This document is intended to guide users through the process of moving GPS data from Avenza Maps (Avenza Systems Inc.) into ArcGIS for spatial analysis and representation. This document was created using the free Avenza Maps version 4.1 and ArcGIS Pro version 2.7.0 during the year 2022. This process may change as future versions of both are released. Avenza Maps Pro, a purchasable version of the application allows users to directly import and export shapefiles to and from ArcGIS.

Avenza Maps

Avenza Maps is a mobile app which allows users to plot, record, and track GPS coordinates both on- and offline. There is a free version available for both Apple and Android products.

In Avenza Maps, after data collection has been completed, users should export the data either by email or to a file sharing service, such as Dropbox. To export, users will select the Map Layers symbol in the bottom right corner of the application.
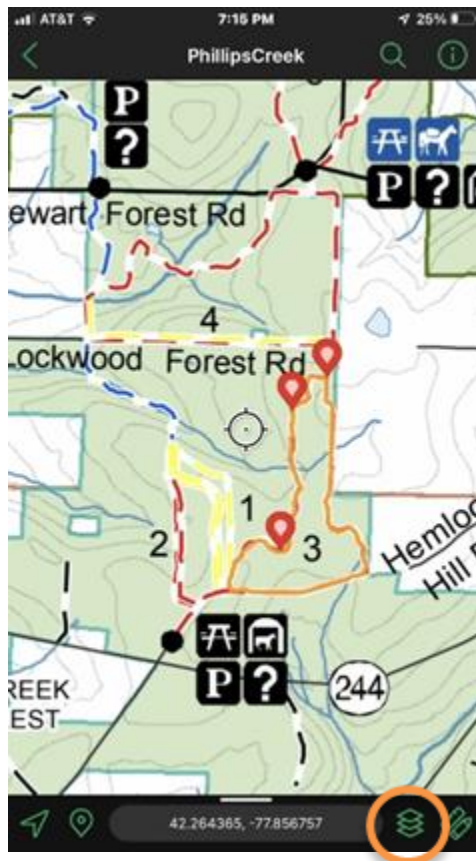

Users will then tap the layer they wish to export and select the Export Features symbol in the bottom left corner.
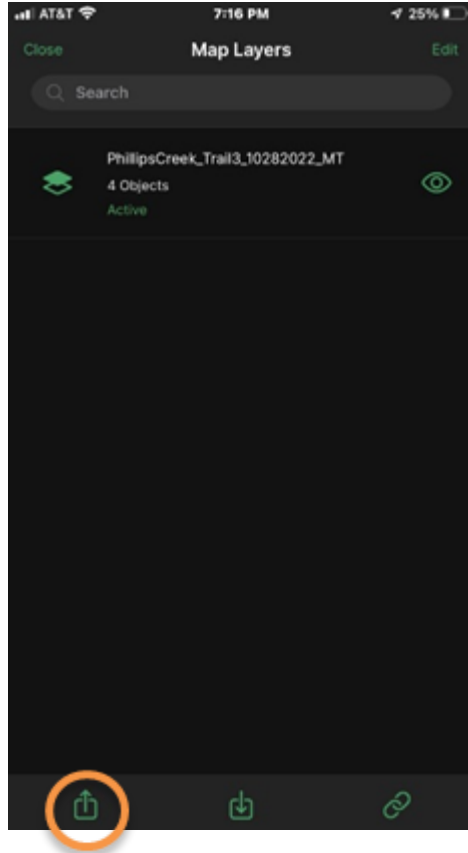
Select the Export to Others option. After selecting Export to Others, users can rename their file, and ensure that it is being exported as a KML file. Keyhole Markup Language (KML) files are used to store, share, and express geographic data. Users then choose the export destination such as email or Dropbox.
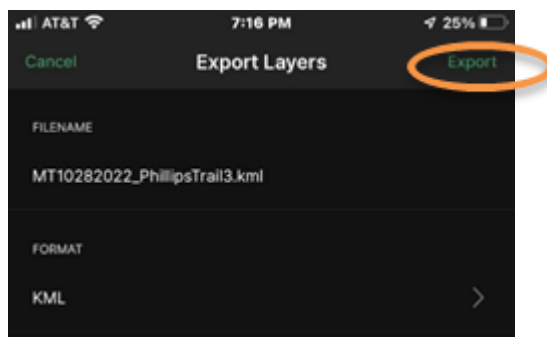
Removing Timestamps from KML Files

After exporting the KML file from Avenza Maps, the Timestamps from the data files must be removed. If Timestamps remain, it creates a Time Slider in ArcGIS Pro. This Time Slider can

make it difficult to symbolize the coordinate data as data may not appear even if it exists within a data table. To make the process as seamless as possible, it is best to disable the timestamps prior to opening the data in ArcGIS.

In a document viewer, change the extension of the KML to a .txt file. Open this file in either TextEdit or WordPad.

With the WordPad or TextEdit application, replace each <TimeStamp> with <!--<TimeStamp. Then replace all </TimeStamp> with </TimeStamp>-->. This creates a comment, or annotation, which preserves the time data but does not display it within ArcGIS.

```
<Placemark>
  <name>Placemark 3</name>
  <!--<TimeStamp>
    <when>2022-10-25T13:56:06-04:00</when>
  </TimeStamp>-->
  <styleUrl>#style9</styleUrl>
  <ExtendedData>
    <SchemaData schemaUrl="#schema2">
      <SimpleData name="pdfmaps_photos"><![CDATA[<img
src="images/Placemark 3.jpg" /><br />]]></SimpleData>
```

Save the document. Then change the file format from .txt to .kml. This will allow the file to be opened in ArcGIS.

**Converting a KML File to a Shapefile in ArcGIS Pro**

This process has been outlined using ArcGIS Pro 2.7.0, some features may be different in other versions of the program, and some processes may not be available. Two methods have been outlined in this document to account for the difference in versions users may be operating.

Method One: KML to Shapefile Tool

To begin, open the Analysis pane in ArcGIS, located at the top of the screen. Click on Tools to open the Geoprocessing pane.
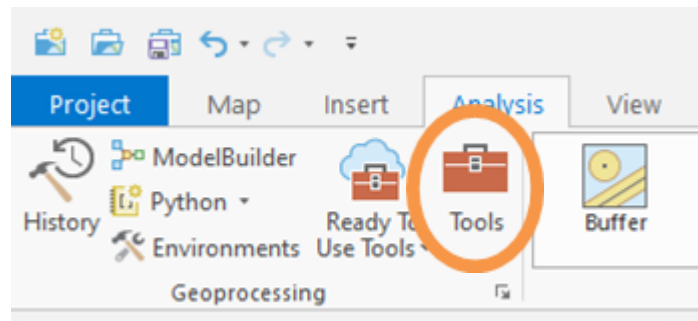

Under toolboxes, select the dropdown arrow next to Conversion Tools. There should be an option called From KML, select this, and then select KML to Layer. This process can also be done by typing KML to Layer in the geoprocessing search box.
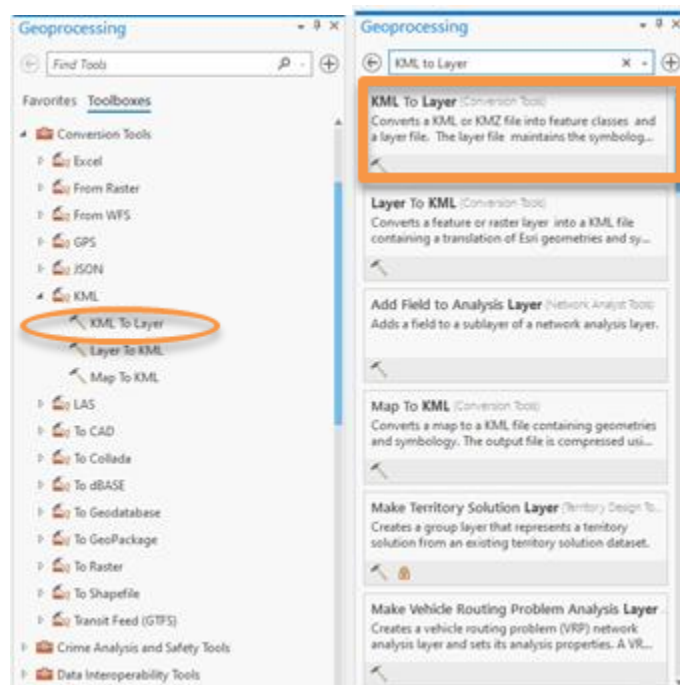
A dialogue box will open for the tool, there will be a folder icon next to the input box, select this and navigate to the KML file you wish to convert to a shapefile. For the output box select your desired geodatabase to save the shapefile in, sometimes ArcGIS will automatically fill this in with the geodatabase you are currently working in. You can rename the output feature or leave the default as the KML name.
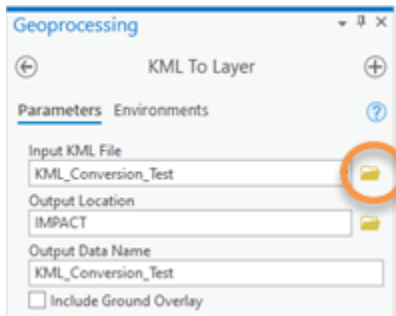
Once all parameters have been filled in, click Run in the bottom right corner.

If there is a green arrow in the bottom right corner it means the process has succeeded, if there is a red symbol it means the process has failed.

The converted file is now able to be viewed on the map.

Method Two: Creating a Shapefile from a Data Table

If the KML to Shapefile tool does not work, there is an option to create a shapefile using a data table such as Excel.

To start, a new feature class with the data will have to be created.

In the catalog pane, right click the geodatabase where the new feature class will exist. Select New and then Feature Class. The Create Feature Class tool will open. In this tool, users will enter a name for the feature class, choose the Feature Class Type: Points, Lines, or Polygons.
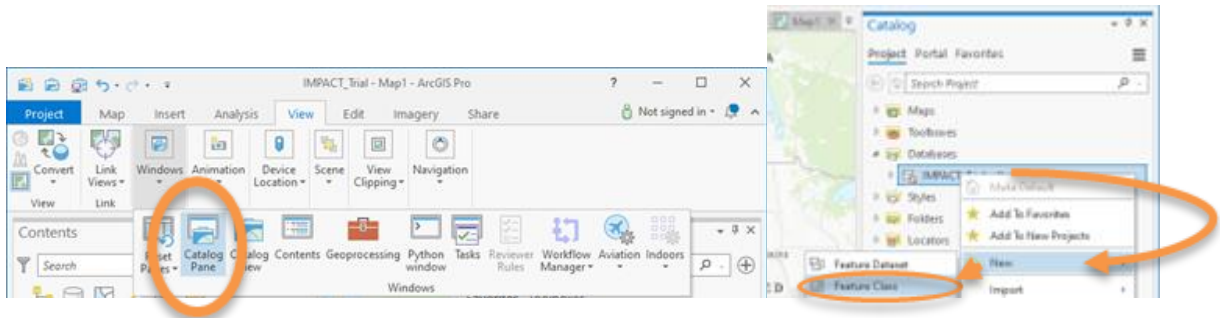
If the new feature class contains Avenza Maps Tracks, users should select Lines for type, and under Geometric Properties check the box marked m-values. This will allow ArcGIS to store route information.

Users can elect to have the output dataset added to the current map by selecting the box. Click Next.

Here, users will add fields to the feature class by clicking where it says *Click here to add a new field.* Use the existing data table as a guide for the Field Names used. This makes the process of adding the data simpler and smoother. Users select Data Type when adding fields: Numbers (Double), Text, Dates, etc. Repeat this process until all of the fields are defined. Click next once all fields are defined and managed.
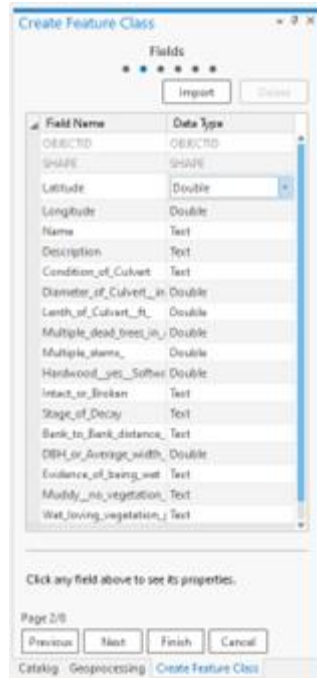
Note: If track data from Avenza Maps as well as point data are to be used, two separate feature classes must be made. One for point data, one for track/polyline data.

Field definitions from other feature classes or .csv files can be imported by selecting Import, browsing to the file, and selecting Ok.

The next page is the Spatial reference page. Under XY Coordinate Systems Available select the desired coordinate system. Coordinate systems from layers in the map, or other feature classes can be used. Z-values give users the ability to model and manipulate three-dimensional features, if this is needed, users can check the box by Current Z and select the z-coordinate system desired. Once this has all been done, users can select Finish to accept default tolerance and resolution values or select Next to make necessary adjustments. The feature class is now created.
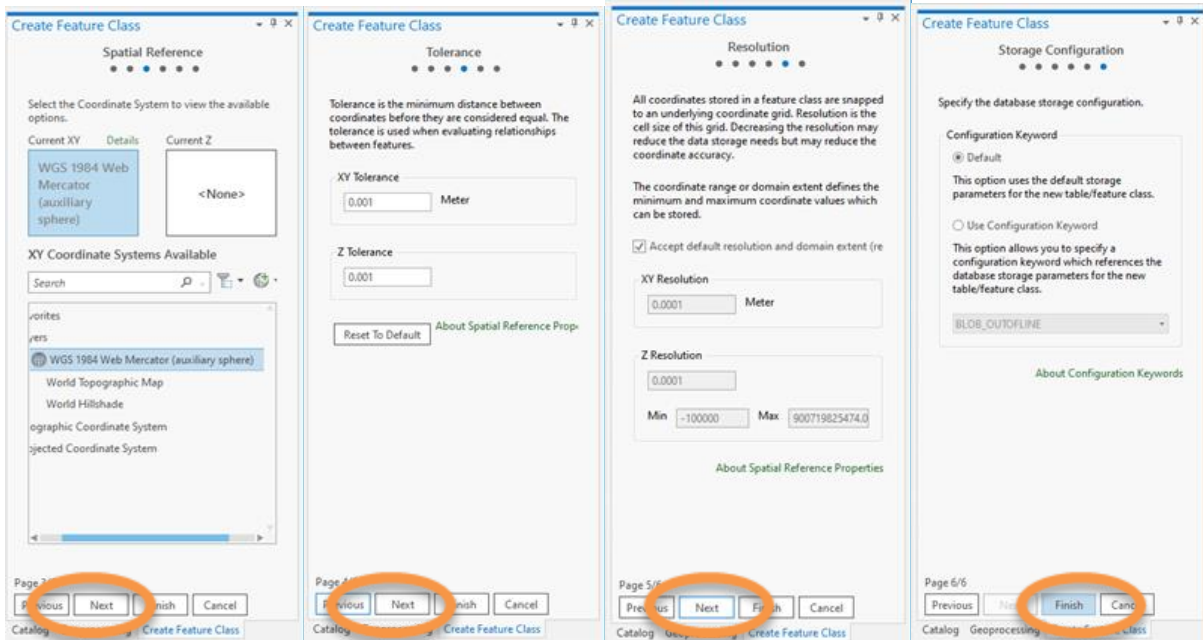
To add the spatial data to this new feature class, users can navigate to the Analysis tab. Click Tools and navigate to Data Management Tools, select Joins and Relates, and click Add Join.
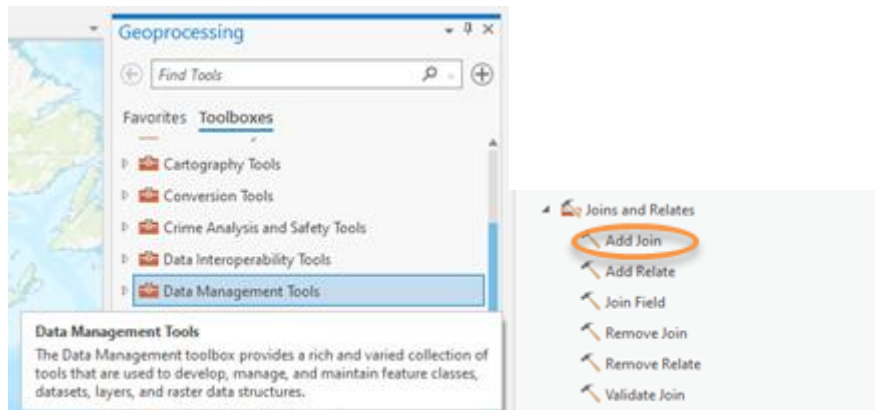

In the Parameters Tab complete the following:

- Select desired feature class under Layer Name or Table View.

- Select field to use as the basis for the join from the drop-down list under Input Join Field Layer. (OBJECTID is typically used, but the field name should be the same with the same information contained in both the feature class as well as the data table. Creating an additional field in the data table labeled OBJECTID may be necessary.)

- Select the Excel table under Join Table.

- Select the field in the excel table used for the join under Output Join Field. (Again, either creating a new field called OBJECTID or using a pre-existing field with individual labels per data entry)

- Users can check Keep All Target Features if they would like all records retained. If left unchecked any records that do not have a match are not included.

Click Run. The Add Join tool will now complete the action.
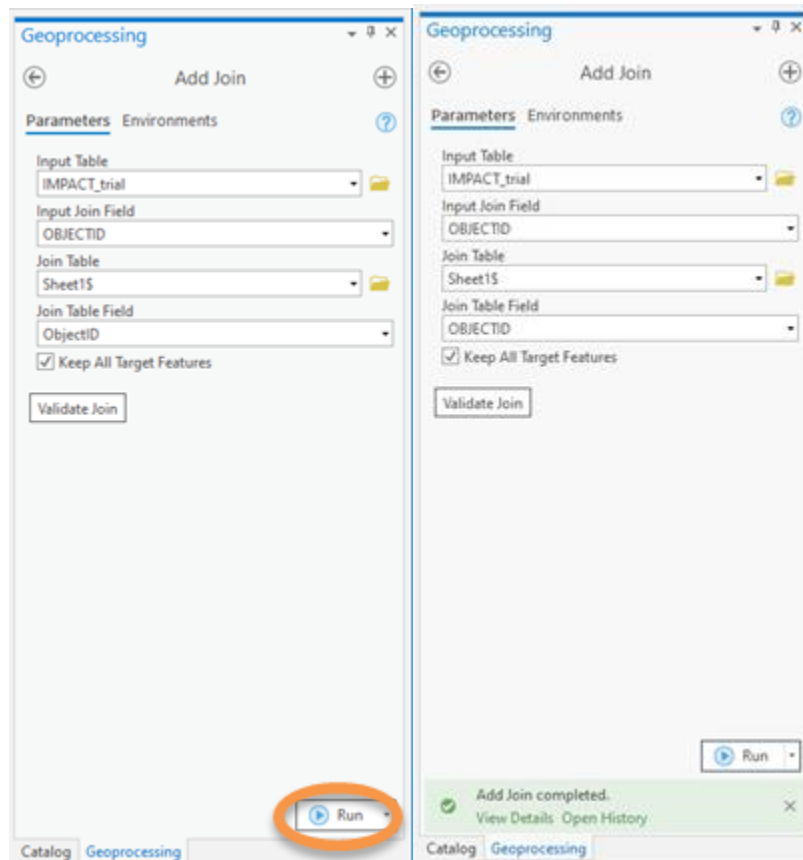
The Join Field tool can be used to create a permanent join, the process is the same.