FCC
Form 690
MF-I Geospatial Data

Filing Instructions

Auctions and Spectrum Access Division
Wireless Telecommunications Bureau
May 2014

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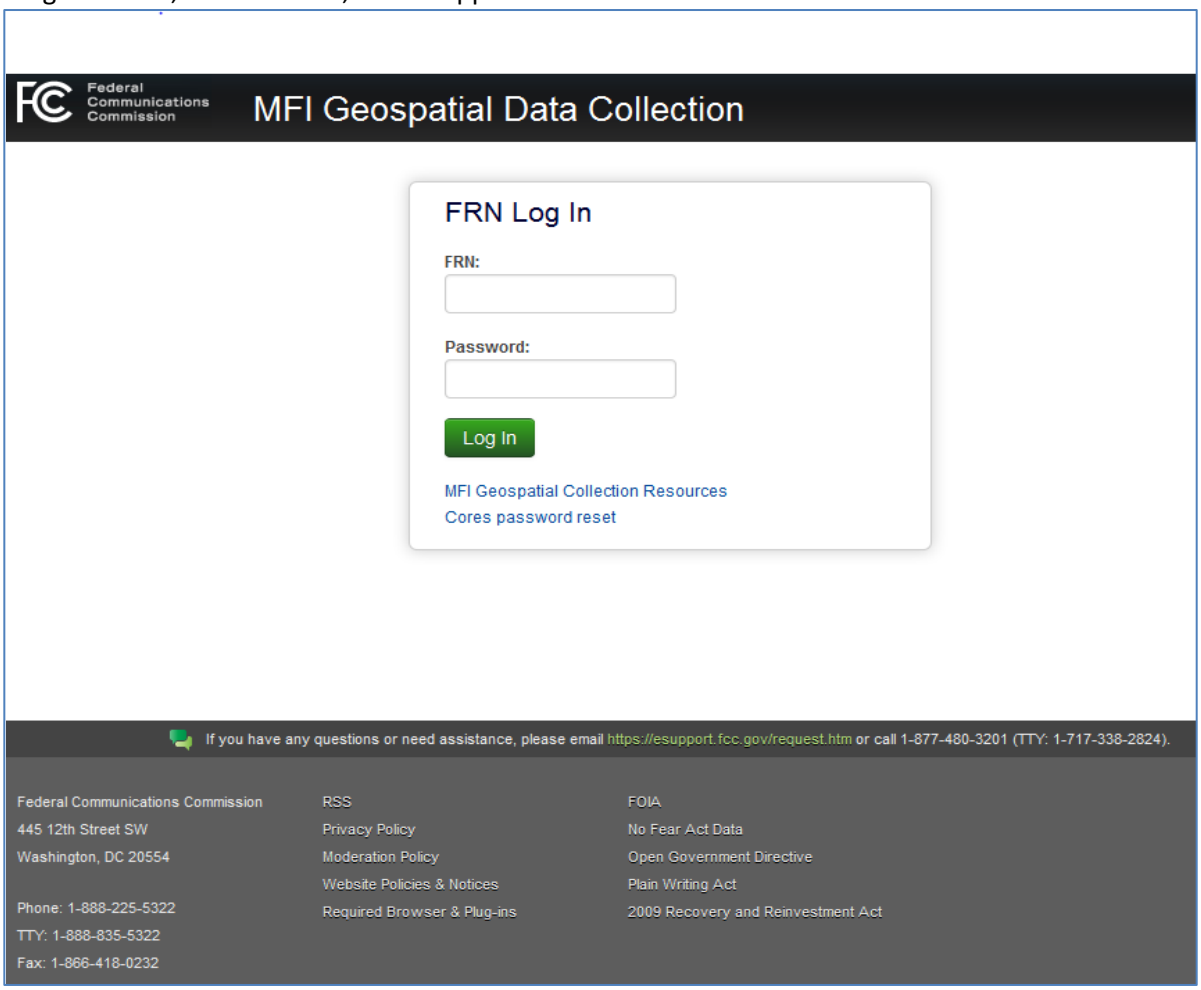
Submissions by Mobility Fund Phase I Recipients

Logging In

1. Open a web browser and go to https://mfigeo.fcc.gov . The FCC's MFI Geospatial Data Collection Log In screen, shown below, should appear:

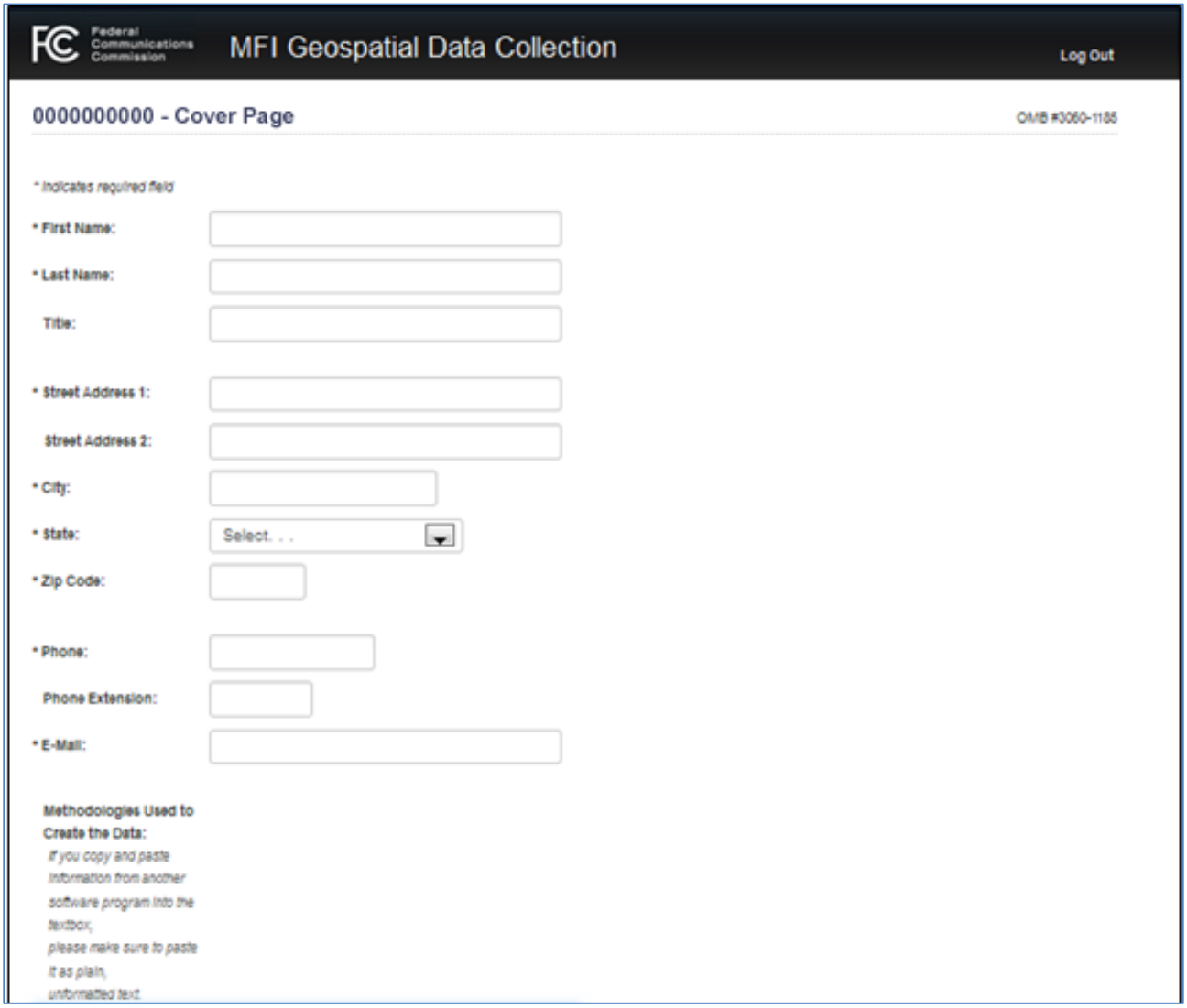


2. Under **FRN**, please log in using the 10-digit FRN (FCC Registration Number) used to file your Form 680 application with the FCC.
3. Under **Password**, please log in using the password associated with the FRN you use. If your FCC password begins with a special character (non- letter, non-number), you should reset your password so that it no longer begins with a special character. You can reset your password by clicking on the link **Core password reset** or by calling FCC Technical Support toll free at 877-480-3201 and selecting Option 1.
4. Click the green **Log In** button or hit [Enter].

   Note: Chrome version 31 and higher or Firefox version 25 and higher provide the best performance and user experience.

Entering Contact Information

Once you have successfully logged into the MFI Geospatial Data Collection website for the first time, you will be required to enter your Contact Information using the form shown below:



Please enter the contact information for the representative who is primarily responsible for submitting the Form 690 and is familiar with the data, in case any technical questions arise.

- ***Note***: The contact entered here may not necessarily be the same individual who certifies the data. You will enter the certification information on a different page after you have uploaded and viewed the study area boundaries.

In **Methodologies Used to Create the Data**, you may provide a brief explanation of how you generated the data, including any use of existing map data, the process used for digitization, the

software program(s) you used, or any other relevant information.

Once you have finished entering all of the Contact Information fields, click **Save Changes**.

- If the contact information was entered correctly, you will receive a message, **Information saved successfully**, at the top of the page. You can then click **Continue** at the bottom of the page to proceed with uploading your data file(s).
- If any required fields were left blank or entered incorrectly, you will be prompted to fill in or correct those fields, then click **Save Changes** again, before continuing.

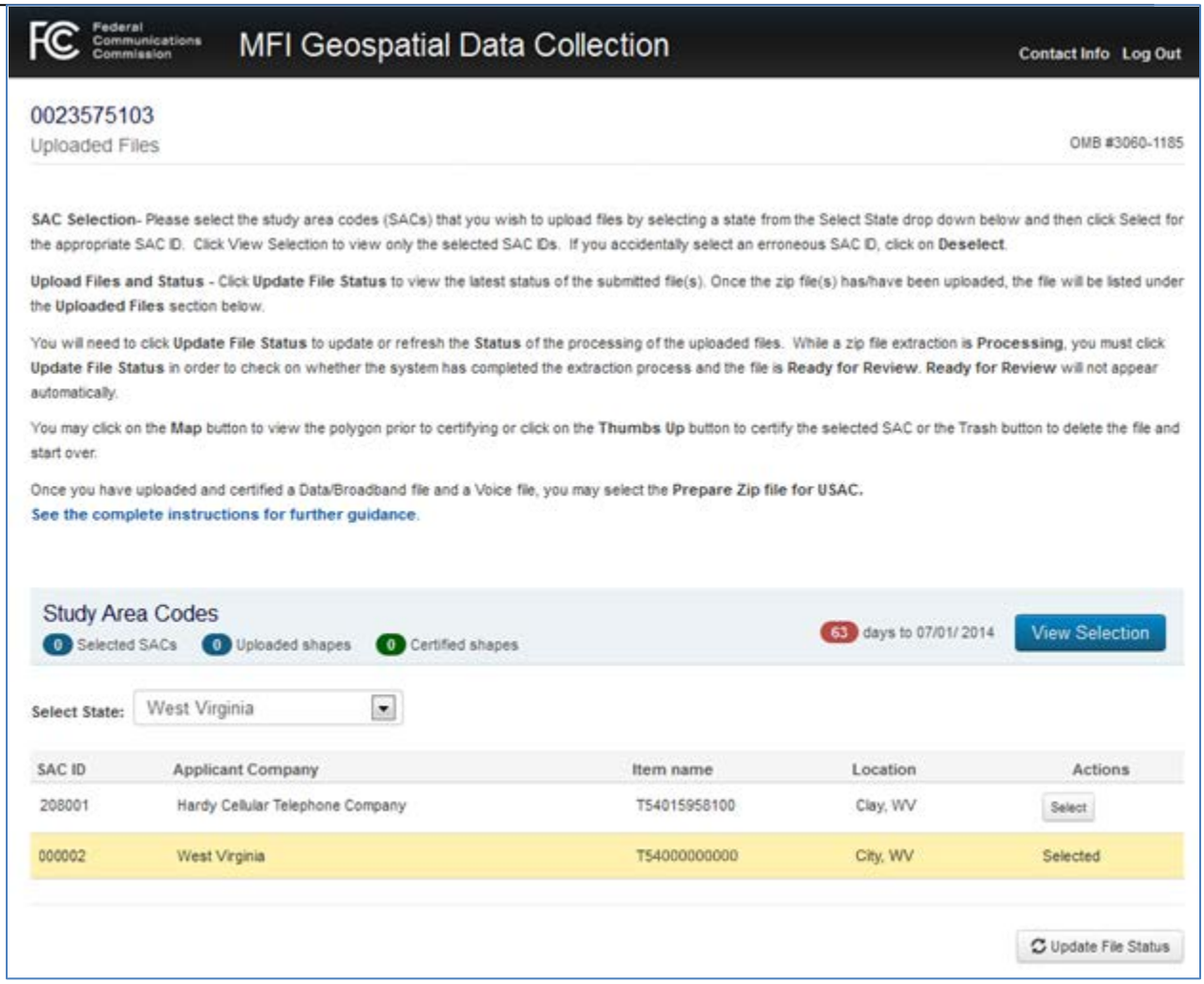
Uploading Data

Select State and SAC

Once you have successfully entered and saved the **Contact Information** and clicked **Continue**, you will proceed to the **Uploaded Files** page shown below, where you can select a state from the drop down and click **Select** for the appropriate study area codes (SACs) for upload. Once a state is selected, a list of all of the selected SACs with the county and state information as well as the Mobility Fund Phase I auction Item Name and Winning Bidder Name will be shown.

If you serve study areas in multiple states, select your SACs on a state-by-state basis using the drop-down menu. Selected SACs will be show as **Selected**.

- ***Note***: If you selected a SAC in error, you will have the opportunity to deselect it after you have clicked **View Selections**. All Mobility Fund Phase I SACs for a state are available for selection so you will need the SAC you serve.



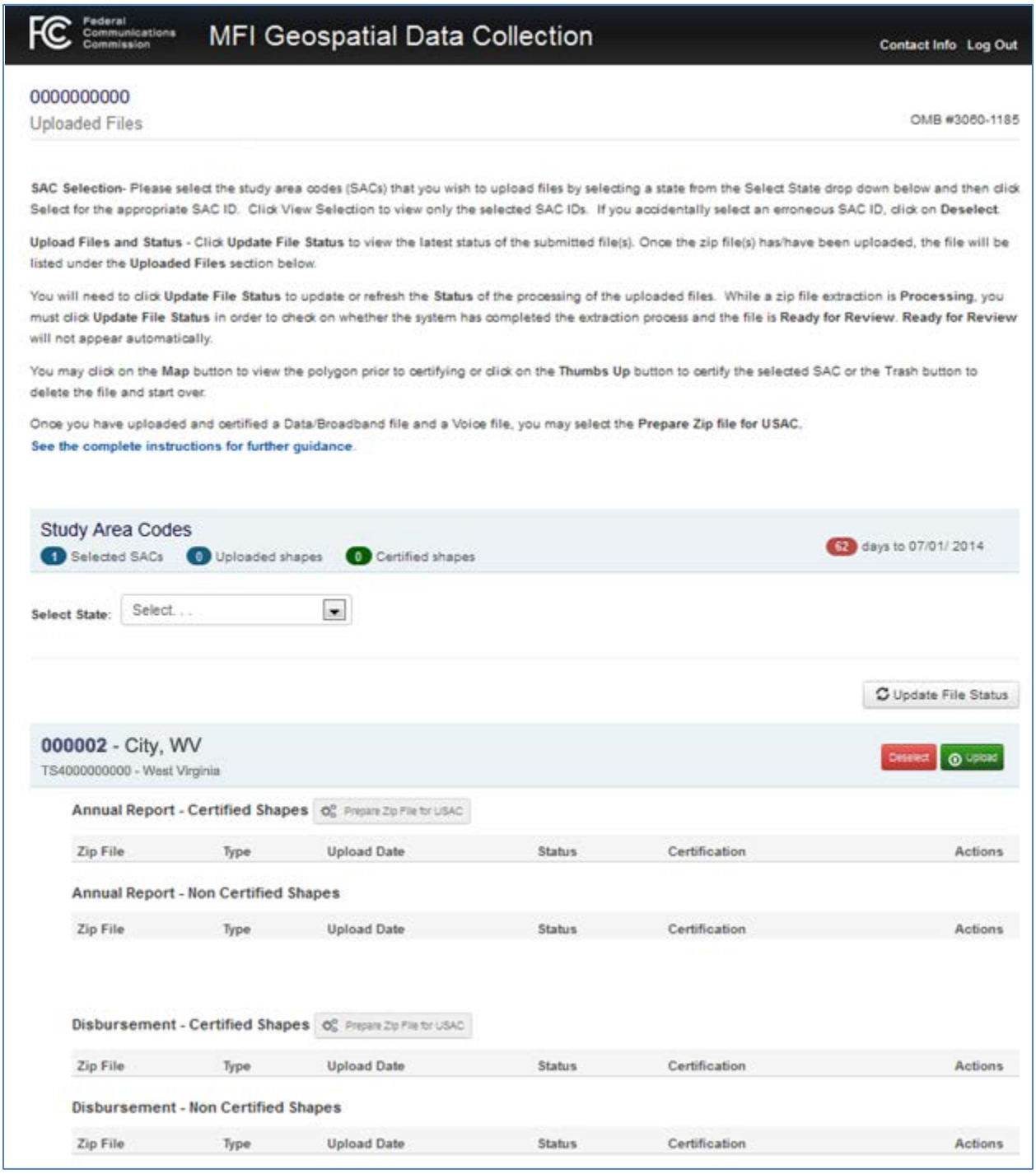
View SAC Selections

After you select all of the SAC(s) you serve you can click **View Selections** at the top of the list. For each selected SAC you will now be able to perform the following actions, labeled on the screen shown below:

1. **DeSelect** – Allows you to deselect a SAC. You may remove SACs from this list by clicking **Deselect**. The SAC will be removed from the list.

   Note: You may not deselect the SAC if you have uploaded any files to that SAC. You must first delete those files in order to deselect the SAC.
2. **Upload** – Links to the **Upload Files** page where you may upload files once you have selected at least one SAC.

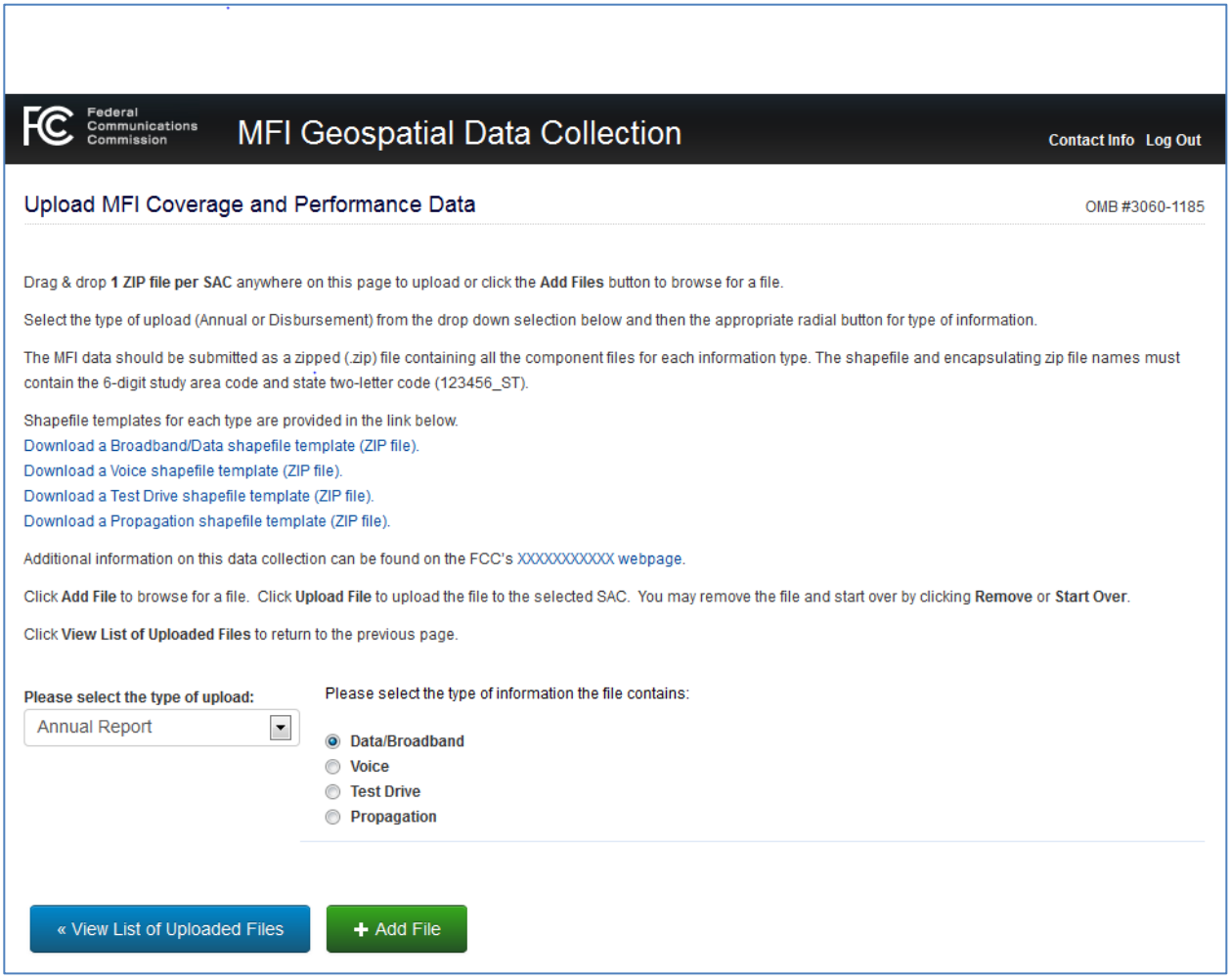
You may select additional SACs by first selecting a state from the **Select State** drop-down menu and selecting the SACs within that state.



For each SAC selected, you will be able to perform the actions described below.

Upload Files

Once you have completed your SAC selections, you may click on the **Upload** button to proceed with uploading your files from the **Upload MFI Data** page shown below:



Select the type of upload, Annual Report or Disbursement, from the drop down selection.

Then select the type of information the file contains – Data/Broadband, Voice, Test Drive or Propagation.

Click **Add File** to browse for a file.

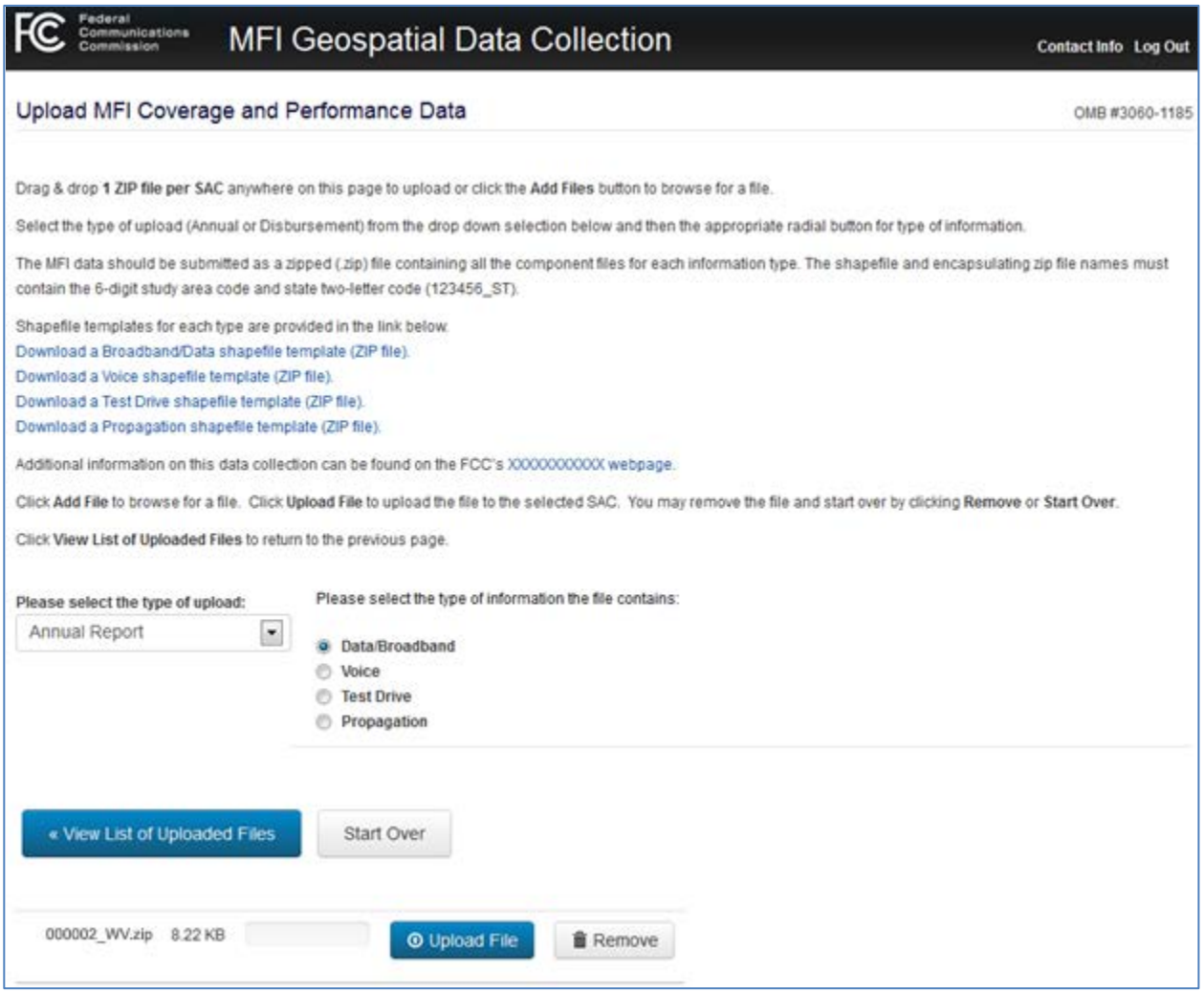
Shapefile templates for each type are provided in the links.

The complete specifications for the MFI Geospatial Data Collection can be found in Appendix A.

The MFI data should be submitted as a zipped (.zip) file containing all the component files for each information type. The shapefile and encapsulating zip file names should contain the 6-digit study area code and the two digit state identifier (123456_ST).

The zip files should contain, at a minimum, the following file types: .dbf, .prj, .shp, .shx. Any zip file not containing these minimum files will result in an error. Any and all non-shapefiles that are part of your submission, such as .csv or .doc files, should be included in the same zip file with the shapefiles. In addition, zip files should not contain any folders.

The chosen or dropped zip file will be listed at the bottom of the page as shown below. Since you must designate the type of file you may only upload or drop in one file at a time to the selected study area code. You can upload additional files without going back to the previous page by clicking **Start Over**.



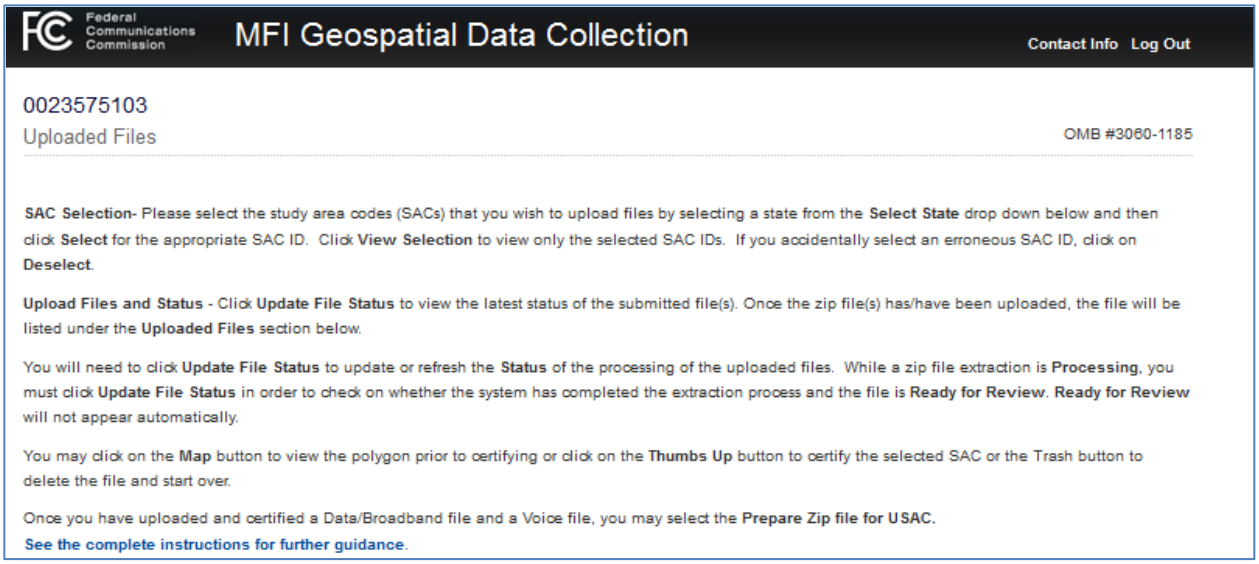
You will now be able to perform the following actions, labeled on the screen shown below:

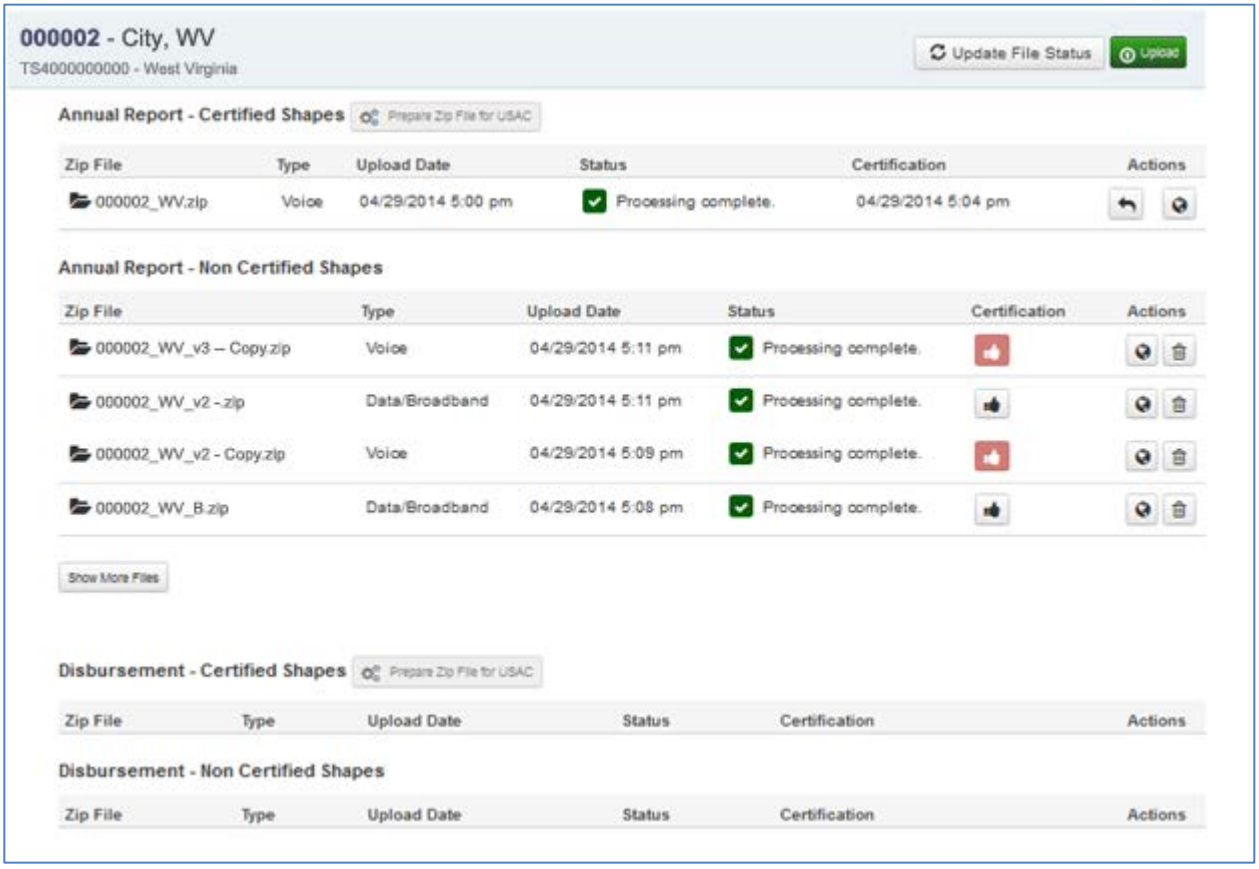
1. **View List of Uploaded Files** – Link to the page listing all previously uploaded files
2. **Start Over** – Upload another file
4. **Upload File** – Upload the file listed
5. **Remove** – Remove the file listed

If the correct file is listed at the bottom of the screen, select **Upload File**. Once you have successfully uploaded your zip file(s), you can view the uploaded files by clicking **View List of Uploaded Files**.

Status of Uploaded Files

This will take you to the **Uploaded Files** page shown below.



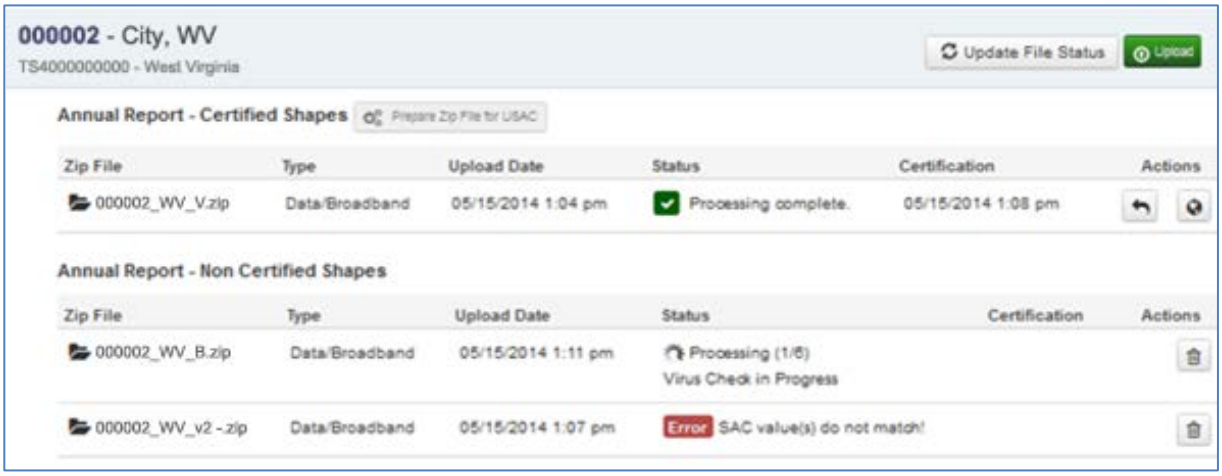


On the page above, you will be able to perform the following actions, labeled on the screen shown

above:

1. **Update File Status** - View the current **Status** of uploaded zip files.
   - **Processing** means the system is in the process of extracting the shapefile(s) from the uploaded zip file. This process can take several minutes.

     Note 1: While a zip file extraction is **Processing**, you must click **Update File Status** in order to check on whether the system has completed the extraction process and the processing is complete. The **Processing complete** will not appear automatically.
     Note 2: If the system is stuck in processing for a long time, the most common reasons are that the zip file contains a folder and/or does not contain a shapefile. Please ensure that the zip file contains only files, not folders, and that any non-shapefiles, such as .csv or .doc files, are included in the same zip file as the shapefile(s).
     Note 3: File size should be limited to 25 MB
   - **Processing complete** (see below) means the shapefile has been successfully extracted and can be viewed. See below.
   - **Error messages** (listed below) indicate the uploaded zip file did not contain the necessary component files or an error occurred in the upload or extraction process. See the example below.
3. **Upload –** Click on this button to upload a file or additional files for the selected SAC.



Possible Error Messages

- **Projection Error(s): Projection needs to be WGS84** – This error is generated when the shapefile has an incorrect or missing projection.
- **Geometry Error(s): Geometry type is (Line/Point), Polygon Geometry is required** – This error is generated when the shapefile contains line or point geometry vs. polygon geometry.
- **SAC Error(s): SAC value cannot be NULL** – This error is generated when the SAC value is not specified.
- **SAC Errors(s): SAC value(s) do not match!** – This error is generated when the SAC value does not match the selected SAC.
- **SAC Error(s): Each shapefile must reference only one SAC** – This error is generated

when a shapefile references more than one SAC in the attribute table.

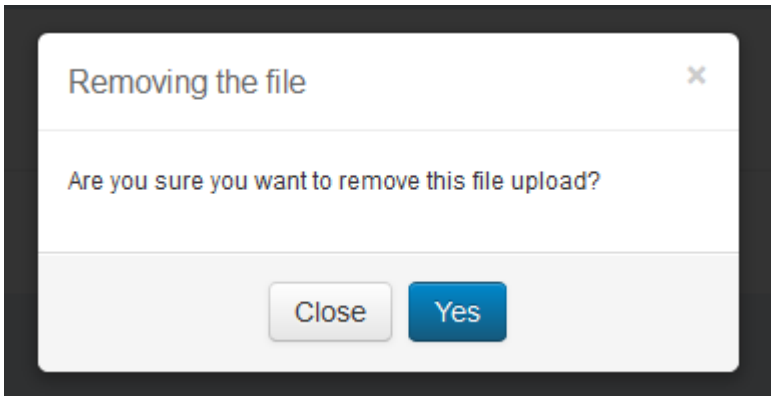
- **Only one shapefile is allowed per Zip file** – This error is generated when a Zip file contains more than one shapefile.

If you receive an error message after uploading a zip file, you will need to upload a new zip file containing a revised, corrected shapefile. You should delete any invalid, incorrect files or files stuck in processing. All accepted uploads receive a timestamp upon completion of processing.

Once an uploaded shapefile has been extracted, scanned for viruses, and verified, you will see the **Processing complete**.

4. **Delete a file** – You may delete a file by clicking on the **Trash Icon**. 

After you click on the trash icon you will see the following message.



Click **Yes** to delete the file and **Close** if do not wish to remove the file. You will be taken back to the previous screen.

5. **Show More Files –** If you have uploaded more than four (4) files, a **Show More Files** button will appear. Click this button to see all of the files you have uploaded. The four files shown will show the most recent uploaded files, for each SAC.

View and Certify Uploaded Files

You will now be able to perform the following actions, labeled on the screen shown above:

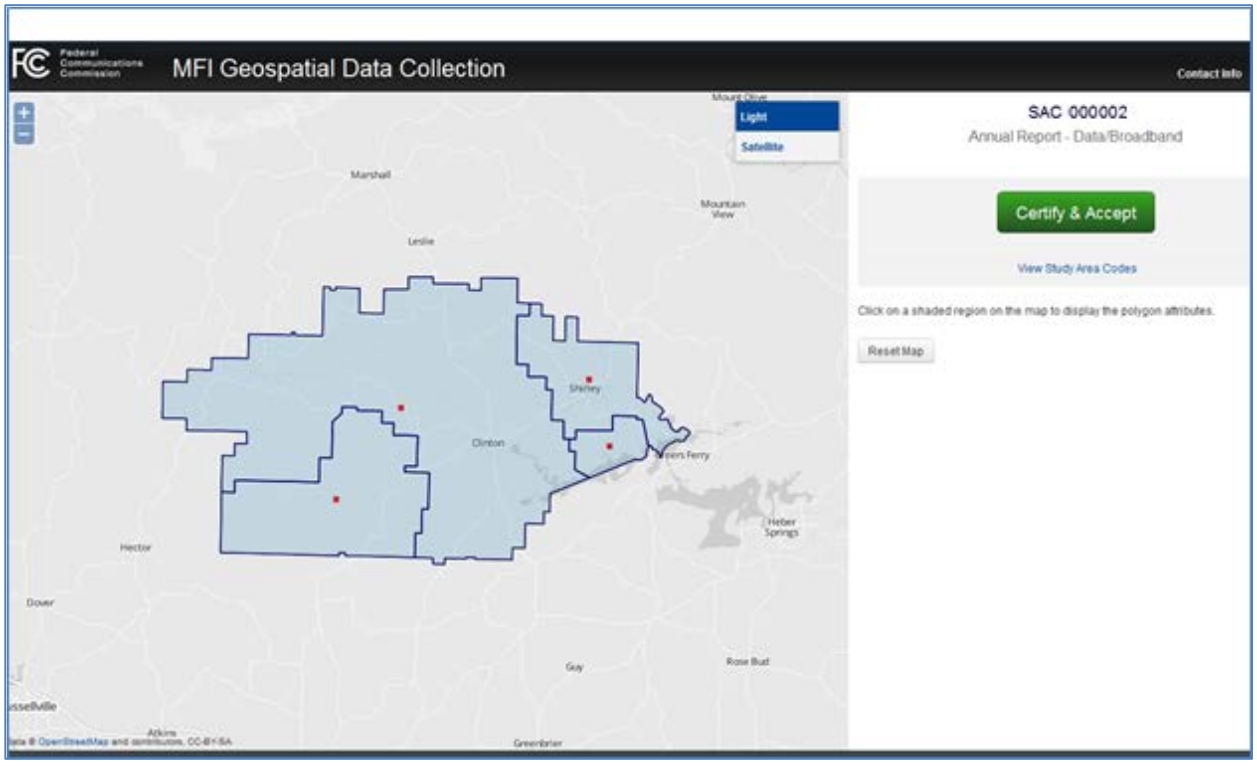
1. View a map of the uploaded shapefile (see below). Click on the Map Icon. 
2. Certify an uploaded shapefile – Click on the **Thumbs Up Icon**.  You may only have one (1) certified file for each file type per SAC.

Viewing Uploaded Maps

You can navigate on the **Map** page using the links labeled on the screen below:

1. **Zoom** in and out
2. Switch the background map from streets (**Light** label) to satellite photography (**Satellite** label)
3. Click **Certify & Accept** to continue to the Certification Page
4. Click on **View Study Area Codes** to return to the List of Uploaded Files Page

You can also move the map around by clicking and dragging within the map window.



If you click inside the boundary of a geographic area shown on the map, the map will do the following, labeled on the screen above:

1. Highlight the selected exchange and zoom to its extent
2. Display the attributes for or data associated with the selected exchange
3. If you click **Reset Map**, the map will deselect the highlighted exchange, clear the displayed attributes, and zoom to the extent of all exchanges

Certifying Submitted Data

Once you have uploaded your zip file, and your file has been successfully verified, you will be able to certify your shapefile by either clicking on **certification icon (Thumbs Up)** from the **Uploaded Files** page or **Certify & Accept** from the **Map** page.

You will also be able to identify if you have submitted a request for confidential treatment of the information submitted. You will select **Yes** or **No** from the drop down list. Filers requesting confidential treatment of the information submitted through this site must comply with Sections 0.457 and 0.459 of the Commission's rules. By selecting **Yes**, you are identifying that you have submitted a request to the Commission. This website does not collect the request for confidential treatment.

When you navigate to the **Certification** page, the following screen will appear:

Certifying Official Contact Information

* **Confidential:** *Request for confidential treatment has or has not been filed pursuant to Commission's rules.*	No
* **First Name:**	
* **Last Name:**	
* **Street Address 1:**	
Street Address 2:	
* **City:**	
* **State:**	Select. . .
* **Zip Code:**	
* **Phone:**	*(999) 999-9999*
Phone Extension:	
* **E-Mail:**	

Populate from Cover

Notes:
If you copy and paste information from another software program into the textbox, please make sure to paste it as plain, unformatted text.

Certify & Accept

Please enter the certifying official information for the person at your company responsible for certifying the accuracy of the submitted study area boundary data. If the information is the same as the Contact Information, you may click Populate from Cover and the contact information will be entered.

In the Certification Notes box, please enter any additional information related to the certification.

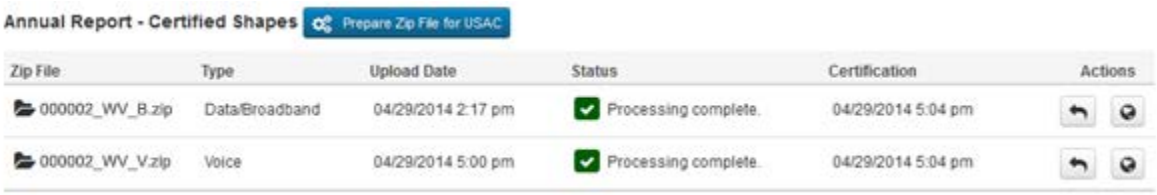
When you have finished entering all of the information on this page, click **Certify & Accept**.

- **Note:** Once you have clicked this button, your certification will be complete and you will no longer be able to update or change the contact information for the certifying official or modify the Certification Notes entry.
- If you need to change any of this information after clicking **Certify & Accept**, you must uncertify the certified file and upload and certify a new shapefile.
- If you certify a file in error, you may uncertify that file by clicking on the Reverse Arrow Icon.
- You can modify, at any time, the general Contact Information or the individual primarily responsible for submitting the data by clicking on the site's **Contact Info** link in the upper right hand corner.
- If any required fields were left blank or entered incorrectly, you will be prompted to fill in or correct those fields and then click **Certify & Accept.**

If you certification was successful, you will be taken to the **Uploaded Files** page, where you will be able to view a list of all of your uploaded files and link to maps of all of your shapefiles.

USAC Zip File

The button **Prepare Zip File for USAC** will be available once you have submitted and certified a broadband and voice file. You may submit all four types of files before you create the zip file for USAC. If you make any changes to your files you will need to re-create the zip file for USAC.



APPENDIX A

Specifications for FCC Form 690 Submission

I. General

Carriers receiving Mobility Fund Phase I (MFI) support must submit electronic shapefiles demonstrating their progress in meeting coverage obligations in order to receive further support disbursements. Shapefiles must be submitted in ESRI compatible shapefile format such that each shapefile represents the coverage for a single Mobility Fund Phase I study area. As shapefiles typically consist of 3 to 9 individual files, the shapefile for the study area should be submitted as a single, zipped file containing all the component files. The shapefile and encapsulating zip file names should at a minimum contain the 6-digit study area code and state abbreviation (123456_ST). Shapefile templates are available at http://www.fcc.gov/encyclopedia/mobility-fund-phase-i-annual-and-disbursement-reporting.

II. Broadband Shapefile

Filers should submit polygons in an ESRI format representing geographic coverage for the transmission technology (e.g. EV-DO, HSPA+, LTE, etc.) deployed in the frequency band (e.g., 700 MHz, Cellular, AWS, PCS, etc.). The data associated with each polygon should indicate at least the minimum upload and download data speeds associated with that network technology in that frequency band, and the coverage area polygon should depict the boundaries where users should expect to receive those speeds. If a filer provides coverage using a variation in technology, frequency band, or speed in the same study area code, a separate polygon is required to be submitted.

Data Format:

Field	Description	Type	Example
SAC	MFI Study Area Code – Six digit code	Integer	123456
ENTITYNAME	Name of the MFI Winning Bidder/Filer	Text	U.S. Wireless
TECHNOLOGY	Category of technology for the provision of service (see Codes, Table 1)	Integer	81
SPECTRUM	Code for the spectrum used for the provision of service (see Codes, Table 2)	Integer	91
MINDOWN	The minimum expected downstream bandwidth in Mbps.	Float	0.768
MINUP	The minimum expected upstream bandwidth that is offered with the above minimum downstream bandwidth in Mbps.	Float	0.200

Details:

1. All map areas must be closed, non-overlapping polygons with a single, unique identifier.
2. Any variation in any of the required fields necessitates the creation of a separate polygon showing the relevant coverage.
3. The shapefile must have an assigned projection with an accompanying .prj file.
4. The shapefile must use unprojected (geographic) WGS84 geographic coordinate system.
5. The coverage boundaries should have a resolution of 100 meters (approximately three arc-seconds)

or better. An arc-second represents the distance of latitude or longitude traversed on the earth's surface while traveling one second (1/3600th of a degree). *See* http://www.esri.com/news/arcuser/0400/wdside.html. Three arc-seconds is a common resolution of terrain databases. *See* USGS Standards for Digital Elevation Models, Part 1-General, at 1-2, 1-4, http://nationalmap.gov/standards/pdf/1DEM0897.PDF.

6. The shapefile should be submitted as a zip archive. Do not include folders in the zip file.
7. In addition to the shapefile, each zip must include metadata or a plain text "readme" file that contains a comprehensive explanation of the methodology employed to generate the map layer including any necessary assumptions and an assessment of the accuracy of the finished product. Also provide the propagation model used, along with the appropriate propagation model optimization or fine tuning parameters.

III. Voice Shapefile

A separate electronic shapefile is to be submitted with polygons in an ESRI shapefile format depicting the network coverage areas representing commercially-available mobile voice service. The polygons should reflect where users should expect to be able to make, maintain, and receive voice calls. A filer should submit a separate polygon for each technology that is used to provide mobile voice coverage (e.g., HSPA+, LTE, etc.) in the study area, and should indicate which frequency bands it uses to provide voice service using that technology.

Data Format:

Field	Description	Type	Example
SAC	MFI Study Area Code – Six digit code	Integer	123456
ENTITYNAME	Name of the MFI Winning Bidder/Filer	Text	U.S. Wireless
TECHNOLOGY	Category of technology for the provision of service (see Codes, Table 1)	Integer	81
SPECTRUM	Code for the spectrum used for the provision of service (see Codes, Table 2)	Integer	91

Details:

1. All map areas must be closed, non-overlapping polygons with a single, unique identifier.
2. Any variation in any of the required fields necessitates the creation of a separate coverage polygon.
3. The shapefile must have an assigned projection with an accompanying .prj file.
4. The shapefile must use unprojected (geographic) WGS84 geographic coordinate system.
5. The coverage boundaries should have a resolution of 100 meters (approximately three arc-seconds) or better. An arc-second represents the distance of latitude or longitude traversed on the earth's surface while traveling one second (1/3600th of a degree). *See* http://www.esri.com/news/arcuser/0400/wdside.html. Three arc-seconds is a common resolution of terrain databases. *See* USGS Standards for Digital Elevation Models, Part 1-General, at 1-2, 1-4, http://nationalmap.gov/standards/pdf/1DEM0897.PDF.
6. The shapefile should be submitted as a zip archive. Do not include folders in the zip file.
7. In addition to the shapefile, each zip file should include metadata or a plain text "readme" file that contains a comprehensive explanation of the methodology employed to generate the map layer including any necessary assumptions and an assessment of the accuracy of the finished product. Also provide the propagation model used along with the appropriate propagation model optimization or fine tuning parameters.

IV. Drive Test/Scattered Site Test Shapefiles

Submitted test data should be presented as a separate electronic shapefile with point feature types in an ESRI shapefile format depicting the drive test or scattered site test results and roads or area covered. A filer should indicate the upload data speeds as points along roads or sites.[1]

Data Format:

Field	Description	Type	Example
SAC	MFI Study Area Code – Six digit code	Integer	123456
ENTITYNAME	Name of the MFI Winning Bidder/Filer	Text	U.S. Wireless
TECHNOLOGY	Technology for the provision of service	Text	EVDO
CHANWIDTH	Carrier Channel Width in MHz	Float	1.25
FREQBAND	Carrier Frequency Band(s) in MHz	Text	1855
DATE	Test Date: mm/dd/yyyy	Date	01/01/2014
TIME	Test Time in 24 hour format: hh:mm:ss	Text	12:55:59
LATDIR	Latitude Direction: N=North, S=South	Text	N
LATITUDE	Latitude in Decimal Degrees	Float	36.512
LONDIR	Longitude Direction: E=East, W=West	Text	W
LONGITUDE	Longitude in Decimal Degrees	Float	80.408
MILEMARKER[2]	Road Mile Segment Marker	Float	125.2
DOWNLOAD	Downstream bandwidth in Mbps	Float	0.768
UPLOAD	Upstream bandwidth in Mbps	Float	0.200
LATENCY	Latency in milliseconds	Integer	500

Details:

1. All features must be points representing drive test results with a unique identifier for each point.
2. The shapefile must have an assigned projection with an accompanying .prj file.
3. The shapefile must use unprojected (geographic) WGS84 geographic coordinate system.
4. The features should have a resolution of 100 meters (approximately three arc-seconds) or better. An arc-second represents the distance of latitude or longitude traversed on the earth's surface while traveling one second (1/3600 of a degree).[3] Three arc-seconds is a common resolution of terrain databases.[4]
5. The shapefile should be submitted as a zip archive. Do not include folders in the zip file.
6. In addition to the shapefile, each zip must include metadata or a plain text "readme" file that contains a comprehensive explanation of the methodology employed to generate the map layer including any necessary assumptions and an assessment of the accuracy of the finished product. The explanation should include information on the drive test equipment used (maker, model and firmware/software version), antenna model and cable if external antennas are used. Provide a

[1] For Tribal Mobility Fund Phase I, the shapefile should depict the scattered site points, if scattered site testing is being used.

[2] Milemarker information is not required for Tribal Mobility Fund Phase I scattered site tests.

[3] *See* http://www.esri.com/news/arcuser/0400/wdside.html.

[4] *See* USGS Standards for Digital Elevation Models, Part 1-General, at 1-2, 1-4, http://nationalmap.gov/standards/pdf/1DEM0897.PDF.

diagram of test equipment setup configuration, testing methodology and parameters such as sampling time, averaging time/distance of raw data, IP protocol, test file size, and any additional post processing of the data.

V. Propagation Study Shapefiles

Propagation Study Shapefiles / Road Miles – Submitted propagation maps should be presented as a separate electronic shapefile with line feature types in an ESRI shapefile format. The methodology should identify the RF planning software, version, terrain data resolution, clutter data, and the propagation model used, along with the appropriate propagation model optimization parameters.

Data Format:

Field	Description	Type	Example
SAC	MFI Study Area Code – Six digit code	Integer	123456
ENTITYNAME	Name of the MFI Winning Bidder/Filer	Text	U.S. Wireless
ROADNAME	Name of road	Text	Fairfax Drive
ROADMILES	Length in miles of road segment	Float	2.8
STATUS	Status of Upload/Download Bandwidth for road segment: "Pass" or "Fail"	Text	Pass

Details:

1. All features must be lines representing propagation study linear results with a unique identifier for each line segment.
2. Any variation in any of the required fields necessitates the creation of a separate linear feature showing the relevant propagation study results (e.g. adjoining segments of similar attributes shall be dissolved into single segments)
3. The shapefile must have an assigned projection with an accompanying .prj file.
4. The shapefile must use unprojected (geographic) WGS84 geographic coordinate system.
5. The features should have a resolution of 100 meters (approximately three arc-seconds) or better. An arc-second represents the distance of latitude or longitude traversed on the earth's surface while traveling one second (1/3600th of a degree). *See* http://www.esri.com/news/arcuser/0400/wdside.html. Three arc-seconds is a common resolution of terrain databases. *See* USGS Standards for Digital Elevation Models, Part 1-General, at 1-2, 1-4, http://nationalmap.gov/standards/pdf/1DEM0897.PDF.
6. The shapefile should be submitted as a zip archive. Do not include folders in the zip file.
7. In addition to the shapefile, each zip must include metadata or a plain text "readme" file that contains a comprehensive explanation of the methodology employed. The methodology should identify the RF planning software, version, terrain data resolution, clutter data and the propagation model used along with the appropriate propagation model optimization parameters.

Propagation Study Shapefiles / Population – Submitted propagation maps should be presented as a separate electronic shapefile representing geographic coverage in an ESRI shapefile format. The methodology should identify the RF planning software, version, terrain data resolution, clutter data, and the propagation model used, along with the appropriate propagation model optimization parameters.

Data Format:

Field	Description	Type	Example

SAC	MFI Study Area Code – Six digit code	Integer	123456
ENTITYNAME	Name of the MFI Winning Bidder/Filer	Text	U.S. Wireless
BLOCKID	Census pop block unique identifier	Text	123456789123456
POPS	Number of pops that passes the required speed thresholds (both upload and download)	Float	570

Details:

1. All features must be polygons representing propagation study results that satisfy the required speed thresholds (both upload and download) for each population census block.
2. Any variation in any of the required fields necessitates the creation of a separate polygons feature showing the relevant propagation study results.
3. The shapefile must have an assigned projection with an accompanying .prj file.
4. The shapefile must use unprojected (geographic) WGS84 geographic coordinate system.
5. The features should have a resolution of 100 meters (approximately three arc-seconds) or better. An arc-second represents the distance of latitude or longitude traversed on the earth's surface while traveling one second (1/3600th of a degree). *See* http://www.esri.com/news/arcuser/0400/wdside.html. Three arc-seconds is a common resolution of terrain databases. *See* USGS Standards for Digital Elevation Models, Part 1-General, at 1-2, 1-4, http://nationalmap.gov/standards/pdf/1DEM0897.PDF.
6. The shapefile should be submitted as a zip archive. Do not include folders in the zip file.
7. In addition to the shapefile, each zip must include metadata or a plain text "readme" file that contains a comprehensive explanation of the methodology employed. The methodology should identify the RF planning software, version, terrain data resolution, clutter data and the propagation model used along with the appropriate propagation model optimization parameters.

Codes

Table 1: Technology Codes

Code	Technology
80	Terrestrial Mobile Wireless – WCDMA/HSPA
81	Terrestrial Mobile Wireless – HSPA+
82	Terrestrial Mobile Wireless – EVDO/EVDO Rev A
83	Terrestrial Mobile Wireless – LTE
88	Terrestrial Mobile Wireless – Other

Table 2: Spectrum Codes

Code	Spectrum Band
90	700 MHz Band
91	Cellular Band
92	Specialized Mobile Radio (SMR) Band
93	Advanced Wireless Services (AWS) Band
94	Broadband Personal Communications Service (PCS) Band
96	Broadband Radio Service/Educational Broadband Service Band
100	Other