



Rainforest Alliance

Spatial data requirements and guidance

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Version 1.1

The Rainforest Alliance works to conserve biodiversity and ensure sustainable livelihoods by transforming land-use practices, business practices, and consumer behavior.

More information?

For more information about the Rainforest Alliance, visit www.rainforest-alliance.org or contact info@ra.org

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Introduction

Rainforest Alliance is a growing network of people who are inspired and committed to working together to achieve our mission of conserving biodiversity and ensuring sustainable livelihoods. For more information about Rainforest Alliance, visit our website: <http://www.rainforest-alliance.org>.

1. Objectives

Accurate spatial data is essential to ensure compliance with the 2017 Rainforest Alliance Sustainable Agriculture Standard (2017 Standard). Deforestation, smallholder inclusion, and other sustainability risk topics are important values for many stakeholders in the Rainforest Alliance certification system, and appropriate assurance mechanisms are necessary to meet this need. This document presents a clarification of spatial data requirements for certificate holders under the 2017 Standard, in addition to a set of guidelines to assist certification bodies and certificate holders in recording such information.

2. Scope and Implementation

This document provides a clarification of spatial data requirements for certificate holders under the 2017 Standard, in addition to a set of guidelines to assist certification bodies and certificate holders in recording such information.

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For implementation challenges, please refer to the phase-in period defined in Annex 1.

3. Context of the 2017 Standard in relation with spatial data

Several criteria and policies specify the requirements for certificate holders and applicants to furnish spatial information. These include:

- Certificate boundary information: Critical criterion 1.1 requires the farm or group to provide a "boundary delineation of the certificate's geographic extent."). Section 3h of the Rules for auditing farms and group certification also require that, prior to audit, certification applicants submit "a complete application, using the Audit Application Form."

- For group certificates: Location of member farms: Critical criterion 1.13 (for group certificates only) requires the group administrator to keep enrollment records of all group members, including the location of each member. This information should be provided in the electronic format using the Group Member List template.

One important purpose of these requirements is to enable accredited certification bodies to assess compliance with several 2017 Standard criteria, including:

- Critical criteria (zero-tolerance) 2.1: No destruction of High Conservation Value areas after November 2005
- Critical criteria 2.2: No conversion of forests and other natural ecosystems in the past five years or after January 2014
- Critical criteria 2.3: No negative effects on protected areas

In addition to the above, accurate spatial data is necessary for the Rainforest Alliance and Certification Bodies to reliably identify and locate certificate holders in cases of high risk situations and disputes. Finally, beyond support of the assurance process, spatial data helps group administrators and farm management better manage its operations or smallholder members in numerous aspects of daily management.

4. Requirements for spatial data collection

3a. Applicability and responsibility

- For certificate holders: Certificate holders are required to provide spatial data as described in this document
- For Certification Bodies: CBs are required to review and verify spatial data through the audit process, ensure that spatial data is entered into the certification database: GPS point for all organizations, spatial polygon for individual farms or multi-site groups, or group member list with GPS points for other group certificates. See section (5) for more detail.

3b. Spatial data requirements for certificate holders

The specific requirements for spatial data detail and recordkeeping format are summarized in the table below, organized by operation type and size of the certificate.

Suggested data collection methods are shown in the right column. Spatial data requirements are the responsibility of the certificate holder.

Certificate type and size	Spatial data requirement for certificate holders	Recordkeeping format for certificate holders	Suggested data collection methods for certificate holders
Individual certificate with total certificate area of 25 hectares or less	A single latitude/longitude point of a location near the middle of the farm (same as currently practiced)	Provide coordinates where requested on the Audit Application Form* (same as currently practiced)	<ol style="list-style-type: none"> 1. Collect GPS point in the field 2. Capture GPS point from the desk using an interactive map (e.g., Google Maps)
Individual certificate with total certificate area of more than 25 hectares	A single latitude / longitude point AND A polygon indicating the boundaries of the certificate scope; if the farm contains two or more non-contiguous parcels of land, boundaries of all parcels should be provided	Provide coordinates where requested on the Audit Application Form* AND An electronic file (.kml, .kmz, or .shp) of farm boundaries as an attachment to the completed Audit Application Form	<ol style="list-style-type: none"> 3. Collect reference points using methods #1 and #2 above 4. Using reference points, draw boundaries using an interactive map program (e.g., Google My Maps or Google Earth)
Group certificate (multiple sites under one owner)	A latitude / longitude point for each group member AND A boundary polygon for each site within the certificate scope that exceeds 25 hectares	A list of coordinates on the Audit Application Form* AND An electronic file (.kml, .kmz, or .shp) that includes the boundaries of sites greater than 25 ha within the certificate scope, as an attachment to the completed Audit Application Form	<ul style="list-style-type: none"> ▪ For single points: see #1 and #2 above ▪ For boundary polygons: see #4 above
Group certificate (all other group models)	A single latitude/longitude point for each member farm	Report one coordinate for the group facility (same as currently practiced) AND coordinates for each member on the Group Member List template*	<ul style="list-style-type: none"> ▪ For farm points: see #1 above

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Table 1: Spatial data requirements for certificate holders



Individual certificate with total area of 25 ha or less: a single coordinate point.



Individual certificate with total area greater than 25 ha: farm boundary polygon(s).



Group certificate (multiple sites under one owner): polygons of all member farms (points may be provided for member farms <25 ha).



All other group certificates: coordinates of all member farms

Figure 1: Examples of location data for the 4 types of certificates

3c. Spatial data reporting requirements for certificate holders

When farm coordinates (latitude/longitude points) are reported on the Audit application form or in the Group Member List template, the following specifications should be observed.

- Coordinates should be reported in decimal degrees (not in degrees, minutes, and seconds) with four decimal places.
 - Example of decimal degrees: Latitude: 9.7611; Longitude: -84.1872
 - Example of degrees, minutes, seconds (**not to be used**): Latitude: 09° 45' 40" N; Longitude 84° 11' 14" W

- If you have coordinates in degrees, minutes, seconds, these can be converted into decimal degrees using an online tool such as:
<http://www.latlong.net/degrees-minutes-seconds-to-decimal-degrees>
- Please ensure that the decimal degree coordinates you provide have the correct (+ / -) sign. Points in the southern hemisphere have negative latitudes; points in the western hemisphere (the Americas) have negative longitudes. If the sign is positive (northern hemisphere latitudes and eastern hemisphere longitudes), it is not necessary to include a “+” sign.
 - Example: Latitude: 9.76111; Longitude: -84.18725

5. Data collection methods for certificate holders

Certificate holders that **already have** accurate digitized maps or location information may simply report this information as specified in the table above. For certificate holders that do not yet have the required information, the table identifies four different data collection methods that are simple and easy to follow. These methods are summarized below, and further explained with step-by-step instructions in the **Appendix**.

Method 1: Collect GPS point in the field

The easiest way to collect latitude / longitude coordinates for your current location is to use a global positioning system (GPS) device or a GPS-capable smartphone. On a smartphone, points can be collected with photos or any number of apps. Note that most smartphones do not need an internet connection or cellular data coverage to collect location data.

Method 2: Capture GPS point from the desk

Farm sites can also be viewed from satellite imagery using web-mapping programs such as Google Earth and Google Maps. Here, the approximate location of the certified location can be referenced from the satellite imagery (including roads, buildings, water, and cultivated areas). The user can then read the latitude / longitude coordinates provided by the program.

Method 3: Collect reference GPS points in the field

For certificates requiring farm boundary polygons (i.e., individual certificates larger than 25 hectares and “multiple sites under one owner”), the certificate holder or applicant can collect field reference points to define the boundaries of the farm. These points should ideally be located at the corners or along the edges of the farm.

Method 4: Draw farm boundary polygon from the desk

Using reference points collected in Method 3, a polygon boundary can be drawn using Google Maps or Google Earth, provided the boundaries can be seen on satellite imagery. Similar to Method 2, these programs allow the user to view the satellite imagery of the farm area. Using Google Earth or the “My Maps” program of Google Maps, the user can import points collected in the field, draw a polygon around these points in the browser, and then save the polygon as a spatial file. Distinctive features such as roads, rivers, clearings, forest patches, live fences, or large buildings can provide landmarks that help identify the site.

6. Certification body review and verification

As detailed above, farms and group managers (certificate holders) should submit farm location information as part of the completed Audit Application Form or (for group administrators) as part of the Group Member List template. Accredited certification bodies must review and verify this information as follows:

- Upon receiving the audit application form with spatial data as described in the steps above, view GPS points and polygons in google maps (Google Maps – My Maps – import kml, excel, or csv file)
- Transfer location points to a smartphone or device to take on the audit
- Prepare print-copies to take on the audit of farm points and polygons with relevant features that can be used for verification (roads, towns, rivers, etc.)
- During the audit, verify approximate location accuracy:
 - o Do the GPS points / polygon provided coincide with the actual farm location visited during the audit?
 - o Do the member points coincide with the actual member farm locations visited in the audit sample (here, note that this verification is only required on the audit sample, not the entire group)
- After completing field audit, use spatial data to assess compliance with critical criteria 2.1 and 2.2 using Global Forest Watch (online satellite monitoring tool to monitor change in tree cover from 2001-current)
- Upon approval of the certificate, enter and attach spatial data into the engagement record in the certificate database

These requirements and subsequent guidance (see appendix) provide simple instructions for any certificate holder or applicant. RA will provide additional training materials in the online training toolbox.

Appendix: Detailed instructions for collecting spatial data

This Appendix provides detailed step-by-step instructions for each of the data collection methods discussed in the requirements, using simple and free online tools and applications. Certificate holders are free to use any GPS tool or application they choose, as long as they can provide data as described in the spatial data requirements format Table 1 of this document. Certificate holders may also consult with local government agencies and land registries for spatial data, and are free to use these information and spatial files as long as they meet the spatial requirements described in this document.

Method 1: Collect GPS location point in the field

Most smartphones come standard with GPS chips that use satellites to provide a GPS location. With GPS, it is possible to collect an accurate location reading from almost anywhere in the world and in any type of environment (farm, forest, city). There are many mobile apps that turn a smartphone into a mapping tool; the following are just two examples that are free, easy to use, and work offline. These programs should be configured in the settings to report in decimal degrees. These points can either be 1) saved as “waypoints” and transferred to a computer, or 2) viewed off the app display as a latitude / longitude coordinate and then recorded in a notebook.

Method 1 Option 1: GPS Essentials (<http://www.gpsessentials.com>)

This app provides a suite of location tools, including a tool for collecting points (waypoints). To collect a location point with GPS Essentials, click on the waypoints icon and the orange “plus” button in the bottom right corner (see figure 2). Next, wait for a moment for your phone to pick up satellites and improve accuracy. Now, enter the name and description of the waypoint and click “create”; you can now read the latitude and longitude location of your point. To export the point to a computer, open the “Waypoints” button, click the three dots in the upper right corner for the pull-down menu and select “Export” to email the data to yourself as a .kml file.

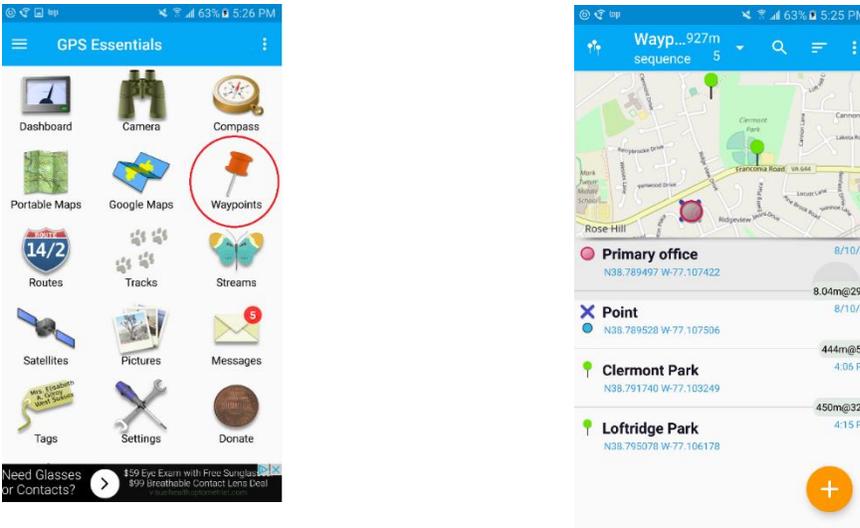


Figure 1: Screen shots of GPS Essentials app

Method 1 Option 2: Google My Maps

Google My Maps is a mobile app and also a web-based application that runs on your desktop. The My Maps mobile app is linked to the Google Maps app that comes standard with many phones; however, My Maps has additional functionality and must be downloaded and installed as a separate application. Once you have installed the app on your device and logged in with your Google account, you can create your own maps and add points.

When in the field, open the My Maps app and click the blue “+” sign in the lower right corner (figure 3), click on “Add a new point”, select the location, select the layer, and give the point a name and description. You also may be able to add points by holding down at a point in the screen for a few seconds; then you will be prompted to name and save this point. You can now read the latitude and longitude location of your point. When you return from the field and connect with the Internet, these mobile maps automatically synchronize with your desktop web-based My Maps program, where the data can be exported as a .kml file.

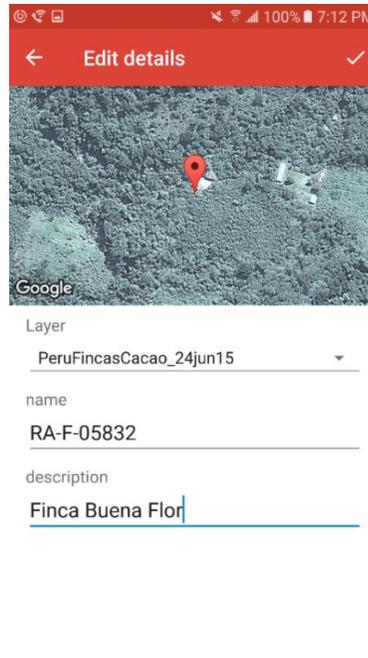
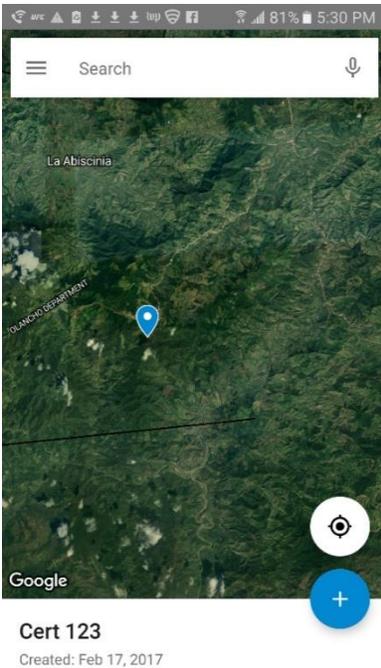


Figure 2: Google My Maps mobile app screen shots

Method 2: Capture location points from the desk

Some locations can be easily identified in a web-map or via satellite view. Here, the user should identify the approximate farm location by viewing surrounding features such as buildings, roads, water, forest, and cultivated area clearings.

In Google Maps, simply create a point or marker at the desired location and then click on that marker to display the properties, which will show the GPS coordinates (usually at the bottom left of the pop-up). In Google Earth, just place the cursor at the desired location and read off the coordinate values from the "Status bar" at the bottom of the screen. When reporting these points, make sure that they are in Decimal Degrees.

Method 3: Collect reference GPS points in the field

To map a large farm with a polygon, it is necessary to first collect reference points in the field. These reference points should include the corners or points along the edges of the farm. The points can then be imported into a desktop program to draw an accurate polygon.

To do so, first, collect reference GPS points in the field using the same steps described in Method 1. Collect a point in one location, name it (e.g., "southeast corner"), and then move to a new location on the farm. As you move to a new location, you should notice that the latitude / longitude location changes only slightly. At the new location, create a

new waypoint, and give this a new name (e.g., "northeast corner"). Make sure to collect these points along the edges of the farm; just a few points should be enough to mark the approximate edges of most farms. Points should then be transferred / synced to a computer as described in method 1 and 2; then the user can proceed to Method 4.

Method 4: Draw farm boundary polygon from the desk

Numerous (GIS) and web-mapping computer programs can be used to draw farm polygons. Once you have collected reference points in the field (Method 3), you can import them into one of these programs, which will make it easier to confidently draw the full extent of your farm polygon(s). Here we present just two web-mapping programs that are free and easy to use: Google Earth and Google My Maps.

Method 4 Option 1: Google Earth

Google Earth Pro is a program that you can download for free and install on your computer. After installing the program, select from the main menu Tools → Options and configure: show Lat/Long in Decimal Degrees (3D View tab). The Google Earth screen is divided into 3 panels on the left-hand side of the screen and one larger panel with the "Map Viewing Area" in the center (figure 4). For the purpose of mapping farm polygons, you will mainly utilize the "Map Viewing Area" and the "Places panel", which is where your data can be referenced and organized.

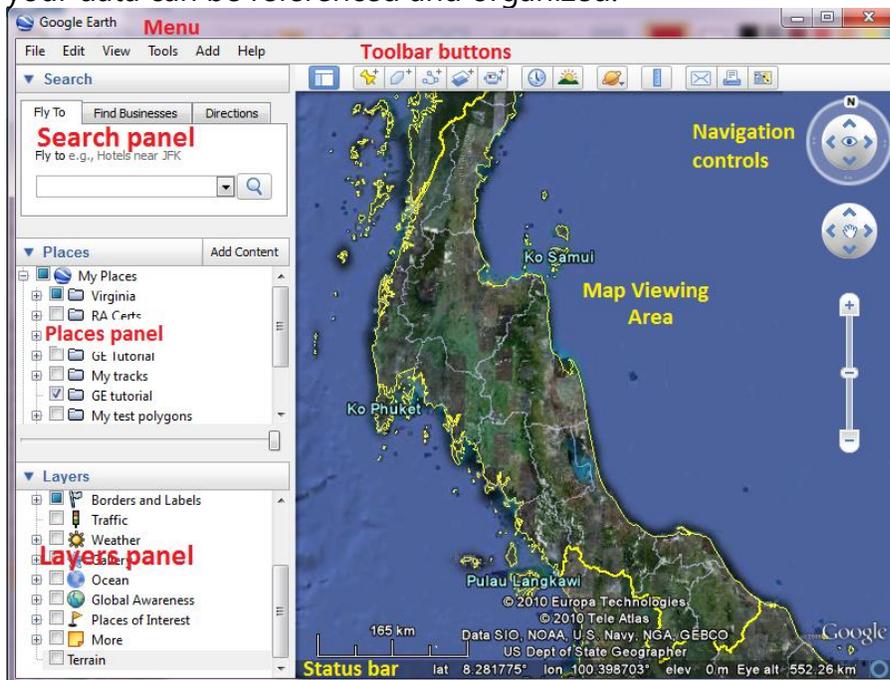


Figure 4. Typical view of Google Earth with labels showing different parts of the screen

Loading reference GPS points into Google Earth

Your reference points in .kml or .kmz format can be loaded into Google Earth simply by double-clicking on the .kml or .kmz file. Alternatively, you can also open kml/kmz, gpx and many other types of spatial data by clicking on File → Open. Data imported into Google Earth are stored in the "Temporary Places" folder of the "Places panel." You must remember to move the files up to one of your folders so that they are not lost when you exit the program.

Digitizing polygons

To draw a polygon, follow these steps (figure 5):

1. Select the <Add polygon> tool.
2. Click on the map at the location of the polygon corners (vertices), going around the entire edge of the polygon to define its shape.
3. When done, give the polygon a name in the "Name" field and add any additional details in the "Description field."
4. Click on the "Style, Color" tab to define how the polygon is displayed.
5. Click on <OK> to save the polygon.

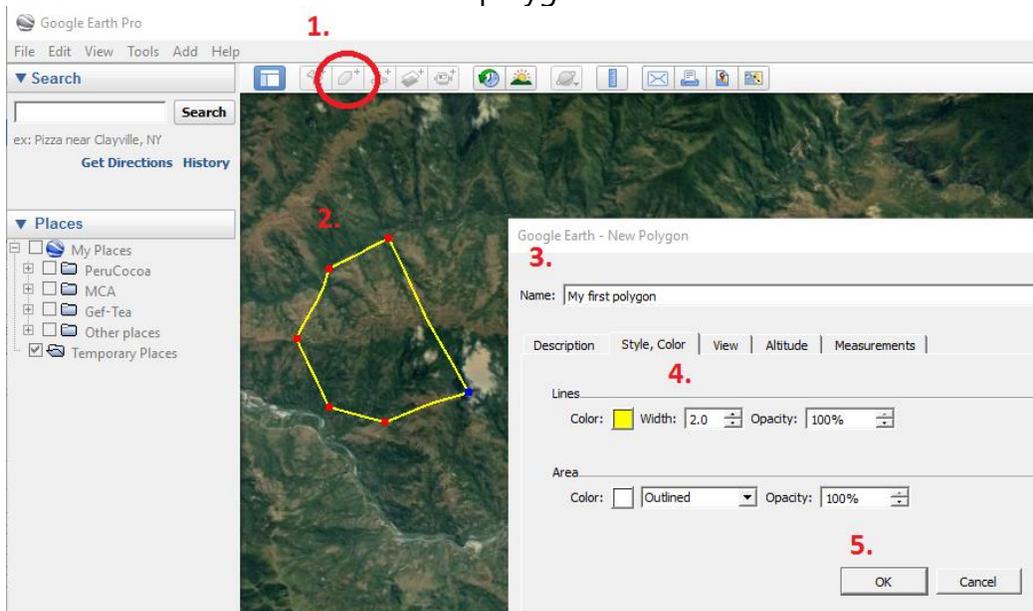


Figure 5: Polygon digitizing steps in Google Earth

Once you have created your polygon you should see it in the left "Places" panel. You can edit both the vertices and the properties by right-clicking on the item in the Places panel and selecting properties. To save the polygon(s) as a kml/kmz file, move all the polygons you want to save into one folder in the "Place" panel, right-click on the folder, select "Save Place As" and enter the name and location of the output file (figure 6).

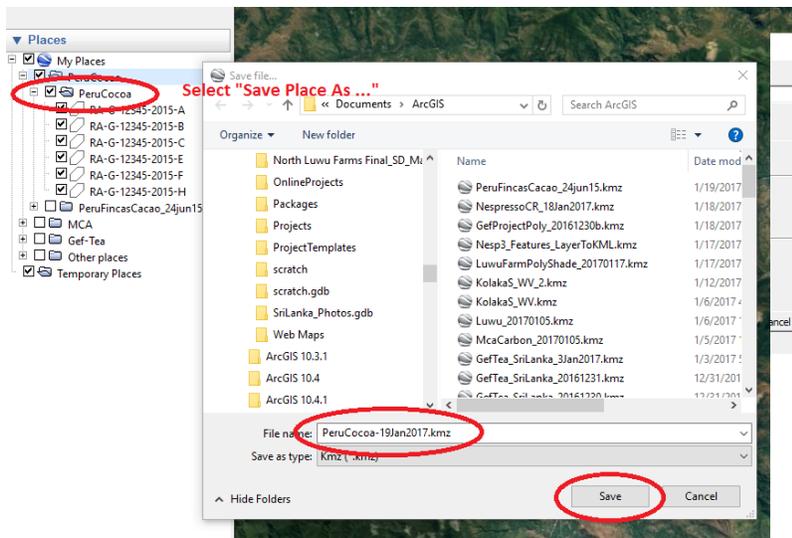


Figure 7: Example of how to save polygons as a kmz file

Method 4 Option 2: Google My Maps

Google My Maps is an extension of Google Maps, and syncs automatically with the My Maps app. On a computer it can be used as part of Google Maps on any internet browser (after you sign in using your Google account). Since maps are web-based, they can be shared and edited by multiple users. To use Google My Maps, sign-in with your Google credentials. This will take you to the My Maps home screen, where you can create a new map (figure 8). Note that My Maps looks similar but slightly different than the traditional Google Maps viewer.

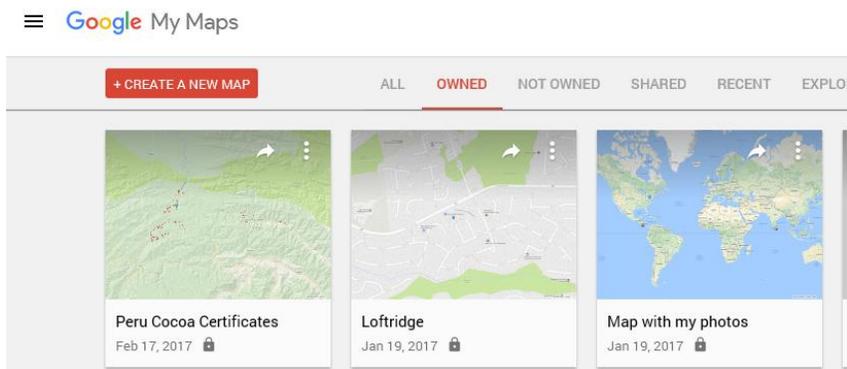


Figure 8: Google My Maps home screenshot

Upload data into Google My Maps

Data you collect in the field on the My Maps app (waypoints, lines) will automatically sync into the desktop map. If necessary, additional spatial data (such as provincial boundaries or previously collected locations in an excel or .csv file) can be added. To do this, first click on <Add layer> and then click on the <Import> button that appears under the new layer. A window is displayed for you to upload or drag / drop files to be imported (figure 9).

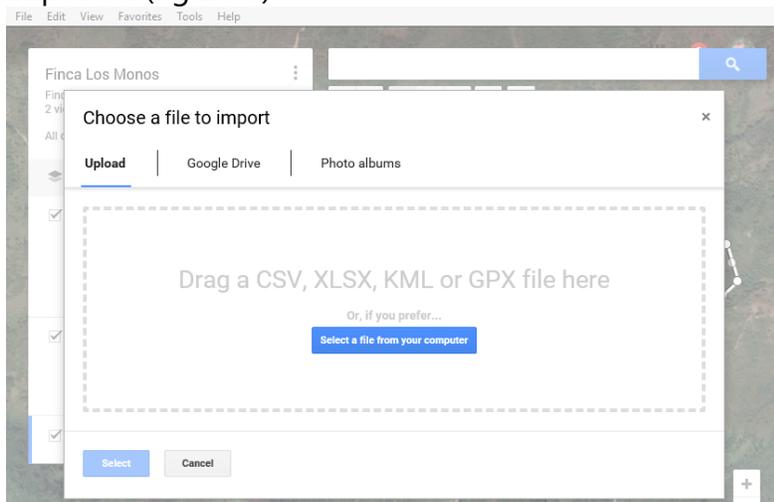


Figure 9: Google My Maps import window

Create and edit polygons in Google My Maps

In the upper left of the screen, use the line tool to draw the perimeter of the farm area, clicking to create a vertex at every corner, and then clicking on the first point to complete the polygon. If you have collected reference points from the field and imported them to Google My Maps, these can help indicate where to draw the polygon vertices. When you are finished, enter the polygon name and description, and save (figure 10).

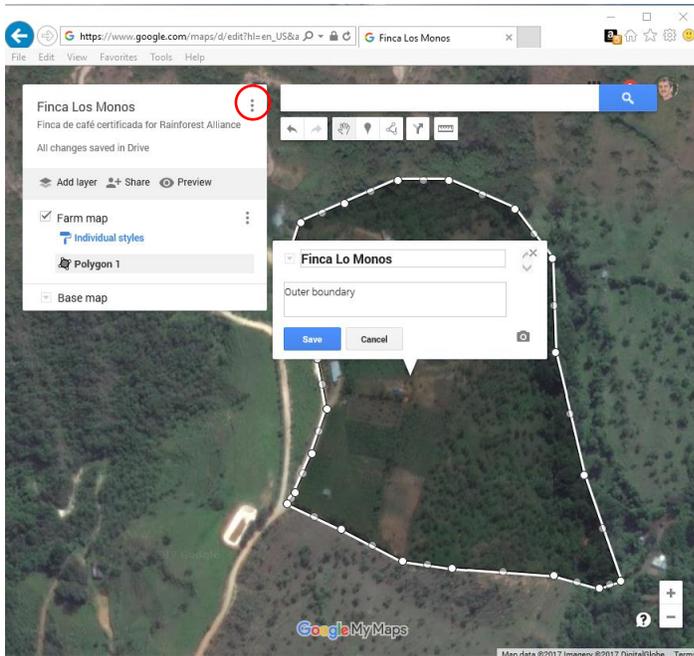


Figure 10: Example of a farm polygon drawn in Google My Maps

All features created can be symbolized by selecting the line thickness, icon type, and color. Note that when you create a point, the latitude / longitude coordinates are displayed at the bottom of the point's information window. Maps are automatically saved as you work.

Exporting spatial features

To export the map, click on the three dots in the top right of the map box, select "export to kml" and select whether you want to export all the map data, or just the data in a specific layer. The kml file can then be shared and emailed.

Annex 1. Implementation of the Spatial Data Requirements and Guidance

All audited organizations (individual farms and groups) must submit their location information in each audit application.

Until December 31, 2018, a grace period will be granted as defined below:

In the case of farms, if at the time of the audit the location information was not completed, it is the farm's responsibility to send to the CB the location information during the following 30 days, after the closing meeting of the audit as stipulated in these spatial requirements and guidance.

In the case of groups, if at the time of the audit the information on the location of members was not completed, it is the responsibility of the Certification Body and Group Administrator to comply with the following:

- After the auditor selects the audit sample, the group administrator is responsible for sending the CB the member location information during the following 30 days, after the closing meeting of the audit, as stipulated in these spatial requirements and guidance.
- The auditor may collect GPS location points (on their own) of the member farms visited during the audit, and later compare with GPS location points provided by the group administrator, but this is left to the discretion of the auditor.
- The CB must update the group member list in the RA database with the GPS location information received from the Group Administrator, before the certification decision is made.

The non-implementation of these requirements is considered a Non-Conformity of the critical criterion 1.1 and in the case of groups, critical criterion 1.13.

If you have any questions or challenges with the implementation, please send them to sas@ra.org.