local Boundary Commission within the Alaska Department of Commerce, Community and Economic Development has designated the Alaska Department of Labor and Workforce Development as the agency to provide the Census Bureau with boundary changes through the annual Boundary and Annexation Survey.

The Census Bureau and the Alaska Department of Labor and Workforce Development are working together to consolidate the updates of legal boundaries in Alaska. This ensures that the Census Bureau will obtain the boundary information it needs from a single source.

Please note that any governmental boundary changes, incorporations, dissolutions, and mergers for your borough or city, effective on or before **January 1st**, will be submitted by the Alaska Department of Labor and Workforce Development.

If you have any questions or concerns regarding legal boundaries for your borough or city you may contact Ingrid Zaruba at 907-465-2439 or by email at:
ingrid_zaruba@labor.state.ak.us

2. California

The California State Board of Equalization serves as the Certifying Official for all local governments in California. The Board certifies to the Census Bureau the legality of boundary changes made by California municipalities. To assist them, please enter the final resolution number adopted by the city council as approved by the Local Agency Formation Commission (LAFCO) for each boundary change in the DOCU attribute field. Do not report the resolution number that initiated the action. Also, please enter the date on the certificate of completion issued by the LAFCO in the EFF_DATE attribute field.

3. Georgia

The Georgia Code stipulates that all annexations and deannexations to incorporated places be reported to the Georgia Department of Community Affairs. The Census Bureau has an ongoing working relationship with this state agency to conduct the annual Boundary and Annexation Survey. A list of entities that reported boundary changes to the Georgia Department of Community Affairs is provided to the Census Bureau each year. By agreement, boundary changes to incorporated places not on this list will not be incorporated into the Census Bureau's geographic database.

Please ensure that all annexation and deannexation information has been reported to the Department of Community Affairs, per the Georgia Code. The Georgia Code is available at <http://www.legis.state.ga.us/>. You may report your boundary changes to the Department of Community Affairs online or print a boundary change report form at <http://www.georgiaplanning.com/annex.htm>. Printed forms can be mailed to:

Annexation Reports
Georgia Department of Community Affairs
60 Executive Park South, NE
Atlanta, GA 30329-2231

The Department of Community Affairs (DCA) serves as the Certifying Official for all local governments in Georgia. DCA certifies to the Census Bureau the legality of boundary changes made by Georgia municipalities. To assist them, please enter the final resolution or ordinance number adopted by the city for each boundary change, as it was reported to DCA. If no resolution or ordinance number was assigned by your city then use the DCA-ID number assigned by DCA to your annexation report. Enter this number in the DOCU attribute field. Also, please enter the effective date, as officially recorded by DCA, into the EFF_DATE attribute field. The DCA-ID number and official effective date for annexations can be obtained at <http://www.GeorgiaPlanning.com/annex.htm>. If you have any concerns about this data, contact Terry Jackson at 404-679-4946.

4. Kentucky

The Kentucky Revised Statutes stipulate that all boundary changes to incorporated places within Kentucky be reported to the office of the Secretary of State. Reports of boundary changes are forwarded by the Secretary of State to the Division of Geographic Information for mapping. The Census Bureau has an ongoing working relationship with this state agency to conduct our annual Boundary and Annexation Survey. The Kentucky Division of Geographic Information provides a list of incorporated places which reported boundary changes to the Census Bureau each year. By agreement, boundary changes to incorporated places not on this list will not be incorporated into the Census Bureau's geographic database.

Please ensure that boundary change information has been reported to the Office of the Secretary of State, per the Kentucky Revised Statutes. The Kentucky Revised Statutes are available at <http://www.lrc.ky.gov/statrev/frontpg.htm>. All boundary changes should be submitted to:

The Land Office Division
Secretary of State
Room T40, Capitol Annex
700 Capital Ave.
Frankfort, KY 40601

If you would like to review the data that the Kentucky Division of Geographic Information has assembled for your entity, please visit <http://kygeonet.ky.gov/>. If you have any concerns about this data, please contact Kim Anness at 502-564-1450.

5. Louisiana

The MCD used in Louisiana for Census Bureau data tabulations is the parish governing authority district. These districts are the same as the Police Jury Districts or the Parish Council Districts used for the election of members of the police jury or parish council. Please review the boundaries of the parish subdivisions in your parish carefully to ensure that the names and boundaries conform to these districts. Do not report election precincts or election districts or any other areas that are not used in apportioning the representatives of the police jury or parish council. If you have a question about which MCDs you are to report, please contact:

Bill Blair
Director of Demographic Services (House and Senate)
PO Box 44486
Baton Rouge, LA 70804
Telephone: 225-342-2591
Fax: 225-342-0768
E-mail: blairb@legis.state.la.us

If you report changes or corrections to the districts in your parish, please ensure that you also report the effective date of each change.

6. Michigan

Michigan law stipulates that all boundary changes to incorporated places and minor civil divisions within Michigan be reported to the office of the Secretary of State. The Census Bureau has an ongoing working relationship with a state agency to conduct our annual Boundary and Annexation Survey. The state agency provides a list of incorporated places and minor civil divisions which reported boundary changes to the Census Bureau each year. The Census Bureau uses this list to determine who should get a BAS package.

The Office of the Great Seal, located within the Department of State, serves as the Certifying Official for all local governments in Michigan. This office certifies to the Census Bureau the legality of boundary changes made by Michigan municipalities. To assist them, please enter the job number assigned by the Secretary of State's office for each boundary change in the DOCU attribute field. Do not report the ordinance or resolution number that initiated the action. Also, please enter the date the change was filed with the Secretary of State in the EFF_DATE attribute field.

7. Minnesota

Minnesota statutes stipulate that all boundary changes to incorporated places and minor civil divisions within Minnesota be reported to the office of Strategic and Long-Range Planning. The Census Bureau has an ongoing working relationship with a state agency to conduct our annual Boundary and Annexation Survey. The state agency provides a list of incorporated places and minor civil divisions which reported boundary changes to the Census Bureau each year. The Census Bureau uses this list to determine who should get a BAS package.

8. New York

The New York Department of State, Division of Corporations and State Records serves as the Certifying Official for all local governments in New York. The Division certifies to the Census Bureau the legality of boundary changes made by New York municipalities. Please be advised that the state can certify only those boundary change actions enacted by Local Law pursuant to Section 714 of the General Municipal Law.

The Secretary of State's Office has recommended a way local governments can assist in this effort. Please enter the final Local Law number into the DOCU field and the date the annexation was filed with the Secretary of State in the EFF_DATE field of the attribute table.

9. Puerto Rico

Under Puerto Rico law, boundary changes to municipios and barrios are reported to the Census Bureau by the Puerto Rico Planning Board only. The Puerto Rico Planning Board will report all boundary changes, approved by the Puerto Rico Government, effective on or before **January 1st** of each year.

The Census Bureau and the Puerto Rico Planning Board collaborate to consolidate the updating of legal boundaries at the commonwealth level, after they have been approved by the Puerto Rico

Legislature. The Planning Board maintains the most up-to-date boundary information for all municipios and barrios in Puerto Rico.

If you would like to review the boundary data that the Puerto Rico Planning Board has for your municipio and/or barrios, please visit <http://www.jp.gobierno.pr>. If you have any concerns about this data, contact Ms. Lillian Torres-Aguirre at 787-723-6200 ext. 2501.

10. Virginia

The districts used for the election of representatives to the County Board of Supervisors are used by the Census Bureau for data tabulation and will be represented as minor civil divisions (MCDs) in Census Bureau data products. These districts usually are termed magisterial districts, but can have other designations, such as election or supervisor districts. Please review the boundaries of the MCDs in your county carefully to ensure that the names and boundaries conform to the areas functioning as districts for the election of county supervisors.

Do not report taxing districts, districts used for the recording of land titles, or any other type of district that is not used in apportioning the representatives of the county board. If these districts are not called magisterial districts, put the correct description of the areas above the first data line showing the “NAME OF MUNICIPALITY OR MINOR CIVIL DIVISION” in Question 3. If you have a question about which MCDs you are to report, please contact:

U.S. Census Bureau
Geography Division
Geographic Areas Branch
Legal Areas Team
Washington, DC 20233-7400
Telephone: 301-763-1099
Fax: 301-457-4710
E-mail: geo.bas@census.gov

If you report changes or corrections to the districts in your county, please ensure that you also report the effective date of each change.

11. West Virginia

The MCD used in West Virginia for Census Bureau data tabulations is the magisterial district. Magisterial districts are the divisions of the county used for the election of county commissioners and members of the school board. Please review the boundaries of the county subdivisions in your county carefully to ensure that the names and boundaries conform to the areas called magisterial districts. Do not report taxing districts, districts used for the recording of land titles, or any other type of district that is not used in apportioning the representatives of the county board.

If you have a question about which MCDs you are to report, please contact:













Patricia Hamilton
Certified Association Executive
West Virginia Association of Counties
2211 Washington Street East
Charleston, WV 25311
Telephone: 304-346-0591
Fax: 304-346-0592
E-mail: wwaco@wwaco.org

If you report changes or corrections to the districts in your county, please ensure that you also report the effective date of each change.

12. Wisconsin

Wisconsin law stipulates that all boundary changes to incorporated places and minor civil divisions within Wisconsin be reported to the office of Secretary of State. The Census Bureau has an ongoing working relationship with a state agency to conduct our annual Boundary and Annexation Survey. The state agency provides a list of incorporated places and minor civil divisions which reported boundary changes to the Census Bureau each year. The Census Bureau uses this list to determine who should get a BAS package.

Appendix 3: Census Bureau Regional Census Centers - Contact Information

	<p>Atlanta Regional Census Center 285 Peachtree Center Ave NE Marquis II Tower, Suite 1000 Atlanta, GA 30303-1230 Phone: (404) 332-2711 Fax: (404) 688-4329 E-mail: atlanta.geography@census.gov</p>	<p>Detroit Regional Census Center 300 River Place Dr, Suite 2950 Detroit, MI 48207 Phone: (313) 396-5002 Fax: (313) 567-2119 TDD: (313) 259-5169 E-mail: detroit.geography@census.gov</p>	
	<p>Boston Regional Census Center One Beacon St, 7th Floor Boston, MA 02108-3107 Phone: (617) 223-3600 Fax: (617) 223-3675 Email: boston.geography@census.gov</p>	<p>Kansas City Regional Census Center 2001 NE 46th St, Suite LL100 Kansas City, MO 64116-2051 Phone: (816) 994-2020 Fax: (816) 298-9614 E-mail: kansas.city.geography@census.gov</p>	
	<p>Charlotte Regional Census Center 3701 Arco Corporate Dr, Suite 250 Charlotte, NC 28273 Phone: (704) 936-4200 Fax: (704) 909-6714 E-mail: charlotte.geography@census.gov</p>	<p>Los Angeles Regional Census Center 9301 Corbin Ave, Suite 1000 Northridge, CA 91324-2406 Phone: (818) 717-6701 Fax: (818) 717-6778 TTY: (818) 717-6705 E-mail: los.angeles.geography@census.gov</p>	
	<p>Chicago Regional Census Center 500 W Madison St, Suite 1600 Chicago, IL 60661-4555 Phone: (312) 454-2705 Fax: (312) 448-1510 E-mail: chicago.geography@census.gov</p>	<p>New York Regional Census Center 330 W 34th St, 13th Floor New York, NY 10001-2406 Phone: (212) 971-8800 Fax: (212) 971-8990 E-mail: new.york.rcc.geography@census.gov</p>	
	<p>Dallas Regional Census Center 2777 N Stemmons Fwy, Suite 200 Dallas, TX 75207-2514 Phone: (214) 267-6920 Fax: (972) 755-3705 TTY: (214) 655-5363 E-mail: dallas.geography@census.gov</p>	<p>Philadelphia Regional Census Center 1234 Market St, Suite 340 Philadelphia, PA 19107-3721 Phone: (215) 717-1000 Fax: (215) 253-8001 E-mail: philadelphia.geography@census.gov</p>	
	<p>Denver Regional Census Center 6950 W Jefferson Ave, Suite 250 Denver, CO 80235 Phone: (720) 475-3600 Fax: (720) 962-4606 E-mail: denver.geography@census.gov</p>	<p>Seattle Regional Census Center 19820 North Creek Pkwy, Suite 100 Bothell, WA 98011 Phone: (425) 908-3010 Fax (425) 908-3020 E-mail: seattle.geography@census.gov</p>	

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 / Web BAS only)
AREA	10	Double	Area of update
RELATE	120	String	Relationship description
NAME	100	String	Entity name
VINTAGE	2	String	Vintage of the data

-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 and Web BAS only)
AREA	10	Double	Area of update
RELATE	120	String	Relationship description
NAME	100	String	Entity name
VINTAGE	2	String	Vintage of the data

-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 and WebBAS only)
AREA	10	Double	Area of update
RELATE	120	String	Relationship description
NAME	100	String	Entity name
VINTAGE	2	String	Vintage of the data

-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 and Web BAS only)
AREA	10	Double	Acreage of update
RELATE	120	String	Relationship description
NAME	100	String	Entity name
VINTAGE	2	String	Vintage of the data

-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 Tmeta ID
BBSPFLG	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

-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

-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

-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

Appendix 5: 2010 Digital BAS – Example Process

Note: This example uses an incorporated place participant as the subject. A county reporting for incorporated places may use the same process.

1. Opening Census Bureau Shapefiles

Enclosed with your Digital BAS Materials should be a ZIP file with all of the necessary shapefiles as well as a PDF copy of this 2010 Digital BAS Respondent Guide. Use these materials to create your Digital BAS submission for 2010. If any questions arise please do not hesitate to contact the Census Bureau at 1-800-972-5651.

- Open the CD, copy the data to your hard drive/serve, and unzip the data to ensure that the correct data has been sent to your entity. For an incorporated place both the incorporated place and edges layers are critical: **bas_2010_place_<ssccc>.shp** and **bas_2010_edges_<ssccc>.shp**. You should have a set of shapefiles for your county(ies), as well as all adjacent counties.

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

- We suggest that you make an extra copy of the data in case a file becomes corrupted, an error is made, etc.

2. Symbolizing Layers in ArcGIS

To most effectively create change polygons it is good to have symbolization that easily distinguishes between different types of linear features and geographic areas.

Symbolizing linear features in the edges layer:

- Using the Layer Properties for the Edges layer symbolize the linear features by grouping like MTFCC codes (i.e. codes sharing the same first character).
- Table A5.2.1 will show you which MTFCC types should be grouped and their recommended symbolization.





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

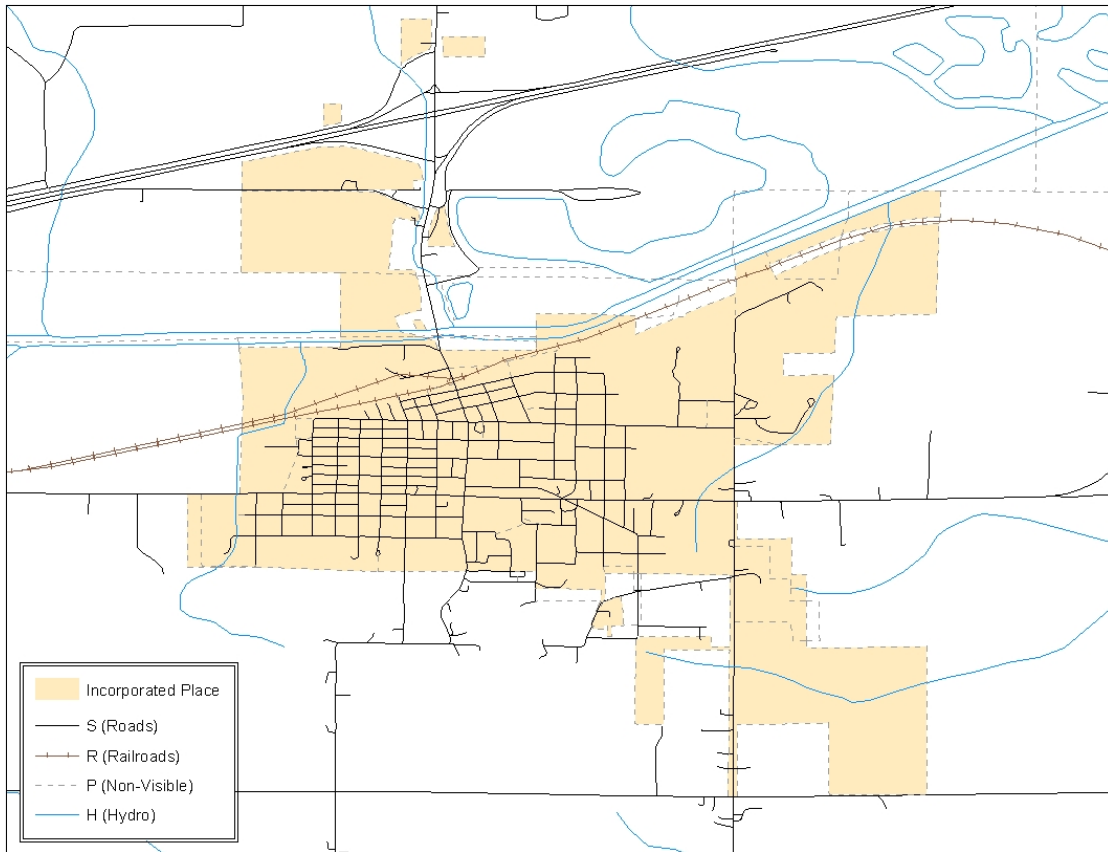
Table A5.2.1

Symbolizing geographic areas:

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

Note: If you are a county participant with many adjacent incorporated places you may want to use different colors to distinguish one place from another.

- ❑ Example A5.2.2 depicts how the incorporated place layer and the edges layer would look after they are symbolized as described above.



Example A5.2.2

3. Creating and Splitting Lines

Not all linear features that are needed to create change polygons will necessarily exist in the MAF/TIGER database. Therefore it will likely be necessary to create and split lines to form your changes. The existing and newly created linear features will be selected to form and create the boundary changes which will be submitted to the Census Bureau.



Creating new linear features

- ❑ *Table of Contents >> Selection*

Uncheck the incorporated place layer so that the only layer that can be selected while editing is the edges layer.

- ❑ Activate *Editor Toolbar >> Start Editing*
- ❑ *Task* should be set to Create New Feature and *Target* should be set to the edges layer (bas_2010_edges_<ssccc>.shp)
- ❑ *Editor >> Snapping...*

Vertex, Edge, and End should be checked for the edges layer. Using snapping will ensure that newly created lines will be coincident with linear features currently in MAF/TIGER.

- ❑ Create new linear features using the *Sketch* tool 
- ❑ On the Editor Toolbar select the *Attributes* button  and enter the code “P0001” into the MTFCC attribute field



An MTFCC must be added to each new linear feature so that it is displayed on the map if you have symbolized your linear features as suggested above. Use “P0001” as the default non-visible feature value. (Note: If you wish to submit linear feature changes it is best to create those in a separate process. It is not necessary to submit changes for non-visible boundaries to the Census Bureau.)

Reminder! Click *Editor >> Save Edits* often so that work is not lost.

Splitting linear features

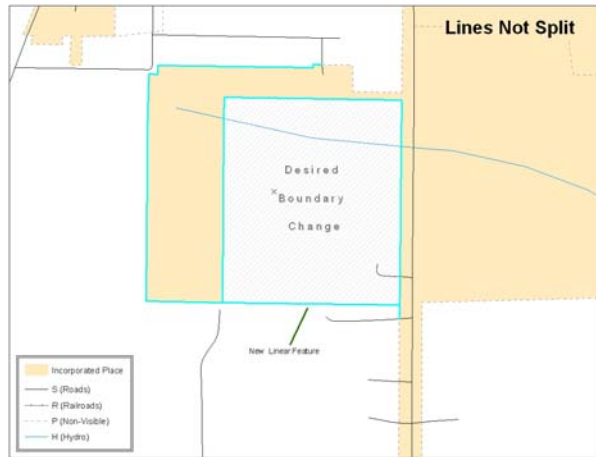
- ❑ Activate *Editor Toolbar >> Start Editing*

If you are continuing on from creating new linear features this step will have already been completed. Check to see that the *Task, Target, and Snapping* match what was selected above.

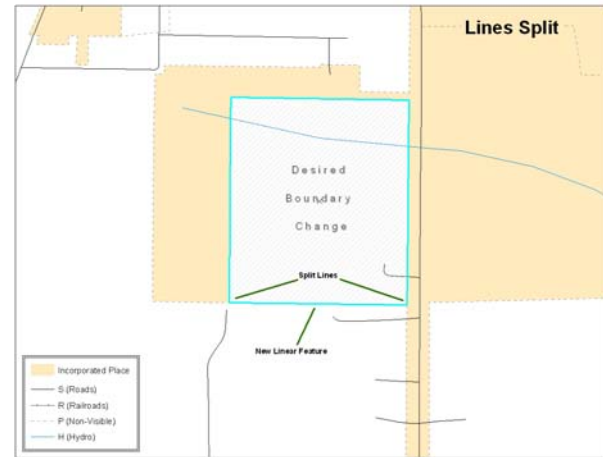
- ❑ Select a linear feature that needs to be split using the *Edit Tool*  on the Editor Toolbar
- ❑ Click the *Split Line* tool  after the line that should be split is selected. Click in the location where you wish to split the line.

Examples A5.3.1 and A5.3.2 display why it may be necessary to split lines when creating change polygons. In Example A5.3.1 the intended boundary change is indicated with grey hatching. However, you can see that when selecting lines to form the boundary change, additional linear features are selected. Example A5.3.2 shows where two existing MAF/TIGER linear features can be split to create the desired boundary change.

- ❑ Click *Editor >> Save Edits* after all linear feature updates have been made



Example A5.3.1



Example A5.3.2

4. Selecting Lines and Creating Change Polygons

After creating and splitting any necessary linear features, those features can be selected to form change polygons. Each change polygon must be created and coded separately. The steps below show how any type of boundary change polygon can be created.


Creating change polygons

- Activate the *Editor Toolbar >> Start Editing*

Verify that the edges layer is the only selectable layer in the *Table of Contents*

- Select the linear features that comprise the boundary of a change polygon (i.e. an annexation, deannexation, or incorrect area) using the *Edit Tool* by holding the *Shift* key while selecting each linear feature segment
- Activate the *Topology Toolbar*
- In the *Editor Toolbar* switch the *Target* from the edges layer to the incorporated place layer

In order to create change polygons using the linear features which have been selected the *Target* in the *Editor Toolbar* must be switched to the incorporated place layer. Then using the *Topology Toolbar* and the *Construct Features* tool, change polygons can easily be created.

- With all linear features that compose a single boundary change selected, click the *Construct Features*  tool on the *Topology Toolbar*
- Click *OK* on the *Construct Features* dialog box. The default *Cluster Tolerance* can be accepted

The polygon will become part of the incorporated place; however, it will not have any attribute values associated with it. Example A5.4.1 displays the selected linear features for the boundary change. In Example A5.4.2 you can see how the desired boundary change is created from the selected lines and the construct features tool.



Example A5.4.1

Example A5.4.2

The next section will describe how to appropriately attribute each boundary change.


5. 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. You may also elect to update the attributes for each change polygon after you have created all of your boundary changes. The following steps will explain how to correctly attribute each type of boundary change. The tables in section 5.3 in the guide indicate the attributes that are required for each type of boundary change.

Annexations

- ❑ *Table of Contents >> Selection*

Check the incorporated place layer. This will enable you to select the change polygons that you have created. The edges layer can remain checked, or unchecked, however you prefer.


- ❑ Using the *Edit Tool* button select the annexation polygon that you have created
- ❑ With the annexation polygon selected click the *Attributes*  tool on the *Editor Toolbar*
- ❑ When the Edit Attributes dialog box appears fill out the mandatory fields required for an annexation. These include: NAME, CHNG_TYPE, DOCU and EFF_DATE

The CHNG_TYPE for an annexation is 'A'

Deannexations

- ❑ *Table of Contents >> Selection*

Check the incorporated place layer. This will enable you to select the change polygons that you have created. The edges layer can remain checked, or unchecked, however you prefer.


- ❑ Using the *Edit Tool* button select the deannexation polygon that you have created
- ❑ With the deannexation polygon selected click the *Attributes*  tool on the *Editor Toolbar*
- ❑ When the Edit Attributes dialog box appears fill out the mandatory fields required for a deannexation. These include: NAME, CHNG_TYPE, DOCU and EFF_DATE

The CHNG_TYPE for a deannexation is 'D'

Boundary Corrections

- ❑ *Table of Contents >> Selection*

Check the incorporated place layer. This will enable you to select the change polygons that you have created. The edges layer can remain checked, or unchecked, however you prefer.


- ❑ Using the *Edit Tool* button select the boundary correction polygon that you have created
- ❑ With the boundary correction polygon selected click the *Attributes*  tool on the *Editor Toolbar*
- ❑ When the Edit Attributes dialog box appears fill out the mandatory fields required for a boundary correction. These include: NAME, CHNG_TYPE, and 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.

Geographic Corridors

- ❑ *Table of Contents >> Selection*

Check the incorporated place layer. This will enable you to select the change polygons that you have created. The edges layer can remain checked, or unchecked, however you prefer.

- ❑ Using the *Edit Tool* button select the geographic corridor polygon that you have created
- ❑ With the geographic corridor polygon selected click the *Attributes*  tool on the *Editor Toolbar*
- ❑ When the Edit Attributes dialog box appears fill out the mandatory fields required for a geographic corridor. These include: NAME, CHNG_TYPE, and RELATE

The CHNG_TYPE for a geographic corridor is ‘C.’ In the RELATE field enter the width of the corridor on each side of the centerline (Left Side, Right Side) (30, 30).

6. Exporting Change Polygons

After creating and coding the change polygons you will want to export them to a separate change polygon layer, which 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.

- ❑ Main Menu >> *Selection* >> *Select by Attributes*
- ❑ *Layer* should be set to the incorporated place layer (bas_2010_place_<ssccc>.shp).
- ❑ *Method* should be set to ‘Create a new selection’.
- ❑ In the *Select * From * Where* box an equation should be written so that each polygon with a change type is selected. Two equations are below:

“CHNG_TYPE” < > ‘ ’

The equation above would select all polygons that have any change type (i.e. all change polygons which you have created and coded).

“CHNG_TYPE” = ‘A’ OR “CHNG_TYPE” = ‘B’ OR... (etc.)

The equation above can be written to select each change type for polygons that were created and coded.

- ❑ Click *OK*

After clicking OK each change polygon that you created and coded should be highlighted on the map and in the attribute table. You may want to open the attribute table and sort to verify that all change polygons with a change type code were selected.

- ❑ Right click the incorporated place layer >> *Data* >> *Export Data...*
- ❑ *Export* should be set to ‘Selected features’
- ❑ Select ‘this layer’s source data’ as the coordinate system to export to

- Save the output shapefile to your desired location naming it according to the naming conventions found in Section 5.7.1. (i.e. bas<yy>_<basID>_changes_incplace).

Once you have exported your change polygon file you should review the file according to Section 5.6. After you have reviewed your file please ZIP together any change polygon, feature, and landmark layers, as well as a file with your contact information, and name the ZIP file according to the guidelines in Section 5.7.4 (i.e. bas<yy>_<basID>_return).

7. FTP the ZIP file to the Census Bureau

The ZIP file that you have created now should be FTP'ed to the Census Bureau. You will do this using the Census Bureau's 'Send A File' utility.

Using Internet Explorer navigate to <http://www2.census.gov/cgi-bin/basupload>

This is the 'Send A File' utility where you will submit your file to the Census Bureau.

- *Source Information (Local) >> File to Send: >> Browse...*

Browse to the location where your ZIP file is stored.

- *Notify by Email >> Census Bureau Employee's Email Address*

In the *Census Bureau Employee's Email Address* box please enter: geo.bas@census.gov. **Please also enter your email address in the *Sender's Email Address* box** so that we may notify you when we receive the file.

- Enter the *Verification Code* in the box provided at the bottom of the screen and click the *Upload* button after you confirm that everything on the page is correct.