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MEMORANDUM FOR The Distribution List

From: Arnold Jackson *[signed]*
Acting Chief, Decennial Management Division

Subject: 2010 Census Operational Assessment for Type of Enumeration Area Delineation

Attached is the 2010 Census Operational Assessment for Type of Enumeration Area Delineation Report. The Quality Process for the 2010 Census Test Evaluations, Experiments, and Assessments was applied to the methodology development and review process. The report is sound and appropriate for completeness and accuracy.

If you have questions about this report, please contact Carrie Johanson at (301)763-2986.

Attachment

2010 Census Operational Assessment for Type of Enumeration Area Delineation

U.S. Census Bureau standards and quality process procedures were applied throughout the creation of this report.

REVISED FINAL DRAFT

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United States Census Bureau

United States Census 2010

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Executive Summary

During the 2010 Type of Enumeration Area (TEA) Delineation, a TEA value was assigned to each 2010 Census collection block. The TEA value represents the type of enumeration and the geography where the Census Bureau conducts various field operations.

The 2010 TEA values are:

TEA 1 = Mailout/Mailback
TEA 2 = Update/Leave
TEA 3 = Remote Update Enumerate
TEA 4 = Remote Alaska
TEA 5 = Update Enumerate
TEA 6 = Military
TEA 7 = Urban Update/Leave
TEA 9 = Island Area List Enumerate

There were two phases to the 2010 TEA Delineation: Remote Area TEA Delineation and the Main TEA Delineation. The Remote Area TEA Delineation was conducted in Regional Offices starting September 5, 2006 and finishing September 28, 2006. TEA 3 and TEA 4 were the only TEAs delineated during this time.

The Main TEA Delineation was composed of a batch delineation, an interactive delineation, and a headquarters review of the 2010 TEAs. The other six TEAs were delineated during this time.

The batch portion of the Main TEA Delineation was performed by Geography Division on September 4, 2008. During this delineation, a TEA value was given to 2010 Census Bureau collection blocks based on pre-defined criteria. Many of the collection blocks were intentionally left blank, with a null TEA value.

The interactive portion of the Main TEA Delineation was performed in the Regional Census Centers starting September 16, 2008 and finishing December 31, 2008. The goal of the interactive delineation was to maximize Mailout/Mailback areas where practical, identify areas for TEA 5 and TEA 7, and smooth block TEA assignments into contiguous operational areas optimal for field operations.

A budget review was conducted on December 16, 2008. The Census Bureau determined that the proposed TEA areas fit within budget plans. The Field Division headquarters review of the TEA plans continued from January 2, 2009 through January 23, 2009. The Geography Division updated the Master Address File and Topologically Integrated Geographic Encoding and Referencing database with the final 2010 TEA Delineation results from January 30 through February 13, 2009.

2010 TEA Delineation Assessment Questions

Question 1: a. For each 2010 TEA, what was the number of housing units, blocks and the square mileage nationally? b. For each 2010 TEA, what was the number of housing units, blocks and the square mileage for each region? c. How do the 2010 TEAs compare with the Census 2000 TEAs?

The number of blocks and land area covered by each TEA was consistent throughout the 2010 Census. The housing unit tallies are reference counts available at the time of the 2010 TEA Delineation, and changed while conducting the 2010 Census.

In TEA 1 (Mailout/Mailback) there were 115,401,204 HUs in 4,910,269 collection blocks, covering 1,157,360.6 square miles. In TEA 2 (Update/Leave) there were 7,643,556 HUs in 1,185,430 collection blocks, covering 1,373,291.0 square miles. There were 7,043 HUs in 4,190 collection blocks, covering 36,339.0 square miles in TEA 3 (Remote Update Enumerate). In TEA 4 (Remote Alaska) there were 27,775 HUs in 12,796 collection blocks, covering 487,887.6 square miles. There were 1,283,940 HUs in 144,028 collection blocks, covering 185,309.2 square miles in TEA 5 (Update Enumerate). In TEA 6 (Military) there were 302,970 HUs in 50,726 collection blocks, covering 38,028.4 square miles. In TEA 7 (Urban Update/Leave) there were 2,424,387 HUs in 321,227 collection blocks, covering 253,717.9 square miles. There were 5,193 collection blocks, covering 602.2 square miles in TEA 9 (Island Area List Enumerate).

Every region had more housing units in TEA 1 than any other TEA. Among the twelve regions, the New York and Charlotte regions had the highest percentages of their total housing units in TEA 1 while the Denver and Kansas City regions had the lowest.

In Census 2000, 79.8 percent of addresses in the final census count (115,904,641 HUs) were in Mailout/Mailback areas, while 19.0 percent of the housing units were assigned to an Update/Leave or Urban Update/Leave TEA. The remaining 1.2 percent of the housing units was distributed among the Rural Update Enumerate, List/Enumerate, and Remote Alaska operations. In comparing the final 2010 Census results (available after completion of the 2010 Census) with Census 2000 data, we see an increase in the number of housing units in Mailout/Mailback (79.8 percent to 91.1 percent), a decrease in the share of housing units in the Update/Leave operation (19.0 percent to 7.9 percent), and a comparable percentage of stateside housing units in the remaining operations.

Question 2: a. What USPS source materials did the regional geography staff use for the interactive delineation? b. What USPS sources did the regional geography staff find most useful? c. What questions did the regional geography staff have about the meaning or accuracy of the USPS data?

The regional geography staff believed contacting local post offices directly was the best source of information provided by the United States Postal Service for use in the 2010 TEA Delineation. Data from national United States Postal Service sources were not always consistent with

information received from local post offices, and the accuracy of the local sources was deemed to be more accurate by the regional geographers.

Question 3: a. How did the regional geography staff use USPS source materials in conjunction with census bureau geography? b. How did the regional geography staff use other sources in conjunction with census bureau geography? c. What limitations did the regional geography staff find?

The United States Postal Service source materials contained data at the Zone Improvement Plan (ZIP) Code level. Most regional geography staffs used these in conjunction with the ZIP Code polygon layer as an overlay onto the 2010 Census geography in order to spatially discern information regarding delivery characteristics of each ZIP Code. Regional geography staffs used outside data in similar, spatially-comparative ways. Limitations included the non-correspondence between United States Postal Service and other external sources to 2010 Census collection geography, and the lack of granularity (not-fine-enough detail) of the ZIP Code-based United States Postal Service products.

Question 4: What sources did the regional geography staff use to identify areas of seasonally vacant housing units for inclusion in TEA 5?

The regional geography staffs used seasonally-vacant information contained in United States Postal Service files, information gathered from contacting local post offices, information from Census 2000 found in the 2010 Planning Database, the American Fact Finder; and local knowledge and previous experience.

Question 5: a. What additional source materials did the regional geography staff use for the interactive delineation? b. What additional tools or resources did the regional geography staff request from Census Bureau headquarters?

The regional geography staffs used additional source materials, and requested a number of additional tools from headquarters. Many of the resources used were local or internet resources. Many of the tools requested from Census Bureau headquarters were related to the United States Postal Service or were geographic in nature.

Question 6: What TEA tools did the regional geography staff find most useful for the interactive delineation, and which did they use the most?

The regional geography staffs identified the following as the most useful resources during the 2010 TEA Delineation: calling/contacting the local post offices, the USPS_UAA geodatabase table, United States Postal Service source files (Delivery Type File, Delivery Statistics File), the ZIP Code polygon shapefile, the 2010 Planning Database (online or table), and the batch delineation. Census Bureau headquarters staff made no attempt to determine a pattern among the regional geography staffs as to most useful, given their varied opinions.

Question 7: What questions or concerns did the regional geography staff raise about the guidance given by Census Bureau headquarters for the interactive delineation?

The majority of the regional geography staffs stated that they found the specific guidance for when to use the various TEAs adequate. The regional geography staffs identified a number of topics where additional training might be beneficial, particularly for staff new to the Census Bureau.

Question 8: a. What was the distribution of TEAs at each TEA review (batch and interactive delineation)? b. Compare and contrast the TEAs by number and percent of housing units, blocks, and land area at each review period, looking for any changes. c. How were the TEA areas clustered?

The number of housing units in Update Enumerate areas increased from 412,578 or 0.3 percent of the total stateside housing units in batch delineation to 1,283,940 or 1.0 percent after the interactive delineation. Housing units in Update/Leave areas increased from 8,140,457 or 6.4 percent to 10,067,943 or 7.9 percent, and Mailout/Mailback areas decreased to 91.0 percent (115,704,174) of the total housing units stateside from 93.2 percent (118,503,022) during the batch delineation. Similarly, the number of blocks and land area decreased in Mailout/Mailback areas and increased for Update/Leave and Update Enumerate areas from batch to interactive delineation.

The regional geography staff assigned a TEA value different from the batch delineation to 2,733,239 or 41.2 percent of the total 6,628,666 stateside blocks during the interactive delineation. Of these, staff shifted 713,747 blocks (or 10.8 percent of the total) from one TEA to another, and assigned a TEA value to 2,019,492 blocks (or 30.5 percent of the total) that were assigned a null value in batch delineation.

Stateside, there were 792 discrete, contiguous areas, or clusters of Mailout/Mailback, 3,554 clusters of Update/Leave, 521 clusters of Update Enumerate, 50 clusters of Remote Alaska, and 5 clusters of Remote Update Enumerate. Looking at the individual TEAs, the number of clusters decreased from batch to interactive by 99 percent, from 749,340 to 5,845.

Question 9: a. What changes in the distribution of city-style and noncity-style addresses were identified after each review? b. What changes in the distribution of Delivery Sequence File presence were identified after each review? c. What changes in the distribution of Address Characteristic Type codes were identified after each review?

Block level data of city-style and delivery sequence file characteristics at the time of the 2010 TEA Delineation were not maintained. Data from a later time period were provided for the analysis, making it more difficult to draw conclusions about the cause of changes.

Stateside, 96.7 percent of the housing units used were city-style and 90.6 percent of the housing units were on the Delivery Sequence File. During the batch delineation, 92.1 percent of the housing units were city-style and in TEA 1, and 87.8 percent of the housing units were on the delivery sequence file and assigned to TEA 1. After the interactive delineation, the percentage of both city-style and Delivery Sequence File housing units in TEA 1 decreased.

The batch delineation was based on block level Address Characteristic Type codes, which attempted to summarize the address characteristics within the block. There was a decrease of 389,938 blocks with Mailout/Mailback Address Characteristic Type codes in TEA 1 after the interactive delineation. Most (308,278) of the Mailout/Mailback blocks that shifted TEAs were delineated to TEA 2, while most (372,933) of the non-Mailout/Mailback blocks that shifted TEAs were delineated to TEA 1.

Question 10: What are the benefits to using a city-style based code as the basis for the batch delineation? What are the benefits to using a Delivery Sequence File based code as the basis for the batch delineation? Would changes to the Address Characteristic Type code or a different measure be recommended for the basis of the 2010 TEA Delineation? What were the benefits of using Address Characteristic Type codes in both the batch and interactive delineation? What were the benefits of using Address Characteristic Type codes in 2010 versus what was available in 2000 for the TEA Delineation?

From a national analysis, the percent city-style, Delivery Sequence File, or Address Characteristic Type codes did not appear to account for the changes made from batch to interactive delineation. The regional actions from additional research or smoothing had a much bigger effect.

When comparing the resources used for delineating TEAs in Census 2000 with those in 2010, Address Characteristic Type codes were very useful and better than 2000. However, they were complex and confusing, and took too long to understand given the short delineation window. Address Characteristic Type codes were limited by the high number of ungeocoded addresses in the Master Address File and the broad ranges representing percentages on the Delivery Sequence File. Use of Address Characteristic Type codes is not recommended as the base for the 2020 TEA delineation.

Although both city-style and Delivery Sequence File addresses are the most prevalent type of address in TEA 1, only a city-style address that is also on the Delivery Sequence File is confidently mailed to. A Delivery Sequence File based metric would be a better source for batch delineation if we could establish confidence in the Delivery Sequence File accuracy. An interactive delineation would still need to be completed. In addition, we recommend studying the feasibility of maintaining regional research of addressing or enumeration problems for use in future delineations.

Question 11: How did the total housing units for each TEA compare with the budget estimates? How did this affect planning for the 2010 Census? Was the 2010 TEA Delineation completed in time to meet operational needs?

The percentages of housing units in each TEA aligned very closely with expectations in the 2010 Census budget model. Many of the 2010 Census implementation teams would have preferred to have TEA results earlier in the planning cycle, but workload estimates seemed to be sufficient for most needs.

Question 12: How consistent were Local Census Office Type assumptions with the resulting TEA assignments?

For the 2010 Census there was no longer a direct correlation between TEAs in a Local Census Office and the Local Census Office Type, as there had been in Census 2000. We recommend the inclusion of TEAs in each Local Census Office Type be removed from the description to avoid confusion as to whether the TEA references were actual Census 2000 or anticipated 2010 values. If the Census Bureau continues to use Local Census Office Type in future budget modeling, we recommend it be renamed to productivity estimate or a similar title to more adequately reflect its use.

Conclusions and Recommendations

Every collection block in the country was assigned a TEA value for the 2010 Census.

The timing of the 2010 TEA Delineation after collection block delineation worked well for 2010 Census purposes and the assignment of TEA values to collection blocks is recommended for the future.

Continue to communicate operational assumptions and plan a review of operational workloads to determine the impact to the budget for the 2020 Census.

Recommendations are as follows:

- **Improve the communication of the goals and objectives of the TEA Delineation, particularly changes. This includes communication with regional directors.**
- **Consider continued consolidation of TEAs and eliminate Urban Update/Leave.**
- **Refine existing process for TEA Delineation or consider alternatives to the current approach of a batch and interactive TEA Delineation. Eliminate Address Characteristic Type codes as the basis for batch delineation and consider a batch delineation based on characteristics of the United States Postal Service Delivery Sequence File only.**
- **Minimize known ungeocoded addresses prior to the 2020 TEA delineation to maximize effectiveness of abatch delineation.**
- **Maintain historical knowledge of regional research of addressing or enumeration problems for use in future delineations.**
- **Monitor national United States Postal Service efforts and trends in mail delivery and receipt.**

1. Introduction

The 2010 Type of Enumeration Area (TEA) Delineation defined the enumeration methodology for every geographic area in the United States for the 2010 Census. Delineation of TEAs in advance of enumeration operations allows for optimal logistical planning. In areas with confirmed mail delivery by the United States Postal Service (USPS) and low rates of enumeration problems, Mailout/Mailback (MO/MB) is the most cost effective approach. In areas without confirmed mail delivery to the physical address of each housing unit (HU), other enumeration approaches are implemented. The nation is not grouped into natural or systematic areas by addressing and mail delivery, thus the 2010 TEA Delineation looks at multiple factors to identify the best TEA value for an area.

The objective of the 2010 TEA Delineation Assessment is to document the final totals, the distributions for all TEA values, and analyze all aspects of the 2010 TEA Delineation process. This assessment is limited to information available from the 2010 TEA Delineation effort itself and not intended to evaluate the effectiveness of the delineation or the impact on Census Bureau operations.

2. Background

For each decennial census, the type of enumeration methodology must be defined for every geographic area in the United States. During the 2010 TEA Delineation, a TEA value was assigned to each 2010 Census collection block. The TEA value defines the type of enumeration methodology and the field operations conducted within that geography. MO/MB is the most economical type of enumeration method when it results in successful questionnaire delivery, and the Census Bureau tried to optimize this approach. The Census Bureau conducts other field operations in areas where:

- the mailing address does not uniquely identify the location of a housing unit
- there is no postal service delivery directly to the housing unit
- special enumeration procedures are deemed to be most effective.

2.1 Census 2000 TEA Delineation

The Census 2000 TEA Delineation process was a much different process from the 2010 approach. For Census 2000, the TEAs were determined by combining different resources. A boundary called the “blue line” was used to distinguish between MO/MB blocks and other blocks. The boundary was constructed in 1997 based upon the 1990 Address Control File (ACF), a 1997 USPS Delivery Sequence File (DSF), and a Geographic Data Technology Zone Improvement Plan (ZIP) Code/1990 Census tabulation block correspondence file.

For the delineation process, Geography Division (GEO) sorted all census blocks by ZIP Code. Each 1990 tabulation block and all ACF addresses were associated with a ZIP Code. All blocks within ZIP Codes containing 90 percent or more city-style addresses on the DSF were placed inside the blue line and assigned a status code of 1. Those blocks in ZIP Codes with at least 50 percent, but less than 90 percent, noncity-style addresses were designated outside the blue line and assigned status code 2. Blocks in the remaining ZIP Codes were assigned status code 3 and required more research.

GEO used the ACF to reset the status code flags based upon the predominant type of address geocoded to each 1990 Census block. All census blocks that were Tape Address Register in the 1990 Census (TEA 1) or contained ACF addresses with one hundred percent city-style addresses were recoded to status code 1 (inside the blue line). All census blocks with ACF addresses with at least one rural route were assigned status code 2. If a block had no addresses on the ACF, then the block was given the status code of the ZIP Code it was within. About ten percent of all blocks required additional research.

After GEO processing, the Regional Census Centers (RCCs) were given a Geographic Information Systems (GIS) block level file that contained the coded information. The RCCs were instructed to adjust the blue line using their knowledge, the results of the 1993 and 1996 Address System Information Survey (ASIS), census data, local reference sources, the address in the ACF, calls to local post offices, and data from the ZIP Code characterization. The goal in delineating the blue line was to maximize MO/MB areas while minimizing under-coverage.

The 2000 TEA values were:

TEA 1 = Block Canvassing and Mailout/Mailback
TEA 2 = Address Listing and Update/Leave
TEA 3 = List/Enumerate
TEA 4 = Remote Alaska
TEA 5 = “Rural” Update Enumerate
TEA 6 = Military
TEA 7 = “Urban” Update/Leave
TEA 8 = “Urban” Update Enumerate
TEA 9 = Additions to Update/Leave Universe of Blocks

The TEA designation of 9 was an adjustment of the original 2000 TEA Delineation. Additional data showed that some areas originally assigned to TEA 1 actually had a low rate of city-style addresses or had known deliverability problems. These areas were reset and designated to use the Update/Leave (U/L) methodology, but a separate TEA value was used to track the cases for evaluations.

2.2 2008 Census Dress Rehearsal TEA Delineation

The objective of the 2008 Census Dress Rehearsal (DR) TEA Delineation process was to delineate all collection blocks in the DR sites into MO/MB, U/L, or Military TEAs. The

MO/MB, U/L, and Military areas were the only TEAs from Census 2000 used in the 2008 Census DR sites and these were the only types of enumeration that were included in the 2008 Census DR. The 2008 Census DR provided an opportunity to test the proposed approach to review area characteristics at a more detailed level than Census 2000. The delineation of TEAs occurred at the collection block level and took into consideration types of addresses in the block and percent of city-style addresses, as well as geographic clustering of the blocks and special enumeration issues. A block of 85 percent or more city-style addresses was assigned TEA 1 (MO/MB) in batch delineation. Those with less than 85 percent were assigned TEA 2 (U/L). All military installations were assigned TEA 6 (Military). The delineation process included a batch delineation performed by GEO using Address Characteristic Type (ACT) codes and an interactive delineation completed by the Field Division (FLD) Regional Offices (ROs). Both a batch and an interactive delineation were done before and after Address Canvassing, but the post-Address Canvassing batch and interactive delineations were for evaluation purposes and were not used in production.

The 2008 Census DR TEA Delineation assessed the differences in tabulations from before and after Address Canvassing and helped gauge the impact and importance of the post- Address Canvassing delineation. The findings from the 2008 Census DR TEA Delineation are documented in the following assessment report: *2008 Census Dress Rehearsal Type of Enumeration Area Delineation Assessment Final Report*.

2.3 2010 TEA Delineation Approach

Some of the main changes between the 2010 Census TEAs and the 2010 TEA Delineation process and those of Census 2000 include:

- No stateside List/Enumerate (L/E) operation was conducted. With a complete stateside Master Address File (MAF) created in Census 2000 and maintained inter-censally, the Census Bureau was able to use that available address information for the 2010 Census. L/E was only conducted in Island Areas for the 2010 Census.

- The timing of the TEA Delineation was changed. In Census 2000 the TEA Delineation was completed earlier in the decade, and TEA values were assigned to tabulation blocks. The transition to collection blocks made it difficult to determine what operations should be conducted in which areas. For the 2010 Census the TEA Delineation was conducted later in the decennial cycle, after the creation of collection blocks. One concern was the inability to complete the 2010 TEA Delineation prior to the requirement to identify Local Census Office (LCO) areas. The impact of this timing is explored in research question 11.

- Census 2000 recommendations were to maximize MO/MB areas for the 2010 Census. Early budget models estimated that the U/L universe could be reduced from 21 million housing units to seven million housing units. Most new housing developments in the United States employ city-style addressing. Some existing areas converted non-city style addresses to city-style addresses for ease of identification and location for emergency responders. When these conversions took place, the USPS sometimes converted and started delivery services to the

newly assigned city-style addresses. In some locations they did not. In the middle of the decade there was concern that the estimates of areas that could be included in MO/MB for the 2010 Census was too optimistic. In 2006 a business case was approved to change the 2010 Census budget plans to include ten million housing units stateside in U/L.

- In an effort to update the blue line (which was used to distinguish city-style and noncity-style addresses in Census 2000), GEO developed ACT codes at the block level. This was used as the basis for the 2010 TEA Delineation. Testing during the 2008 Census DR showed this to be an effective approach. See section 7 for 2010 TEA lessons learned and recommendations.

- In Census 2000 there were two separate listing operations, an Address List Operation was conducted in more rural or noncity-style areas, and a Block Canvassing operation in more urban or city-style areas. For the 2010 Census one combined listing operation was conducted and called Address Canvassing. Conducting only one listing operation minimized the distinction that had been created previously by the blue line. This approach influenced the 2007 decision to eliminate the Urban Update Enumerate (UUE) operation and remove TEA 8 as a valid TEA value for the 2010 Census. The decision to have just one U/L operation was not made until 2008, and TEA 7 was still used for Urban Update/Leave (UU/L). The UU/L designation and its definition have created confusion and are discussed further in this assessment.

- Although it was anticipated that a successful MO/MB could be conducted in many areas of Puerto Rico, a decision was made by the 2010 Decennial leadership to conduct Puerto Rico entirely as U/L. This was consistent with the approach for Census 2000.

- It was suggested that TEA areas be refined after Address Canvassing results were available, but prior to the mailout of census questionnaires in order to maximize MO/MB. This approach was tested in the 2008 Census DR. While effective, it was determined not to be feasible given the schedule constraints of the 2010 Census.

2.4 2010 TEA Descriptions

TEA 1 - Mailout/Mailback (MO/MB) is a method of data collection in which the USPS delivers addressed questionnaires to housing units, based on geographically coded addresses (usually city-style mailing addresses). Residents are asked to complete and return the questionnaires through the mail.

TEA 2 - Update/Leave (U/L) is a method of data collection in which enumerators canvass assignment areas to deliver a census questionnaire to each housing unit, and update census address and map information. Residents are asked to complete and return the questionnaires through the mail. U/L is conducted in areas that typically do not have city-style addresses to receive mail.

TEA 3 - Remote Update Enumerate (RUE) is a method of data collection used in rural areas requiring special travel and other arrangements. The enumerator updates census address and map information and enumerates the households.

TEA 4 - Remote Alaska (RA) is a method used to enumerate the most sparsely settled and isolated parts of Alaska, requiring special travel and other special arrangements. The enumerator updates census address and map information and enumerates the households.

TEA 5 - Update Enumerate (UE) is a method of data collection for communities with special enumeration needs. Enumerators canvass assignment areas to update address and map information and to enumerate the households.

TEA 6 – Military identifies areas that are part of military installations and is a distinction made for planning and evaluation purposes only. The enumeration methodology in this TEA is MO/MB.

TEA 7 - Urban Update/ Leave (UU/L) is a methodology that is used in areas with city-style addressing where the Census Bureau is not confident in accurate mail delivery. Enumerators canvass assignment areas to deliver a census questionnaire to each housing unit, and update census address and map information. The residents are asked to complete and return questionnaires by mail. The scope of UU/L includes areas with multi-unit buildings where the USPS delivers the mail to a drop point instead of individual unit designations and urban communities with city-style addresses where many residents pick up their mail at a post office box. [1]

TEA 8 – is not used for the 2010 Census.

TEA 9 – Island Area List/Enumerate (L/E) is a methodology that is used in American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and the U.S. Virgin Islands. During the Island Area L/E operation, field enumerators list the housing units, depict their spatial location on a map, and enumerate the households.

2.5 2010 TEA Delineation

There were two phases to the 2010 TEA Delineation: Remote Area TEA Delineation, and the Main TEA Delineation.

While the Remote Area TEA Delineation was conducted in the ROs, and the Main TEA Delineation was conducted in the RCCs, both efforts were conducted by regional geography staff. Most of the analysis is focused on the interactive Main TEA Delineation conducted in late 2008. The term 'region' is used within this assessment to refer to geographic areas within the 2010 RCC boundaries. Tables in the results section use the term RCC. Region is also used to refer to staff that worked in RCCs.

[1] Areas affected by hurricanes Katrina, Rita and Ike were included in TEA 7.

2.5.1 Remote Area TEA Delineation

The Remote Area TEA Delineation was conducted in the ROs between September 5, 2006 and September 28, 2006. Only TEA 3 and TEA 4 were defined during this time. The Remote Area TEAs were not included in the Local Update of Census Addresses (LUCA) program, and processing deadlines for this program provided the timeframe for identifying governmental units with areas in TEAs 3 or 4.

Training was provided via a memo, a teleconference, and a training session held at the Chicago RO August 31, 2006. Every RO was invited to participate in the Remote Area TEA Delineation, even though it was expected that only ROs with L/E or RA operations in Census 2000 would identify areas in TEA 3 or 4. Boston, Seattle, Dallas, Denver, and Los Angeles were the ROs with areas in L/E or RA for Census 2000. For the 2010 Census, the extent of the Remote Area TEA Delineation decreased even further. Only Seattle and Boston conducted remote operations and completed the technical work for the Remote Area TEA Delineation.

The Remote Area TEA Delineation was entirely interactive. The regional geography staff was instructed to use the Geographic Area Analysis and Delineation Software (GAADS) to select candidate areas at the tabulation block level.[2] They were given guidance to use easily identifiable, preferably visible features for the outer boundaries of these areas. These outer boundaries were maintained in the 2010 Census collection block delineation. Results of the Remote Area TEA Delineation were submitted via GAADS.

2.5.2 Main TEA Delineation

The Main TEA Delineation was composed of batch delineation, interactive delineation and a headquarters review of the 2010 TEAs.

The 2008 Census DR was used to test the 2010 TEA Delineation plans. The approach was successful, and the scope was expanded to include the whole country and additional TEAs. Members from Decennial Management Division (DMD) and FLD responsible for each operation took a lead in determining TEA criteria.

Table 2.5.2.1 provides an overview of the criteria used for the batch delineation and the guidance given for interactive delineation for each of the TEAs that were able to be modified during the interactive delineation.

[2] The Remote Area TEA Delineation was conducted using 2006 Current Tabulation Blocks, based on the 2006 Geographic Update System to Support Intercensal Estimates Benchmark

Table 2.5.2.1: Main TEA Delineation Overview

	Batch Delineation Assignment	Interactive Delineation Guidance
TEA 1 (MO/MB)	Blocks with ≥ 85% city-style address and some DSF	Maximize this TEA to the extent practical. Smooth into areas practical for field operations
TEA 2 (U/L)	Puerto Rico, and blocks not assigned another TEA (<85% city-style or no DSF)	Smooth into areas practical for field operations.
TEA 5 (UE)	All federally recognized American Indian Reservations	Add colonias[3], areas with high numbers of seasonally vacant housing units, and other difficult to enumerate areas.
TEA 6 (Military)	All Military reservations, except areas in PR.	No change
TEA 7 (UU/L)	No blocks assigned TEA 7	Add Katrina/Rita/Ike areas, and city-style addressing with no mail delivery to individual HUs.
Null	Zero HU blocks	Incorporate into TEA 1 (MO/MB) or surrounding TEA

2.5.2.1 Batch Delineation

The batch portion of the Main TEA Delineation was performed by GEO on September 4, 2008. During this delineation a TEA value was assigned to 2010 Census collection blocks based on pre-defined criteria.

TEA 3 and TEA 4 areas identified in the Remote Area TEA Delineation were excluded from the Main TEA Delineation. TEA 9 was only assigned during the batch delineation.

All of Puerto Rico was assigned TEA 2 during the batch delineation. All federally recognized American Indian Reservations were assigned TEA 5 during the batch delineation. All stateside Military installations were assigned TEA 6 (this excludes Puerto Rico military areas, which remained TEA 2). Any blocks meeting the criteria for TEA 5 or TEA 6 were not eligible for any other TEA value during the batch delineation. No blocks were assigned TEA 7 during the batch delineation.

ACT codes were used to assign the remaining TEA values. A description of these ACT codes can be found in Appendix A.

Blocks where the ACT code indicated 85 percent or more city-style addressing, and some DSF (C2, C3, MA, MB, MC and M3) were assigned TEA 1 during batch delineation.

[3] A colonia is an area without community infrastructure and utilities, generally along the border with Mexico.

An ACT code of B1, B2, B3, or Z0, indicated there were no residential housing units in the block, and the block was not assigned a TEA value during the batch delineation, and was left as a null value. The purpose was so that these blocks could be easily identified and added to surrounding TEAs.

The remaining blocks were designated TEA 2 and represented blocks with less than 85 percent city-style addressing.

2.5.2.2 Interactive Delineation

Procedures and guidelines for the interactive portion of the Main TEA Delineation were developed by the TEA team. Procedures and training for the interactive delineation were developed by FLD Geographic Support Branch (GSB). See *Geographic Support Program (GSP) Memorandum No. 08-39*. The internet and conference calls were used to train the staff. NetMeeting (a multi-user software application to perform video and audio conferencing) was used for training on September 8, 2008.

The primary portion of the interactive delineation was conducted in the RCCs between September 16, 2008 and December 31, 2008.

TEAs within an LCO were to include a sufficient number of housing units in order to make an operation efficient and cost-effective. The interactive delineation focused on maximizing areas where we anticipated successful mail delivery to a city-style address and minimizing areas with more costly enumeration methods. The purpose was to identify areas for TEA 5 and TEA 7, and smooth MO/MB and U/L areas. See Appendix I for highlights of the guidance given regarding each of the TEAs.

Goals for conducting the interactive delineation were provided to the regional geography staffs as follows:

- Maximize MO/MB areas and reduce the amount of U/L from Census 2000.
- Identify hard to enumerate areas, (such as American Indian Reservations and seasonally-vacant areas), and include them in the UE operation.
- Identify communities that have city-style addresses which are not used for mail delivery for UU/L.
- Balance cost-effectiveness of enumeration with management of field operations.

Procedures and training included:

- overall guidance for the interactive delineation
- a description of each TEA and characteristics of the batch delineation
- what action should be taken in the interactive delineation
- any special considerations or guidance for the TEA
- use of the GAADS software
- the relevant tools to aid the interactive delineation

- technical details about the currency of sources and how to conduct the interactive delineation
- target assignment area and crew leader sizes for operations
- 2010 budgeted number of HUs and associated percentages
- information about the impact and consequences of the TEA assignments
- reporting tools

Datasets provided for use in the interactive delineation included the 2010 Census Planning Database (with Census 2000 information at the tract level, including vacancy rates and Hard to Count scores), percentages of mail returned as undeliverable from the American Community Survey (ACS) by ZIP Code, data from the USPS on seasonal delivery areas by ZIP Code, ZIP Codes with no street area delivery, and a ZIP Code area file. Headquarters encouraged regional geography staff to obtain and use other sources, such as imagery, consultation with experienced field staff, use of local resources and direct communications with local post offices.

GAADS was the software used to perform the interactive delineation. This software included built-in edits to detect problems within the delineation, such as TEA clusters not meeting minimum suggested HU requirements.

FLD reviewed and resolved any problems prior to submitting their proposed TEA plans. Once the RCCs completed the interactive component, FLD headquarters staff reviewed the TEA plans. If there were any problems, FLD headquarters contacted the appropriate RCC to provide a resolution.

2.5.2.3 Headquarters Review of the 2010 TEA Delineation

DMD and FLD budget staffs conducted a budget review on December 16, 2008. It was determined that the proposed TEA areas fit within budget plans.

FLD reviewed the detailed TEA delineation, and worked with regional geography to make any necessary final refinements.

FLD RCC geography staff finalized and submitted the 2010 TEA Delineation to GEO via GAADS.

GEO updated the MAF/Topologically Integrated Geographic Encoding and Referencing (TIGER) database (MTdb) with the final 2010 TEA Delineations in February 2009.

2.6 Use of TEAs in Conducting the 2010 Census

A specific combination of operations was conducted within each enumeration area as part of the 2010 Census. Some operations are conducted in most TEAs, whereas other operations are conducted in designated TEAs only. The 2010 TEA Delineation provided the framework for conducting the 2010 Census.

Table 2.6.1 provides a matrix of what field operations were conducted in each TEA. For example, the Address Canvassing field operation was not conducted in TEA 3 or 4, but was in TEAs 1, 2, 5, 6, and 7.

Table 2.6.1: 2010 Census Operations Conducted in Each TEA

	TEA 1	TEA 2	TEA 3	TEA 4	TEA 5	TEA 6	TEA 7
	MO/MB	U/L	RUE	RA	UE	Military	UU/L
Address Canvassing	Yes	Yes	No	No	Yes	Yes	Yes
Group Quarters Validation	Yes	Yes	No	No	Yes	Yes	Yes
Remote Alaska	No	No	No	Yes	No	No†	No
Update/Leave	No	Yes	No	No	No	No†	Yes
Mailout/Mailback	Yes	No	No	No	No	Yes	No
Enumeration at Transitory Locations	Yes	Yes	No*	No*	Yes	Yes	Yes
Update Enumerate	No	No	Yes	No	Yes	No†	No
Service-Based Enumeration	Yes	Yes	No*	No*	Yes	Yes	Yes
Group Quarters Enumeration	Yes	Yes	Yes*	Yes*	Yes	Yes	Yes
Nonresponse Followup and Vacant Delete Check	Yes	Yes	No	No	No	Yes	Yes
Field Verification	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Census Coverage Measurement	Yes	Yes	No	No	Yes	Yes	Yes

* Enumerated by Team Leader as needed at time of the core operation.
† TEA 6 did not exist in these operations, but any areas under military ownership were enumerated as part of the core operation.

2.7 Management of the 2010 TEA Delineation

The TEA team consisted of headquarters staff from DMD, FLD, GEO, Decennial Statistical Studies Division (DSSD), and Decennial System & Contract Management Office (DSCMO).

There were no operational changes implemented during the operation.

2.7.1 Budget

Staffing was the only expense budgeted for the 2010 TEA Delineation. There were Geographic Coordinators, Geographers, and Geographic Specialists in the ROs and RCCs to support the 2010 TEA Delineation. Staff from DMD, GEO, DSSD, and FLD headquarters participated in the planning and development, and monitoring of the 2010 TEA Delineation. Salaries for the regional geography staff were charged to the RCC Geographic Programs project. Since other work was also charged to this project, direct costs are not available.

In 2011 the ROs estimated the number of staff and hours that were spent on the 2010 TEA Delineation. They reported 109 geographic coordinators, geographers, and geographic specialists worked on the 2010 TEA Delineation, totaling about 24,220 hours. Direct costs of $4 million are estimated based on the amount charged to the RCC-Geographic Program from September through December 2008. Some work during that time may not have been work

directly to the TEA delineation, but there may have also been some work on the TEA delineation outside that time period. Staffing and costs were within the plan.

The 2010 Decennial Cost Model included estimated costs for each of the major 2010 Census operations. This cost model included a projected HU count and operational costs. See Question 11 for results on how closely the 2010 TEA Delineation results matched the budget.

2.7.2 Schedule Development

The 2010 TEA Delineation schedule development was accomplished through a series of TEA team meetings over a period of several months and included the addition of activities and the modification of existing activity lines. This was a coordinated effort with members from DMD, GEO, DSSD, and FLD responsible for specific tasks covering the scope of the operation. The TEA team reviewed the activity linkages (predecessors/successors), logic/relationships (e.g., Start to Start, Finish to Finish), and activity durations. The team returned the modified schedule to the DMD Management Information Systems (MIS) staff for analysis.

The baselining process began when the detailed integrated schedule was considered final by the Geographic Programs Operational Integration Team (GP OIT) and the MAF/TIGER Integrated System Team and was sent to the Census Integration Group (CIG). Once CIG accepted the schedule, the DMD MIS staff baselined a final version of the 2010 Census schedule. The initial baseline of the 2010 Census schedule occurred on May 22, 2008. A global change request containing changes for all operations was submitted in December 2008. See Appendix K for the 2010 TEA Delineation Schedule.

2.7.3 Risk Mitigation Planning

As part of the GP OIT, the TEA team developed a risk register to identify and manage risks associated with the 2010 TEA Delineation. The team assigned each risk a probability rating and an impact rating, each as low, medium, or high. The team also devised a mitigation plan and a contingency plan for each risk. The risk register was reviewed and updated regularly. The risk register was managed and reported in conjunction with risks from other GP OIT risks. See Appendix J for the 2010 TEA Delineation Risk Register.

Two risks were assessed with a high rating. The first was that the RCC staff may not follow a consistent approach to delineating TEAs and this was assessed with a high probability rating. Although training and procedures may be put in place, in many cases the proper action to take might not be obvious, or may be superseded by specific regional needs. For instance, when performing the interactive smoothing of MO/MB and U/L areas, is it better to include a block within MO/MB and make initial contact during Nonresponse Followup, or put the block within U/L? The mitigation strategies were to:

- Provide consistent training for the RCCs, where they can all participate at the same time.
- Provide training materials with clear procedures.

- Require the RCCs to provide the rationale for their TEA plans, which will then be reviewed by Census Bureau headquarters staff as a Quality Control measure prior to insertion.

The second high risk rating was the recommended 2010 TEA Delineation may result in operational workloads that impact the budget. It was expected the 2010 TEA Delineation will not match budgeted workloads exactly and that small workload differences can likely be absorbed without major budget implications. The mitigation strategies were to monitor the progression of the 2010 TEA Delineation during the interactive delineation and watch for excessive changes from the batch delineation. In addition, large differences in the recommended 2010 TEA Delineation could require Census Bureau management input for either refining the 2010 TEA Delineation or acquiring additional funding.

2.7.4 Software Development

The GAADS created by GEO facilitated the analysis and delineation of the 2010 Census collection geography areas. During the interactive delineation, there was a series of data integrity validations. Both the batch and the interactive processes occurred within a geodatabase created specifically for the GAADS application. The regional geography staff conducted the interactive delineation process for these entities after GEO completed the batch process. The interactive delineation stage was necessary because in many cases the batch process created entities that were not optimal for field operations. This software was developed to give the regional geography staff the necessary tools to assess and edit the entities in order to best fit their operational needs.

Progress reports were not available through GAADS. Narratives were produced by each of the regional geography staffs and reported to FLD GSB to monitor progress.

2.7.5 Workloads and Workflow

See Appendix H for the 2010 TEA Delineation workflow, which identifies schedule line items and the handoffs between divisions. The actual workload was the same as planned, a TEA assignment for 6,672,090 collection blocks in the United States, including Puerto Rico and the Island Areas. Each region was responsible for assigning a TEA value to each 2010 Census collection block within LCOs assigned to their region. GEO assigned TEA 9 to Island Areas.

3. Methodology

3.1 Questions to be answered

The 2010 TEA Delineation Assessment Study Plan established the questions to be answered in this assessment. They are as follows.

1. a. For each TEA, what was the number of housing units, blocks and the square mileage nationally? b. For each TEA, what was the number of housing units, blocks and the square mileage for each region? c. How do the 2010 TEAs compare with the Census 2000 TEAs?

2. a. What USPS source materials did the regional geography staff use for the interactive delineation? b. What USPS sources did the regional geography staff find most useful? c. What questions did the regional geography staff have about the meaning or accuracy of the USPS data?

3. a. How did the regional geography staff use USPS source materials in conjunction with Census Bureau geography? b. How did the regional geography staff use other sources in conjunction with Census Bureau geography? c. What limitations did the regional geography staff find?

4. What sources did the regional geography staff use to identify areas of seasonally vacant housing units for inclusion in TEA 5?

5. a. What additional source materials did the regional geography staff use for the interactive delineation? b. What additional tools or resources did the regional geography staff request from Census Bureau headquarters?

6. What TEA tools did the regional geography staff find most useful for the interactive delineation, and which did they use the most?

7. What questions or concerns did the regional geography staff raise about the guidance given by Census Bureau headquarters for the interactive delineation?

8. What was the distribution of TEAs at each TEA review (batch and interactive delineation)? b. Compare and contrast the TEAs by number and percent of housing units, blocks, and land area at each review period, looking for any changes. c. How were the TEA areas clustered?

9. a. What changes in the distribution of city-style and noncity-style addresses were identified after each review? b. What changes in the distribution of DSF presence were identified after each review? c. What changes in the distribution of ACT codes were identified after each review?

10. What are the benefits to using a city-style based code as the basis for the batch delineation? What are the benefits to using a DSF based code as the basis for the batch delineation? Would changes to the ACT code or a different measure be recommended for the basis of the 2010 TEA Delineation? What were the benefits of using ACT codes in both the batch and interactive delineation? What were the benefits of using ACT codes in 2010 versus what was available in 2000 for the TEA Delineation?

11. How did the total housing units for each TEA compare with the budget estimates? How did this affect planning for the 2010 Census? Was the 2010 TEA Delineation completed in time to meet operational needs?

12. How consistent were Local Census Office type assumptions with the resulting TEA assignments?

3.2 Methods

2010 Census collection blocks are the vintage of all the block references in this assessment.

The 2010 TEA Delineation Assessment Data provided by GEO was used to answer assessment Questions 1, 8, and 9. The original data delivery to DSSD included HU counts, block counts, and land area totals at the national, county, and block levels for the batch and interactive delineation TEAs at the time of the delineation. The HU counts were consistent with the data used to produce the batch delineation, and was based off a February 2008 extract using the ACS filter. Nonresidential addresses were used in creating ACT codes, but were not provided in HU tallies. Ungeocoded address were not included in the counts. These files were used to answer assessment Questions 1 and 8. GEO provided the maps included in question 1 and the cluster tallies and screen shots for question 8. In a subsequent delivery, a file containing tallies at the block level of city-style and noncity-style addresses, along with addresses on and not on the DSF was delivered to DSSD. These tallies were based upon the next DSF refresh after the delineation took place, in March 2009. The file was used to answer assessment Question 9. When the file was initially delivered, the no DSF and noncity-style address tallies were not equivalent. This was because incomplete addresses, in addition to addresses with merely a location description were not included in the DSF refresh delivery. Thus, these incomplete and location description only addresses were allocated to the "not present on DSF" category for Question 9.

Block level tallies for city-style addresses in the assessment data were defined by GEO as having a house number and a street name, or a building name and either a within structure descriptor or within structure identifier. A city and ZIP Code were also required. If an address did not meet one of these criteria, it was considered to be noncity-style.

Block level tallies for address records considered to be on the DSF include those records that were flagged on the MAF as *ever* being included in a DSF delivery. In addition to records with incomplete address information and addresses with merely location descriptions, address records that were *never* flagged on the MAF as being included in a DSF delivery were considered to be not on the DSF.

The Universe Control and Management (UCM) Operations Table was used to identify the final 2010 HU counts shown in Tables 5.1.8 and 5.1.9. Only valid HUs, whether they were vacant or occupied, were considered in the Final Census tallies.

FLD debriefings of regional geographic staff who conducted the interactive delineation were the primary source of information for questions 2, 3, 4, 5, 6, and 10. Data for Question 11 were obtained from the DMD budget staff, and data for Question 12 were obtained from DMD.

Lessons learned were compiled upon review of the analysis from this assessment and debriefings of team members.

4. Limitations

This assessment is limited to information available from the 2010 TEA Delineation effort itself, and it is not intended to evaluate the various operations as they were impacted by the 2010 TEA Delineation.

All of the RCCs were provided with the same training, materials, and procedures from Census Bureau headquarters to conduct the interactive delineation; however, RCCs may not have used the same approach when conducting the interactive delineation. Although training and procedures were utilized, in many cases the "proper" action to take might not have been obvious or may have been superseded by specific regional needs. The RCCs were required to maintain documentation of their rationale for their 2010 TEA plans, which were then reviewed as needed by Census Bureau headquarters staff as a quality control measure prior to insertion.

Data containing HU tallies of city-style and noncity-style addresses, along with tallies of addresses on and not on the DSF, at the block level was not available from the same timeframe as HU counts provided for use in the 2010 TEA Delineation. The city-style/noncity-style and DSF/no DSF tallies were based upon the next DSF refresh in March 2009 after the delineation took place, and were used, for the purpose of this assessment, to approximate conditions at the time of the 2010 TEA Delineation. The analyses in Sections 5.8 and 5.9 were limited by the inability to clearly determine if differences were caused by the 2010 TEA Delineation effort or the changes over time reflected by the available data.

The number of HUs in Puerto Rico at the time of the 2010 TEA Delineation was not reflected accurately in the 2010 TEA Assessment data file. Since there were no changes to TEAs in Puerto Rico during the interactive delineation, Puerto Rico results were excluded from the results for Questions 2 through 11. Similarly, there was no change in TEA 9 during the 2010 TEA Delineation, and Island Areas results are limited to question 1.

5. Results

The purpose of the 2010 TEA Delineation Assessment is to evaluate the delineation process in order to improve its effectiveness for future operations. In this section we will ask each question, provide the results, and summarize the response.

5.1 a. For each 2010 TEA, what was the number of housing units, blocks and the square mileage nationally? b. For each 2010 TEA, what was the number of housing units, blocks and the square mileage for each region? c. How do the 2010 TEAs compare with the Census 2000 TEAs?

a. For each 2010 TEA, what was the number of housing units, blocks and the square mileage nationally?

Every 2010 Census collection block was assigned a 2010 TEA value during the 2010 TEA Delineation. Table 5.1.1 shows the distribution of the Island Area TEA at the time of the 2010 TEA Delineation.

Table 5.1.1: 2010 TEA Delineation Results for Island Areas

TEA	No. of Blocks	Square Mileage
9	5,193	602.2

Source: 2010 TEA Delineation Assessment Data provided by GEO

Island Areas in American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and the U.S. Virgin Islands were assigned as TEA 9 during the batch delineation. Interactive delineation was not conducted in Island areas and data about TEA 9 are limited to this question only. There were 5,193 blocks and 602.2 square miles in the Island Areas. Addresses for these areas were not maintained in the MAF, so HU estimates are not available.

Table 5.1.2 shows the 2010 TEA Delineation results for Puerto Rico.

Table 5.1.2: 2010 TEA Delineation Results for Puerto Rico

TEA	No. of Blocks	Square Mileage
2	38,231	3,423.7

Source: 2010 TEA Delineation Assessment Data provided by GEO

All enumeration in Puerto Rico (including Military) was conducted as U/L (TEA 2). Puerto Rico was assigned TEA 2 during the batch delineation, and no TEA changes were made during the interactive delineation.

There were 38,231 blocks and 3,423.7 square miles in Puerto Rico at the time of the 2010 TEA Delineation. While there were HUs maintained in the MAF for Puerto Rico, the number of HUs at the time of the 2010 TEA Delineation was not available. Since there were no changes to TEAs during the interactive delineation in Puerto Rico, data for Puerto Rico are excluded from questions 2 through 11.

Table 5.1.3 provides the stateside results for the 2010 TEA Delineation, including the number of HUs, collection blocks, and the square mileage of land area grouped by TEA. The HUs used were the counts available at the time of the 2010 TEA Delineation. The number of HUs has subsequently changed as a result of updates acquired during the 2010 Census.

Table 5.1.3: Stateside 2010 TEA Delineation Results

TEA	No. of HUs	%	No. of Blocks	%	Square Mileage	%
1	115,401,204	90.8	4,910,269	74.1	1,157,360.6	32.8
2	7,643,556	6.0	1,185,430	17.9	1,373,291.0	38.9
3	7,043	0.0	4,190	0.1	36,339.0	1.0
4	27,775	0.0	12,796	0.2	487,887.6	13.8
5	1,283,940	1.0	144,028	2.2	185,309.2	5.2
6	302,970	0.2	50,726	0.8	38,028.4	1.1
7	2,424,387	1.9	321,227	4.8	253,717.9	7.2
Total	**127,090,875**	**100.0**	**6,628,666**	**100.0**	**3,531,933.8**	**100.0**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Some percentage totals do not equal 100.0 due to rounding
Note: Square mileage is land area only

Most stateside blocks (74.1 percent) and HUs (90.8 percent) were in TEA 1. Enumeration in TEA 1 and TEA 6 was conducted using the MO/MB enumeration methodology. For the 2010 Census, the UU/L and the U/L operations were combined into one U/L operation that encompassed both TEA 2 and TEA 7. Viewing the TEAs by the 2010 Census operations may be useful in understanding the operational impact of the 2010 TEA Delineation.

Table 5.1.4 presents the number and percent of HUs, blocks, and area by major Census Operation.

Table 5.1.4: Stateside 2010 TEA Delineation Results by Operation

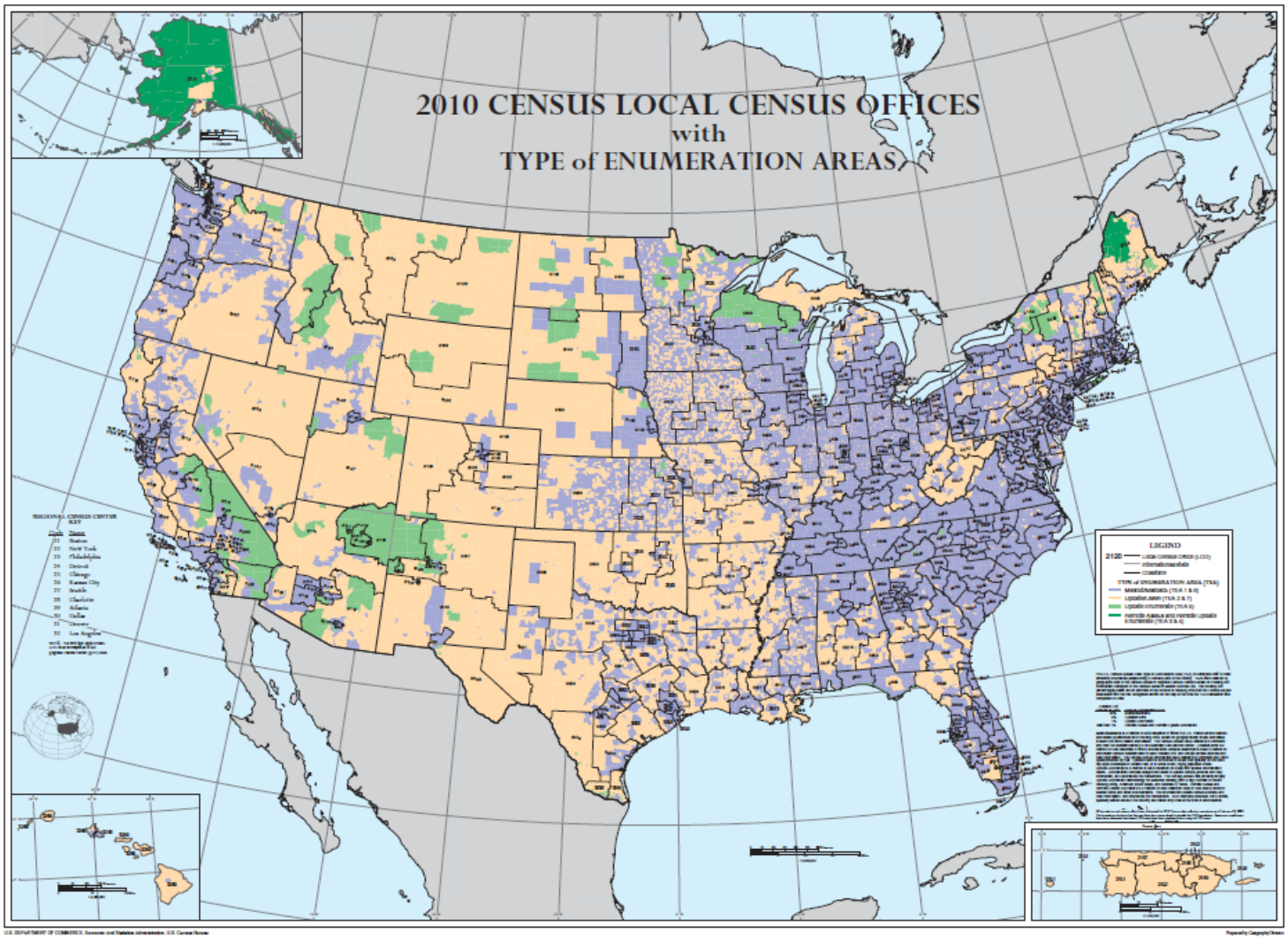
Operation	No. of HUs	%	No. of Blocks	%	Square Mileage	%
Mailout/Mailback (TEA 1 and TEA 6)	115,704,174	91.0	4,960,995	74.8	1,195,389.0	33.8
Update/Leave (TEA 2 and TEA 7)	10,067,943	7.9	1,506,657	22.7	1,627,008.9	46.1
Update Enumerate (TEA 5)	1,283,940	1.0	144,028	2.2	185,309.2	5.2
Remote Update Enumerate (TEA 3)	7,043	0.0	4,190	0.1	36,339.0	1.0
Remote Alaska (TEA 4)	27,775	0.0	12,796	0.2	487,887.6	13.8
Total	**127,090,875**	**100.0**	**6,628,666**	**100.0**	**3,531,933.8**	**100.0**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Some percentage totals do not equal 100.0 due to rounding
Note: Square mileage is land area only

At the time of the final 2010 TEA Delineation, 91.0 percent of the total HUs, in 74.8 percent of the stateside blocks, was in MO/MB areas. U/L areas had 7.9 percent of the total HUs in 22.7 percent of the stateside blocks. Stateside, UE, RUE and RA areas comprised over 1.0 percent of the HUs.

See Figure 5.1.1 for the 2010 Census TEA Map.

Figure 5.1.1: 2010 Census National TEA Map



MO/MB areas (TEA 1 and 6) are designated in purple. U/L areas are designated in beige, and encompass TEAs 2 and 7. Light green indicates the UE areas (TEA 5), and Remote Areas are in dark green (TEA 3 and 4).

b. For each 2010 TEA, what was the number of housing units, blocks and the square mileage for each region?

Table 5.1.5 presents the distribution of stateside HUs for the 2010 TEA Delineation grouped by RCC. The number of HUs in each TEA increased as the 2010 Census progressed.

Table 5.1.5: 2010 TEA Delineation Stateside HU Counts and Percentages by RCC

	No. of HUs							
RCC	**TEA 1**	**TEA 2**	**TEA 3**	**TEA 4**	**TEA 5**	**TEA 6**	**TEA 7**	**Total**
Atlanta	13,276,912	25,854	0	0	160,558	31,331	568,826	14,063,481
%	94.4	0.2	0.0	0.0	1.1	0.2	4.0	100.0
Boston	8,657,966	763,483	2,941	0	181,948	10,479	2,079	9,618,896
%	90.0	7.9	0.0	0.0	1.9	0.1	0.0	100.0
Charlotte	13,658,330	90,110	0	0	86,848	54,315	105,253	13,994,856
%	97.6	0.6	0.0	0.0	0.6	0.4	0.8	100.0
Chicago	10,076,665	356,116	0	0	209,666	4,248	38,183	10,684,878
%	94.3	3.3	0.0	0.0	2.0	0.0	0.4	100.0
Dallas	10,541,614	166,945	0	0	117,779	40,824	1,697,539	12,564,701
%	83.9	1.3	0.0	0.0	0.9	0.3	13.5	100.0
Denver	7,629,775	1,707,013	0	0	222,754	38,385	0	9,597,927
%	79.5	17.8	0.0	0.0	2.3	0.4	0.0	100.0
Detroit	9,612,071	880,088	0	0	0	4,039	0	10,496,198
%	91.6	8.4	0.0	0.0	0.0	0.0	0.0	100.0
Kansas City	7,872,991	2,533,375	0	0	58,042	18,311	0	10,482,719
%	75.1	24.2	0.0	0.0	0.6	0.2	0.0	100.0
Los Angeles	8,462,815	219,975	0	0	104,858	48,692	7,824	8,844,164
%	95.7	2.5	0.0	0.0	1.2	0.6	0.1	100.0
New York	6,860,451	0	0	0	91,512	779	4,683	6,957,425
%	98.6	0.0	0.0	0.0	1.3	0.0	0.1	100.0
Philadelphia	9,575,741	399,687	0	0	0	22,702	0	9,998,130
%	95.8	4.0	0.0	0.0	0.0	0.2	0.0	100.0
Seattle	9,175,873	500,910	4,102	27,775	49,975	28,865	0	9,787,500
%	93.8	5.1	0.0	0.3	0.5	0.3	0.0	100.0
Total	**115,401,204**	**7,643,556**	**7,043**	**27,775**	**1,283,940**	**302,970**	**2,424,387**	**127,090,875**
%	**90.8**	**6.0**	**0.0**	**0.0**	**1.0**	**0.2**	**1.9**	**100.0**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Some percentage totals do not equal 100.0 due to rounding

Every region had more HUs in TEA 1 than any other TEA. Among the twelve regions, the New York and Charlotte regions had the highest percentages of their total HUs (98.6 percent and 97.6 percent, respectively) in TEA 1. Looking only at TEA 1, the Denver and Kansas City regions had the lowest percentage of their HUs (79.5 and 75.1 percent) in TEA 1.

The Denver and Kansas City regions had the highest percentages of their blocks (47.9 and 42.5 percent) and HUs (17.8 and 24.2 percent) in TEA 2. The Dallas region contained over half of the total TEA 7 HUs and had roughly three times more HUs in TEA 7 than the next highest region (Atlanta). Natural disaster affected areas accounted for 14.8 percent (358,078 HUs) of all the HUs that were placed into TEA 7 blocks.

All TEA 4 HUs were in the Seattle region, and TEA 3 HUs were in the Boston and Seattle regions only.

Table 5.1.6 presents the distribution of stateside blocks for the 2010 TEA Delineation grouped by RCC. The number of blocks in each TEA was consistent through the 2010 Census.

Table 5.1.6: 2010 TEA Delineation Stateside Block Counts and Percentages by RCC

	No. of Blocks							
RCC	**TEA 1**	**TEA 2**	**TEA 3**	**TEA 4**	**TEA 5**	**TEA 6**	**TEA 7**	**Total**
Atlanta	597,805	3,732	0	0	6,263	8,693	72,563	689,056
%	86.8	0.5	0.0	0.0	0.9	1.3	10.5	100.0
Boston	320,234	53,962	1,769	0	14,207	1,774	166	392,112
%	81.7	13.8	0.5	0.0	3.6	0.5	0.0	100.0
Charlotte	591,373	6,424	0	0	3,698	8,445	8,375	618,315
%	95.6	1.0	0.0	0.0	0.6	1.4	1.4	100.0
Chicago	473,902	43,085	0	0	23,118	1,168	299	541,572
%	87.5	8.0	0.0	0.0	4.3	0.2	0.1	100.0
Dallas	490,018	28,797	0	0	5,282	5,191	239,288	768,576
%	63.8	3.7	0.0	0.0	0.7	0.7	31.1	100.0
Denver	374,819	402,578	0	0	55,913	6,727	0	840,037
%	44.6	47.9	0.0	0.0	6.7	0.8	0.0	100.0
Detroit	393,189	81,267	0	0	0	1,001	0	475,457
%	82.7	17.1	0.0	0.0	0.0	0.2	0.0	100.0
Kansas City	515,434	390,044	0	0	6,545	4,850	0	916,873
%	56.2	42.5	0.0	0.0	0.7	0.5	0.0	100.0
Los Angeles	237,934	26,204	0	0	12,317	6,110	339	282,904
%	84.1	9.3	0.0	0.0	4.4	2.2	0.1	100.0
New York	143,364	0	0	0	5,100	120	197	148,781
%	96.4	0.0	0.0	0.0	3.4	0.1	0.1	100.0
Philadelphia	413,884	29,821	0	0	0	2,898	0	446,603
%	92.7	6.7	0.0	0.0	0.0	0.6	0.0	100.0
Seattle	358,313	119,516	2,421	12,796	11,585	3,749	0	508,380
%	70.5	23.5	0.5	2.5	2.3	0.7	0.0	100.0
Total	**4,910,269**	**1,185,430**	**4,190**	**12,796**	**144,028**	**50,726**	**321,227**	**6,628,666**
%	**74.1**	**17.9**	**0.1**	**0.2**	**2.2**	**0.8**	**4.8**	**100.0**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Boston RCC does not include Puerto Rico, data include stateside only
Note: Some percentage totals do not equal 100.0 due to rounding

Similar to the HU counts, the New York and Charlotte regions had the highest percentages of their total blocks (96.4 percent and 95.6 percent, respectively) in TEA 1. Looking only at TEA

1, the Denver and Kansas City regions had the lowest percentage of their blocks (44.6 and 56.2 percent) in TEA 1.

The Denver and Kansas City regions had the highest percentages of any region of their blocks (47.9 and 42.5 percent) in TEA 2. In fact, Denver was the only region that had more TEA 2 blocks than TEA 1 blocks. The Dallas region had the highest percentage of any region (31.1 percent) of their total blocks in TEA 7. The Dallas region contained almost three-quarters of the total TEA 7 blocks. There were 26,928 blocks that were deemed natural disaster affected areas and placed into TEA 7 blocks during the interactive delineation.

All TEA 4 blocks were in the Seattle region, and TEA 3 blocks were in the Boston and Seattle regions only.

Table 5.1.7 presents the distribution of stateside square mileage for the 2010 TEA Delineation grouped by RCC. The square mileage of land area covered by each TEA was consistent throughout the 2010 Census.

Table 5.1.7: 2010 TEA Delineation Stateside Square Mileage and Percentages by RCC

	Square Mileage – Land Area							
RCC	**TEA 1**	**TEA 2**	**TEA 3**	**TEA 4**	**TEA 5**	**TEA 6**	**TEA 7**	**Total**
Atlanta	108,617.9	2,254.6	0.0	0.0	718.1	2,231.1	47,978.5	161,800.2
%	67.1	1.4	0.0	0.0	0.4	1.4	29.7	100.0
Boston	52,612.1	38,448.4	7,071.6	0.0	9,291.2	282.5	2.4	107,708.2
%	48.8	35.7	6.6	0.0	8.6	0.3	0.0	100.0
Charlotte	190,478.6	4,404.8	0.0	0.0	371.3	1,629.6	2,021.5	198,905.7
%	95.8	2.2	0.0	0.0	0.2	0.8	1.0	100.0
Chicago	113,343.3	16,395.2	0.0	0.0	15,385.1	369.0	3.4	145,495.8
%	77.9	11.3	0.0	0.0	10.6	0.3	0.0	100.0
Dallas	118,320.1	27,467.3	0.0	0.0	677.2	2,782.6	203,670.8	352,917.9
%	33.5	7.8	0.0	0.0	0.2	0.8	57.7	100.0
Denver	90,629.9	785,225.9	0.0	0.0	98,405.6	19,209.1	0.0	993,470.4
%	9.1	79.0	0.0	0.0	9.9	1.9	0.0	100.0
Detroit	78,943.9	42,286.2	0.0	0.0	0.0	192.5	0.0	121,422.6
%	65.0	34.8	0.0	0.0	0.0	0.2	0.0	100.0
Kansas City	186,443.9	213,036.7	0.0	0.0	6,263.5	914.8	0.0	406,658.9
%	45.8	52.4	0.0	0.0	1.5	0.2	0.0	100.0
Los Angeles	27,068.9	28,209.7	0.0	0.0	33,884.4	6,242.0	17.2	95,422.1
%	28.4	29.6	0.0	0.0	35.5	6.5	0.0	100.0
New York	4,373.6	0.0	0.0	0.0	332.8	12.7	24.2	4,743.4
%	92.2	0.0	0.0	0.0	7.0	0.3	0.5	100.0
Philadelphia	51,091.0	9,810.9	0.0	0.0	0.0	267.2	0.0	61,169.1
%	83.5	16.0	0.0	0.0	0.0	0.4	0.0	100.0
Seattle	135,437.5	205,751.4	29,267.4	487,887.6	19,980.2	3,895.3	0.0	882,219.5
%	15.4	23.3	3.3	55.3	2.3	0.4	0.0	100.0
Total	**1,157,360.6**	**1,373,291.0**	**36,339.0**	**487,887.6**	**185,309.2**	**38,028.4**	**253,717.9**	**3,531,933.8**
%	**32.8**	**38.9**	**1.0**	**13.8**	**5.2**	**1.1**	**7.2**	**100.0**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Boston RCC does not include Puerto Rico, data include stateside only
Note: Some percentage totals do not equal 100.0 due to rounding

Stateside, TEA 2 areas spanned more square miles of land area than any other TEA. Second was TEA 1, followed by TEA 4, TEA 7, TEA 5, TEA 6, and TEA 3. In the Seattle region TEA 4 covered more land area than any other TEA, because most of Alaska was in TEA 4. The following regions had more land area in TEA 1 than any other TEA: Atlanta, Boston, Charlotte, Chicago, Detroit, New York, and Philadelphia. The Denver, Kansas City and Los Angeles regions had more land area in TEA 2 than any other TEA, which is represented by most of the western United States in Figure 5.1.1. Dallas had the majority of its land area in TEA 7. Most (79 percent of land area) of the Denver region was TEA 2, which was the largest land area of TEA 2 in all the regions (second being the Kansas City region with 52.4 percent). The regions

with the largest proportion of their land area covered by TEA 1 were Charlotte and New York, which were 95.8 and 92.2 percent respectively.

c. How do the 2010 TEAs compare with the Census 2000 TEAs?

Table 5.1.8 shows the final distributions of stateside HUs for the 2010 Census compared to Census 2000 grouped by TEA.

Table 5.1.8: 2010 Census and Census 2000 Final Counts of Stateside HUs by TEA

Census 2000 Final			2010 Census Final		
TEA	**No. of HUs**	**%**	**TEA**	**No. of HUs**	**%**
Mailout/Mailback	92,502,415	79.8	Mailout/Mailback	119,713,726	90.9
Update/Leave	21,788,559	18.8	Update/Leave	7,978,221	6.1
List/Enumerate	392,235	0.3	Remote Update Enumerate	6,896	0.0
Remote Alaska	27,002	0.0	Remote Alaska	28,549	0.0
Rural Update Enumerate	886,231	0.8	Update Enumerate	1,366,883	1.0
N/A	N/A	N/A	Military	213,420	0.2
Urban Update/Leave	238,216	0.2	Urban Update/Leave	2,397,035	1.8
Urban Update Enumerate	69,983	0.1	N/A	N/A	N/A
Total	**115,904,641**	**100.0**	**Total**	**131,704,730**	**100.0**

Source: Address List Development in Census 2000 and UCM File
Note: Military areas were given a separate TEA in Census 2000, but counts were not provided separately from MO/MB in the source.

The number of addresses in RUE (6,896 in the 2010 Census final universe) was considerably lower than the L/E operation of Census 2000, which had 392,235 HUs. The 2010 UE operation replaced the Rural Update Enumerate operation, and saw an increase in the number and percentage of HUs. The 2010 UU/L was never meant to be comparable to the Census 2000 UU/L TEA.

Table 5.1.9 shows the final distributions of stateside HUs for the 2010 Census compared to Census 2000 grouped by operation.

Table 5.1.9: 2010 Census and Census 2000 Final Counts of Stateside HUs by Operation

Census 2000 Final			2010 Census Final		
Operation	**No. of HUs**	**%**	**Operation**	**No. of HUs**	**%**
Mailout/Mailback	92,502,415	79.8	Mailout/Mailback	119,927,146	91.1
Update/Leave	22,026,775	19.0	Update/Leave	10,375,256	7.9
Other Stateside Operations	1,375,451	1.2	Other Stateside Operations	1,402,328	1.1
Total	**115,904,641**	**100.0**	**Total**	**131,704,73**	**100.0**

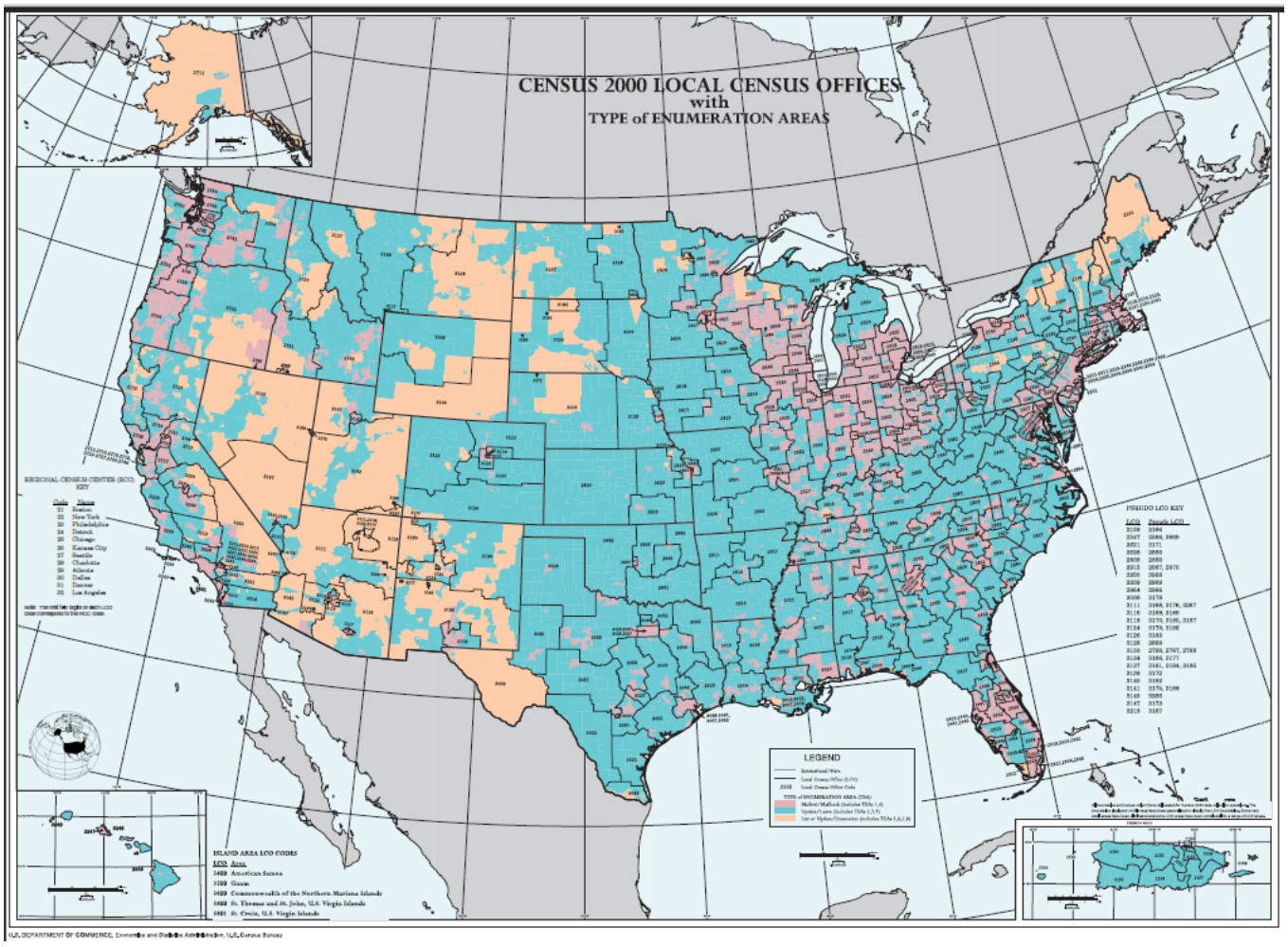
Source: Address List Development in Census 2000 and UCM File

In Census 2000, 79.8 percent of addresses in the final census count (115,904,641 HUs) were in MO/MB areas, while 19.0 percent of the HUs were assigned to a U/L or UU/L TEA. The remaining 1.2 percent of the HUs was distributed among the RUE, L/E, and RA operations.

In comparing the final 2010 Census results (available after completion of the 2010 Census) with Census 2000 data, we see an increase in the number of HUs in MO/MB (79.8 percent to 91.1 percent), a decrease in the share of HUs in of the U/L operation (19.0 percent to 7.9 percent), and a comparable percentage of stateside HUs in the remaining operations.

See Figure 5.1.2 for the Census 2000 TEA Map.

Figure 5.1.2: Census 2000 National TEA Map



MO/MB areas are designated in pink, and include TEAs 1 and 6. U/L areas are blue, and encompass TEAs 2, 7, and 9. The peach color includes L/E or UE areas of TEA 3, 4, 5, and 8.

The Census 2000 and 2010 Census and maps included in this document provide a visual indication of the areas of the United States assigned to each TEA. Although many areas cannot be seen from this scale, we see the larger land areas assigned to each TEA.

For the 2010 Census, in TEA 1 (MO/MB) there were 115,401,204 HUs in 4,910,269 collection blocks, covering 1,157,360.6 square miles. In TEA 2 (U/L) there were 7,643,556 HUs in 1,185,430 collection blocks, covering 1,373,291.0 square miles. There were 7,043 HUs in 4,190 collection blocks, covering 36,339.0 square miles in TEA 3 (RUE). In TEA 4 (RA) there were 27,775 HUs in 12,796 collection blocks, covering 487,887.6 square miles. There were 1,283,940 HUs in 144,028 collection blocks, covering 185,309.2 square miles in TEA 5 (UE). In TEA 6 (Military) there were 302,970 HUs in 50,726 collection blocks, covering 38,028.4 square miles. In TEA 7 (UU/L) there were 2,424,387 HUs in 321,227 collection blocks, covering 253,717.9 square miles. There were 5,193 collection blocks, covering 602.2 square miles in TEA 9 (Island Area L/E).

5.2 a. What USPS source materials did the regional geography staff use for the interactive delineation? b. What USPS sources did the regional geography staff find most useful? c. What questions did the regional geography staff have about the meaning or accuracy of the USPS data?

a. What USPS source materials did the regional geography staff use for the interactive delineation?

Regional geography staff was able to contact local post offices to inquire about mail delivery types and the geographic areas where each type is used. Census Bureau headquarters also provided to the regional geography staff a set of TEA tools with their training materials. Among them were the following USPS-derived products:

- The July 2008 USPS Delivery Type File (DTF) indicates the type(s) of mail delivery (street addressed, Post Office (PO) Box, rural route, etc.) within each ZIP Code;

- The July 2008 USPS Delivery Statistics File contains information regarding delivery by carrier route and post office box section. This data file defines the number of post office boxes and business/residential deliveries on city, rural, and highway contract routes for every ZIP Code in the country, and indicates, among other things, whether a ZIP Code contains drop-point or seasonal mail delivery.

- The July 2008 USPS City State Product which indicates seasonal mail delivery.

Headquarters provided all three products both as raw data and summarized into the USPS_UAA geodatabase table. In addition, Census Bureau headquarters also provided USPS undeliverable as addressed (UAA) data related to the 2006 and 2007 ACS sample mailings, and a ZIP Code polygon layer for use in ESRI's ArcGIS software.

b. What USPS sources did the regional geography staff find most useful?

In near unanimous agreement, the regional geography staff thought permission to contact the local post offices was the best USPS tool Census Bureau headquarters gave them for the interactive 2010 TEA Delineation. The regional staff thought the information provided by the postmaster was more reliable than the data sets provided by Census Bureau headquarters. Regional geographic staff indicated that both contacting local post offices and having access to USPS reference materials should continue to be tools available for the next TEA Delineation. Regional geography staff varied in their use of the USPS data sources. Some staff used them extensively while others did not use the USPS data sources. The primary reason the regional geography staff cited for not using the USPS data sources was that the materials were too complex or confusing. Overall, they were more likely to use the summarized *USPS_UAA* geodatabase table than the three raw USPS source materials. (FLD headquarters staff did not fully understand the three raw USPS source materials, and provided limited help in directing their use. The files were not used for any Census Bureau processing, so experience with the data were limited. In addition, it had been difficult to clarification regarding intended data definitions or explanations about the data inconsistencies or changes in the files might mean.)

Regional geography staff varied in which of the information within the USPS resources they considered most useful. Some staff stated that the seasonally vacant information (as summarized in the *USPS_UAA* geodatabase table) was very useful, a number of others found it the least useful, saying that it differed from their regional knowledge of an area, or that it contradicted the information received from local post offices. Regional geography staff spoke positively about the following data within the USPS materials: seasonally vacant information; the ACS UAA information; and the PO Box delivery, 100 percent Street Delivery, Rural Route Delivery, and Drop Point Delivery information.

c. What questions did the regional geography staff have about the meaning or accuracy of the USPS data?

Most regional geography staff thought that the level of geography that the USPS sources portrayed (ZIP Code) was too general to be useful for the interactive delineation, and suggested that the Census Bureau acquire and provide them with address-level and carrier-route-level USPS delivery information. In addition, some thought that much of the data in the USPS sources did not support the information received from local post offices. For instance, one regional staff called post offices in the areas where mail drop delivery was indicated and no one was able to confirm drop points. The regional geography staff also found problematic the small sample size of the percent ACS undelivered as addressed data.

In summary, the regional geography staff believed contacting local post offices directly was the best source of information provided by the United States Postal Service for use in the 2010 TEA Delineation. Data from national United States Postal Service sources were not always consistent with information received from local post offices, and the accuracy of the local sources was deemed to be more accurate by the regional geographers.

5.3 a. How did the regional geography staff use USPS source materials in conjunction with Census Bureau geography? b. How did the regional geography staff use other sources in conjunction with Census Bureau geography? c. What limitations did the regional geography staff find?

a. How did the regional geography staff use USPS source materials in conjunction with Census Bureau geography?

The USPS source materials were at the 5 digit ZIP Code level. Most regional geography staff used these in conjunction with the ZIP Code polygon layer as an overlay onto Census Bureau geography (collection blocks, tracts, etc.) in order to spatially discern information regarding delivery characteristics of each ZIP Code.

b. How did the regional geography staff use other sources in conjunction with Census Bureau geography?

Regional geography staff used outside data (imagery, Count Question Resolution (CQR) cases from Census 2000, mail delivery problems from Census 2000, 2010 LUCA program participants with large number of address adds, etc.) in similar, spatially-comparative ways.

The regional geography staff in Dallas developed and shared with the other regions and Census Bureau headquarters a more user friendly Microsoft Access version of the USPS data that could quickly search and return percent street delivery versus percent PO Box delivery by ZIP Code and county. The staff also created custom ArcGIS tools to select ZIP Codes and display a form that compared USPS data and TEA batched data. This tool returned TEA data for any selected geography (incorporated place, ZIP Code, county, etc.). The user clicked in a polygon area and the tool would display the ACT code and USPS delivery data. The geography staff in Dallas found this tool very useful in the process of determining which TEAs to use for their region.

c. What limitations did the regional geography staff find?

Limitations included the difference in geographic definition between USPS and other external sources compared to census collection geography, and the lack of information below the ZIP Code level for USPS products.

5.4 What sources did the regional geography staff use to identify areas of seasonally-vacant housing units for inclusion in TEA 5?

Other than the seasonally-vacant information contained in the USPS City State File and the related *USPS_UAA* geodatabase table discussed earlier, regional geography staff relied on:

- information gathered from contacting local post offices
- information from Census 2000 found in the 2010 Planning Database
- the American Fact Finder
- local knowledge and previous experience

5.5 a. What additional source materials did the regional geography staff use for the interactive delineation? b. What additional tools or resources did the regional geography staff request from Census Bureau headquarters?

The regional geography staffs used many different additional source materials, and requested a number of additional tools from Census Bureau headquarters. A source one region deemed essential was often regarded as ineffective or was not used by other regional staff.

a. What additional source materials did the regional geography staff use for the interactive delineation?

Additional source materials used for the interactive delineation include:

- Local knowledge and field work from regional management, experienced senior field representatives from current surveys, and other field employees
- Experience from Census 2000, and how areas were delineated
- Lists of towns determined to be PO Box only, provided by liaisons from the State Data Centers
- USPS online
- Region-created shapefiles of governmental units corresponding with Census 2000 CQR cases
- Information obtained by regional management and staff when working directly with communities
- ZIP Code maps, purchased by the region for the 2010 TEA Delineation and other uses (they doubted that the one provided by Census Bureau headquarters was up to date and accurate)
- A survey that Atlanta RCC staff sent to the Field Representatives (FRs) asking specific questions about mail delivery in their area
- Address point files obtained from some of one region's largest cities to determine where new addresses were located
- Google Earth and Google Earth Street View
- Melissa.com data (for information on delivery to addresses and USPS routing)
- Governmental Unit websites
- Military websites
- Wikipedia (ZIP Code and governmental unit research)
- Microsoft Maps Live
- Interviews with local community members
- MAF data which the Census Bureau provided to 2010 LUCA participants (to get a more detailed look at certain areas)
- 2010 LUCA participants which had large number of address adds (possible address conversions from noncity-style to city-style)
- American Fact Finder
- List of UAA communities from Census 2000

- During 2010 LUCA training, one region asked the participants to try to determine if they were predominantly E911/city-style addressing or if they used PO Box delivery exclusively or had a sizable area of their community that was PO Box delivery
- Colonia data from the USGS [Dallas Region]
- Data indicating areas with significant growth or a high number of ungeocoded addresses.

b. What additional tools or resources did the regional geography staff request from Census Bureau headquarters?

Additional tools or resources the regional geography staff requested from Census Bureau headquarters (either during the interactive TEA delineation or identified after the 2010 TEA Delineation through debriefings). None of these resources were provided by Census Bureau headquarters for use in the interactive delineation.

- ZIP Code route file/carrier route polygons from the USPS
- Shapefiles of areas where the post office required citizens within a certain radius (typically 0.5 miles) to pick up their mail at the post-office
- Geocoded post office locations, or a post office point layer that when clicked would give you the general post office information for a given area (phone number, particularly)
- The full (address-level) DSF
- More information on working with post offices (what questions to ask the POs)
- USPS delivery type by address, including drop points
- Information on what a representative ACS sample consisted of (i.e., 20 percent of the total number of HUs in a ZIP Code)
- MAF data (not just address by address, as in the MAF browser, but exports of query results and summaries at levels above that of the individual address, for example (and highly requested), tables of all addresses in a block)
- List of communities that were delineated TEA 1 (Mailout/Mailback) during Census 2000 but actually should have been TEA 2 (U/L)
- The ability to have ongoing communication with local post offices over the years instead of only contacting them during the limited window of time that existed for this delineation
- The ability to import imagery into the delineation software.

The regional geography staff used many different additional source materials, and requested a number of additional tools from Census Bureau headquarters. Many of the resources used were local or internet resources. Many of the tools requested were related to the USPS or geographic in nature.

5.6 What TEA tools did the regional geography staff find most useful for the interactive delineation, and which did they use most?

The regional geography staff had widely different opinions as to which of the TEA tools were more or less useful, and subsequently which were most used, as a tool that one region deemed essential was often regarded as not useful by another region. Depending on TEA value being investigated, the same tool or dataset could have been both the most and least useful (and most or least used) within a single region. All tools that the regional geography staff called "useful" are listed (in no particular order) and Census Bureau headquarters staff made no attempt to determine a pattern among the regional geography staffs as to "most" useful, given their varied opinion:

- Calling/contacting the local post offices
- *USPS_UAA* geodatabase table
- USPS source files (Delivery Type File, Delivery Statistics File[4])
- The ZIP Code polygon shapefile
- The 2010 Planning Database (online or table)
- ACT codes/batch delineation

5.7 What questions or concerns did the regional geography staff raise about the guidance given by Census Bureau headquarters for the interactive delineation?

While the majority of the regional geography staff stated that they found the specific guidance in the FLD GSB-memos and attachments for when to use the various 2010 TEAs adequate, they had a number of comments:

- Clarify guidance on TEAs 2 compared to 7. Some regional geography staff thought the guidance about where and when to use TEA 2 versus TEA 7 was unclear, or unnecessary. Others thought it was fine, but that it came late in the process. The chief concern was the "urban" in the name of TEA 7 (UU/L), especially as the working definition of TEA 7. City-style addressing with doubtful house-level mail delivery, was not consistently urban in all areas of the country. Based on guidance from their regional directors, Kansas City and Denver RCCs chose not to use TEA 7 at all. They thought the distinction between city-style addresses and noncity-style addresses was not an efficient use of time, given the combining of TEAs 2 and 7 into the same field operation. The Chicago region used TEA 7 only for areas with inner-city mail drops. Overall, the regional staff thought that TEA 2 and TEA 7 should be combined, or the "urban" in the name of TEA 7 changed.

- Include more guidance on how to handle isolated pockets of one TEA within an LCO. Regional geography staff thought that their managers were better sources for TEA pocket sizes.

- Explain better how to handle large expanses of Null HU blocks (should they be TEA 2 or TEA 1).

[4] Note that the Delivery Statistics File is a summary level file different than the Delivery Sequence File (DSF) used to update the MAF.

- Provide better guidance about the proper Crew Leader District (CLD) size for a TEA within an LCO.

- Regional geography staff thought that the guidance provided by Census Bureau headquarters required supplemental information from RCC management. Regional management provided a great deal of additional advice that was valuable, given the various unique situations in their areas.

- Provide more guidance on the use of TEA 5 for seasonal addresses.

- The regional geography staff wanted better ranking, or prioritizing, of the many data sources provided them by Census Bureau headquarters; they thought that it would have been helpful if one of the databases or sources had been identified as being primary or more essential than the others. Others noted that different data worked with some situations, but not with every situation, and so ranking may be difficult.

- Provide an acronym list.

- Provide a better understanding of the USPS files.

- Provide better guidance for areas where TEA 1 and TEA 2 were mixed up almost evenly, such that making a decision for which area would best fit the type of TEA was very difficult.

- Provide more basic information on 2010 TEA Delineation as a concept, to go with the guidance and procedures. Nearly all the Geographic Specialists working on the delineation were new to the Census Bureau and needed basic background information in Census Bureau operations and TEAs before the 2010 TEA Delineation training.

- Provide better information on what to do when sources were in conflict with each other.

- Provide guidance on how to handle the concept that the best TEA type for each block was different for different people – Census Bureau headquarters and RCC management often had different opinions as to the proper TEA for an area.

- Provide information on the importance of the New Construction Program related to 2010 TEA Delineations (probable U/L areas into MO/MB).

- Provide some way to identify mail drop points.

- Include a one-page condensed reference guide.

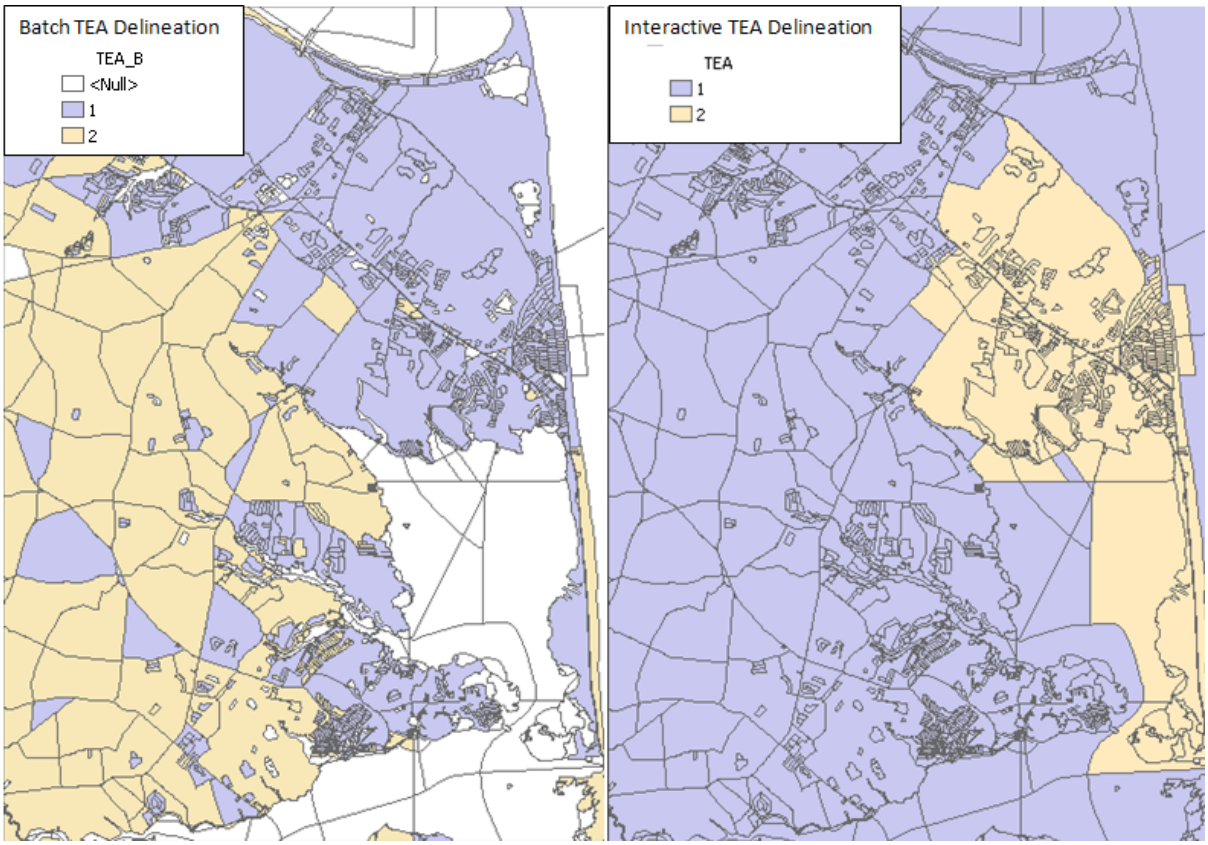
The majority of the regional geography staff stated that they found the specific guidance for when to use the various TEAs adequate. A number of topics were identified where additional training might be beneficial, particularly for new staff to the Census Bureau.

5.8 a. What was the distribution of TEAs at each TEA review (batch and interactive delineation)? b. Compare and contrast the TEAs by number and percent of housing units, blocks, and land area at each review period, looking for any changes. c. How were the TEA areas clustered?

The main purpose of this question is to examine how each step in the Main TEA Delineation process affects the distribution of the TEAs. This helps quantify the amount of effort the regional geography staff took during the interactive portion, and the effectiveness of the batch delineation.

Figure 5.8.1 shows a visual example of an area of the country indicating the patchwork of multiple clusters of TEA assignment that resulted from batch. The interactive effort determined the most appropriate TEA value for an area, resulting in neighboring geographic areas with the same TEA value. In Figure 5.8.1, TEA 1 areas displayed in purple and TEA 2 areas in tan.

Figure 5.8.1: Visual Example of TEA Changes from Batch to Interactive with U/L and MO/MB Areas



a. What was the distribution of TEAs at each TEA review (batch and interactive delineation)?

TEA 3 and TEA 4 were defined during the Remote Area Delineation in September 2006. Edits were in place to ensure there were no changes in TEAs 3 and 4 during the Main TEA Delineation. TEA 3 and TEA 4 are excluded from tables where changes are described.

Refer to Appendix I for an outline of the actions taken during the batch delineation and the guidance given to perform the interactive delineation. Changes were expected in TEAs 1, 2, 5, and 7. No changes were expected in TEA 6 between batch and interactive delineation. The main goal of the interactive delineation was to identify areas for TEA 5 and TEA 7, and smooth MO/MB and U/L into areas optimal for field operations.

Table 5.8.1 shows the number of HUs, number of blocks, and land area in square mileage for each TEA after each stage of the 2010 TEA Delineation process.

Table 5.8.1: Distribution of Stateside HUs, Blocks, and Land Area after Each 2010 TEA Delineation Review

Batch Delineation						
TEA	**No. of HUs**	**%**	**No. of Blocks**	**%**	**Square Miles**	**%**
1	118,198,900	93.0	3,851,770	58.1	1,154,651.2	32.7
2	8,140,457	6.4	610,589	9.2	1,040,552.1	29.5
3	7,043	0.0	4,190	0.1	36,339.0	1.0
4	27,775	0.0	12,796	0.2	487,887.6	13.8
5	412,578	0.3	79,335	1.2	111,229.8	3.1
6	304,122	0.2	50,494	0.8	37,869.7	1.1
Null	0	0.0	2,019,492	30.5	663,404.4	18.8
Total	**127,090,875**	**100.0**	**6,628,666**	**100.0**	**3,531,933.8**	**100.0**
Interactive Delineation						
1	115,401,204	90.8	4,910,269	74.1	1,157,360.6	32.8
2	7,643,556	6.0	1,185,430	17.9	1,373,291.0	38.9
3	7,043	0.0	4,190	0.1	36,339.0	1.0
4	27,775	0.0	12,796	0.2	487,887.6	13.8
5	1,283,940	1.0	144,028	2.2	185,309.2	5.2
6	302,970	0.2	50,726	0.8	38,028.4	1.1
7	2,424,387	1.9	321,227	4.8	253,717.9	7.2
Total	**127,090,875**	**100.0**	**6,628,666**	**100.0**	**3,531,933.8**	**100.0**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Some percentage totals do not equal 100.0 due to rounding

Although the number of blocks and land area increased for TEAs 1 and 2, the number of HUs fell in each of these areas because of smoothing and assigning blocks from TEAs 1 and 2 into TEAs 5 or 7. The number of blocks, number of HUs, and land area all increased in TEA 5 from batch delineation to interactive delineation. This was expected because only federally recognized American Indian reservations were included in TEA 5 for the batch delineation. During the interactive delineation, the RCCs had the responsibility of adding seasonally vacant and other difficult to enumerate areas to TEA 5.

There were relatively minimal changes to TEA 6 areas. TEA 7 was delineated only during the interactive delineation. Guidance was given to use TEA 7 for blocks that had more of a predominance of city-style addresses but where the RCC had reason to doubt whether the USPS actually delivered mail to the HUs. Natural disaster areas were included in TEA 7.

Table 5.8.2 presents the stateside 2010 TEA Delineation results after both the batch and interactive delineations by operation.

Table 5.8.2: Stateside 2010 TEA Delineation Results by Operation after Each Review

TEA	No. of HUs	%	No. of Blocks	%	Square Mileage	%
Batch Delineation						
Mailout/Mailback (TEA 1 and TEA 6)	118,503,022	93.2	3,902,264	84.7	1,192,520.9	41.6
Update/Leave (TEA 2 and TEA 7)	8,140,457	6.4	610,589	13.2	1,040,552.1	36.3
Update Enumerate (TEA 5)	412,578	0.3	79,335	1.7	111,229.8	3.9
Remote Update Enumerate (TEA 3)	7,043	0.0	4,190	0.1	36,339.0	1.3
Remote Alaska (TEA 4)	27,775	0.0	12,796	0.3	487,887.6	17.0
Total	**127,090,875**	**100.0**	**4,609,174**	**100.0**	**2,868,529.5**	**100.0**
Interactive Delineation						
Mailout/Mailback (TEA 1 and TEA 6)	115,704,174	91.0	4,960,995	74.8	1,195,389.0	33.8
Update/Leave (TEA 2 and TEA 7)	10,067,943	7.9	1,506,657	22.7	1,627,008.9	46.1
Update Enumerate (TEA 5)	1,283,940	1.0	144,028	2.2	185,309.2	5.2
Remote Update Enumerate (TEA 3)	7,043	0.0	4,190	0.1	36,339.0	1.0
Remote Alaska (TEA 4)	27,775	0.0	12,796	0.2	487,887.6	13.8
Total	**127,090,875**	**100.0**	**6,628,666**	**100.0**	**3,531,933.8**	**100.0**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Some percentage totals do not equal 100.0 due to rounding
Note: Square mileage is land area only
Note: TEA Null blocks and square mileage were not included in the batch delineation results since they were not associated with an operation until the interactive delineation.

The number of HUs in UE areas increased from 412,578, or 0.3 percent of the total stateside HUs, in batch delineation to 1,283,940, or 1.0 percent, after interactive delineation. The number of HUs in U/L areas increased from 8,140,457 or 6.4 percent to 10,067,943, or 7.9 percent, and MO/MB areas decreased to 91.0 percent (115,704,174) of the total HUs stateside from 93.2 percent (118,503,022) during the batch delineation. Similarly, the number of blocks and land area decreased in MO/MB areas and increased for U/L and UE areas from batch to interactive delineation.

b. Compare and contrast the TEAs by number and percent of housing units, blocks, and land area at each review period, looking for any changes.

Over two million null blocks, blocks with no residential HUs, were not assigned to a TEA in the batch delineation (Table 5.8.1). Every block was allocated to a TEA during the interactive delineation.

TEA 7 was originally designated for use by the UU/L operation. Once the U/L operations were combined, the definitions of TEA 2 and TEA 7 were repurposed to distinguish U/L areas with primarily city-style addressing (TEA 7) compared to U/L areas without city-style addressing (TEA 2). There were 321,227 blocks, containing 2,424,387 HUs, placed into TEA 7 during the interactive delineation (Table 5.8.1). Also included in TEA 7 were areas that were deemed "natural disaster" blocks by headquarters. These were areas in the Dallas RCC that were affected by hurricanes Katrina, Rita and/or Ike. There were 26,928 blocks, containing 358,078 HUs placed into TEA 7 because of natural disasters.

Table 5.8.3 presents the raw shifts in stateside blocks from batch to interactive delineation, grouped by TEA.

Table 5.8.3: Shifts in Stateside Block Totals by TEA from the 2010 Batch Delineation to the 2010 Interactive Delineation

	Interactive TEA											
Batch TEA	**1**	**%**	**2**	**%**	**5**	**%**	**6**	**%**	**7**	**%**	**Total**	**%**
1	-	-	305,819	34.9	22,980	27.0	3	1.0	64,020	19.9	392,822	14.4
%	-		77.9		5.8		0.0		16.3		100.0	
2	193,224	13.3	-	-	16,720	19.6	3	1.0	90,371	28.1	300,318	11.0
%	64.3		-		5.6		0.0		30.1		100.0	
5	5,660	0.4	14,872	1.7	-	-	1	0.3	15	0.0	20,548	0.8
%	27.5		72.4		-		0.0		0.1		100.0	
6	56	0.0	3	0.0	0	0.0	-	-	0	0.0	59	0.0
%	94.9		5.1		0.0		-		0.0		100.0	
Null	1,252,381	86.3	554,465	63.4	45,541	53.4	284	97.6	166,821	51.9	2,019,492	73.9
%	62.0		27.5		2.3		0.0		8.3		100.0	
Total	**1,451,321**	**100.0**	**875,159**	**100.0**	**85,241**	**100.0**	**291**	**100.0**	**321,227**	**100.0**	**2,733,239**	**100.0**
%	**53.1**		**32.0**		**3.1**		**0.0**		**11.8**		**100.0**	

Data Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: There were no changes in TEAs 3 and 4; no blocks were added to TEA Null
Note: Some percentage totals do not equal 100.0 due to rounding

The RCCs shifted 2,733,239 or 41.2 percent of the total 6,628,666 stateside blocks from one TEA to another during the interactive delineation. This figure includes 2,019,492 blocks that were in a null TEA during batch delineation. After the null block category, TEA 2 had the

largest percentage of blocks shift to another TEA from batch to interactive. Of the 610,589 blocks assigned to TEA 2 during the batch delineation, 300,318 or 49 percent of blocks were assigned another TEA at the end of the interactive delineation. Over half, or 64.3 percent were moved to TEA 1, and 30.1 percent were assigned to TEA 7. Excluding the null TEA blocks from batch delineation, the RCCs shifted 713,747 or 15.5 percent of the 4,609,174 non-null blocks during the interactive delineation.

There was no expectation of the number or proportion of blocks that would be shifted from one TEA to another during the interactive delineation. However, 41 percent is a high percentage, showing that the regional geography staff performed a considerable amount of work to assign what they considered the most effective TEA value to each block during the interactive delineation.

Table 5.8.4 presents the net changes in stateside HUs, blocks, and square mileage of land area grouped by TEA from batch to interactive delineation.

Table 5.8.4: Net Changes in Stateside HUs, Blocks, and Land Area by TEA from the 2010 Batch Delineation to the 2010 Interactive Delineation

TEA	Net Change in HU Count	% Change in HU Count	Net Change in Block Count	% Change in Block Count	Net Change in Land Area	% Change in Land Area
1	-2,797,696	-2.4	1,058,499	27.5	2,709.4	0.2
2	-496,901	-6.1	574,841	94.2	332,738.9	32.0
5	871,362	211.2	64,693	81.5	74,079.4	66.6
6	-1,152	-0.4	232	0.5	158.7	0.4
7	2,424,387	.	321,227	.	253,717.9	.
Null	.	.	-2,019,492	-100.0	-663,404.4	-100.0

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Unable to calculate percent changes for TEA 7 due to zero in denominator. There were no shifts in TEAs 3 and 4.

Table 5.8.5 presents the shifts in stateside HUs from batch to interactive delineation, grouped by TEA.

Table 5.8.5: Shifts in Stateside HU Totals by TEA from the 2010 Batch Delineation to the 2010 Interactive Delineation

	Interactive TEA											
Batch TEA	**1**	**%**	**2**	**%**	**5**	**%**	**6**	**%**	**7**	**%**	**Total**	**%**
1	-	-	3,966,201	98.8	659,241	65.2	18	81.8	1,269,363	52.4	5,894,823	55.9
%	-		67.3		11.2		0.0		21.5		100.0	
2	3,005,258	97.0	-	-	352,080	34.8	4	18.2	1,154,974	47.6	4,512,316	42.8
%	66.6		-		7.8		0.0		25.6		100.0	
5	90,907	2.9	49,002	1.2	-	-	0	0.0	50	0.0	139,959	1.3
%	65.0		35.0		-		0.0		0.0		100.0	
6	962	0.0	212	0.0	0	0.0	-	-	0	0.0	1,174	0.0
%	81.9		18.1		0.0		-		0.0		100.0	
Total	**3,097,127**	**100.0**	**4,015,415**	**100.0**	**1,011,321**	**100.0**	**22**	**100.0**	**2,424,387**	**100.0**	**10,548,272**	**100.0**
%	**29.4**		**38.1**		**9.6**		**0.0**		**23.0**		**100.0**	

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Some percentage totals do not equal 100.0 due to rounding

Over 93 percent of all the stateside HUs were in blocks that were assigned to a MO/MB TEA (TEA 1 or TEA 6) during the batch delineation, as compared to 91.0 percent after the interactive delineation (Table 5.8.2). The drop in HUs in MO/MB areas was mainly due to a net loss of 2.4 percent of the HUs in TEA 1 for the interactive delineation (Table 5.8.6). A total of 5,895,997 HUs (5,894,823 from TEA 1 and 1,174 from TEA 6) were shifted out of MO/MB areas during the interactive delineation, which contributed to a net loss of 2,798,848 HUs (2,797,696 from TEA 1 and 1,152 from TEA 6) in MO/MB areas during the interactive delineation (Table 5.8.4). Most (67.3 percent) of the HUs that were shifted out of TEA 1 were delineated to TEA 2 areas during the interactive delineation. In fact, this was the largest number of HUs (3,966,201) shifted from one TEA to another. In contrast, 3,097,149 HUs (3,097,127 from TEA 1 and 22 from TEA 6) were moved into MO/MB areas during interactive delineation. Of these HUs, 97.0 percent were from TEA 2 areas and the other 2.9 percent came from TEA 5 areas in batch delineation.

Table 5.8.5 shows the RCCs shifted blocks containing 10,548,272, or 8.3 percent of the total 127,090,875 stateside HUs, from one TEA to another during the interactive delineation. There was a net decrease of 496,901 HUs in TEA 2 areas and net increase of 2,424,387 HUs in TEA 7 areas from batch to interactive delineation (Table 5.8.4). This amounted to a total net increase of 1,927,486 HUs in U/L areas.

Table 5.8.5 shows that TEA 2 gained the most gross HUs from batch to interactive delineation, 4,015,415 (98.8 percent of which were from TEA 1), which amounted to 38.1 percent of the total HUs that shifted TEAs. In contrast, blocks in TEA 2 containing 4,512,316 HUs during batch delineation were shifted out of TEA 2 areas during the interactive delineation. A total of 1,154,974 HUs were in blocks that were shifted from TEA 2 to TEA 7 during the interactive delineation, thus remaining in U/L areas. These HUs encompassed 47.6 percent of TEA 7 HUs, while the other 52.4 percent came from blocks that were in TEA 1 after batch delineation. While estimates expected close to a ten percent net increase in the number of HUs in the U/L

workload[5], there was a 23.7 percent net increase in the number of U/L addresses from batch delineation to interactive delineation. Most of these addresses came from blocks that were designated as TEA 1 areas for the batch delineation.

Table 5.8.6 shows the percentage change in the number of stateside TEA 1 HUs from batch to interactive delineation.

Table 5.8.6: Percent Change in Number of Stateside TEA 1 HUs from the 2010 Batch Delineation to the 2010 Interactive Delineation

RCC	Net HU Change	% Change
Atlanta	-83,767	-0.6
Boston	-139,773	-1.6
Charlotte	850,441	6.6
Chicago	-319,915	-3.1
Dallas	-679,606	-6.1
Denver	-952,439	-11.1
Detroit	-138,993	-1.4
Kansas City	-1,330,061	-14.5
Los Angeles	-121,519	-1.4
New York	-66,262	-1.0
Philadelphia	279,279	3.0
Seattle	-95,081	-1.0
Total	**-2,797,696**	**-2.4**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Some percentage totals do not equal 100.0 due to rounding

Appendix C contains data for the changes in number of HUs for each RCC by TEA after each review. Appendix D contains data for the distribution of blocks for each RCC by TEA after each review.

The Dallas region had the most dramatic change in HU TEA from batch delineation to interactive delineation. The majority of the HU changes were between TEA 2 and TEA 7, so there was minimal operational impact. Charlotte and Philadelphia were the two RCCs to increase their MO/MB workload, in terms of HUs, from batch delineation to interactive delineation. The Kansas City region saw the largest amount of movement of HUs out of TEA 1, at 14.5 percent. The Kansas City RCC indicated that their contact with the local post offices indicated that many of their areas with city-style addressing did not receive mail delivery to the HUs.

[5] The 2006 Business Case to increase the U/L workload from 7 million HUs to 10 million HUs for the 2010 Census estimated an addition of approximately 10 percent from the ACT tallies due to smoothing.

The Detroit and Philadelphia regions had no HUs in TEA 5. In addition to the Detroit and Philadelphia regions, the Kansas City RCC decreased the number of HUs assigned to TEA 5. The remaining regions increased the number of HUs in TEA 5, by identifying seasonally vacant areas, Colonias, or other hard to enumerate areas. The Chicago RCC shifted the largest number of HUs to TEA 5 (191,602), followed by the Boston RCC (174,138) and the Atlanta RCC (158,299). The New York region saw the largest percent increase (28,231.9 percent) in its number of TEA 5 addresses from the batch delineation to interactive delineation, which is understandable given the low number of HUs assigned in the batch delineation. The New York region went from 323 HUs in TEA 5 blocks for the batch delineation to 91,512 after the interactive delineation

The regional geography staff assigned a TEA value different from the batch delineation to 2,733,239 or 41.2 percent of the total 6,628,666 stateside blocks during the interactive delineation. Of these, staff shifted 713,747 blocks (or 10.8 percent of the total) from one TEA to another, and assigned a TEA value to 2,019,492 blocks (or 30.5 percent of the total) that were assigned a null value in batch delineation.

c. How were the TEA areas clustered?

Looking at the clustering helps describe the magnitude of work done by the regional geography staff in order to smooth areas to be practical for field operations. Table 5.8.7 presents the tallies of stateside clusters by region by TEA after the batch delineation.

Table 5.8.7: Frequency of Stateside Clusters by Region by TEA Type during 2010 TEA Batch Delineation

RCC	Null	TEA 1	TEA 2	TEA 3	TEA 4	TEA 5	TEA 6	TEA 7
Atlanta	70,935	5,158	10,202	0	0	26	157	0
Boston	32,439	2,898	7,187	4	0	71	76	0
Charlotte	60,031	4,854	13,081	0	0	36	114	0
Chicago	39,749	1,887	7,100	0	0	155	32	0
Dallas	70,259	10,529	11,037	0	0	76	95	0
Denver	76,811	10,165	18,425	0	0	1,681	92	0
Detroit	39,194	2,835	5,465	0	0	93	42	0
Kansas City	100,047	11,755	19,168	0	0	617	45	0
Los Angeles	16,177	1,552	2,697	0	0	167	138	0
New York	5,992	240	633	0	0	1	12	0
Philadelphia	32,661	3,768	4,358	0	0	1	76	0
Seattle	36,444	2,719	6,401	1	50	536	93	0
Total	**580,739**	**58,360**	**105,754**	**5**	**50**	**3,460**	**972**	**0**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Boston RCC does not include Puerto Rico, data include stateside only

The number of individual pockets was quantified for each region after the batch and interactive delineation. These pockets, or clusters, represent at least one collection block. In the case where neighboring collection blocks are of the same TEA, multiple collection blocks comprise one cluster. The total number of clusters stateside was not calculated for the batch delineation. In order to compare the number of clusters between batch and interactive delineation, a stateside total was estimated by summing the number of clusters in each region. This over-estimates the total number of clusters because it is likely that areas near the regional border may be of the same TEA type.

The Kansas City region had the most individual pockets from the batch delineation, with 100,047 individual clusters assigned a null TEA value. The New York region had the fewest number of TEA pockets in both the batch delineation and the interactive delineation, but also had the smallest geographic area (as seen in Table 5.1.8). In every region, the number of clusters with a null TEA exceeded the number of clusters assigned a TEA value.

Table 5.8.8 shows the number of stateside clusters, along with the change in the number clusters from batch to interactive delineation, grouped by TEA.

Table 5.8.8: Stateside Clusters and Change by TEA Type at 2010 TEA Batch and Interactive Delineation

	Batch	Interactive	Change	Percent Change
Null	580,739	0	-580,739	-100.0
TEA 1	58,360	686	-57,674	-98.8
TEA 2	105,754	3040	-102,714	-97.1
TEA 3	5	5	0	0.0
TEA 4	50	50	0	0.0
TEA 5	3,460	521	-2,939	-84.9
TEA 6	972	930	-42	-4.3
TEA 7	0	613	613	-
Total	**749,340**	**5,845**	**-743,495**	**-99.2**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Stateside totals for the batch delineation are approximated by regional totals

As expected, the number of individual clusters decreased considerably after the interactive delineation. There was an increase in the number of clusters in TEA 7 from batch to interactive delineation, but in every other TEA there was a decrease. There was minimal change in TEA 6 (Military). TEA 1 clusters decreased by 85 fold, from 58,360 to 686.

The number of stateside clusters is reduced even further when we look at the distribution by operation in Table 5.8.9.

Table 5.8.9: Frequency of Stateside Clusters by Region by Operation after the 2010 Interactive TEA Delineation

RCC	MO/MB (TEA 1+6)	U/L (TEA 2+7)	RUE (TEA 3)	RA (TEA 4)	UE (TEA 5)
Atlanta	58	39	0	0	25
Boston	36	54	4	0	58
Charlotte	11	213	0	0	53
Chicago	119	1,314	0	0	81
Dallas	167	196	0	0	46
Denver	135	9	0	0	87
Detroit	58	561	0	0	0
Kansas City	111	585	0	0	39
Los Angeles	45	43	0	0	96
New York	7	21	0	0	6
Philadelphia	39	282	0	0	0
Seattle	51	294	1	50	32
Total	**792**	**3,554**	**5**	**50**	**521**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Boston RCC does not include Puerto Rico, data include stateside only

Stateside, there were 792 clusters of MO/MB areas and 3,554 clusters of U/L areas. The Chicago region had the largest number of U/L clusters, with 1,314. There were 50 clusters of RA areas, 5 clusters of RUE areas, and 521 clusters of UE areas.

Upon review, much of the clustering during the batch delineation was due to the distribution of null blocks. Guidance was to incorporate these blocks into the surrounding TEA.

Analysis at lower level geographies and additional documentation would be needed to quantify how much of the interactive work was a result of smoothing null blocks, smoothing TEAs suggested in batch delineation, or correcting or changing TEA assignments based on additional research.

Stateside there were 792 clusters of MO/MB areas, 3,554 clusters of U/L areas, 521 clusters of UE areas, 50 clusters of RA areas, and 5 clusters of RUE areas. Looking at the individual TEAs, the number of clusters decreased from batch to interactive delineation by 99 percent, from 749,340 to 5,845.

5.9 a. What changes in the distribution of city-style and noncity-style addresses were identified after each review? b. What changes in the distribution of DSF presence were identified after each review? c. What changes in the distribution of ACT codes were identified after each review?

We will first review the relation between the TEA values and the characteristics of city-style addressing, DSF presence, and the block ACT code individually. Examining characteristics which most closely resemble the final TEA value may help refine and create a more useful batch delineation.

a. What changes in the distribution of city-style and noncity-style addresses were identified after each review?

A city-style address is defined as having a house number and a street name, or a building name and either a within structure descriptor or within structure identifier (See the Address Characteristic Type Software Requirements Specification). Any address that does not fit these criteria is considered to be noncity-style. The city-style address counts discussed in this section are not based upon the total number of HUs used for the 2010 TEA Delineation. The totals are based upon the next DSF refresh after the 2010 TEA Delineation took place, which occurred in March 2009.

Those city-style address totals were mapped back to their original block used in the 2010 TEA Delineation. There were a total of 2,271,045 more addresses in the next benchmark universe compared to the total HUs used in the 2010 TEA Delineation. The city-style address counts were not created by GEO because city-style address information was not used directly in the batch delineation. It is unknown if these addresses were clustered, or represent particular areas of under-coverage or growth. Although the totals are not exactly the same from the time of the 2010 TEA Delineation, we will assume the HUs proportionally represent what might have been seen if the data from the time of the 2010 TEA Delineation had been maintained.

These shifts are very similar to the shifts in HUs from MO/MB areas during batch delineation to U/L areas in interactive delineation. One of the main goals of the 2010 TEA Delineation is to maximize the number of addresses we have in MO/MB TEAs while enumerating every household and minimizing public perceptions of poor quality operations and products.

Table 5.9.1 presents the distribution of stateside city-style and noncity-style addresses grouped by TEA, after batch and interactive delineation.

Table 5.9.1: Distribution of Stateside City-Style and Noncity-Style Addresses by TEA after Each 2010 TEA Delineation Review

TEA	No. of City-Style HUs	%	No. of Noncity-Style HUs	%	Total	%
Batch Delineation						
1	119,178,369	95.2	691,285	16.4	119,869,654	92.7
%	99.4		0.6		100.0	
2	4,826,671	3.9	3,355,366	79.4	8,182,037	6.3
%	59.0		41.0		100.0	
3	2,175	0.0	4,868	0.1	7,043	0.0
%	30.9		69.1		100.0	
4	5,270	0.0	22,505	0.5	27,775	0.0
%	19.0		81.0		100.0	
5	265,567	0.2	147,429	3.5	412,996	0.3
%	64.3		35.7		100.0	
6	303,621	0.2	1,942	0.0	305,563	0.2
%	99.4		0.6		100.0	
Null	552,343	0.4	4,509	0.1	556,852	0.4
%	99.2		0.8		100.0	
Total	**125,134,016**	**100.0**	**4,227,904**	**100.0**	**129,361,920**	**100.0**
%	**96.7**		**3.3**		**100.0**	
Interactive Delineation						
1	116,020,333	92.7	1,550,366	36.7	117,570,699	90.9
%	98.7		1.3		100.0	
2	5,881,815	4.7	1,828,809	43.3	7,710,624	6.0
%	76.3		23.7		100.0	
3	2,175	0.0	4,868	0.1	7,043	0.0
%	30.9		69.1		100.0	
4	5,270	0.0	22,505	0.5	27,775	0.0
%	19.0		81.0		100.0	
5	1,011,407	0.8	290,939	6.9	1,302,346	1.0
%	77.7		22.3		100.0	
6	302,480	0.2	1,931	0.0	304,411	0.2
%	99.4		0.6		100.0	
7	1,910,536	1.5	528,486	12.5	2,439,022	1.9
%	78.3		21.7		100.0	
Total	**125,134,016**	**100.0**	**4,227,904**	**100.0**	**129,361,920**	**100.0**
%	**96.7**		**3.3**		**100.0**	

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Some percentage totals do not equal 100.0 due to rounding

Note: The 556,852 HUs in Null blocks during batch delineation was *not* the result of the 2010 TEA Delineation, but was due to using a different/later vintage of data for the analysis.

Examining the distribution of city-style and noncity-style addresses is important because it is a main contributor to the ACT code for the block, which determines the batch TEA. For the entire universe, 96.7 percent of all HUs had a city-style address and 3.3 percent had a noncity-style address.

Of the 125,134,016 HUs with city-style addresses, over 95 percent of the city-style addresses were assigned TEA 1 by the batch delineation.

The largest net increase in city-style addresses from batch delineation to interactive delineation was in TEA 7, where the number went from zero city-style addresses to 1,910,536. If the HU tallies for this analysis had been created at the time of the 2010 TEA Delineation, there would have been no HUs in null blocks. The majority of the HUs in null blocks was assigned to TEA 1, which is consistent with the assignment of the majority of the overall HUs and blocks for the TEA results.

Table 5.9.2 shows shifts in stateside city-style address totals from batch to interactive delineation.

Table 5.9.2: Shifts in Stateside City-Style Address Totals from the 2010 Batch TEA Delineation to the 2010 Interactive TEA Delineation

	Interactive TEA											
Batch TEA	**1**	**%**	**2**	**%**	**5**	**%**	**6**	**%**	**7**	**%**	**Total**	**%**
1	-	-	3,899,917	98.7	651,723	74.8	18	85.7	1,232,972	64.5	5,784,630	61.8
%	-		67.4		11.3		0.0		21.3		100.0	
2	2,011,366	76.6	-	-	213,069	24.5	3	14.3	672,086	35.2	2,896,524	30.9
%	69.4		-		7.4		0.0		23.2		100.0	
5	88,962	3.4	35,946	0.9	-	-	0	0.0	27	0.0	124,935	1.3
%	71.2		28.8		-		0.0		0.0		100.0	
6	956	0.0	206	0.0	0	0.0	-	-	0	0.0	1,162	0.0
%	82.3		17.7		0.0		-		0.0		100.0	
Null	525,310	20.0	15,599	0.4	5,983	0.7	0	0.0	5,451	0.3	552,343	5.9
%	95.1		2.8		1.1		-		1.0		100.0	
Total	**2,626,594**	**100.0**	**3,951,668**	**100.0**	**870,775**	**100.0**	**21**	**100.0**	**1,910,536**	**100.0**	**9,359,594**	**100.0**
%	**28.1**		**42.2**		**9.3**		**0.0**		**20.4**		**100.0**	

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: There were no changes in TEAs 3 and 4; no blocks were added to TEA Null
Note: Some percentage totals do not equal 100.0 due to rounding

A total of 5,784,630 stateside city-style addresses were in blocks that were shifted out of TEA 1 from batch to interactive delineation; 3,899,917 or 67.4 percent of these addresses were shifted to TEA 2. This shift in TEA 1 city-style addresses coupled with a shift of 2,626,594 city-style addresses into TEA 1 areas during the interactive delineation (76.6 of which came from TEA 2), meant a net decrease of 3,158,036 city-style addresses in TEA 1 from batch delineation to interactive delineation.

Table 5.9.3 presents the percentages of the total stateside city-style and noncity-style addresses grouped by TEA for both the batch delineation and interactive delineation.

Table 5.9.3: Stateside City-Style and Noncity-Style Address Percentages of Total by TEA for 2010 TEA Delineation

	TEA 1	TEA 2	TEA 5	TEA 6	TEA 7	Null	Total
Batch Delineation							
City-Style	92.1	3.7	0.2	0.2	.	0.4	96.7
Noncity-Style	0.5	2.6	0.1	0.0	.	0.0	3.3
Total	**92.7**	**6.3**	**0.3**	**0.2**	**.**	**0.4**	**100.0**
Interactive Delineation							
City-Style	89.7	4.5	0.8	0.2	1.5	.	96.7
Noncity-Style	1.2	1.4	0.2	0.0	0.4	.	3.3
Total	**90.9**	**6.0**	**1.0**	**0.2**	**1.9**	**.**	**100.0**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: There were no changes in TEAs 3 and 4; percent changes could not be calculated for TEA 7 because of zero in the denominator
Note: Some percentage totals do not equal 100.0 due to rounding

Out of all the HUs (129,361,920) 92.1 percent were city-style and in TEA 1 after the batch delineation, while 89.7 percent of all addresses were city-style and in TEA 1 after the interactive delineation. A total of 3.7 percent of all TEA 2 HUs were city-style after batch delineation, as compared to 4.5 percent after interactive delineation.

Table 5.9.4 presents the percentage changes of stateside city-style and noncity-style addresses from batch to interactive delineation.

Table 5.9.4: Percentage Changes of Stateside City-Style and Noncity-Style Addresses from 2010 TEA Batch Delineation to 2010 TEA Interactive Delineation

TEA	City-Style Address % Change	Noncity-Style Address % Change	Total Change
1	-2.7	124.3	-1.9
2	21.9	-45.5	-5.8
5	280.9	97.3	215.3
6	-0.4	-0.6	-0.4
Null	-100.0	-100.0	-100.0

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Unable to calculate percent changes for TEA 7 due to zero in the denominator.
Note: There were no shifts in TEAs 3 and 4.

After batch delineation, 0.5 percent of all addresses were noncity-style and in TEA 1 (Table 5.9.3). This proportion increased to 1.2 percent of all addresses after the interactive delineation. This shift amounted to a 124.3 percent increase in the number of noncity-style addresses in TEA 1 from batch delineation to interactive delineation. While it is not desirable to have noncity-style addresses delivered by MO/MB, some smoothing is needed to make TEA areas practical for field work. After batch delineation, 79.4 percent of the noncity-style addresses were allocated to TEA 2 (Table 5.9.1). The number of noncity-style addresses allocated to TEA 2 decreased by 45.5 percent from batch to interactive delineation, while the number of noncity-style addresses in TEA 5 increased by 97.3 percent. After the interactive delineation, there were 528,426 noncity-style addresses added to TEA 7, compared to zero addresses after batch delineation (Table 5.9.1).

Table 5.9.5 shows shifts in stateside noncity-style address totals from batch to interactive delineation.

Table 5.9.5: Shifts in Stateside Noncity-Style Address Totals from 2010 Batch TEA Delineation to 2010 Interactive TEA Delineation

	Interactive TEA											
Batch TEA	**1**	**%**	**2**	**%**	**5**	**%**	**6**	**%**	**7**	**%**	**Total**	**%**
1	-	-	103,489	86.8	16,845	10.6	0	0.0	40,877	7.7	161,211	8.8
%	-		64.2		10.4		0.0		25.4		100.0	
2	1,016,352	99.6	-	-	141,862	89.3	1	100.0	487,533	92.3	1,645,748	90.1
%	61.8		-		8.6		0.0		29.6		100.0	
5	2,192	0.2	13,169	11.0	-	-	0	0.0	23	0.0	15,384	0.8
%	14.2		85.6		-		0.0		0.1		100.0	
6	6	0.0	6	0.0	0	0.0	-	-	0	0.0	12	0.0
%	50.0		50.0		0.0		-		0.0		100.0	
Null	1,742	0.2	2,527	2.1	187	0.1	0	0.0	53	0.0	4,509	0.2
%	38.6		56		4.1		0.0		1.2		100.0	
Total	**1,020,292**	**100.0**	**119,191**	**100.0**	**158,894**	**100.0**	**1**	**100.0**	**528,486**	**100.0**	**1,826,864**	**100.0**
%	**55.8**		**6.5**		**8.7**		**0.0**		**28.9**		**100.0**	

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: There were no changes in TEAs 3 and 4; no blocks were added to TEA Null
Note: Some percentage totals do not equal 100.0 due to rounding

b. What changes in the distribution of DSF presence were identified after each review?

The DSF is delivered semiannually to GEO from the USPS. The DSF contains addresses where the USPS delivers mail or could potentially deliver mail. DSF presence is a value created when the USPS addresses are compared to the MAF. Each address could receive one of four different values:

- 0 = Not on the indicated DSF,
- 1 = Flagged as residential on the indicated DSF,
- 2 = Flagged as commercial on the indicated DSF, or
- 3 = Flagged as an 'X' record[6] on the indicated DSF every time the DSF is updated.

Only city-style records were updated on the MAF from the DSF. If an address record was ever flagged as being in a DSF delivery on the MAF, it was included in the block level tallies in the assessment data. Whether or not the addresses in a block were on the DSF is information used in determining a block's ACT code. A category of All DSF, No DSF, or Some DSF was reflected

[6] A flag on the DSF record indicating that no data are available regarding delivery statistics.

in the ACT code. Most of the blocks have some DSF addresses, so there was minimal impact on the ACT codes.

The DSF presence counts during the time of the Main TEA Delineation were not recovered because DSF presence at the block level was not used directly in the batch or interactive delineation, and was not maintained by GEO. DSF information (at the ZIP Code level) was provided to the regional geography staff for their use as reference in the interactive delineation. The regional geography staff did request address level DSF information to aid them in the interactive TEA Delineation, but the data were not provided.

The following DSF presence tallies were not based upon the total number of HUs used for the 2010 TEA Delineation. The totals reflect those after the next DSF refresh, which occurred in March 2009. There were a total of 2,271,045 more addresses in the next benchmark universe compared to the total HUs used in the delineation.

Table 5.9.6 presents the distribution of stateside addresses with and without DSF presence grouped by TEA, after batch and interactive delineation.

Table 5.9.6: Distribution of Stateside Addresses with and without DSF Presence after Each 2010 TEA Delineation Review

TEA	No. of HUs on DSF	%	No. of HUs not on DSF	%	Total	%
Batch Delineation						
1	113,527,834	96.9	6,341,820	52.1	119,869,654	92.7
%	94.7		5.3		100.0	
2	2,646,645	2.3	5,535,392	45.4	8,182,037	6.3
%	32.3		67.7		100.0	
3	1,044	0.0	5,999	0.0	7,043	0.0
%	14.8		85.2		100.0	
4	245	0.0	27,530	0.2	27,775	0.0
%	0.9		99.1		100.0	
5	182,645	0.2	230,351	1.9	412,996	0.3
%	44.2		55.8		100.0	
6	290,114	0.2	15,449	0.1	305,563	0.2
%	94.9		5.1		100.0	
Null	533,328	0.5	23,524	0.2	556,852	0.4
%	95.8		4.2		100.0	
Total	**117,181,855**	**100.0**	**12,180,065**	**100.0**	**129,361,920**	**100.0**
%	**90.6**		**9.4**		**100.0**	
Interactive Delineation						
1	111,035,280	94.8	6,535,419	53.7	117,570,699	90.9
%	94.4		5.6		100.0	
2	3,871,638	3.3	3,838,986	31.5	7,710,624	6.0
%	50.2		49.8		100.0	
3	1,044	0.0	5,999	0.0	7,043	0.0
%	14.8		85.2		100.0	
4	245	0.0	27,530	0.2	27,775	0.0
%	0.9		99.1		100.0	
5	604,722	0.5	697,624	5.7	1,302,346	1.0
%	46.4		53.6		100.0	
6	289,088	0.2	15,323	0.1	304,411	0.2
%	95.0		5.0		100.0	
7	1,379,838	1.2	1,059,184	8.7	2,439,022	1.9
%	56.6		43.4		100.0	
Total	**117,181,855**	**100.0**	**12,180,065**	**100.0**	**129,361,920**	**100.0**
%	**90.6**		**9.4**		**100.0**	

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: There were no changes in TEAs 3 and 4; no blocks were added to TEA Null
Note: Some percentage totals do not equal 100.0 due to rounding

Overall, 90.6 percent of all HUs were included on the DSF and 9.4 percent of the HUs were not on the DSF. If an address is on the DSF, it would be enumerated by MO/MB. However, this will not always be the case because the TEA is determined at the block level. After batch delineation, 96.9 percent of the HUs on the DSF were delineated to TEA 1, as compared to 94.8 percent after the interactive delineation.

Table 5.9.7 presents the percentages of the total stateside addresses with and without DSF presence grouped by TEA for both the batch delineation and interactive delineation.

Table 5.9.7: DSF Address Percentages of Total by TEA for 2010 TEA Delineation

	TEA 1	TEA 2	TEA 5	TEA 6	TEA 7	Null	Total
Batch Delineation							
On DSF	87.8	2.0	0.1	0.2	.	0.4	90.6
Not on DSF	4.9	4.3	0.2	0.0	.	0.0	9.4
Total	**92.7**	**6.3**	**0.3**	**0.2**	**.**	**0.4**	**100.0**
Interactive Delineation							
On DSF	85.8	3.0	0.5	0.2	1.1	.	90.6
Not on DSF	5.1	3.0	0.5	0.0	0.8	.	9.4
Total	**90.9**	**6.0**	**1.0**	**0.2**	**1.9**	**.**	**100.0**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: There were no changes in TEAs 3 and 4; percent changes could not be calculated for TEA 7 because of zero in the denominator
Note: Some percentage totals do not equal 100.0 due to rounding

For the batch delineation, 87.8 percent of all addresses were on the DSF and in TEA 1, while 85.8 percent of the addresses were on the DSF and in TEA 1 after the interactive delineation.

Table 5.9.8 shows shifts in stateside address totals with DSF presence from batch to interactive delineation.

Table 5.9.8: Shifts in DSF Address Totals from 2010 Batch TEA Delineation to 2010 Interactive TEA Delineation

	Interactive TEA											
Batch TEA	**1**	**%**	**2**	**%**	**5**	**%**	**6**	**%**	**7**	**%**	**Total**	**%**
1	-	-	3,024,961	98.9	458,413	86.8	18	100.0	991,720	71.9	4,475,112	64.4
%	-		67.6		10.2		0.0		22.2		100.0	
2	1,384,246	69.8	-	-	66,169	12.5	0	0.0	383,031	27.8	1,833,446	26.4
%	75.5		-		3.6		0.0		20.9		100.0	
5	82,943	4.2	23,257	0.8	-	-	0	0.0	21	0.0	106,221	1.5
%	78.1		21.9		-		0.0		0.0		100.0	
6	933	0.0	111	0.0	0	0.0	-	-	0	0.0	1,044	0.0
%	89.4		10.6		0.0		-		0.0		100.0	
Null	514,436	25.9	10,110	0.3	3,716	0.7	0	0.0	5,066	0.4	533,328	7.7
%	96.5		1.9		0.7		0.0		0.9		100.0	
Total	**1,982,558**	**100.0**	**3,058,439**	**100.0**	**528,313**	**100.0**	**18**	**100.0**	**1,379,838**	**100.0**	**6,949,151**	**100.0**
%	**28.5**		**44.0**		**7.6**		**0.0**		**19.9**		**100.0**	

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: There were no changes in TEAs 3, 4, and 7; no blocks were added to TEA Null
Note: Some percentage totals do not equal 100.0 due to rounding

Blocks containing 4,475,112 DSF HUs were shifted from TEA 1 to other TEAs; 3,024,961 or 67.6 percent of these HUs were shifted to TEA 2. This shift coupled with a shift of blocks containing 1,982,558 HUs on the DSF to TEA 1 resulted in a net decrease of 2.2 percent of HUs with DSF presence in TEA 1 from batch delineation to interactive delineation.

Table 5.9.9 presents the percentage changes of stateside addresses with and without DSF presence from batch to interactive delineation.

Table 5.9.9: Change in HUs with DSF Presence and No DSF Presence from 2010 Batch TEA Delineation to 2010 Interactive TEA Delineation

TEA	DSF Presence % Change	No DSF Presence % Change	Total Change
1	-2.2	3.1	-1.9
2	46.3	-30.7	-5.8
5	231.1	202.9	215.3
6	-0.4	-0.8	-0.4
Null	-100.0	-100.0	-100.0

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: There were no changes in TEAs 3 and 4; percent changes could not be calculated for TEA 7 because of zero in the denominator

For batch delineation, 2.0 percent of all TEA 2 HUs were on the DSF, while 3.0 percent of all TEA 2 HUs were on the DSF after the interactive delineation (Table 5.9.7). There was a net increase of 1,224,993 HUs on the DSF in TEA 2 from batch delineation to interactive delineation, resulting in a 46.3 percent increase in the number of HUs on the DSF in TEA 2. The percentage of TEA 2 HUs on the DSF increased from 32.3 percent, after batch delineation, to 50.2 percent after the interactive delineation. Much of this increase can be attributed to the 3,024,961 HUs on the DSF shifted from TEA 1 to TEA 2 from batch delineation to interactive delineation.

Table 5.9.10 shows shifts in stateside address totals without DSF presence from batch to interactive delineation.

Table 5.9.10: Shifts in No DSF Address Totals from Batch Delineation to Interactive Delineation

	Interactive TEA											
Batch TEA	**1**	**%**	**2**	**%**	**5**	**%**	**6**	**%**	**7**	**%**	**Total**	**%**
1	-	-	978,445	96.6	210,155	41.9	0	0.0	282,129	26.6	1,470,729	34.7
%	-		66.5		14.3		0.0		19.2		100.0	
2	1,643,472	98.7	-	-	288,762	57.6	4	100.0	776,588	73.3	2,708,826	63.9
%	60.7		-		10.7		0.0		28.7		100.0	
5	8,211	0.5	25,858	2.6	-	-	0	0.0	29	0.0	34,098	0.8
%	24.1		75.8		-		0.0		0.1		100.0	
6	29	0.0	101	0.0	0	0.0	-	-	0	0.0	130	0.0
%	22.3		77.7		0.0		-		0.0		100.0	
Null	12,616	0.8	8,016	0.8	2,454	0.5	0	0.0	438	0.0	23,524	0.6
%	53.6		34.1		10.4		0.0		1.9		100.0	
Total	**1,664,328**	**100.0**	**1,012,420**	**100.0**	**501,371**	**100.0**	**4**	**100.0**	**1,059,184**	**100.0**	**4,237,307**	**100.0**
%	**39.3**		**23.9**		**11.8**		**0.0**		**25.0**		**100.0**	

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: There were no changes in TEAs 3 and 4; no blocks were added to TEA Null
Note: Some percentage totals do not equal 100.0 due to rounding

After batch delineation, 4.9 percent of all TEA 1 addresses were not on the DSF (Table 5.9.7). This percentage increased to 5.1 percent of all addresses after the interactive delineation. This shift amounted to a 3.1 percent increase in the number of addresses not on the DSF in TEA 1 from batch delineation to interactive delineation. TEA 1 gained the most HUs not on the DSF (1,664,489) and TEA 2 lost the most HUs not the DSF (2,708,826) during the interactive delineation. Most (66.5 percent) of the HUs not on the DSF in TEA 1 blocks that shifted during interactive delineation were shifted to TEA 2 blocks. Most (98.7 percent) of the HUs not on the DSF were in blocks that shifted to TEA 1 from TEA 2 during batch delineation.

c. What changes in the distribution of ACT codes were identified after each review?

The ACT code assignments for each block are available from the time of the 2010 TEA Delineation.

Table 5.9.11 presents the distribution of stateside blocks by ACT code, grouped by TEA after the batch delineation.

Table 5.9.11: Distribution of Stateside Blocks by ACT Code by TEA after Batch Delineation

	Batch Delineation							
ACT Code	**TEA 1**	**TEA 2**	**TEA 3**	**TEA 4**	**TEA 5**	**TEA 6**	**Null**	**Total**
B1	0	0	1	3	14	29	298	345
B2	0	0	0	0	4	8	124	136
B3	0	0	0	1	435	1,078	188,219	189,733
C1	0	135,883	7	133	2,626	276	0	138,925
C2	867,208	0	6	1	3,073	1,067	0	871,355
C3	2,712,569	0	2	0	6,599	6,615	0	2,725,785
M1	0	82,929	43	427	4,400	58	0	87,857
M3	133	0	0	0	0	1	0	134
MA	113,696	0	5	1	431	62	0	114,195
MB	96,658	0	1	0	517	37	0	97,213
MC	61,506	0	0	1	384	27	0	61,918
MD	0	54,623	1	1	494	24	0	55,143
ME	0	38,421	1	0	331	14	0	38,767
MF	0	18,698	0	0	181	4	0	18,883
MG	0	158,407	23	3	2,500	62	0	160,995
N1	0	77,417	318	1,149	8,115	75	0	87,074
N2	0	44	0	0	0	0	0	44
N3	0	2	0	0	0	0	0	2
P1	0	12,006	10	144	1,596	5	0	13,761
R1	0	32,146	21	32	865	15	0	33,079
R2	0	11	0	0	0	1	0	12
R3	0	2	0	0	0	0	0	2
Z0	0	0	3,751	10,900	46,770	41,036	1,830,851	1,933,308
Total	**3,851,770**	**610,589**	**4,190**	**12,796**	**79,335**	**50,494**	**2,019,492**	**6,628,666**
% of Total	**58.1**	**9.2**	**0.1**	**0.2**	**1.2**	**0.8**	**30.5**	**100.0**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Some percentage totals do not equal 100.0 due to rounding

ACT codes were used as the basis of determining the batch TEA value. Blocks with an ACT code of C2, C3, M3, MA, MB, or MC were placed in MO/MB areas for batch delineation. If a block fell into one of the other twenty- two ACT codes, it was not MO/MB. The rules for determining the ACT code for a block are in Appendix A. After batch delineation, the regional geography staff "smoothed" the TEA using the guidelines in Appendix I. In general, the goal of the interactive delineation was to identify seasonally-vacant and hard to enumerate areas for TEA 5, identify TEA 7, maximize areas in MO/MB without jeopardizing delivery of questionnaires, and smooth the blocks into operational areas optimal for field operations. There was a decrease in MO/MB ACT codes in TEA 1 after the interactive delineation.

Table 5.9.12 presents the distribution of stateside blocks by ACT code, grouped by TEA after the interactive delineation.

Table 5.9.12: Distribution of Stateside Blocks by ACT Code by TEA after Interactive Delineation

	Interactive Delineation							
ACT Code	**TEA 1**	**TEA 2**	**TEA 3**	**TEA 4**	**TEA 5**	**TEA 6**	**TEA 7**	**Total**
B1	113	142	1	3	22	29	35	345
B2	111	4	0	0	7	8	6	136
B3	179,134	7,033	0	1	753	1,080	1,732	189,733
C1	39,504	77,526	7	133	6,421	278	15,056	138,925
C2	728,578	107,556	6	1	11,798	1,064	22,352	871,355
C3	2,523,390	158,015	2	0	10,962	6,610	26,806	2,725,785
M1	12,873	53,409	43	427	7,436	58	13,611	87,857
M3	129	1	0	0	2	1	1	134
MA	96,924	11,553	5	1	2,273	60	3,379	114,195
MB	71,976	16,943	1	0	2,189	37	6,067	97,213
MC	40,835	14,210	0	1	1,427	26	5,419	61,918
MD	31,154	16,525	1	1	1,337	24	6,101	55,143
ME	19,761	13,174	1	0	939	14	4,878	38,767
MF	9,039	6,350	0	0	518	4	2,972	18,883
MG	61,516	63,883	23	3	4,898	62	30,610	160,995
N1	13,130	50,699	318	1,149	10,275	75	11,428	87,074
N2	5	30	0	0	0	0	9	44
N3	2	0	0	0	0	0	0	2
P1	1,827	7,430	10	144	1,773	5	2,572	13,761
R1	4,764	24,174	21	32	936	16	3,136	33,079
R2	0	11	0	0	0	1	0	12
R3	0	2	0	0	0	0	0	2
Z0	1,075,504	556,760	3,751	10,900	80,062	41,274	165,057	1,933,308
Total	**4,910,269**	**1,185,430**	**4,190**	**12,796**	**144,028**	**50,726**	**321,227**	**6,628,666**
% of Total	**74.1**	**17.9**	**0.1**	**0.2**	**2.2**	**0.8**	**4.9**	**100.0**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: Some percentage totals do not equal 100.0 due to rounding

The regional geography staff moved 1,451,553 blocks containing 3,096,169 HUs from non MO/MB areas to MO/MB during interactive delineation. A total of 1,252,665 of these blocks were zero HU blocks. However, 392,822 blocks containing 5,895,017 HUs were moved out of MO/MB areas and into non MO/MB areas (mainly TEA 2) during interactive delineation. This resulted in a net gain of 1,058,731 blocks and a net loss of 2,798,848 HUs in MO/MB areas after interactive delineation—a 2.4 percent decrease in the number of MO/MB addresses after interactive delineation. Due to the large number of blocks being moved into TEA 2, a much

higher percentage of blocks with ACT codes recommended as TEA 1 ended up in TEA 2 after batch delineation (Table 5.9.13). Movement either way shows that the batch delineation was not delineated in the same way the regional staff would have preferred . One goal of the interactive delineation is to make necessary changes in order for field operations to run smoothly.

Table 5.9.13 shows shifts in the number of blocks between ACT codes, grouped by TEA value, from batch to interactive delineation.

Table 5.9.13: Distribution of Block Shifts by ACT Code by TEA from Batch Delineation to Interactive Delineation

	Change in Blocks					
ACT Code	**TEA 1**	**TEA 2**	**TEA 5**	**TEA 6**	**TEA 7**	**Null**
B1	113	142	8	0	35	-298
B2	111	4	3	0	6	-124
B3	179,134	7,033	318	2	1,732	-188,219
C1	39,504	-58,357	3,795	2	15,056	.
C2	-138,630	107,556	8,725	-3	22,352	.
C3	-189,179	158,015	4,363	-5	26,806	.
M1	12,873	-29,520	3,036	0	13,611	.
M3	-4	1	2	0	1	.
MA	-16,772	11,553	1,842	-2	3,379	.
MB	-24,682	16,943	1,672	0	6,067	.
MC	-20,671	14,210	1,043	-1	5,419	.
MD	31,154	-38,098	843	0	6,101	.
ME	19,761	-25,247	608	0	4,878	.
MF	9,039	-12,348	337	0	2,972	.
MG	61,516	-94,524	2,398	0	30,610	.
N1	13,130	-26,718	2,160	0	11,428	.
N2	5	-14	.	.	9	.
N3	2	-2	.	.	.	.
P1	1,827	-4,576	177	0	2,572	.
R1	4,764	-7,972	71	1	3,136	.
R2	.	0	.	0	.	.
R3	.	0	.	.	.	.
Z0	1,075,504	556,760	33,292	238	165,057	-1,830,851
Total	**1,058,499**	**574,841**	**64,693**	**232**	**321,227**	**-2,019,492**

Source: 2010 TEA Delineation Assessment Data provided by GEO

Table 5.9.14 presents the distribution of the percentage changes in stateside block shifts by ACT code, grouped by TEA value, from the batch to interactive delineation.

Table 5.9.14: Distribution of Percentage Changes in TEA Block Shifts by ACT Codes from Batch Delineation to Interactive Delineation

	Percentage Change				
ACT Code	**TEA 1**	**TEA 2**	**TEA 5**	**TEA 6**	**Null**
B1	.	.	57.1	0.0	-100.0
B2	.	.	75.0	0.0	-100.0
B3	.	.	73.1	0.2	-100.0
C1	.	-43.0	144.5	0.7	.
C2	-16.0	.	283.9	-0.3	.
C3	-7.0	.	66.1	-0.1	.
M1	.	-35.6	69.0	0.0	.
M3	-3.0	.	.	0.0	.
MA	-14.8	.	427.4	-3.2	.
MB	-25.5	.	323.4	0.0	.
MC	-33.6	.	271.6	-3.7	.
MD	.	-69.8	170.7	0.0	.
ME	.	-65.7	183.7	0.0	.
MF	.	-66.0	186.2	0.0	.
MG	.	-59.7	95.9	0.0	.
N1	.	-34.5	26.6	0.0	.
N2	.	-31.8	.	.	.
N3	.	-100.0	.	.	.
P1	.	-38.1	11.1	0.0	.
R1	.	-24.8	8.2	6.7	.
R2	.	0.0	.	0.0	.
R3	.	0.0	.	.	.
Z0	.	.	71.2	0.6	-100.0
Total	**27.5**	**94.1**	**81.5**	**0.5**	**-100.0**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: There were no changes in TEAs 3 and 4; percent changes could not be calculated for TEA 7 because of zero in the denominator

Table 5.9.15 shows the distribution of the percentage changes in stateside block shifts by type of ACT code, grouped by TEA value, from batch to interactive delineation.

Table 5.9.15: Distribution of Percentage Changes in TEA Block Shifts by ACT Codes Type from Batch Delineation to Interactive Delineation

	Change in Blocks					
ACT Code Type	**TEA 1**	**TEA 2**	**TEA 5**	**TEA 6**	**TEA 7**	**Null**
MO/MB	-389,938	308,278	17,647	-11	64,024	0
NonMO/MB	372,933	-290,197	13,754	5	92,146	0
Null	1,075,504	556,760	33,292	238	165,057	-2,019,492
Total	**1,058,499**	**574,841**	**64,693**	**232**	**321,227**	**-2,019,492**

Source: 2010 TEA Delineation Assessment Data provided by GEO
Note: There were no shifts in TEAs 3 and 4.

Block level data of city-style and DSF characteristics at the time of the 2010 TEA Delineation were not maintained. Data from a later time period were provided for the analysis, making it more difficult to draw conclusions about the cause of changes.

Stateside, 96.7 percent of the HUs used were city-style and 90.6 percent of the HUs were on the DSF. During the batch delineation, 92.1 percent of the HUs were city-style and in TEA 1 and 87.8 percent of the HUs were on the DSF and assigned to TEA 1. After the interactive delineation, the percentage of both city-style and DSF HUs in TEA 1 decreased.

The batch delineation was based on block level ACT codes, which attempt to summarize the address characteristics within the block. There was a decrease of 389,938 blocks with MO/MB ACT codes in TEA 1 after the interactive delineation. Most (308,278) of the MO/MB blocks that shifted TEAs were delineated to TEA 2, while most (372,933) of the non-MO/MB blocks that shifted TEAs were delineated to TEA 1.

5.10 What are the benefits to using a city-style based code as the basis for the batch delineation? What are the benefits to using a DSF based code as the basis for the batch delineation? Would changes to the ACT code or a different measure be recommended for the basis of the 2010 TEA Delineation? What were the benefits of using ACT codes in both the batch and interactive delineation? What were the benefits of using ACT codes in 2010 versus what was available in 2000 for the TEA Delineation?

From a national analysis, the percent city-style, DSF, or ACT codes could not appear to account for the changes made from batch to interactive delineation. The regional actions from additional research or smoothing had a much bigger effect. We did not track at a national level the reasons for the action taken during the interactive delineation. Many of the actions taken were identifying areas of growth, moving blocks out of TEA 1 during the batch delineation based on knowledge about lack of mail delivery, identifying difficult to enumerate areas and general smoothing to make areas feasible for conducting field operations.

During the batch delineation, 92.1 percent of HUs are city-style and assigned to TEA 1 and 87.8 percent of HUs are on the DSF and assigned to TEA 1. After the interactive delineation, both of these numbers decreased. Only 89.7 percent of HUs are city-style and assigned to TEA 1 and

85.8 percent of HUs are on the DSF and assigned to TEA 1. It is unclear which measure is more closely related to the final 2010 TEA Delineation. Although both city-style and DSF addresses are the most prevalent type of address in TEA 1, only a city-style address that is also on the DSF is confidently mailed to. The ACT codes did not provide this linkage. Blocks themselves often contain combinations of address characteristics and need to be moved into the TEA that staff thinks best represents the block's predominant address characteristics.

When comparing the resources used for delineating TEAs in Census 2000 with those in 2010, ACT codes were very useful and better than 2000. However, they were complex and confusing, and took too long to understand given the short delineation window. The ACT codes were a good starting point for the 2010 TEA Delineation.

Most regional geography staffs only considered ACT codes if they confirmed or verified information from postal calls and other datasets, or if they could not reach someone in a post office. The ranges of percentages of DSF were often too broad, and some ACT codes could easily misrepresent the majority of the block. The accuracy of the ACT codes was limited by the high number of ungeocoded addresses in the MAF, which were not included in ACT scores. Since ACT codes were based on the MAF, they are only as good as the MAF. The regional geography staff believed the ACT codes were most accurate in metropolitan areas, and in stable, low-growth areas.

The regional geography staffs think there is little benefit to using a city-style-based code as one of the bases for the batch delineation unless it is combined with a DSF-based code to indicate mailability. City-style codes alone are of doubtful utility to TEA Delineation.

Use of ACT codes is not recommended as the base for the 2020 TEA delineation. An alternate metric should be considered for the basis of TEA Delineation in the future. The regional geography staff suggested the following:

- Change the coding scheme to be consistent thus making it less confusing: use a letter and a number for all codes instead of C1, C2, MA, MB, M3, or have the code itself reflect the number and percent of residential, city-style, and DSF so that no key is needed.

- Use city-style and DSF flags on MAF addresses and Map Structure Points, to give delineation staff a better sense of delivery distribution on each block.

- Change the percentages used to define the M- series ACT codes. There is a big difference between zero percent of addresses matching the DSF and 69 percent matching. Categories such as "0-25 percent", "25-50 percent", "50-75 percent" and "75 – 100 percent" may make more sense.

- Find a way to reflect "forced" P.O. Box use.

- Include a table with DSF geocoding rate by block and by ZIP Code.

- Include a table of the actual numbers of HUs by mail delivery type, and the actual percent of MAF records with DSF correspondence, by block.

Since DSF records are city-style and determined mailable by the USPS, this measure would be a better source to determine mailability of addresses. An interactive delineation would still need to be completed. In addition, we recommend studying the feasibility of maintaining regional research of addressing or enumeration problems for use in future delineations.

5.11 How did the total housing units for each TEA compare with the budget estimates? How did this affect planning for the 2010 Census? Was the 2010 TEA Delineation completed in time to meet operational needs?

Budget estimates for 2010 Census operations were based on HU totals established early in the decade. HU estimates for each operation were established, and reviewed. The model assumption for the HUs in the stateside U/L operation were determined to be too low, so using a business case in 2006 the model was changed from 7 million HUs to 10 million HUs . UE areas in this model include the HUs in RA and RUE. This table of the estimated HU workloads from the 2010 Budget model excludes Puerto Rico and the Island Areas.

Table 5.11.1 presents the distribution of the estimated stateside HUs used in the DMD budget model for 2006, 2008, 2010, and those used for 2010 TEA Delineation reference.

Table 5.11.1 Stateside Estimated Housing Units used in the DMD Budget Model

Operation	2006	%	2008	%	2010	%	TEA Ref	%
MO/MB	119,350,985	93.0	120,283,726	90.9	120,755,244	91.1	115,704,174	91.0
U/L	7,000,001	5.5	10,000,000	7.6	10,399,379	7.8	10,067,943	7.9
UU/L	372,817	0.3	372,817	0.3				0.0
UE	1,662,050	1.3	1,662,050	1.3	1,434,021	1.1	1,318,758	1.0
Total	**128,385,853**	**100.0**	**132,318,593**	**100.0**	**132,588,644**	**100.0**	**127,090,875**	**100.0**

Note: 2006, 2008 and 2010 data may include QC work and overestimate the number of production HUs
2010 budget workloads were established after the 2010 TEA Delineation.

The percentages of HUs estimated to be in each 2010 Census operation during the 2010 TEA Delineation were similar to the HU expectations in the 2010 Census budget model. The percentage of HUs in MO/MB areas matched the modeled percentage, at nearly 91 percent. U/L operations were 7.92 percent of the total stateside workload and UE areas encompassed just over 1 percent. Comparisons were not made with the total number of HUs, because other 2010 Census operations (primarily Address Canvassing) would impact the HU frame.

A workload review was scheduled as part of the Main TEA Delineation process because of the potential for impact to other census programs. HU workload estimates were provided to other 2010 Census programs for planning purposes.

There is some concern the DMD workload review did not reflect the opportunity to review the HU workloads and 2010 Census budget based on address characteristics in the field. Debriefings indicated there was pressure for the 2010 TEA Delineation to meet modeled expectations.

Many of the census implementation teams would have preferred to have TEA results earlier in the planning cycle. Workloads are needed for printing forms, preparing materials for field assignments, and other purposes. The workload estimates seemed to be sufficient for most needs. Customers with the need to know the specific results of the 2010 TEA Delineation were able to modify their plans in time for implementation.

In summary, the percentages of housing units in each TEA aligned very closely with expectations in the 2010 Census budget model. Many of the 2010 Census implementation teams would have preferred to have TEA results earlier in the planning cycle, but workload estimates seemed to be sufficient for most needs.

5.12 How consistent were Local Census Office Type assumptions with the resulting TEA assignments?

In Census 2000, LCO Types were designated after the 2000 TEA Delineation, and the LCO Type descriptions included the 2000 TEAs in that LCO.

The 2010 LCO boundaries and types were identified prior to the 2010 TEA Delineation. The guidance provided for the LCO boundaries and type definition allowed for most combinations of Census 2000 TEAs to later be defined in each LCO Type.

Table 5.12.1 provides the Census 2000 and 2010 Description for each of the LCO types.

Table 5.12.1 Local Census Office Type Descriptions for Census 2000 and the 2010 Census

	Census 2000 Definitions/Basis for 2010 Budget Assumptions	2010 Description
Type A	Entirely Mailout/Mailback. Hardest to enumerate. Covers inner city/urban areas. May include Urban Update/Leave.	Urban/Hard to Count. Primarily Mailout/Mailback; May include pockets of Urban Update Enumerate and/or Urban Update/Leave.
Type B	Entirely Mailout/Mailback. Covers urban/metropolitan areas. May include Urban Update/Leave.	Urban/Metropolitan. Primarily Mailout/Mailback, possibly with some pockets of Urban Update Leave, Urban Update Enumerate, and/or Update/Leave.
Type C	Includes Update/Leave Areas and Mailout/Mailback areas. Covers suburban areas, small and medium cities, towns and rural areas. May include Rural Update Enumerate. Most numerous type of LCO.	Suburban/Rural. A mixture of Update/Leave and Mailout/Mailback and may include some Update Enumerate.
Type D	Includes List/Enumerate areas. Also includes Update/Leave areas and may include some Mailout/Mailback areas.	Rural/Remote. Mostly Update Enumerate, with limited Update/Leave, Mailout/Mailback, and Remote Update Enumerate.
Type E	Puerto Rico LCOs. Entirely Update/Leave.	Alaska. Mailout/Mailback, Update/Leave, Update Enumerate, Remote Update Enumerate, and Remote Alaska.
Type F		Puerto Rico. Update/Leave.

The 2010 guidance was not updated to eliminate reference to the UU/E operation. Since 2010 TEAs were not available, guidance for the LCO Delineation specified the use of Census 2000 TEAs, land area, Hard to Count indicators, and expected NRFU workload in determining the LCO Type.

Census 2000 assumptions were often used in the 2010 planning. For example, the DMD budget model made workload assumptions for each LCO Type using the Census 2000 LCO Type categories. These categories became a generic indicator of the types of differences that need to be accounted for in conducting field operations and an estimate of how many LCOs would need to conduct each operation. It was not known prior to the 2010 TEA Delineation how many support staff or materials would be needed for each field operation.

The Remote Alaska operation was only conducted in Alaska. The RUE operation was conducted in two LCOs. MO/MB was conducted in every stateside LCO. (LCO 3018 in New Orleans, LA did not have any TEA 1 areas, but did have TEA 6). Over half (61 percent) of the LCOs conducted U/L. There were 88 LCOs that conducted UE.

Table 5.12.2 shows the combination of type of enumeration operational areas conducted in each LCO Type. There were 178 stateside LCOs comprised of only one enumeration method. The seven Puerto Rico LCOs were all conducted by U/L. There were 232 offices with two different types of enumeration methods, either MO/MB and U/L, or MO/MB and UE. There were 75 offices with three enumeration methods, and the Anchorage, Alaska and Bangor, Maine offices had four each.

Table 5.12.2 Type of Enumeration Operational Areas by Local Census Office Type

	Total LCOs	MOMB Only	MOMB and UL	MOMB and UE	MOMB, UL, and UE	MOMB, UL, UE, RUE	MOMB, UL, RUE, RA	UL Only
Type A	93	82	11	0	0	0	0	0
Type B	134	63	51	6	14	0	0	0
Type C	235	33	154	6	42	0	0	0
Type D	24	0	4	0	19	1	0	0
Type E	1	0	0	0	0	0	1	0
Type F	7	0	0	0	0	0	0	7
Total	**494**	**178**	**220**	**12**	**75**	**1**	**1**	**7**

The table indicates the presence of an operation within each TEA. This information can indicate if an operation was conducted, but a more detailed geographic analysis was not conducted to determine the size of each of the operations by LCO. For Type A LCOs, the description of primarily MO/MB seems to hold true. From a national level, assumptions for the rest of the LCO Types also seem to hold true. However, caution should be taken when equating the urban and rural designations with addressing types. While many urban or suburban areas can be successfully enumerated by MO/MB, many rural areas can be as well.

For the 2010 Census there was no longer a direct correlation between TEAs in a LCO and the LCO Type, as there had been in Census 2000. We recommend the inclusion of TEAs in each LCO Type be removed from the description to avoid confusion as to whether the TEA references were actual Census 2000 or anticipated 2010 Census values. If the Census Bureau continues to use LCO Type in future budget modeling, we recommend it be renamed to productivity estimate or a similar title to more adequately reflect its use.

6. Related Evaluations, Experiments, and/or Assessments

See the *2010 Census Update/Leave (U/L) Assessment* for more information about the U/L operation and the *2010 Census Update Enumerate Operation* for more information about the UE, RUE, and RA.

7. Key Lessons Learned, Conclusions, and Recommendations

2010 TEA Delineation operational successes include:

- Every block in the country was successfully assigned a TEA value for the 2010 Census. The software used to facilitate this delineation worked as required, and the TEA values were uploaded to the MTdb for use in subsequent Census operations.

- The general timing of the delineation after collection block delineation worked well for Census purposes and the assignment of TEA values to collection blocks (rather than tabulation blocks, as was done in Census 2000) is recommended for the future.

- Continue to communicate operational assumptions and plan a review of operational workloads to determine the impact to the budget.

Based on the 2010 TEA Delineation and feedback from regional and headquarters staff, we recommend the following:

- **Eliminate the Urban Update/Leave TEA.** The distinction between city-style addresses that do and do not receive mail delivery may best be tracked by other methods.

- In Census 2000 the "blue line" was a big dividing line between urban and rural operations. For the 2010 Census, the Address List and Block Canvassing operations were combined into one Address Canvassing operation, minimizing the dividing line between urban and rural and reducing the total number of TEAs. The 2010 TEA Delineation did not restrict MO/MB to areas typically considered as urban or U/L to areas considered rural. **Consider continued consolidation of TEAs.**

- MAF Geocoding Office Resolution operations were canceled in the years leading up to the 2010 Census. At the time of the 2010 TEA Delineation there were approximately 9 million ungeocoded addresses. Ungeocoded addresses were not included in the block level batch delineation. Maintaining MTdb features and addresses, correcting known errors, and geocoding efforts will minimize the time spent to understand incorrect census features and research deficiencies in the information provided for use in the batch or interactive delineations. **Minimize known ungeocoded addresses prior to the 2020 TEA delineation.** If this is not feasible given fiscal constraints, consider revisiting the TEA Delineation after the address canvassing operation.

- **Maintain historical knowledge of regional research of addressing or enumeration problems for use in future delineations.** With new staff often performing the interactive TEA delineation, historical information could be valuable. Not all difficult to enumerate

areas may be most appropriate to put in UE. Other custom field enumeration techniques may be more effective. Consult with advisory committees and partnership staff about the political climate and enumeration preferences.

- **Refine the existing process for TEA Delineation.** Batch delineation was not as effective as planned, demonstrated by the breadth of other resources the regional geography staff used to determine what they deemed the most appropriate TEA values.

    - **Eliminate ACT codes as currently defined as the basis for batch delineation.** Many areas of the country have city-style addressing, but do not receive mail delivery. ACT codes relied too heavily on the percent city-style addresses and not enough on the mailability of addresses.

    - **Consider a DSF-based batch delineation**. Since DSF records are city-style and determined mailable by the USPS, this measure would be a better source than ACT codes if we could establish confidence in their accuracy. An interactive delineation would still need to be completed.

    - Review the HU universe used for the 2010 TEA Delineation. The HU count that matched the ACT code creation was used for reference, but another filter may have more closely matched cases identified for enumeration.

    - In order to reduce the number of changes required during the interactive delineation, consider assigning blocks without residential housing units (null blocks) to a TEA during batch delineation.

    - Perform a cost/benefit analysis on TEA pocket size, in order to give better guidance for 2020 interactive delineation.

- **Consider alternatives to the current approach of a batch and interactive TEA Delineation.** Future TEA Delineations need to be planned in context of the 2020 Census, including combinations of enumeration techniques that will be utilized.

    - Consider the possibility of developing consistency of enumeration areas with other Census Bureau surveys. If enumeration areas do not need to be maintained in clusters large enough to operationalize field operations, then consider managing TEA values at the household level. Criteria used by ACS or current surveys to identifying areas not updated by the DSF, may be useful in a future TEA Delineation. Address quality or mailability metrics developed or maintained by the Census Bureau may be useful in delineating the 2020 TEAs.

  - Updating TEAs during the decade would eliminate the need for batch delineation. Modifying the 2010 Census TEAs may serve as the best basis for this effort.

- Census Bureau headquarters needs to **improve the communication of the goals and objectives of the TEA Delineation**, particularly changes. This includes communication with regional directors.

- **Monitor national USPS efforts and trends in mail delivery and receipt**. Work with the USPS to better understand the accuracy of their files. Conduct a survey with the USPS and maintain information about the methods of mail distribution and geographic extent of service area throughout the country.

- Create and preserve data needed for analysis at time of the delineation.

- Remove the description of TEAs from the LCO type description and consider renaming LCO Type to reflect its use.

- Additional research is needed to determine if the assigned 2010 TEAs resulted in the most appropriate TEA for conducting the 2010 Census.

8. Acknowledgements

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Appendix A: Address Characteristic Type (ACT) Code Definitions

Code C1 – city-style, no DSF – Assign a code of C1 if all of the following are true:
a. At least one record in the block is residential
b. All of the records in the block are city-style
c. None of the records in the block have a DSF source

Code C2 – city-style, some DSF – Assign a code of C2 if all of the following are true:
a. At least one record in the block is residential
b. All of the records in the block are city-style
c. At least one record in the block has a DSF source
d. At least one record in the block does not have a DSF source

Code C3 – city-style, all DSF – Assign a code of C3 if all of the following are true:
a. At least one record in the block is residential
b. All of the records in the block are city-style
c. All of the records in the block have a DSF source

Code R1 – Rural Route, no DSF – Assign a code of R1 if all of the following are true:
a. At least one record in the block is residential
b. All of the records in the block are rural route
c. None of the records in the block have a DSF source

Code R2 – Rural Route, some DSF – Assign a code of R2 if all of the following are true:
a. At least one record in the block is residential
b. All of the records in the block are rural route
c. At least one record in the block has a DSF source
d. At least one record in the block does not have a DSF source

Code R3 – Rural Route, all DSF – Assign a code of R3 if all of the following are true:
a. At least one record in the block is residential
b. All of the records in the block are rural route
c. All of the records in the block have a DSF source

Code P1 – P.O. Box, no DSF – Assign a code of P1 if all of the following are true:
a. At least one record in the block is residential
b. All of the records in the block are P.O. Box
c. None of the records in the block have a DSF source

Code P2 – P.O. Box, some DSF – Assign a code of P2 if all of the following are true:
a. At least one record in the block is residential
b. All of the records in the block are P.O. Box
c. At least one record in the block has a DSF source
d. At least one record in the block does not have a DSF source

Code P3 – P.O. Box, all DSF – Assign a code of P3 if all of the following are true:
a. At least one record in the block is residential
b. All of the records in the block are P.O. Box
c. All of the records in the block have a DSF source

Code D1 – Location Descriptions and Incomplete Records – Assign a code of D1 if all of the following are true:
a. At least one record in the block is residential
b. None of the records in the block are city-style
c. None of the records in the block are rural route
d. None of the records in the block are P.O. Box

Code M1 – Mixed City-style and Non city-style, no DSF – Assign a code of M1 if all of the following are true:
a. At least one record in the block is residential
b. At least one record in the block is city-style
c. At least one record in the block is non city-style
d. None of the records in the block has a DSF source

Code MA – Mixed City-style and Non city-style, some DSF, where the percentage of city-style is 95% to 99.99%. Assign a code of MA if all of the following are true:
a. At least one record in the block is residential
b. At least one record in the block is city-style
c. At least one record in the block is non city-style
d. At least one of the records in the block has a DSF source

e. At least one of the records in the block does not have a DSF source
f. The percentage of city-style is 99.5% to 99.99%[7]

Code MB – Mixed City-style and Non city-style, some DSF, where the percentage of city-style is 90% to 94.99%. Assign a code of MB if all of the following are true:

a. At least one record in the block is residential
b. At least one record in the block is city-style
c. At least one record in the block is non city-style
d. At least one of the records in the block has a DSF source
e. At least one of the records in the block does not have a DSF source
f. The percentage of city-style is 90% to 94.99%

Code MC – Mixed City-style and Non city-style, some DSF, where the percentage of city-style is 85% to 89.99%. Assign a code of MC if all of the following are true:

a. At least one record in the block is residential
b. At least one record in the block is city-style
c. At least one record in the block is non city-style
d. At least one of the records in the block has a DSF source
e. At least one of the records in the block does not have a DSF source
f. The percentage of city-style is 85% to 89.99%

Code MD – Mixed City-style and Non city-style, some DSF, where the percentage of city-style is 80% to 84.99%. Assign a code of MD if all of the following are true:

a. At least one record in the block is residential
b. At least one record in the block is city-style
c. At least one record in the block is non city-style
d. At least one of the records in the block has a DSF source
e. At least one of the records in the block does not have a DSF source
f. The percentage of city-style is 80% to 84.99%

Code ME – Mixed City-style and Non city-style, some DSF, where the percentage of city-style is 75% to 79.99%. Assign a code of ME if all of the following are true:

a. At least one record in the block is residential

[7] The wording in the ACT Code definition is "f. The percentage of city-style to non city-style is 99.5% to 99.99%". Descriptions for MA – MG have been modified in this attachment for clarification.

b. At least one record in the block is city-style
c. At least one record in the block is non city-style
d. At least one of the records in the block has a DSF source
e. At least one of the records in the block does not have a DSF source
f. The percentage of city-style is 75% to 79.99%

Code MF – Mixed City-style and Non city-style, some DSF, where the percentage of city-style is 70% to 74.99%. Assign a code of MF if all of the following are true:

a. At least one record in the block is residential
b. At least one record in the block is city-style
c. At least one record in the block is non city-style
d. At least one of the records in the block has a DSF source
e. At least one of the records in the block does not have a DSF source
f. The percentage of city-style is 70% to 74.99%

Code MG – Mixed City-style and Non city-style, some DSF, where the percentage of city-style is 0.01% to 69.99%. Assign a code of MG if all of the following are true:

a. At least one record in the block is residential
b. At least one record in the block is city-style
c. At least one record in the block is non city-style
d. At least one of the records in the block has a DSF source
e. At least one of the records in the block does not have a DSF source
f. The percentage of city-style to non city-style is 0.01% to 69.99%

Codes MA, MB, MC, MD, ME, MF, and MG replace the M2 ACT code.

Code M3 – Mixed City-style and Non city-style, all DSF – Assign a code of M3 if all of the following are true:

a. At least one record in the block is residential
b. At least one record in the block is city-style
c. At least one record in the block is non city-style
d. All of the records in the block have a DSF source

Code N1 – Non city-style, assorted, no DSF – Assign a code of N1 if all of the following are true:

a. At least one record in the block is residential
b. None of the records in the block are city-style
c. None of the records in the block have a DSF source

Code N2 – Non city-style, assorted, some DSF – Assign a code of N2 if all of the following are true:
a. At least one record in the block is residential
b. None of the records in the block are city-style
c. At least one record in the block has a DSF source
d. At least one record in the block does not have a DSF source

Code N3 – Non city-style, assorted, all DSF – Assign a code of N3 if all of the following are true:
a. At least one record in the block is residential
b. None of the records in the block is city-style
c. All of the records in the block have a DSF source

Code B1 – Nonresidential, no DSF – Assign a code of B1 if all of the following are true:
a. None of the records in the block are residential
b. None of the records in the block have a DSF source

Code B2 – Nonresidential, some DSF – Assign a code of B2 if all of the following are true:
a. None of the records in the block are residential
b. At least one record in the block has a DSF source
c. At least one record in the block does not have a DSF source

Code B3 – Nonresidential, all DSF – Assign a code of M3 if all of the following are true:
a. None of the records in the block are residential
b. All of the records in the block have a DSF source

Code Z0 – No Addresses – There are no records in the block

Source: (Johns, 2005)

Appendix B: Distribution of HUs for Each RCC by TEA after Each Review

Batch Delineation																
RCC	**TEA 1**	**%**	**TEA 2**	**%**	**TEA 3**	**%**	**TEA 4**	**%**	**TEA 5**	**%**	**TEA 6**	**%**	**TEA 7**	**%**	**Total**	**%**
Atlanta	13,360,679	11.3	668,756	8.2	0	0.0	0	0.0	2,259	0.5	31,787	10.5	0	0.0	14,063,481	11.1
%	95.0		4.8		0.0		0.0		0.0		0.2		0.0		100.0	
Boston	8,797,739	7.4	799,929	9.8	2,941	41.8	0	0.0	7,810	1.9	10,477	3.4	0	0.0	9,618,896	7.6
%	91.5		8.3		0.0		0.0		0.1		0.1		0.0		100.0	
Charlotte	12,807,889	10.8	1,128,988	13.9	0	0.0	0	0.0	3,664	0.9	54,315	17.9	0	0.0	13,994,856	11.0
%	91.5		8.1		0.0		0.0		0.0		0.4		0.0		100.0	
Chicago	10,396,580	8.8	265,987	3.3	0	0.0	0	0.0	18,064	4.4	4,247	1.4	0	0.0	10,684,878	8.4
%	97.3		2.5		0.0		0.0		0.2		0.0		0.0		100.0	
Dallas	11,221,220	9.5	1,299,914	16.0	0	0.0	0	0.0	2,743	0.7	40,824	134	0	0.0	12,564,701	9.9
%	89.3		10.3		0.0		0.0		0.0		0.3		0.0		100.0	
Denver	8,582,214	7.3	757,935	9.3	0	0.0	0	0.0	219,302	53.2	38,476	12.7	0	0.0	9,597,927	7.6
%	89.4		7.9		0.0		0.0		2.3		0.4		0.0		100.0	
Detroit	9,751,064	8.2	726,005	8.9	0	0.0	0	0.0	14,824	3.6	4,305	1.4	0	0.0	10,496,198	8.3
%	92.9		6.9		0.0		0.0		0.1		0.0		0.0		100.0	
Kansas City	9,203,052	7.8	1,217,521	15.0	0	0.0	0	0.0	43,835	10.6	18,311	6.0	0	0.0	10,482,719	8.2
%	87.8		11.6		0.0		0.0		0.4		0.2		0.0		100.0	
Los Angeles	8,584,334	7.3	181,909	2.2	0	0.0	0	0.0	29,228	7.1	48,693	16.0	0	0.0	8,844,164	7.0
%	97.1		2.1		0.0		0.0		0.3		0.6		0.0		100.0	
New York	6,926,713	5.9	29,612	0.4	0	0.0	0	0.0	323	0.1	777	0.3	0	0.0	6,957,425	5.5
%	99.6		0.4		0.0		0.0		0.0		0.0		0.0		100.0	
Philadelphia	9,296,462	7.9	678,623	8.3	0	0.0	0	0.0	0	0.0	23,045	7.6	0	0.0	9,998,130	7.9
%	93.0		6.8		0.0		0.0		0.0		0.2		0.0		100.0	
Seattle	9,270,954	7.8	385,278	4.7	4,102	58.2	27,775	100.0	70,526	17.1	28,865	9.5	0	0.0	9,787,500	7.7
%	94.7		3.9		0.0		0.3		0.7		0.3		0.0		100.0	
Total	**118,198,900**	**100.0**	**8,140,457**	**100.0**	**7,043**	**100.0**	**27,775**	**100.0**	**412,578**	**100.0**	**304,122**	**100.0**	**0**	**0.0**	**127,090,875**	**100.0**
%	**93.0**		**6.4**		**0.0**		**0.0**		**0.3**		**0.2**		**0.0**		**100.0**	
Interactive Delineation																
Atlanta	13,276,912	11.5	25,854	0.3	0	0.0	0	0.0	160,558	12.5	31,331	10.3	568,826	23.5	14,063,481	11.1
%	94.4		0.2		0.0		0.0		1.1		0.2		4.0		100.0	
Boston	8,657,966	7.5	763,483	10.0	2,941	41.8	0	0.0	181,948	14.2	10,479	3.5	2,079	0.1	9,618,896	7.6
%	90.0		7.9		0.0		0.0		1.9		0.1		0.0		100.0	
Charlotte	13,658,330	11.8	90,110	1.2	0	0.0	0	0.0	86,848	6.8	54,315	17.9	105,253	4.3	13,994,856	11.0
%	97.6		0.6		0.0		0.0		0.6		0.4		0.8		100.0	

Chicago	10,076,665	8.7	356,116	4.7	0	0.0	0	0.0	209,666	16.3	4,248	1.4	38,183	1.6	10,684,878	8.4
%	94.3		3.3		0.0		0.0		2.0		0.0		0.4		100.0	
Dallas	10,541,614	9.1	166,945	2.2	0	0.0	0	0.0	117,779	9.2	40,824	13.5	1,697,539	70.0	12,564,701	9.9
RCC	**TEA 1**	**%**	**TEA 2**	**%**	**TEA 3**	**%**	**TEA 4**	**%**	**TEA 5**	**%**	**TEA 6**	**%**	**TEA 7**	**%**	**Total**	**%**
%	83.9		1.3		0.0		0.0		0.9		0.3		13.5		100.0	
Denver	7,629,775	6.6	1,707,013	22.3	0	0.0	0	0.0	222,754	17.3	38,385	12.7	0	0.0	9,597,927	7.6
%	79.5		17.8		0.0		0.0		2.3		0.4		0.0		100.0	
Detroit	9,612,071	8.3	880,088	11.5	0	0.0	0	0.0	0	0.0	4,039	1.3	0	0.0	10,496,198	8.3
%	91.6		8.4		0.0		0.0		0.0		0.0		0.0		100.0	
Kansas City	7,872,991	6.8	2,533,375	33.1	0	0.0	0	0.0	58,042	4.5	18,311	6.0	0	0.0	10,482,719	8.2
%	75.1		24.2		0.0		0.0		0.6		0.2		0.0		100.0	
Los Angeles	8,462,815	7.3	219,975	2.9	0	0.0	0	0.0	104,858	8.2	48,692	16.1	7,824	0.3	8,844,164	7.0
%	95.7		2.5		0.0		0.0		1.2		0.6		0.1		100.0	
New York	6,860,451	5.9	0	0.0	0	0.0	0	0.0	91,512	7.1	779	0.3	4,683	0.2	6,957,425	5.5
%	98.6		0.0		0.0		0.0		1.3		0.0		0.1		100.0	
Philadelphia	9,575,741	8.3	399,687	5.2	0	0.0	0	0.0	0	0.0	22,702	7.5	0	0.0	9,998,130	7.9
%	95.8		4.0		0.0		0.0		0.0		0.2		0.0		100.0	
Seattle	9,175,873	8.0	500,910	6.6	4,102	58.2	27,775	100.0	49,975	3.9	28,865	9.5	0	0.0	9,787,500	7.7
%	93.8		5.1		0.0		0.3		0.5		0.3		0.0		100.0	
Total	**115,401,204**	**100.0**	**7,643,556**	**100.0**	**7,043**	**100.0**	**27,775**	**100.0**	**1,283,940**	**100.0**	**302,970**	**100.0**	**2,424,387**	**100.0**	**129,090,875**	**100.0**
%	**90.8**		**6.0**		**0.0**		**0.0**		**1.0**		**0.2**		**1.9**		**100.0**	

Source: 2010 TEA Delineation Assessment Data provided by GEO

Appendix C: Changes in Number of HUs for Each RCC by TEA after Each Review

	Change in No. of HUs TEA								% Change in No. of HUs TEA							
RCC	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Null**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Null**
Atlanta	-83,767	-642,902	.	.	158,299	-456	568,826	0	-0.6	-96.1	.	.	7,007.5	-1.4	.	.
Boston	-139,773	-36,446	0	.	174,138	2	2,079	0	-1.6	-4.6	0.0	.	2,229.7	0.0	.	.
Charlotte	850,441	-1,038,878	.	.	83,184	0	105,253	0	6.6	-92.0	.	.	2,270.3	0.0	.	.
Chicago	-319,915	90,129	.	.	191,602	1	38,183	0	-3.1	33.9	.	.	1,060.7	0.0	.	.
Dallas	-679,606	-1,132,969	.	.	115,036	0	1,697,539	0	-6.1	-87.2	.	.	4,193.8	0.0	.	.
Denver	-952,439	949,078	.	.	3,452	-91	.	0	-11.1	125.2	.	.	1.6	-0.2	.	.
Detroit	-138,993	154,083	.	.	-14,824	-266	.	0	-1.4	21.2	.	.	-100.0	-6.2	.	.
Kansas City	-1,330,061	1,315,854	.	.	14,207	0	.	0	-14.5	108.1	.	.	32.4	0.0	.	.
Los Angeles	-121,519	38,066	.	.	75,630	-1	7,824	0	-1.4	20.9	.	.	258.8	-0.0	.	.
New York	-66,262	-29,612	.	.	91,189	2	4,683	0	-1.0	-100.0	.	.	28,231.9	0.3	.	.
Philadelphia	279,279	-278,936	.	.	0	-343	.	0	3.0	-41.1	.	.	.	-1.5	.	.
Seattle	-95,081	115,632	0	0	-20,551	0	.	0	-1.0	30.0	0.0	0.0	-29.1	0.0	.	.
Total	**-2,797,696**	**-496,901**	**0**	**0**	**871,362**	**-1,152**	**2,424,387**	**0**	**-2.4**	**-6.1**	**0.0**	**0.0**	**211.2**	**-0.4**	**.**	**.**

Source: 2010 TEA Delineation Assessment Data provided by GEO

Appendix D: Distribution of Blocks for Each RCC by TEA after Each Review

Batch Delineation

RCC	TEA 1	%	TEA 2	%	TEA 3	%	TEA 4	%	TEA 5	%	TEA 6	%	TEA 7	%	TEA Null	%	Total	%
Atl	402,401	10.4	43,256	7.1	0	0.0	0	0.0	220	0.3	8,652	17.1	0	0.0	234,527	11.6	689,056	10.4
%	58.4		6.3		0.0		0.0		0.0		1.3		0.0		34		100.0	
Bos	249,476	6.5	35,285	5.8	1,769	42.2	0	0.0	948	1.2	1,771	3.5	0	0.0	102,863	5.1	392,112	5.9
%	63.6		9.0		0.5		0.0		0.2		0.5		0.0		26.2		100.0	
Cha	369,454	9.6	49,418	8.1	0	0.0	0	0.0	272	0.3	8,421	16.7	0	0.0	190,750	9.4	618,315	9.3
%	59.8		8.0		0.0		0.0		0.0		1.4		0.0		30.8		100.0	
Chi	399,920	10.4	30,923	5.1	0	0.0	0	0.0	2,109	2.7	1,159	2.3	0	0.0	107,461	5.3	541,572	8.2
%	73.8		5.7		0.0		0.0		0.4		0.2		0.0		19.8		100.0	
Dal	387,622	10.1	99,446	16.3	0	0.0	0	0.0	331	0.4	5,176	10.3	0	0.0	276,001	13.7	768,576	11.6
%	50.4		12.9		0.0		0.0		0.0		0.7		0.0		35.9		100.0	
Den	359,280	9.3	102,512	16.8	0	0.0	0	0.0	54,952	69.3	6,639	13.1	0	0.0	316,654	15.7	840,037	12.7
%	42.8		12.2		0.0		0.0		6.5		0.8		0.0		37.7		100.0	
Det	315,966	8.2	37,095	6.1	0	0.0	0	0.0	1,212	1.5	1,004	2.0	0	0.0	120,180	6.0	475,457	7.2
%	66.5		7.8		0.0		0.0		0.3		0.2		0.0		25.3		100.0	
K.C.	493,851	12.8	127,692	20.9	0	0.0	0	0.0	9,090	11.5	4,816	9.5	0	0.0	281,424	13.9	916,873	13.8
%	53.9		13.9		0.0		0.0		1.0		0.5		0.0		30.7		100.0	
L.A.	188,523	4.9	12,885	2.1	0	0.0	0	0.0	1,459	1.8	6,070	12.0	0	0.0	73,967	3.7	282,904	4.3
%	66.6		4.6		0.0		0.0		0.5		2.1		0.0		26.1		100.0	
N.Y.	125,962	3.3	1,778	0.3	0	0.0	0	0.0	22	0.0	119	0.2	0	0.0	20,900	1.0	148,781	2.2
%	84.7		1.2		0.0		0.0		0.0		0.1		0.0		14		100.0	
Phi	307,141	8.0	38,781	6.4	0	0.0	0	0.0	2	0.0	2,920	5.8	0	0.0	97,759	4.8	446,603	6.7
%	68.8		8.7		0.0		0.0		0.0		0.7		0.0		21.9		100.0	
Sea	252,174	6.5	31,518	5.2	2,421	57.8	12,796	100.0	8,718	11.0	3,747	7.4	0	0.0	197,006	9.8	508,380	7.7
%	49.6		6.2		0.5		2.5		1.7		0.7		0.0		38.8		100.0	
Total	**3,851,770**	**100.0**	**610,589**	**100.0**	**4,190**	**100.0**	**12,796**	**100.0**	**79,335**	**100.0**	**50,494**	**100.0**	**0**	**0.0**	**2,019,492**	**100.0**	**6,628,666**	**100.0**
%	**58.1**		**9.2**		**0.1**		**0.2**		**1.2**		**0.8**		**0.0**		**30.5**		**100.0**	

Interactive Delineation

Atl	597,805	12.2	3,732	0.3	0	0.0	0	0.0	6,263	4.3	8,693	17.1	72,563	22.6	0	0.0	689,056	10.4
%	86.8		0.5		0.0		0.0		0.9		1.3		10.5		0.0		100.0	
Bos	320,234	6.5	53,962	4.6	1,769	42.2	0	0.0	14,207	9.9	1,774	3.5	166	0.1	0	0.0	392,112	5.9
%	81.7		13.8		0.5		0.0		3.6		0.5		0.0		0.0		100.0	
Cha	591,373	12.0	6,424	0.5	0	0.0	0	0.0	3,698	2.6	8,445	16.6	8,375	2.6	0	0.0	618,315	9.3
%	95.6		1.0		0.0		0.0		0.6		1.4		1.4		0.0		100.0	
Chi	473,902	9.7	43,085	3.6	0	0.0	0	0.0	23,118	16.1	1,168	2.3	299	0.1	0	0.0	541,572	8.2
%	87.5		8.0		0.0		0.0		4.3		0.2		0.1		0.0		100.0	
Dal	490,018	10.0	28,797	2.4	0	0.0	0	0.0	5,282	3.7	5,191	10.2	239,288	74.5	0	0.0	768,576	11.6
%	63.8		3.7		0.0		0.0		0.7		0.7		31.1		0.0		100.0	
Den	374,819	7.6	402,578	34.0	0	0.0	0	0.0	55,913	38.8	6,727	13.3	0	0.0	0	0.0	840,037	12.7

%	44.6		47.9		0.0		0.0		6.7		0.8		0.0		0.0		100.0	
Det	393,189	8.0	81,267	6.9	0	0.0	.0	0.0	0	0.0	1,001	2.0	0	0.0	0	0.0	475,457	7.2
RCC	**TEA 1**	**%**	**TEA 2**	**%**	**TEA 3**	**%**	**TEA 4**	**%**	**TEA 5**	**%**	**TEA 6**	**%**	**TEA 7**	**%**	**TEA Null**	**%**	**Total**	**%**
%	82.7		17.1		0.0		0.0		0.0		0.2		0.0		0.0		100.0	
K.C	515,434	10.5	390,044	32.9	0	0.0	0	0.0	6,545	4.5	4,850	9.6	0	0.0	0	0.0	916,873	13.8
%	56.2		42.5		0.0		0.0		0.7		0.5		0.0		0.0		100.0	
L.A.	237,934	4.8	26,204	2.2	0	0.0	0	0.0	12,317	8.6	6,110	12.0	339	0.1	0	0.0	282,904	4.3
%	84.1		9.3		0.0		0.0		4.4		2.2		0.1		0.0		100.0	
N.Y.	143,364	2.9	0	0.0	0	0.0	0	0.0	5,100	3.5	120	0.2	197	0.1	0	0.0	148,781	2.2
%	96.4		0.0		0.0		0.0		3.4		0.1		0.1		0.0		100.0	
Phi	413,884	8.4	29,821	2.5	0	0.0	0	0.0	0	0.0	2,898	5.7	0	0.0	0	0.0	446,603	6.7
%	92.7		6.7		0.0		0.0		0.0		0.6		0.0		0.0		100.0	
Sea	358,313	7.3	119,516	10.1	2,421	57.8	12,796	100.0	11,585	8.0	3,749	7.4	0	0.0	0	0.0	508,380	7.7
%	70.5		23.5		0.5		2.5		2.3		0.7		0.0		0.0		100.0	
Total	**4,910,269**	**100.0**	**1,185,430**	**100.0**	**4,190**	**100.0**	**12,796**	**100.0**	**144,028**	**100.0**	**50,726**	**100.0**	**321,227**	**100.0**	**0**	**0.0**	**6,628,666**	**100.0**
%	**74.1**		**17.9**		**0.1**		**0.2**		**2.2**		**0.8**		**4.8**		**0.0**		**100.0**	

Source: 2010 TEA Delineation Assessment Data provided by GEO

Appendix E: Changes in Number of Blocks for Each RCC by TEA after Each Review

	Change in No. of Blocks TEA								% Change in No. of Blocks TEA							
RCC	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Null**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Null**
Atlanta	195,404	-39,524	.	.	6,043	41	72,563	-234,527	48.6	-91.4	.	.	2,746.8	0.5	.	-100.0
Boston	70,758	18,677	0	.	13,259	3	166	-102,863	28.4	52.9	0.0	.	1,398.6	0.2	.	-100.0
Charlotte	221,919	-42,994	.	.	3,426	24	8,375	-190,750	60.1	-87.0	.	.	1,259.6	0.3	.	-100.0
Chicago	73,982	12,162	.	.	21,009	9	299	-107,461	18.5	39.3	.	.	996.2	0.8	.	-100.0
Dallas	102,396	-70,649	.	.	4,951	15	239,288	-276,001	26.4	-71.0	.	.	1,495.8	0.3	.	-100.0
Denver	15,539	300,066	.	.	961	88	.	-316,654	4.3	292.7	.	.	1.8	1.3	.	-100.0
Detroit	77,223	44,172	.	.	-1,212	-3	.	-120,180	24.4	119.1	.	.	-100.0	-0.3	.	-100.0
Kansas City	21,583	262,352	.	.	-2,545	34	.	-281,424	4.4	205.5	.	.	-28.0	0.7	.	-100.0
Los Angeles	49,411	13,319	.	.	10,858	40	339	-73,967	26.2	103.4	.	.	744.2	0.7	.	-100.0
New York	17,402	-1,778	.	.	5,078	1	197	-20,900	13.8	-100.0	.	.	23,081.8	0.8	.	-100.0
Philadelphia	106,743	-8,960	.	.	-2	-22	.	-97,759	34.8	-23.1	.	.	-100.0	-0.8	.	-100.0
Seattle	106,139	87,998	0	0	2,867	2	.	.	42.1	279.2	0.0	0.0	32.9	0.1	.	-100.0
Total	**1,058,499**	**574,841**	**0**	**0**	**64,693**	**232**	**321,227**	**-1,822,486**	**27.5**	**94.2**	**0.0**	**0.0**	**81.5**	**0.5**	**.**	**-100.0**

Source: 2010 TEA Delineation Assessment Data provided by GEO

Appendix F: Distribution of Square Mileage for Each RCC by TEA after Each Review

Batch Delineation

RCC	TEA 1	%	TEA 2	%	TEA 3	%	TEA 4	%	TEA 5	%	TEA 6	%	TEA 7	%	TEA Null	%	Sum	%
Atl	92,099.5	8.0	45,316.8	4.4	0.0	0.0	0.0	0.0	279.2	0.3	2,258.9	6.0	0.0	0.0	21,845.8	3.3	161,800.2	4.6
%	56.9		28.0		0.0		0.0		0.2		1.4		0.0		13.5		100.0	
Bos	53,256.2	4.6	40,498.1	3.9	7,071.6	19.5	0.0	0.0	433.5	0.4	282.4	0.7	0.0	0.0	6,166.4	0.9	107,708.2	3.0
%	49.4		37.6		6.6		0.0		0.4		0.3		0.0		5.7		100.0	
Cha	139,699.1	12.1	48,055.2	4.6	0.0	0.0	0.0	0.0	85.4	0.1	1,629.4	4.3	0.0	0.0	9,436.8	1.4	198,905.7	5.6
%	70.2		24.2		0.0		0.0		0.0		0.8		0.0		4.7		100.0	
Chi	118,132.0	10.2	20,681.2	2.0	0.0	0.0	0.0	0.0	996.4	0.9	368.7	1.0	0.0	0.0	5,317.5	0.8	145,495.9	4.1
%	81.2		14.2		0.0		0.0		0.7		0.3		0.0		3.7		100.0	
Dal	101,477.5	8.8	159,602.8	15.3	0.0	0.0	0.0	0.0	58.4	0.1	2,774.8	7.3	0.0	0.0	89,004.4	13.4	352,917.9	10.0
%	28.8		45.2		0.0		0.0		0.0		0.8		0.0		25.2		100.0	
Den	208,134.7	18.0	351,353.0	33.8	0.0	0.0	0.0	0.0	92,829.9	83.5	19,030.2	50.3	0.0	0.0	322,122.5	48.6	993,470.4	28.1
%	21.0		35.4		0.0		0.0		9.3		1.9		0.0		32.4		100.0	
Det	76,523.2	6.6	38,044.4	3.7	0.0	0.0	0.0	0.0	332.6	0.3	194.4	0.5	0.0	0.0	6,328.0	1.0	121,422.6	3.4
%	63.0		31.3		0.0		0.0		0.3		0.2		0.0		5.2		100.0	
K.C.	200,182.3	17.3	156,246.0	15.0	0.0	0.0	0.0	0.0	6,150.3	5.5	913.9	2.4	0.0	0.0	43,166.4	6.5	406,658.9	11.5
%	49.2		38.4		0.0		0.0		1.5		0.2		0.0		10.6		100.0	
L.A.	28,230.8	2.4	29,117.4	2.8	0.0	0.0	0.0	0.0	635.9	0.6	6,240.2	16.5	0.0	0.0	31,197.9	4.7	95,422.1	2.7
%	29.6		30.5		0.0		0.0		0.7		6.5		0.0		32.7		100.0	
N.Y.	4,188.5	0.4	163.1	0.0	0.0	0.0	0.0	0.0	1.5	0.0	12.6	0.0	0.0	0.0	377.8	0.1	4,743.4	0.1
%	88.3		3.4		0.0		0.0		0.0		0.3		0.0		8.0		100.0	
Phi	34,748.0	3.0	23,011.0	2.2	0.0	0.0	0.0	0.0	0.4	0.0	269.0	0.7	0.0	0.0	3,140.7	0.5	61,169.1	1.7
%	56.8		37.6		0.0		0.0		0.0		0.4		0.0		5.1		100.0	
Sea	97,979.4	8.5	128,463.2	12.3	29,267.5	80.5	487,887.6	100.0	9,426.4	8.5	3,895.3	10.3	0.0	0.0	125,300.2	18.9	882,219.5	25.0
%	11.1		14.6		3.3		55.3		1.1		0.4		0.0		14.2		100.0	
Total	**1,154,651.2**	**100.0**	**1,040,552.1**	**100.0**	**36,339.0**	**100.0**	**487,887.6**	**100.0**	**111,229.8**	**100.0**	**37,869.7**	**100.0**	**0.0**	**0.0**	**663,404.4**	**100.0**	**3,531,933.8**	**100.0**
%	**32.7**		**29.5**		**1.0**		**13.8**		**3.1**		**1.1**		**0.0**		**18.8**		**100.0**	

Interactive Delineation

Atl	108,617.9	9.4	2,254.6	0.2	0.0	0.0	0.0	0.0	718.1	0.4	2,231.1	5.9	47,978.5	7.2	0.0	0.0	161,800.2	4.6
%	67.1		1.4		0.0		0.0		0.4		1.4		29.7		0.0		100.0	
Bos	52,612.1	4.5	38,448.4	2.8	7,071.6	19.5	0.0	0.0	9,291.2	5.0	282.5	0.7	2.4	0.0	0.0	0.0	107,708.2	3.0
%	48.8		35.7		6.6		0.0		8.6		0.3		0.0		0.0		100.0	
Cha	190,478.6	16.5	4,404.8	0.3	0.0	0.0	0.0	0.0	371.3	0.2	1,629.6	4.3	2,021.5	0.3	0.0	0.0	198,905.7	5.6
%	95.8		2.2		0.0		0.0		0.2		0.8		1.0		0.0		100.0	
Chi	113,343.3	9.8	16,395.2	1.2	0.0	0.0	0.0	0.0	15,385.1	8.3	369.0	1.0	3.4	0.0	0.0	0.0	145,495.9	4.1
%	77.9		11.3		0.0		0.0		10.6		0.3		0.0		0.0		100.0	
Dal	118,320.1	10.2	27,467.3	2.0	0.0	0.0	0.0	0.0	677.2	0.4	2,782.6	7.3	203,670.8	30.7	0.0	0.0	352,917.9	10.0
%	33.5		7.8		0.0		0.0		0.2		0.8		57.7		0.0		100.0	
Den	90,629.9	7.8	785,225.9	57.2	0.0	0.0	0.0	0.0	98,405.6	53.1	19,209.1	50.5	0.0	0.0	0.0	0.0	993,470.4	28.1
%	9.1		79.0		0.0		0.0		9.9		1.9		0.0		0.0		100.0	
Det	78,943.9	6.8	42,286.2	3.1	0.0	0.0	0.0	0.0	0.0	0.0	192.5	0.5	0.0	0.0	0.0	0.0	121,422.6	3.4
%	65.0		34.8		0.0		0.0		0.0		0.2		0.0		0.0		100.0	

K.C.	186,443.9	16.1	213,036.7	15.5	0.0	0.0	0.0	0.0	6,263.5	3.4	914.8	2.4	0.0	0.0	0.0	0.0	406,658.9	11.5
%	45.8		52.4		0.0		0.0		1.5		0.2		0.0		0.0		100.0	
L.A.	27,068.9	2.3	28,209.7	2.1	0.0	0.0	0.0	0.0	33,884.4	18.3	6,242.0	16.4	17.2	0.0	0.0	0.0	95,422.1	2.7
RCC	**TEA 1**	**%**	**TEA 2**	**%**	**TEA 3**	**%**	**TEA 4**	**%**	**TEA 5**	**%**	**TEA 6**	**%**	**TEA 7**	**%**	**TEA Null**	**%**	**Sum**	**%**
%	28.4		29.6		0.0		0.0		35.5		6.5		0.0		0.0		100.0	
N.Y.	4,373.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	332.8	0.2	12.7	0.0	24.2	0.0	0.0	0.0	4,743.4	0.1
%	92.2		0.0		0.0		0.0		7.0		0.3		0.5		0.0		100.0	
Phi	51,091.0	4.4	9,810.9	0.7	0.0	0.0	0.0	0.0	0.0	0.0	267.3	0.7	0.0	0.0	0.0	0.0	61,169.1	1.7
%	83.5		16.0		0.0		0.0		0.0		0.4		0.0		0.0		100.0	
Sea	135,437.5	11.7	205,751.4	15.0	29,267.5	80.5	487,887.6	100.0	19,980.2	10.8	3,895.3	10.2	0.0	0.0	0.0	0.0	882,219.5	25.0
%	15.4		23.3		3.3		55.3		2.3		0.4		0.0		0.0		100.0	
Total	**1,157,360.6**	**100.0**	**1,373,291.0**	**100.0**	**36,339.0**	**100.0**	**487,887.6**	**100.0**	**185,309.2**	**100.0**	**38,028.4**	**100.0**	**253,717.9**	**100.0**	**0.0**	**0.0**	**3,531,933.8**	**100.0**
%	**32.8**		**38.9**		**1.0**		**13.8**		**5.2**		**1.1**		**18.8**		**0.0**		**100.0**	

Source: 2010 TEA Delineation Assessment Data provided by GEO

Appendix G: Changes in Square Mileage for Each RCC by TEA after Each Review

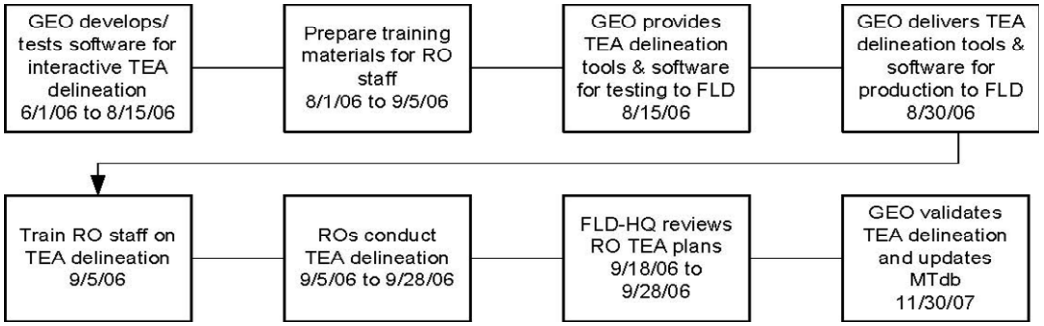
	Change in Square Mileage – Land Area TEA								% Change in Square Mileage – Land Area TEA							
RCC	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Null**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Null**
Atlanta	16,518.4	-43,062.2	.	.	439.0	-27.7	47,978.5	-21,845.8	17.9	-95.0	.	.	157.3	-1.2	.	-100.0
Boston	-644.1	-2,049.7	0.0	.	8,857.7	0.1	2.4	-6,166.4	-1.2	-5.1	0.0	.	2,043.4	0.0	.	-100.0
Charlotte	50,779.5	-43,650.4	.	.	285.9	0.2	2,021.5	-9,436.8	36.4	-90.8	.	.	334.8	0.0	.	-100.0
Chicago	-4,788.8	-4,286.1	.	.	14,388.6	0.3	3.4	-5,317.5	-4.1	-20.7	.	.	1,444.0	0.1	.	-100.0
Dallas	16,842.5	-132,135.5	.	.	618.7	7.8	203,670.8	-89,004.4	16.6	-82.8	.	.	1,059.1	0.3	.	-100.0
Denver	-117,504.8	433,872.9	.	.	5,575.7	178.8	.	-322,122.5	-56.5	123.5	.	.	6.0	0.9	.	-100.0
Detroit	2,420.7	4,241.8	.	.	-332.6	-1.9	.	-6,328.0	3.2	11.2	.	.	-100.0	-1.0	.	-100.0
Kansas City	-13,738.4	56,790.7	.	.	113.2	1.0	.	-43,166.4	-6.9	36.4	.	.	1.8	0.1	.	-100.0
Los Angeles	-1,161.9	-907.7	.	.	33,248.5	1.8	17.2	-31,197.9	-4.1	-3.1	.	.	5,228.6	0.0	.	-100.0
New York	185.1	-163.1	.	.	331.4	0.1	24.2	-377.8	4.4	-100.0	.	.	22,676.0	1.1	.	-100.0
Philadelphia	16,343.0	-13,200.1	.	.	-0.4	-1.8	.	-3,140.7	47.0	-57.4	.	.	-100.0	-0.7	.	-100.0
Seattle	37,458.2	77,288.2	0.0	0.0	10,553.8	0.0	.	-125,300.2	38.2	60.2	0.0	0.0	112.0	0.0	.	-100.0
Total	**2,709.4**	**332,738.9**	**0.0**	**0.0**	**74,079.4**	**158.7**	**253,717.9**	**-663,404.4**	**0.2**	**32.0**	**0.0**	**0.0**	**66.6**	**0.4**	**.**	**-100.0**

Source: 2010 TEA Delineation Assessment Data provided by GEO

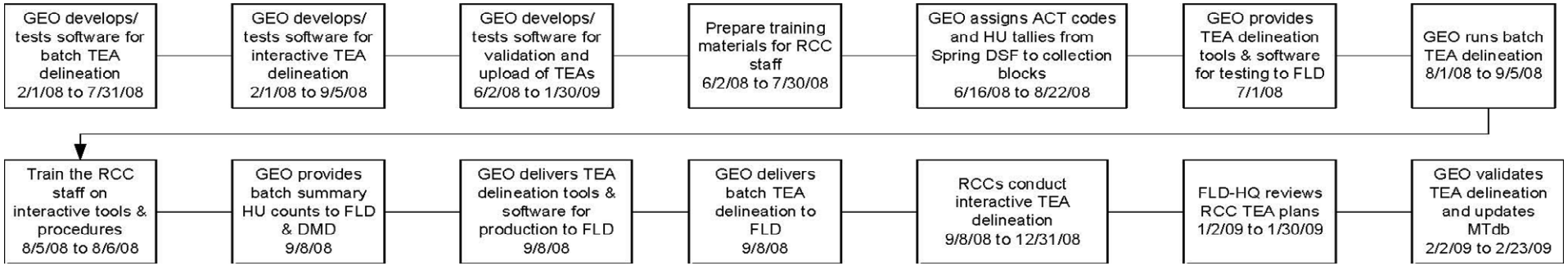
Appendix H: 2010 TEA Delineation Workflow

2010 TEA Workflow

Remote Area Delineation June 2006 -Nov 2007 TEA 3 & 4



Main Delineation Feb 2008 -Feb 2009 TEA's 1,2,5,6,7,9



Appendix I: 2010 TEA Batch and Interactive General Guidelines

	Priority	2010 TEA Batch Delineation	2010 TEA Interactive Delineation
TEA 1 MO/MB	4	All blocks where the ACT code indicates ≥ 85% City-style addressing and some DSF (C2, C3, MA, MB, MC and M3) will be assigned TEA 1 during batch delineation, except for blocks meeting the criteria during batch delineation for TEA 3, 4, 5, 6, or 7.	MO/MB blocks should be maximized during interactive delineation. Avoid small isolated areas within UE.
TEA 2 U/L	5	All PR will be assigned TEA 2 during batch delineation, regardless of any other block characteristics. All blocks that have not been assigned a batch TEA code as TEA 1,3,4,5,6,7, or null should indicate < 85% City-style addressing and be assigned TEA 2 during batch delineation.	Rural areas without mail delivery should be included in Update/Leave, TEA 2. Look for localized pockets with at least an AA's worth of HUs. Within the LCO there should be enough HUs to constitute a CLD. Rural communities without postal delivery may be U/L, regardless of expected HU counts and clustering.
TEA 3 RUE	1	**None.** Already completed before LUCA because TEA 3&4 areas are excluded from LUCA – no AC in those areas so no field verification of LUCA submissions possible, thus no detailed feedback or appeals.	Already Completed. Out of scope for the interactive delineation portion of the Main TEA Delineation.
TEA 4 RA	1		

TEA 5 U/E	2	All federally recognized American Indian Reservations will be assigned TEA 5 during batch delineation, except areas in TEA 3 or TEA 4.	- All federally recognized American Indian Reservations will remain TEA 5 regardless of expected HU counts and clustering, with a few exceptions. -Add colonias (some suggested reference material may be provided) - Seasonally vacant areas should be included. Look for localized pockets with at least an AA's worth of HUs. Within the LCO there should be enough HUs to constitute a CLD. - Consider inclusion of remote areas, to avoid inclusion in multiple operations.
TEA 6 MIL	2	All Military reservations will be assigned TEA 6 during batch delineation, except areas in TEA 3, TEA 4, or PR.	Out of scope for interactive delineation. All military areas will remain TEA 6 and be enumerated by mailout/mailback, regardless of expected HU counts and clustering.
TEA 7 UU/L	3	None	- Urban areas without mail delivery and areas with a large number of housing units without mail delivery to their individual unit should be included in Urban Update/Leave, TEA 7. Look for localized pockets with at least an AA's worth of HUs. Within the LCO there should be enough HUs to constitute a CLD. - Urban communities without postal delivery should be UU/L, regardless of expected HU counts

			and clustering.
TEA 8		None – Not planned for use in the 2010 Census.	Out of scope for interactive main 2010 TEA delineation.
TEA 9 Island Areas L/E	3	Island Areas included in the 2010 Census shall be assigned TEA 9. (U.S. Virgin Islands, Guam, Commonwealth of the Northern Mariana Islands, American Samoa)	Out of scope for interactive main 2010 TEA delineation.
Null	4	Zero Blocks (ACT code of B1, B2, B3, or Z0)	To be smoothed into MO/MB or surrounding TEA.

Appendix J: Risk Assessment for 2010 Type of Enumeration Areas

Activity (Risk Event)	Risks/Opportunities	Global Risk	Probability	Impact	Mitigation Strategy	Comments
TEA Delineation	**Risk:** The TEA Delineation software may not function properly, or there may be difficulties in the file transfer of information.	RSK-DLG-0021	L	M	Monitor use of software in preceding delineation efforts; identify problems and make corrections as needed.	The Geographic Area Analysis and Delineation System (GAADS) was tested in DR, and has been working successfully in other delineation efforts (LCO and Address Canvassing delineations).
TEA Delineation	**Risk:** Source data or software needed for batch and interactive TEA Delineation may not be available on time.	RSK-DLG-0025	L	M	Monitor status of preceding schedule activities.	There is a higher probability (Med) that some of the reference material not delivered through GAADS in DR will be delayed, but the impact of those materials being late is Low.
FLD conducts interactive TEA Delineation	**Risk:** RCC staff may not follow a consistent approach to delineating TEAs.	RSK-DLG-0014	H	M	- Provide consistent training for the RCCs, where they can all participate at the same time. - Provide training materials that provide clear procedures. - Require the RCCs to provide the rationale for their TEA plans, which will then be reviewed by headquarters staff as a QC measure prior to insertion.	Although training and procedures may be put in place, in many cases the proper action to take might not be obvious, or may be ignored in favor of a regional preference. For instance, when performing the interactive smoothing of MO/MB and U/L areas, is it better include a block within MO/MB (and deal with the problem in NRFU) or put the block within U/L?
Headquarters Review of TEA Delineation	**Risk:** The recommended TEA Delineation may result in operational workloads that impact the budget.	RSK-DLG-0003	M	H	- Monitor progression of TEA Delineation during the interactive delineation, and watch for excessive changes from the batch delineation. - Large differences in the recommended TEA Delineation will require Census Management input. Either the TEA Delineation will need to be refined, or additional funding acquired.	It is expected that the TEA Delineation will not match budgeted workloads exactly. Small workload differences can likely be absorbed without major budget implications.

Appendix K: 2010 TEA Delineation Schedule

ID	Activity ID	Task Name	Baseline Start	Baseline Finish	Actual Start	Actual Finish	Predecessors	Successors
1		**2010 TEA Delineation**	**Thu 6/1/06**	**Fri 5/29/09**	**Thu 6/1/06**	**Fri 9/18/09**		
2		**Remote Area Delineation (TEA 3 and 4)**	**Thu 6/1/06**	**Mon 12/17/07**	**Thu 6/1/06**	**Mon 2/4/08**		
3	10GPT-23110	FLD develops and delivers 2010 TEA Remote Area Delineation (TEA 3 and 4) Customer Requirements to GEO	Thu 6/1/06	Tue 8/15/06	Thu 6/1/06	Tue 8/15/06		10MTS-A1000, 10GPT-A0005
4	10MTS-18630	Receive Customer Requirements for 2010 TEA Interactive TEA 3 & 4 Delineation	Wed 5/31/06	Wed 5/31/06	Mon 12/17/07	Mon 12/17/07	10GPT-A0003	10MTS-A0004, 10MTS-A0017
5	10MTS-18600	Develop/Test Software for 2010 Interactive TEA 3 & 4 Delineation	Thu 6/1/06	Tue 8/15/06	Thu 6/1/06	Tue 8/15/06	10MTS-A1000	10MTS-A0007, 10MTS-A0008, 10MTS-A0009, 10MTS-A0012, 10MTS-A0011
6	10MTS-18610	Develop/Test Software for 2010 Upload of TEA 3 & 4 Delineation	Thu 2/1/07	Fri 5/25/07	Thu 2/1/07	Fri 5/25/07	10MTS-A1000	10MTS-A0018
7	10GPT-23120	FLD Prepares RO Staff TEA Training Materials	Tue 8/1/06	Tue 9/5/06	Tue 8/1/06	Tue 9/5/06	10GPT-A0003	10GPT-A0013
8	10GPT-23130	FLD Trains the RO Staff on Remote Area Delineation	Tue 9/5/06	Tue 9/5/06	Tue 9/5/06	Tue 9/5/06	10GPT-A0005	10GPT-A0014
9	10GPT-23140	FLD-ROs conduct Remote Area TEA Delineation	Tue 9/5/06	Thu 9/28/06	Tue 9/5/06	Thu 9/28/06	10MTS-A0012, 10MTS-A0011, 10GPT-A0013	10GPT-A0015, 10GPT-A0016
10	10GPT-23150	FLD-HQ finishes review of RO Remote Area TEA plans	Mon 9/18/06	Thu 9/28/06	Mon 9/18/06	Thu 9/28/06	10GPT-A0014	10MTS-A0018
11	10GPT-A0016	Names/ID codes of governmental units outside of LUCA delivered to GEO	Fri 9/29/06	Fri 9/29/06	Fri 9/29/06	Fri 9/29/06	10GPT-A0014	
12	10MTS-18660	Run Upload of 2010 TEA 3 & 4 Delineation	Fri 11/30/07	Fri 11/30/07	Fri 2/1/08	Mon 2/4/08	10MTS-A0017, 10GPT-A0015	
13		**Main Delineation (TEA 1,2,5,6,7)**	**Mon 11/19/07**	**Fri 5/29/09**	**Mon 11/19/07**	**Fri 9/18/09**		
14	10GPT-23210	FLD develops and delivers 2010 TEA Delineation Customer Requirements to GEO	Mon 11/19/07	Thu 1/31/08	Mon 11/19/07	Thu 4/24/08		10MTS-A0022, 10MTS-A0023, 10MTS-A0024, 10GPT-A0043
15	10MTS-02330	Receive Final Requirements from FLD for Main 2010 TEA Delineation	Thu 1/31/08	Thu 1/31/08	Mon 4/28/08	Mon 4/28/08	10GPT-23210	10MTS-02300, 10MTS-02310, 10MTS-02320
16	10MTS-02300	Develop/Test Software for Main 2010 Batch TEA Delineation	Fri 2/1/08	Thu 7/31/08	Thu 3/27/08	Mon 4/28/08	10GPT-A0020	10MTS-A0037
17	10MTS-02310	Develop/Test Software for Main 2010 Interactive TEA Delineation	Fri 2/1/08	Fri 9/5/08	Thu 3/27/08	Mon 9/8/08	10GPT-A0020	10MTS-A0027, 10MTS-A0028
18	10MTS-02320	Develop/Test Software for Validation and Upload of Main 2010 TEA Delineation	Mon 6/2/08	Fri 1/30/09	Tue 6/17/08	Wed 12/3/08	10GPT-A0020	10MTS-A0047
19	10MTS-A2500	GEO assigns ACT codes and HU tallies from Spring DSF to collection blocks (flow by county)	Tue 7/1/08	Thu 8/7/08	Thu 7/24/08	Fri 8/8/08		10MTS-A0038
20	10MTS-02340	Run Production Batch Main 2010 TEA Delineation	Fri 8/1/08	Fri 9/5/08	Thu 9/4/08	Thu 9/4/08	10MTS-A0022	10MTS-A0042
21	10MTS-A3600	Release to FLD and DMD Batch Summary HU Counts for workload review	Mon 9/8/08	Mon 9/8/08	Tue 9/9/08	Tue 9/9/08	10MTS-A0025	
22	10MTS-02350	Release to FLD Production Main 2010 Interactive TEA Delineation Tools/SW/Data (incl. Geodatabase)	Mon 9/8/08	Mon 9/8/08	Tue 9/9/08	Tue 9/9/08		
23	10MTS-A4200	Release to FLD 2010 Batch Delineated TEAs (national file)	Mon 9/8/08	Mon 9/8/08	Tue 9/9/08	Tue 9/9/08	10MTS-A0037	
24	10GPT-23230	FLD Prepares RCC Staff TEA Training Materials	Mon 6/2/08	Wed 9/3/08	Tue 7/22/08	Wed 8/27/08	10GPT-A0020	10GPT-A0044
25	10GPT-23240	Train the RCC Staff on Main TEA Interactive Tools and Procedures	Tue 8/5/08	Wed 8/6/08	Wed 8/6/08	Wed 8/27/08	10GPT-A0043	10GPT-A0045
26	10GPT-23250	FLD-RCCs conduct Interactive Main TEA delineation (flow by LCO)	Mon 9/8/08	Wed 12/31/08	Sat 8/16/08	Wed 12/31/08	10GPT-A0044	10GPT-A0046
27	10GPT-23260	FLD-HQ review of RO TEA plans	Fri 1/2/09	Fri 1/30/09	Fri 1/2/09	Fri 1/23/09	10GPT-A0045	10GPT-A0050
28	10MTS-02360	Run Validation and Upload of Main 2010 TEA Delineation	Mon 2/2/09	Mon 2/23/09	Fri 1/30/09	Fri 2/13/09	10MTS-A0024	
29	10GPT-23265	FLD Receives National TEA Map	Tue 6/30/09	Fri 3/13/09	Fri 9/18/09	Fri 9/18/09	10GPT-A0046	

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Appendix L: Acronym List

AC	Address Canvassing
ACF	Address Control File
ACS	American Community Survey
ACT	Address Characteristic Type
ASIS	Address System Information Survey
CIG	Census Integration Group
CLD	Crew Leader District
CQR	Count Question Resolution
DMD	Decennial Management Division
DR	Dress Rehearsal
DSCMO	Decennial System & Contract Management Office
DSF	Delivery Sequence File
DSSD	Decennial Statistical Studies Division
FLD	Field Division
FLD-GSB	Field Geographic Support Branch
GAADS	Geographic Area Analysis and Delineation Software
GEO	Geography Division
GIS	Geographic Information System
GP OIT	Geographic Programs OIT
HU	Housing Unit
L/E	List/Enumerate
LCO	Local Census Office
LUCA	Local Update of Census Addresses
MAF	Master Address File
MIS	Management Information Systems
MO/MB	Mailout/Mailback
MTdb	MAF/TIGER database
PO	Post Office
RA	Remote Alaska
RCC	Regional Census Center
RO	Regional Office
RUE	Remote Update Enumerate
TEA	Type of Enumeration Area
TIGER	Topological Integrated Geographic Encoding and Referencing
U/L	Update/Leave
UAA	Undeliverable As Addressed
UE	Update Enumerate
USPS	United States Postal Service
UU/L	Urban Update/Leave
UUE	Urban Update Enumerate
ZIP	Zone Improvement Plan