

SERVICE DESCRIPTION FOR

ANNUAL FOUNDATIONAL DATA MAINTENANCE

INCLUDED WITH



Spatial IQ

for  MapGeo

A Managed Services Approach to Enterprise GIS

The Magic of Location



sanborn
geospatial

version: 20240118

This document includes methods and ideas that shall not be disclosed for any purpose other than to evaluate Spatial IQ®. Should a contract be awarded to Sanborn, the Government shall have the right to duplicate, use, or disclose this document to the extent provided in the resulting contract.

Annual Foundational Data Maintenance Overview

Quality based GIS data is the core of any Local Government Geospatial program, and the foundation for any successful Enterprise GIS. One of the most important aspects of a robust GIS is regularly updating and maintaining the local foundational datasets. Sanborn has developed specific processes and quality standards based on our extensive experience and discipline-wide best practices. Our goal is to provide you with not just updated data, but data that can grow to meet the needs of your municipality. We do this in the following ways:

- Utilize standardized databases that track feature-level attribution including sources and history and meet state-level parcel standards.
- Update parcel geometry using best practices, including coordinate geometry (COGO), georeferencing, and digitizing for more accurate parcel lines
- Maintain a quality control link between your parcel data and your Assessor's database
- Provide actionable information by spotting errors in the data and identifying untaxed or undertaxed property.
- Keep coincident and related layers in sync by efficiently updating them at the same time

Sanborn will assist your municipality in updating your foundational data layers and Tax Assessor's Maps, so that you can be confident that your GIS data is ready to keep your staff and citizens informed, your business systems integrated, and your decisions sound.

The Annual Foundational Data Maintenance program will update your parcels and associated tax map information, as well as update several existing foundational map layers such as zoning, street centerlines, address points, and open space areas. The exact layers to be maintained will be determined and defined for your managed services program based on existing data and practices in place.

As an added step, we will perform multiple quality control checks, and provide you with QA analyses reports to help improve your parcel data going forward. Your Project Manager will provide you with additional guidance on each step of the process prior to beginning the annual foundational data maintenance.

Foundational Data Maintenance Schedule Overview

Sanborn will assist your municipality in updating your foundational data layers and Assessor's Maps to current conditions (usually to Grand List Year).

A typical Annual Data Maintenance task schedule will include:

- Municipality provides source documents, CAMA, and completed update table to Sanborn
- Sanborn will update data (60-90 days), then provide draft data to municipality for review
- Municipality will review data and provide any comments or issues identified in the updates or on provided maps (30 days)
- Sanborn will then make any fixes and provide the final deliverables to the municipality (15-30 days), at which point Sanborn will initiate the annual MapGeo refresh (individual municipal sites only).

More detail on each step of the process is provided below.

Getting Started

A single point of contact will be identified by the municipality to oversee, coordinate and manage the foundational data maintenance with the Sanborn Project Manager. The municipal contact will provide Sanborn with copies of surveys, subdivision plans or deed references, and descriptions of the mapping data changes that are needed. Generally, the municipal Clerk will have filed maps that have been scanned into a digital format which may be used for these updates; and these digital files should be provided to Sanborn. Sanborn will provide you with a link to our online ShareFile website which is where you may upload any and all digital files. While *digital files are preferred*, any source document that is not provided digitally should be provided in hard copy.

Sanborn will provide a spreadsheet template in which you should populate the list of requested map changes and track these updates annually. *This spreadsheet should be submitted concurrently with any digital or paper source documents.* All updates should indicate the type of update, what information should be updated, and any new or changed parcel identifiers, addresses, or other information that is required to maintain the data completely.

The materials for the required updates will need to be provided to Sanborn *in one iteration*. Sanborn will begin the edits once all required information is provided in full. Any additional requests for map changes provided after the initial submission to Sanborn will be held onto and included for the following fiscal year (or following batch of maintenance, depending on the client's maintenance frequency arrangement with Sanborn).

Parcel editing will generally consist of a combination of new lots/condos, lot splits, merges, and lot line revisions. Additional foundational data changes will include editing of existing layers such as building outlines, roads and/or street name edits, address point changes, zoning, and open space boundary adjustments. *All changes requested will need to be noted on the spreadsheet, and a source document will need to be provided, in order for them to be made by Sanborn.*

Foundational Data Editing

Sanborn employs two standard methods for parcel editing; coordinate geometry (COGO) and heads-up digitizing (georeferencing source doc and digitizing). The type of editing used will depend on the sources provided and each will deliver accurate maintenance of your parcel data to meet your needs and expectations.

Sanborn's parcel update strategies include best practices that are designed to incrementally improve parcel data quality over time. This is a "whole parcel" approach to data editing that leverages the survey-quality information provided for a target parcel(s) but also improves the accuracy of the adjacent parcels.

With the COGO approach, all parcels that are shown on a survey map are reconstructed using the bearing and distance information from the plan, and then the surrounding (less accurate parcels) are adjusted to the new (more accurate) parcels.

The best starting point for the COGO construction will be picked based on all available sources, including all the visible evidence on the imagery, such as road edges, buildings, etc. and the corresponding survey information. Once the parcel boundary has been drawn, it may be rotated around the starting point to best fit the ortho evidence. Then all the adjacent parcel lines will be adjusted to the newly constructed parcel(s). All parcels will be closed polygons.

With the heads-up digitizing approach, parcel line features will be captured by best-fit methodology. Sanborn will georeference (align) provided digital parcel plan scans to the existing parcel basemap and most recent orthophoto. Essentially, the parcels will be traced from the scanned, georeferenced images and then adjusted as needed to fit the basemap and existing parcel data as well as possible.

Sanborn will complete all parcel changes identified on the drawings and plans provided by the municipality and will include any easements identified on the plans.

Parcel attributes will be updated in the parcel layer's attribute table to reflect all updates, including but not limited to parcel identifier, map, block, lot and unit numbers, legal area, update date, update type, parcel type, source details, etc.

Annotation Editing

All annotation changes noted on the source plans will be updated in the GIS annotation layers. These may include Lot Number, Acreage, parcel dimensions, street names, developer lot numbers, easements, and water names where provided.

It is the municipality's responsibility to make a note for Sanborn of new lot numbers and legal acreages of the affected parcels.

Additional Layers Editing

It is anticipated that various other foundational layers, aside from the parcel/tax map layers, will need to be updated at the same time as the parcel data updates are occurring. The updates may also include revisions shown on plans provided by the municipality such as edits to related layers including:

- Addresses
- Flagged Wetlands
- Street Centerlines
- Zoning (primarily maintaining appropriate alignment with coincident parcel boundaries, please indicate if there is an actual zone change on the source material)
- Open Space (primarily maintaining appropriate alignment with coincident parcel boundaries, please indicate any new open space areas on the source material)
- Planimetric features such as Buildings, Roads, Sidewalks, Driveways, Parking, etc. These layers are maintained at this time depending on the municipality's best practices and needs.

For example, if flagged wetland boundaries are delineated on a survey, then that flagged wetland line will be traced from the georeferenced plan into a flagged wetland line GIS layer and attributed with the feature level metadata. New structures (buildings, sidewalks, etc.) will be drawn only from provided as-builts, not from property surveys. *These updates will occur to existing municipal GIS layers only.* If a municipality would like to capture these data going forward, but do not currently track them, Special Projects budget can be used towards

the effort to create and implement this data. Thereafter, these data would be updated as part of the annual data editing.

Linking Parcels to Assessor's Data

Sanborn will extract a copy of the Assessor's CAMA database from municipality's MapGeo website for those whose CAMA data is automatically updated to MapGeo via the Uploader; and will link the CAMA data to the updated GIS parcels data based on the unique parcel and property identifiers. If the municipality does not have a MapGeo uploader, the municipality must provide an export of the Assessor's CAMA database to Sanborn. The export must contain the updated property records related to the map changes performed.

This linking is preferred for the data maintenance QA/QC and is required for MapGeo. Please contact [MapGeo Customer Support](#) for the list of required CAMA data fields and format if necessary. This CAMA export should be provided concurrent with the foundational data maintenance task.

Quality Control Analysis and Reporting

All data updates, once completed, are reviewed by production staff against the provided source material for correctness, completeness, and adherence to Sanborn and applicable State standards, where appropriate. This ensures that any questions or issues that arise can be addressed and resolved prior to draft map delivery and municipal review.

Sanborn will implement quality control reporting designed to capture issues that are commonly encountered in parcel data. These reports are provided to encourage the municipality to resolve data quality issues, to identify inconsistencies between the GIS parcel and CAMA data, and to identify potentially undertaxed property in the municipality.

Mismatch Report

The mismatch report consists of four* separate tables. They are:

1. Parcels no CAMA: these identify parcels in the GIS for which there is no matching property record in CAMA. Causes for this may include: either no CAMA record exists, or unique parcel identifiers are incorrect, and thus, will not be able to be queried and identified in MapGeo.

2. CAMA no Parcel: this table identifies CAMA records for which there is no matching parcel on the map. Causes for this may include incorrect parcel identifiers, missed splits or merges, or old CAMA records that still exist in the database. In these cases, MapGeo search results will find the property record, but will not be able to select/zoom to it on the map.
3. Duplicate IDs: this table will identify any duplicate parcel identifiers in either the parcels or CAMA records. Causes may include split parcels that were not assigned unique parcel id's, multipart parcels that should be merged into one parcel record, condo unit CAMA records that all match to the same condo main parcel, or inadvertent duplications of a parcel record, either in the GIS or in CAMA.
4. Area discrepancies: after completion of the parcel updates, Sanborn analyzes your data by comparing the calculated acreage of a GIS parcel to the legal acreage listed in CAMA and provides a table showing any parcel with more than a 20%-50% difference between the two sizes. This table can be used to identify missed splits and merges, or parcels in need of a survey, but may also help Assessor's identify non- or under-taxed property in the municipality.

Ideally, an Assessor's office can, throughout the year, research and resolve many of these issues. If staffing time is a concern, Sanborn can also provide research for you within your Managed Services framework as a special project. In many cases, Sanborn can find resolutions and fixes to improve your GIS parcel data, increase your MapGeo parcel/CAMA match rate, and even identify additional taxable property.

Any fixes or resolutions that are found as part of this mismatch review can be provided to Sanborn the following fiscal year to be included as part of the Annual Data updates.

*Massachusetts Level III parcel standard clients will also receive a fifth table highlighting any changed Map_Par_IDs which should be updated in the municipal CAMA database.

Municipality Review

Once the changes have been incorporated into the GIS data, a draft set of the updated tax maps will be produced and provided to the municipality for review as electronic PDF files. The notated table originally provided to Sanborn by the municipality will also be provided with the PDFs so that the updates may be tracked and reviewed efficiently. The municipality will have thirty (30) days to review and submit comments regarding the updated maps to Sanborn.

Sanborn requests that *all comments be compiled into one list and be returned to Sanborn in a single submission. If no comments are received after the thirty day period, Sanborn will consider the data to be finalized.*

Upon finalization, Sanborn will submit any final deliverables, as well as initiate the municipality's annual MapGeo data refresh. If comments are submitted, Sanborn will incorporate the necessary changes, if any, into the data and generate the final deliverables as well as initiate the municipality's annual MapGeo data refresh. (Regional MapGeo sites may be on a different refresh schedule- contact mapgeosupport@mapgeo.io for Regional Site data update schedules).

Any changes, corrections, or updates identified after the final delivery will be held on to for inclusion in the following foundational data maintenance event which in most cases will be the following year. If the municipality wishes to make additional changes or updates to the data, maps, or MapGeo site after the finalization of the data updates, Special Projects budget may be used for these changes.

Final Deliverables

Your final deliverables for the Annual Foundational Data Maintenance task are based on the known needs of your municipality and the Assessor's Department. These may include:

- Updated GIS Databases (Geodatabase and/or Shapefiles)
- PDF Tax Maps
- Hard copy Tax Maps (for those who require it)
- Return of Source Materials (if original hard copies)
- Provide scanned sources (if digital sources were provided)
- Mismatch Report

Please let us know what meets your needs. If you would like to change final deliverables from what you were provided in the previous year, please let your Project Manager know prior to developing the final quote for annual Spatial IQ® subscription. A description of your deliverables is included on your Annual Foundational Data Maintenance Checklist, which will be provided to you prior to initiating this data maintenance service. The checklist will assist you with properly preparing for your data updates task.