




# Guidelines for Collecting and Submitting Spatial Data



**Contact Information:**  
Aquaculture Stewardship Council  
Daalseplein 101, 3511 SX Utrecht  
The Netherlands

 +31 30 239 31 10

 [www.asc-aqua.org](http://www.asc-aqua.org)

## Aquaculture Stewardship Council (ASC) Guidelines for Collecting Spatial Data

This document is based on the International Social and Environmental Accreditation and Labelling Alliance (ISEAL) guidelines on collecting spatial data; and adapted to meet the specific needs of ASC.

The software recommendations have been gathered from the collaborative Geographic Information System (GIS) starter kit tool, composed by ASC, ISEAL, Accreditation Services International (ASI) and the Forest Stewardship Council (FSC). If you would like more background information about GIS and spatial data collection, you are strongly encouraged to review these documents.

The present document is intended for applicants and certificate holders to guide them through capturing spatial data of their farm site(s), as well as for auditors from Conformity Assessment Bodies (CABs) to verify if their clients (e.g. the applicants and certificate holders) have prepared the spatial data collection work in the appropriate fashion.

For users with no previous spatial data/GIS experience, ASC has created step-by-step instructions to create the desired output. It is highly recommended that you follow all the steps as described in this document.

This document (hereafter referred to as “the Guidelines”) and any other supportive documents should be delivered to the farm site before the audit announcement. Auditors will verify polygon data while on site and the applicant or certificate holder should submit all requested information within **thirty (30) working days** following completion of the audit to [data@asc-aqua.org](mailto:data@asc-aqua.org).

Annex I provides solutions to some of the frequently occurring issues arising when it comes to spatial data.

## Contents

<b>1. Types of location data</b> .....	5
1.1 Point.....	5
1.2 Polygon .....	5
1.3 Objectives of ASC.....	6
<b>2. Collection of location data</b> .....	8
2.1. Collecting a polygon.....	9
2.1.1 <i>Collecting polygons from coordinates</i> .....	9
2.1.2 <i>Drawing polygons with web-based software</i> .....	10
2.1.3 <i>Collecting polygons from a georeferenced map</i> .....	12
<b>3. End products</b> .....	14
3.1 Required for all farm sites.....	14
3.2 Capturing voluntary data.....	15
3.2.1 <i>Production unit submission form</i> .....	16
3.3 Workflow data capturing process.....	17
<b>4. Reviewing captured data (for auditors)</b> .....	18
 <b>Annex I. Common issues</b> .....	 I

## Version control

The Aquaculture Stewardship Council (ASC) is the owner of this document. For comments or questions regarding the content of this document, please contact ASC via: [data@asc-aqua.org](mailto:data@asc-aqua.org).

Version history:

Version	Published date	Remarks
V1.0	November 1 <sup>st</sup> 2019	Original version
V1.1	November 18 <sup>th</sup> 2020	<ul style="list-style-type: none"> <li>- Removed guidance for collection of center point coordinate per farm site, as well as information associated with capturing a center point per farm site</li> <li>- Clarified process steps for chapters 2, 3 and 4.</li> <li>- Added Annex I: Common issues on verifying data through Online Mapping Tool.</li> </ul>

## 1. Types of location data

Sites (or locations) can be represented geographically in data as either points or areas (referred to as “polygons”). This document provides guidance for applicants and certificate holders to develop and submit locations data; Section 4 summarizes the process for auditors to check these data for compliance.

### 1.1 Point

A point is a dimensionless feature (i.e., it has no area) and is represented by a pair of latitude/longitude coordinates. Points are easy to manage since they only require two (2) columns in a data table. A location point can easily be captured with a global positioning system (GPS).

In the context of ASC, we can use a point to represent a farm site location that is composed of many production units (See Figure 1a) or use a point for each production unit individually (See Figure 1b).

### 1.2 Polygon

A polygon is a geographic area feature defined by a series of points that are connected to form a ring (and hence enclose an area). They have a more complex nature, therefore management of polygons requires special software, such as Geographical Information Systems, or specialised mapping programs, like Google Earth.

ASC can use a polygon to represent the boundaries of one or more production units, or to represent the perimeter of multiple production units which together make up the farm site boundaries (See Figure 1a).

### 1.3 Objectives of ASC

In the collection of spatial data on certified farms, ASC’s objective is to accurately represent the spatial location of each farm site for certainty in certified units and for monitoring and evaluation purposes.

There are four (4) ways to geographically represent ASC applicants and certificate holders, ranging from the most general (least useful) to more specific (and most useful) (See Figures 1a and b).

- One point representing a farm site with many production units;
- One point for each production unit (Figure 1b);
- One polygon representing all production units within the farm site. (Figure 1a);
- One polygon for each production unit.



Figure 1a – One polygon inclusive of many production units representing the outer farm boundaries. This is the **required** submission.



Figure 1b – Many points taken at the southwest corner of each production unit on a farm site. This is the **optional** submission.

The most useful spatial data have the highest resolution: In this case the individual polygons of production units. However, due to a multitude of constraints this may not always be possible.

Therefore, ASC is **requesting all** applicants and certificate holders to provide *at minimum*:

- One (1) polygon representing the *farm site boundaries*, which includes all production units, as well as other features that fall within the boundaries of the farm. These do not have to reflect legal boundaries, as long as they reflect the boundaries of all production units that are under certification (Figure 1a).

**Optional or voluntary** (additional) submissions is to collect:

- One (1) point per individual production unit (Figure 1b), which, if submitted should be submitted through the Production Unit Submission Form (See **chapter 3.2**).

Any features that do not legally belong to a farm site or are not part of the certification assessment, even if they are spatially located *within* the said farm site, should not be taken into the polygon. This can be achieved by drawing another polygon around the foreign object with a name that clearly states it does not belong within farm site property, for instance “foreign object” (see Figure 2).

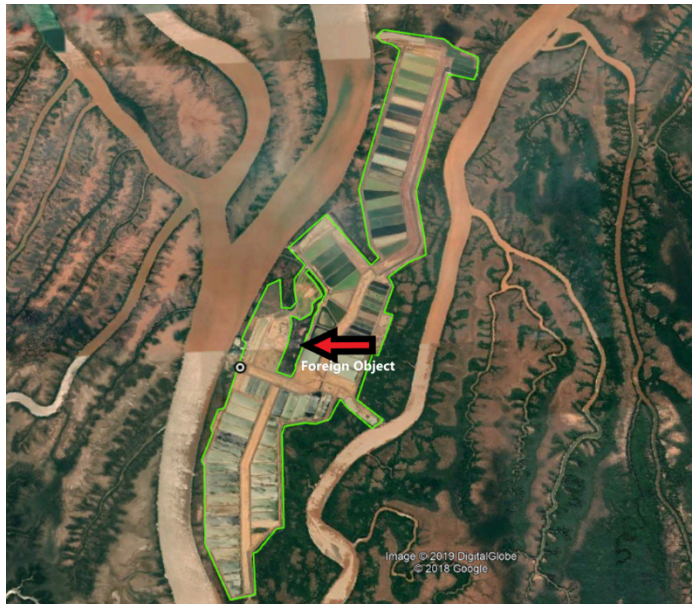



Figure 2 - A foreign object within site boundaries is drawn with an additional polygon to clearly indicate that it does not belong to the site

## 2. Collection of location data

In order to receive consistent location data from all farm sites ASC has developed an Online Farm Mapping Tool for applicants and certificate holders to collect data and for auditors to verify the data collected by the applicants and certificate holders. This Online Farm Mapping Tool is based on high-resolution satellite imagery, which makes it possible to view most sites from above and map them.

Steps in the collection process are designated with  and it is important to read each step as many depend on previous actions.

Use ASC's [Online Farm Mapping Tool](#) to find your farm site and follow the steps outlined here to assess whether your farm site boundaries are visible and accurate.

- ▶ Go to the tool in the “*Online Farm Mapping Tool*” section of the [GIS portal](#), zoom in to your Area of Interest and search for the farm site you want to digitize. If you cannot find it on the map due to temporal issues, you can use the “Slide” widget (pictured right).



This widget allows you to choose base-maps from a different year and compare them with each other. If you locate your farm site on any of the layers, put the slider aside and make sure the whole farm site is in the picture.

- ▶ Is your site clearly visible with all boundaries?
  - If yes, go to [Chapter 2.1.2](#).
  - If either the site is not visible or it is visible, but you have a list of corner coordinates for your farm site, go to [Chapter 2.1.1](#).
  - If the site is visible, but the boundaries are not correct or clear, go to [Chapter 2.1.3](#).
  - If the site is not visible at all, go to [Chapter 2.1.3](#).



## 2.1. Collecting a polygon

### 2.1.1 Collecting polygons from coordinates

If you have a list of corner coordinates that make up your farm site boundaries or concession area (provided by authorities for instance), you can use those to mark the edges of the polygon.

Depending on the format in which you have received your coordinates, you can upload this location data in a file onto the ASC Online Farm Mapping Tool to be displayed, and start drawing your polygon from there.

There are two conditions that need to be met to upload multiple coordinates to the ASC Online Farm Mapping Tool:

1. The coordinate file needs to be in **.csv format**, with clear headers indicating Longitude and Latitude, or X and Y, in separate columns. This is a simple file type that stores data in a tabular format.
2. The coordinates need to be formatted in **Decimal Degrees**. A converter to Decimal Degrees, with examples of common formats (Degrees Minutes Seconds (DMS), Degrees Decimal Minutes (DDM)), can be found here: <https://www.pgc.umn.edu/apps/convert/>


- ▶ Once you have formatted the coordinate file correctly, open the ASC Online Farm Mapping Tool and click the “Add data” widget (pictured right).
- ▶ Choose “Browse” and select the .csv file that you want to import.



The “Add data” widget allows uploading of one thousand (1000) points maximum. If you have more coordinates than this, please make sure to save it in separate files.

- ▶ You can now check if the points are at the correct location based on the satellite imagery.
- ▶ If you are satisfied with their current location, proceed to the next [Chapter 2.1.2](#) to draw your polygon based on the uploaded coordinates.

## 2.1.2 Drawing polygons with web-based software

- ▶ Make sure you have the whole site in your screen view, then click the draw  widget. Choose the “polygon” button to start drawing.
- ▶ Add the first point of the polygon with a click of your mouse. Continue to click where the site boundaries are, adding points to create turns to make it more detailed to ‘draw’ the site’s contour (see Figure 3). This method is applicable to all types of site shapes; therefore, it is important to use as many points within the polygon as required to accurately trace the outline of the site (e.g. a round-shaped site will have a lot more points than a square-shaped site).
- ▶ Once you have covered the whole site, including all production units, name the polygon:
  - If your farm site was already marked with a point in the ASC Online Farm Mapping Tool, click the point and **use the unique ASC Site number (Site Number)** as the name of the polygon (see Figure 4).
  - If your farm site was **not** already marked with a point in the ASC Online Farm Mapping Tool, you can **name the polygon according to your farm site name**.

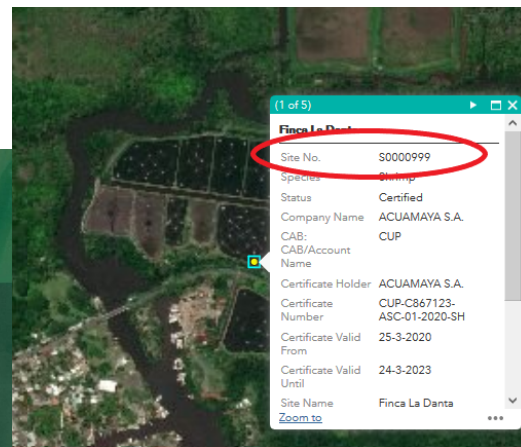




Figure 3 - Creating a polygon with details.

Figure 4 - Unique ASC site number

The widget should now contain a list with the polygon (or multiple polygons if polygons are collected for more farm sites).

- ▶ To export the whole list, click the white square on the left side under “Drawing list” and click “export selected drawings”.  The file will be named “GIS\_FarmName.json” by default, **make sure to change this name** to the site number (see Figure 4).
- ▶ You can check if your files are exported correctly by uploading them to the ASC Online Farm Mapping Tool again. Navigate to the “Draw” widget.  In the lower left corner in the “list” tab, click the “Import drawings” button and browse to the correct .json file. The polygon(s) should now appear in the list of files. Click the magnifying glass to zoom to the polygon(s) and check for correctness.

- ▶ After the auditor has verified the data during the on-site audit (see Figure 8), submit it through the [GIS portal](#) on our website together with voluntary data in case you captured it (See [Chapter 3](#)). **The submission will only succeed if the polygon has been captured according to the steps in this chapter. If not, an error will appear.**

**In case you do not have internet access at the site *during the audit*, but you did collect data with the ASC Online Farm Mapping Tool, please make sure you provide a screenshot to the auditor of the farm site polygon that you have created. If the auditor confirms everything is in order, you can send the required files (See *Figure 7*) later, when you have access to internet, as long as it is submitted to ASC before the draft audit report appears online for public consultation.**


### 2.1.3 Collecting polygons from a georeferenced map

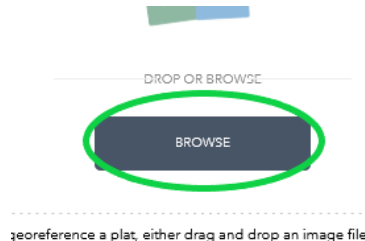
If you are trying to draw a polygon, and zoom to your area of interest, it is possible that the site *does not appear* on the mapping software (ASC Online Farm Mapping Tool), this can be due to several reasons, of which the most common ones are:


1. **Resolution:** The farm site is not clearly/fully visible on the mapping software.
2. **Temporal issues:** The satellite imagery of the software was taken at a time that does not reflect the accuracy or current site boundaries.

The ASC Online Farm Mapping Tool has a feature to resolve these challenges; Georeference your map to the base-map and start drawing from there. Georeferencing is a process of putting a map of your farm site over the base map and joining them together. From there you can start drawing your polygons.



In order to draw from your map, the image must meet the following requirements:

- It can only be uploaded in **JPG or PNG format**;
  - the map has to be drawn to **scale**; and
  - clearly **contain the site**, including all production units under current certification.
- ▶ If you are sure your map meets these requirements, you can upload it through the georeference widget.  When you click the widget, a screen shows up that provides explanation of the features that are supported by the widget.
- ▶ Click the 'Browse' button and navigate to your map. The map will appear on your screen.

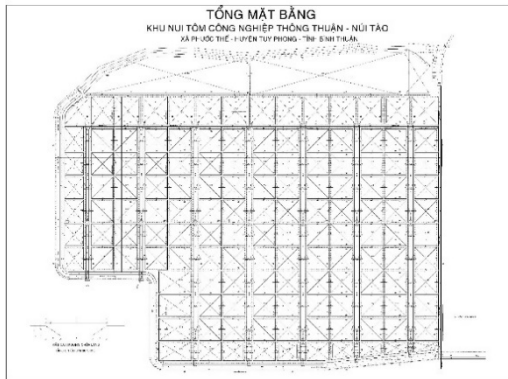


- ▶ In the upper left corner, you will see a hand symbol.  Select the symbol to drag the map across the base-map until you reach the right location.

There is a good chance that the map does not represent the accurate size of your site.

- ▶ This can be adjusted with the lower right corner feature; Resize.  Click down and drag the map to resize it to the desired width and length.
- ▶ The slider bar on top of the map allows you to set the opacity.  This makes it possible to see the base-map below your uploaded map, to be able to see if you are almost done with georeferencing your map.
- ▶ Try to manipulate the map image in a way that it overlaps precisely with the accurate

location of your site (see Figure 5).



*Figure 5 – Georeference widget. Overlaying a map (upper left) with the base-map (upper right) to make it possible to capture data (combined image in lower left) in case the farm is not (completely) visible on the base-map.*

In this version of the ASC Online Farm Mapping Tool, it is unfortunately not possible to rotate the images with this widget. This means that the map has to be rotated to a correct angle to fit the base-map, with a different image editing program (Microsoft Paint is recommended).

- ▶ It can take several attempts to match the map, but when you are finished click the 'Finish Image Georeferencing' button. The image is now connected to the base-map, and you can start drawing your polygon according to the steps in [Chapter 2.1.2](#).

### 3. End products

#### 3.1 Required for all farm sites

Once each of the steps described in [Chapter 2](#) have been carefully followed, you should be able to show to the auditor the following during the audit (see Figure 6):

- ✓ Per site **One (1) .json file** in which the farm site boundaries are stored with a polygon. The file should be named according to the ASC Site number.

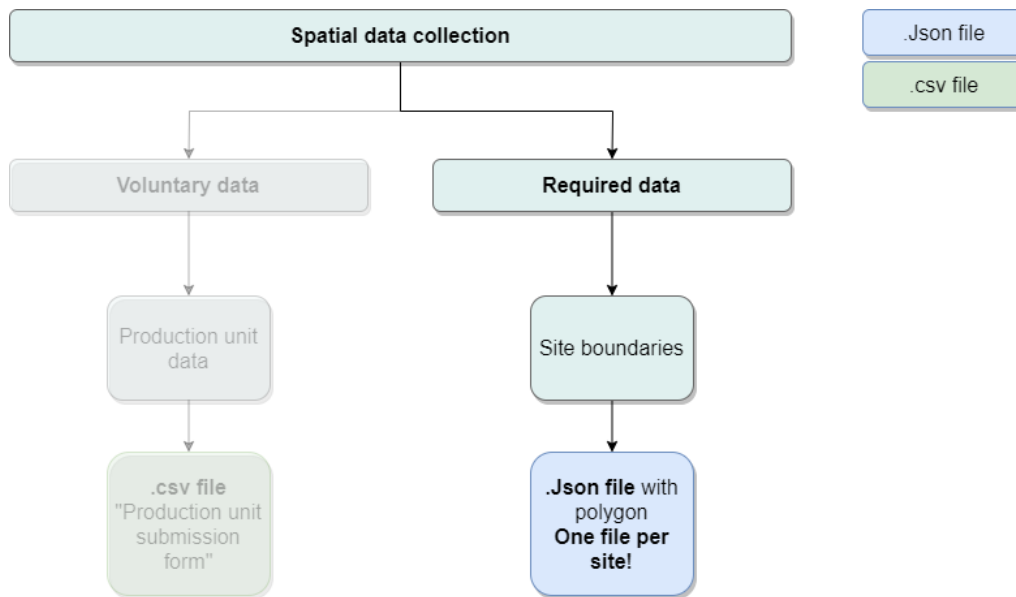





Figure 6 - Flow chart of files to submit to ASC.

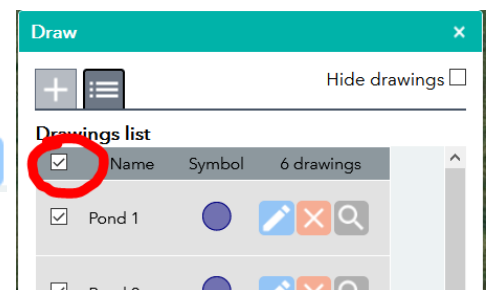
### 3.2 Capturing voluntary data

The ASC Online Farm Mapping Tool allows you to create points on high-resolution satellite imagery. You can take advantage of this by mapping out all certified production units. These can then be transferred to a form to complete data about each production unit (see Figure 7).

Navigate to your farm site by searching for the address in the search bar in the upper left corner of the Online Farm Mapping Tool, or zoom in on the map. Once you've located it, make sure your area of interest is fully visible on your screen and follow the next steps:

- ▶ Click the “Draw” widget.  It will prompt you to choose a draw mode.
- ▶ Click “Point”. 

The fields that appear make it possible to provide each point with a name and description. The **name field is mandatory**, because it makes it easier for you to keep track of your production units later on. If desired, name the point according to your internal reference system or use consecutive numbering (starting with number one (1)).
- ▶ Place the cursor over the most bottom left corner of a production unit and zoom in as far as possible until the imagery becomes too blurry to distinguish the borders of the production unit. Click to secure the waypoint.
- ▶ Repeat this step for all Production Units, if applicable. The widget will display a list with all the points you have collected.
- ▶ Once all points have been added, in the dark grey column, check the white box to select all the points, and click the “Export selected drawings” button. 
- ▶ The file will be named “CentroidPoints.csv” by default, but **make sure you change this name to [site number/ name] ProductionUnits**. See [Chapter 2.1.2](#) for naming procedure.



**It is important to export any points and polygon drawings into separate files, otherwise ASC will not be able to process them.**

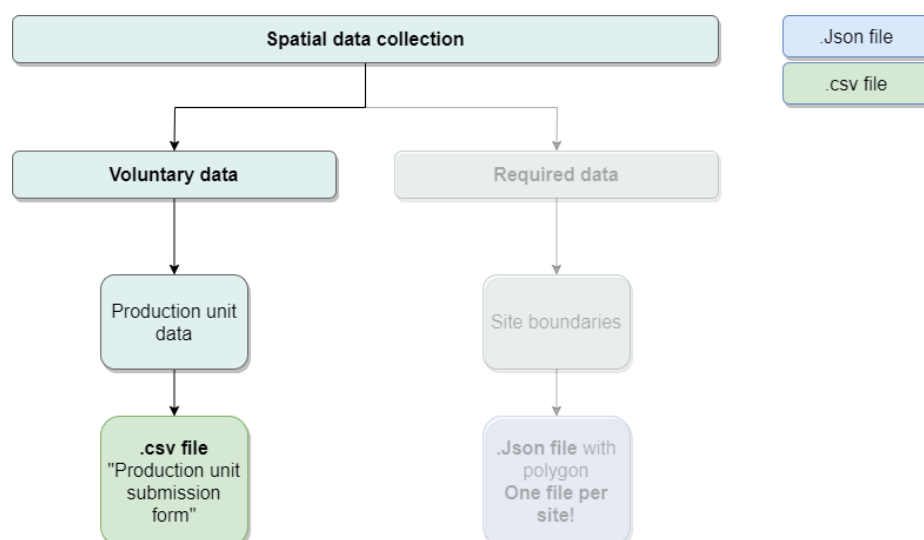



Figure 7 - Flowchart of voluntary data to submit to ASC.

### 3.2.1 Production unit submission form

In case you have captured data on a production unit level, the waypoints should be submitted to ASC as a .csv file as well as via the “Production unit submission form”.

The submission form is in Excel format; you will need to get the coordinates from the .csv file into the production unit submission form. Follow the steps described below:

1. Navigate to the .csv file with the production unit coordinates from the previous exercise, select and “open” the file;
2. The file opens with the columns; longitude, latitude, name and description in the first row. These will become the column headers later on.
3. Click the top of the first column (“A”) so that it is entirely selected.
4. With the column selected, click the “Data” tab from the top menu ribbon.
5. In the “Data tools” section, click “Text to Column”.
6. Choose a file type to describe your data; select “Delimited” and click “Next”.
7. Choose a delimiter: the data you exported from the .csv file gives a comma as the default delimiter, so select “Comma” and click “Next”.
8. To make sure the data has the right format when you save it, select “Text” from the list. This only applies to the column that is highlighted in black. Select the other columns one by one and also set the format to “Text”. When all columns are in the right format, click “Finish”.
9. This should leave you with a sheet that has four (4) separated columns.
10. Select the row that has Longitude as a header, but do not take longitude itself into the selection. If you have selected all production units, press Ctrl+C or right-click your mouse and “Copy”.
11. Now you will copy and paste these columns into the GIS submission form to fill in the remaining data. Open the production unit submission form from the GIS portal under the “Guidelines” button.
12. On the form, under Longitude, right click in the first empty box, and press CTRL+V or right-click your mouse and choose “Paste”.
13. Do the same for the Latitude column from the .csv file, and paste this data in the Latitude column in the production unit submission form.
14. Repeat these steps for the column names and paste it in the first column of the production unit submission form under “Production Unit ID internal system of the farm site”.
15. Fill in the rest of the required data on the form per production unit and save the GIS submission form under the name: Production unit submission form <farm site number/name>.
16. Make sure when you want to close the .csv file that you **DISCARD** the changes made. This is to make sure that the file remains the same and can be presented to the auditor through the ASC Online Farm Mapping Tool during the audit. In case there is no internet present at the farm site, you will need to reload the .csv file in the ASC Online Farm Mapping Tool through the “Add data” widget, and take a screenshot of the production units. 

**Always check to see if the number of coordinates match up with the number of names, to ensure that the transfer was done correctly.**



### 3.3 Workflow data capturing process

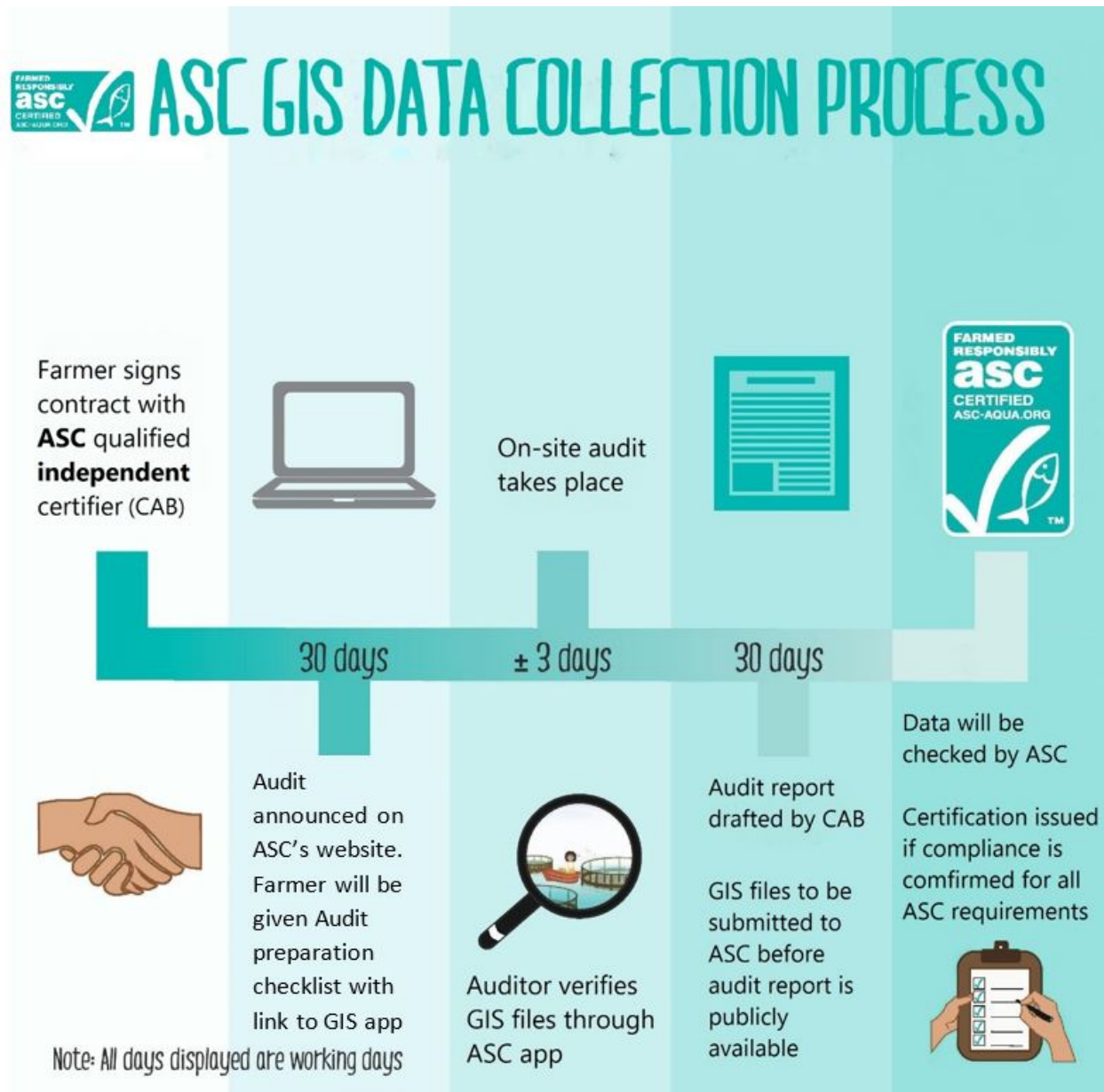




Figure 8 - Workflow collecting spatial data for AS

#### 4. Reviewing captured data (for auditors)

To check if the farm site has gathered the spatial data in a proper manner, auditors should review the gathered files **during the audit** and validate them prior to the client submitting the data to ASC.

The following method is applicable **if internet is present on site**:

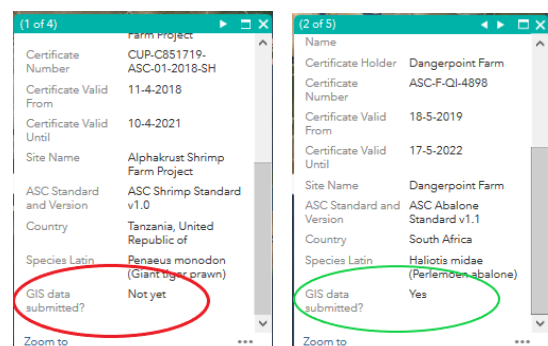
- ▶ Go to the ASC Online Farm Mapping Tool through: <https://www.asc-aqua.org/resources/for-farms/gis-portal/>
- ▶ Click the “Online Farm Mapping Tool” button, and navigate to the “Draw” widget.
- ▶ In the lower left corner in the “list” tab, click the “Import drawings” button and (have the client) browse to the correct .json file. This should be properly named by the client **according to the site number** (see Figure 3) or farm site name in case no number is assigned by ASC yet. **This must match the site name(s) that was submitted in the audit announcement to ASC.** 
- ▶ The polygon(s) should now appear in the list of files. Click the magnifying glass to zoom to the polygon(s) and check for accuracy.
- ▶ Some farm sites might have collected voluntary data on production unit level. This can be added to the map by navigating to the “Add data” widget. 
- ▶ Have the client browse to the correct .csv file. This should be properly named by the client according to the site number (see Figure 4), or farm site name. **This must match the site name(s) that was submitted in the audit announcement to ASC!**
- ▶ If all files accurately represent the site(s) location, the auditor can give the green light to the client to submit the files to ASC.

**If no internet is present on site:**

- ▶ If the client has captured the data, but the auditor is not able to verify it on site due to internet access problems.
- ▶ The guidelines here describe that the client should have created a screenshot of the captured data (one (1) polygon per site).
- ▶ Review the screenshot with the polygon, just like you would with a map and confirm the geographical information is correct.
- ▶ If correct, the client should seek out an internet connection and submit all files to ASC according to the guidance in [Chapter 2.1.2.](#)

**All spatial data should be in the possession of ASC before the publication of the draft report.**

**When ASC has received properly formatted polygon data for a site and entered it in the GIS database, it will be visible the following day in the Online Mapping Tool in the pop-up screen.**



## Annex I. Common issues

This annex provides an overview of the most common issues related to spatial data collection for ASC. These arise because of the third-party nature of the ASC certification programme. When the steps in the guidelines are followed properly, all GIS data should have been checked by the auditor before being submitted to ASC by the producer. This means any issues should be detected during an on-site audit. The most common issues that auditors can come across are described here, with solutions or workarounds.

### Drawing polygons

To display farm site locations and be able to analyse data from them, one needs to be precise and accurate.

The polygons will deliver this type of accuracy, but only if the requirements are followed. The figures below will explain the difference between a wrong and correct polygon (see Figure 1).



Figure 1 - Polygons around a farm. The one on the left is wrong and should not be accepted, the one on the right is correct.

Even though the polygon on the left contains the whole farm site, it does not meet the ASC requirements because:

- There is a neighbouring farm site in the polygon;
- it is unclear which pond belongs to the farm site;
- presence of a natural water body within the polygon without clear indication of the boundaries; and
- area measurements are not accurate.

The polygon on the right is what ASC requires: all features that belong to the farm site are included, without containing features from any neighbouring farm site. With polygons of this accuracy, ASC can perform analyses.

The best way to achieve such level of precision is to zoom-in while drawing your polygon and take the time to trace/draw the outlines with as many points as necessary.



## Verifying polygons

The ASC Online Farm Mapping Tool allows everybody in possession of the exported .json file (from the requirements in [Chapter 3.1](#)) to open it and review and edit the captured polygon data. There are instances that the “Draw” widget will show an error when trying to upload a polygon drawing to verify, with the most common one being: “***File structure doesn’t match***”.

- This error shows because there was more data stored in the .json file than just the polygon.
- The “draw” widget was built to export “point” drawings differently than “polygon” drawings. Points will be exported in .csv files automatically and polygons in .json files.
- When exporting a list of drawings that contains both polygons and point, the file will be exported as .json, but with the structure of a .csv file, causing the error to show.  
**Polygon and point drawings should always be exported to separate files.**

The workaround to this is to open the .json file that shows the error with a text editor (such as Notepad). If somewhere in the first line it says “*wkid*”:4326 then the error shows up because of the above mentioned problem. The data collector should go back to the ASC Online Farm Mapping Tool and **export the polygon and point drawings separately**. A polygon file with the correct structure should have “*wkid*”:102100 in the text.

## Submitting GIS data to ASC

The ASC GIS Portal (on which the ASC Online Mapping Tool is hosted) allows GIS data to be submitted through an online form. This form only accepts data that is submitted in a certain format. By having the client follow the steps in [Chapter 2.1.2](#) and the auditor verifying the captured data according to [Chapter 4](#), this error should not appear. Should it somehow still appear, please send an email to [data@aquaculture.org](mailto:data@aquaculture.org) and attach the file(s) that caused the error.