

Invasive Species Early Detection Monitoring Protocol for Klamath Network Parks

Standard Operating Procedure (SOP) #4: Field Map Preparations for Data Collection

Version 2025Jun09

Citation for this SOP:

Klamath Network. 2025. Standard Operating Procedure 4: Field Map Preparations for Data Collection: 2025Jun09. Klamath Network Invasive Species Early Detection Monitoring Protocol. Unpublished National Park Service Standard Operating Procedure, Klamath Inventory and Monitoring Network, Ashland, Oregon.

Citation for the original protocol:

Odion DC, Sarr DA, Mohren SR, Klinger RC. 2010. Invasive Species Early Detection Monitoring Protocol for Klamath Network Parks. Natural Resource Report. NPS/KLMN/NRR—2010/227. National Park Service. Fort Collins, Colorado <https://irma.nps.gov/DataStore/Reference/Profile/2124867>

(Note that updated versions of the protocol are linked from the original IRMA record.)

To create a new version of this SOP, carefully follow the instructions for the KLMN (caves) SOP: Revising the Protocol (<https://irma.nps.gov/DataStore/Reference/Profile/2238840>). Use the Revision History Log below to describe the revisions:

- Populate the top table of the revision history log, providing the previous version date, author of the change, a specific but concise description of the changes made, the footnote number associated with change details, and a new version date.
- In the bottom table, add a footnote and as much text as needed to describe in detail the reasons for and implications of the change.
- Replace en dashes with text.

Previous Version Date	Author of Change	Changes Made	Footnote #	New Version Date
2010	E. Edson	Updates to workflow to use ArcPro and ESRI field maps.	1	8/03/2021
8/03/2021	E. Edison	Updates to workflow as all parks combined now and no random points.	2	3/22/2023
3/22/2023	AS	Updates to workflow. Changes reflect ISED protocol updates.	–	4/18/2025
4/18/2025	T. Berrian	Formatted to adhere to 508 compliance standards.	–	6/09/2025
–	–	–	–	–

Footnote #	Detailed Reasons for and Implications of the Changes
1	Software changes necessitates workflow changes.
2	Protocol change necessitates workflow changes.
–	–
–	–

This SOP details the process to prepare a geodatabase for ArcGIS Online (AGOL) and publishing web maps for offline data collection.

SOPs 6 and 6b cover field data collection using Field Maps and Avenza, as well as data download. File names represented in this document were created for testing and documentation purposes. It is expected that these are to be examples only and that actual file names for the invasive species monitoring project may be different.

Preparing a map project for ArcGIS Online

Folder Structure

Files will be managed in annual GIS folders. Within the folder

N:\Monitoring\ISED\ISED_GIS\Seasonal_Data\YEAR, create two folders: CollectedData and ReferenceData.

NPS Shared Drive (N:) > Monitoring > ISED > ISED_GIS > Seasonal_Data > 2025		
Name	Date modified	Type
 CollectedData	1/16/2025 12:21 PM	File folder
 ReferenceData	1/16/2025 10:00 AM	File folder

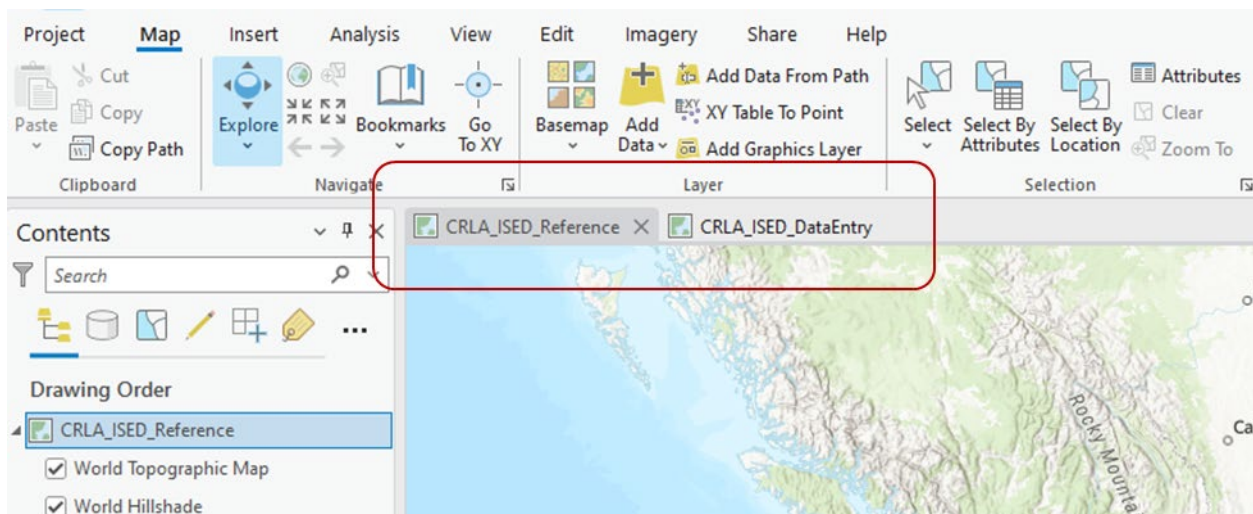
The CollectedData folder will contain data collected by the crew, including points and tracklines.

The ReferenceData will contain all of the layers used to create the Web Map for field data collection.

Create the Map Project

Open ArcGIS Pro and create a new map project in

N:\Monitoring\ISED\ISED_GIS\Seasonal_Data\2025. This can be called something like *ISED_All_Parks_YEAR*. Add two maps for each park and name them PARK_ISED_DataEntry and PARK_ISED_Reference.



Data Entry Layers

The PARK_ISED_DataEntry map should include two empty layers: *Invasive_Start_Stop* and *Invasive_Point*. These layers can be created or layers from previous years can be used.

To create new layers, in the Catalog pane, right click on Databases and select New File Geodatabase. Call it ISED_PARK_YEAR and click Save. In the Catalog pane, right click on the new geodatabase

and select New-> Feature Class. Call the new Feature Class *Invasive_Start_Stop* and make sure the Type is *Point*. Create a second point Feature Class called *Invasive_Point*. Accept default values for both, ensuring that the “Z Values- Coordinates include Z values used to store 3D data.” is checked.

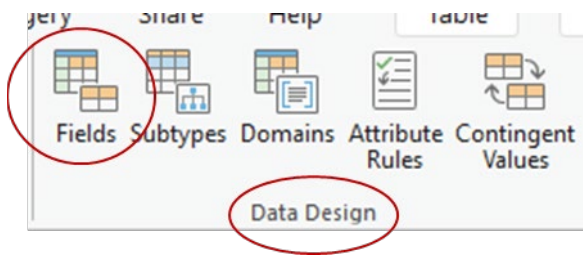
If layers exist from previous years, they can be Copy and Pasted into ISED_PARK_YEAR.gdb. Be sure to remove data from these tables and ensure that fields are consistent with current methods.

Add the two layers to the PARK_ISED_DataEntry map.

Add Fields to Newly Created Feature Classes

If layers are copied from previous years, this section can be skipped.

For the *Invasive_Point* layer, open the attribute table and click on Fields in the Data Design ribbon.



Add fields and populate as follows. Field headings in **bold** are those that will be populated by the field crews, the rest are automatically populated. Required fields are in red; this is enforced by unclicking the “Allow NULL” checkbox in the field view table but may also be required on the field form.

- OBJECTID: Object ID
- Shape: Geometry
- **ROUTE**: Text, 255 (Domain: Routes_PARK)
- **SURVEY_DATE**: Date
- **SPECIES**: Text, 200 (Domain: Species_PARK)
- **PHENOLOGY**: Text, 10 (Domain: Phenology)
- **DISTANCE**: Double
- **INFESTSIZE** : Text, 10 (Domain: InfestSize)
- **PLOTINFEST**: Text, 255 (Domain: InfestCover)
- **TREATED**: Text, 10 (Domain: YesNo)
- **VISITNOTES**: Text, 255
- PARK_Unit: Text, 10 (Domain: Park_Unit, Default based on park project)
- **Route_Comments**: Text, 255

- **ExtraArea:** Text, 10 (Domain: YesNo)
- **Species_NonPriority:** Text, 255 (Domain: PARK_SpeciesNonPriority)

Invasive_Point										
Fields: Invasive_Point										
Current Layer: Invasive_Point										
Visible	Read Only	Field Name	Alias	Data Type	Allow NULL	Highlight	Number Format	Domain	Default	Length
☒	☒	OBJECTID	OBJECTID	Object ID	☐	☐	Numeric			
☒	☐	Shape	SHAPE	Geometry	☒	☐				
☒	☐	SURVEY_DATE	SURVEY_DATE	Date	☐	☐				
☒	☐	SPECIES	SPECIES	Text	☐	☐		Species_CRLA		200
☒	☐	PHENOLOGY	PHENOLOGY	Text	☐	☐		Phenology		10
☒	☐	DISTANCE	DISTANCE	Double	☐	☐	Numeric			
☒	☐	INFESTSIZE	INFESTSIZE	Text	☐	☐		InfestSize		10
☒	☐	PLOTINFEST	PLOTINFEST	Text	☐	☐		InfestCover		255
☒	☐	TREATED	TREATED	Text	☐	☐		YesNo		10
☒	☐	VISITNOTES	VISITNOTES	Text	☒	☐				255
☒	☐	PARK_Unit	PARK_Unit	Text	☐	☐		Park_Unit	CRLA	10
☒	☐	Route_Comments	Route_Comments	Text	☒	☐				255
☒	☐	ExtraArea	ExtraArea	Text	☐	☐		YesNo		10
☒	☐	ROUTE	ROUTE	Text	☐	☐		Routes_CRLA		255
☒	☐	Species_NonPriority	Species_NonPriority	Text	☒	☐		CRLA_SpeciesNonPriority		255

Add fields and populate as follows, for the *Invasive_Start_Stop* layer.

- OBJECTID: Object ID
- Shape: Geometry
- **RouteStartStop:** Text, 255 (Domain: RouteStartStop_1)
- **Comments:** Text, 255
- **EDSWm:** Double
- GlobalID: Global ID
- **Route:** Text, 255 (Domain: Routes_PARK)
- **GPSTime:** Date

Invasive_Start_Stop (CRLA_ISD_Re										
Visible	Read Only	Field Name	Alias	Data Type	Allow NULL	Highlight	Number Format	Domain	Default	Length
☒	☒	OBJECTID	OBJECTID	Object ID	☐	☐	Numeric			
☒	☐	Shape	SHAPE	Geometry	☒	☐				
☒	☐	RouteStartStop	RouteStartStop	Text	☐	☐		RouteStartStop		255
☒	☐	Comments	Comments	Long	☒	☐	Numeric			
☒	☐	EDSWm	EDSWm	Double	☒	☐	Numeric			
☒	☐	Route	Route	Text	☐	☐		Routes_CRLA		255
☒	☐	GPSTime	GPSTime	Date	☐	☐	Numeric			

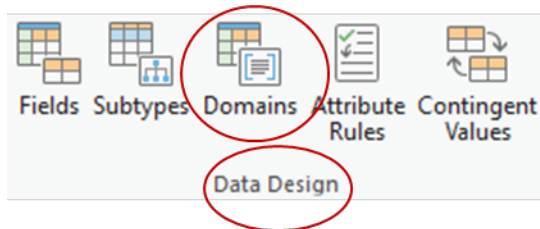
Create Domains

Domains are used for certain fields to standardize data entry. Most domains will not change from year to year although some, like species lists may need updating every field season.

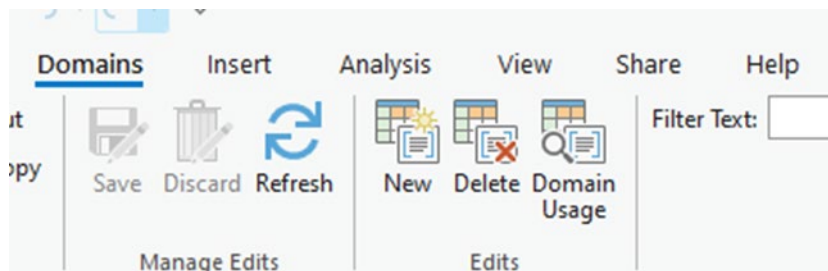
Creating a new domain

If an entirely new domain is needed at any point, it can be created by opening an attribute table and selecting Domains from the Data ribbon.

The domains can be created by selecting Domains from the Data Design ribbon.



Then select **New**.



Add the Domain Name, Description, and in the right pane, add the Codes and Descriptions. If lots of Codes and Descriptions need to be added, see below (Creating or Updating Many Domain Values).

Invasive_Point						*Domains: Test_ParkData	
Domain Name	Description	Field Type	Domain Type	Split Policy	Merge Policy	Code	Description
YesNo	Yes and No domain	Text	Coded Value Domain	Default	Default	Yes	Yes
						No	No
Click here to add a new domain.						Click here to add coded value.	

Save and close. Then be sure to select the Domain in the Fields pane.

Invasive_Point										
Fields: Invasive_Point										
Current Layer: Invasive_Point										
Visible	Read Only	Field Name	Alias	Data Type	Allow NULL	Highlight	Number Format	Domain	Default	Length
☒	☒	OBJECTID	OBJECTID	Object ID	☐	☐	Numeric			
☒	☐	SHAPE	SHAPE	Geometry	☒	☐				
☒	☐	SURVEY_DATE	SURVEY_DATE	Date	☐	☐				
☒	☐	SPECIES	SPECIES	Text	☐	☐		Species_CRLA		200
☒	☐	PHENOLOGY	PHENOLOGY	Text	☐	☐		Phenology		10
☒	☐	DISTANCE	DISTANCE	Double	☐	☐	Numeric			
☒	☐	INFESTSIZE	INFESTSIZE	Text	☐	☐		InfestSize		10
☒	☐	PLOTINFEST	PLOTINFEST	Text	☐	☐		InfestCover		255
☒	☐	TREATED	TREATED	Text	☐	☐		YesNo		10
☒	☐	VISITNOTES	VISITNOTES	Text	☒	☐				255
☒	☐	PARK_Unit	PARK_Unit	Text	☐	☐		Park_Unit	CRLA	10
☒	☐	Route_Comments	Route_Comments	Text	☒	☐				255
☒	☐	ExtraArea	ExtraArea	Text	☐	☐		YesNo		10
☒	☐	ROUTE	ROUTE	Text	☐	☐		Routes_CRLA		255
☒	☐	Species_NonPriority	Species_NonPriority	Text	☒	☐		CRLA_SpeciesNonPriority		255

Updating One or Two Domain Values

Open the Domains view. Click on the *Domain* you wish to edit, and the domain values will appear on the right-hand pane. Add or edit the domain Code and/or Description; the fields will have a red box to indicate that they have been edited, and the box will turn green when you have clicked off the edited fields. Below, a new phenology type (Seedling) is being added:

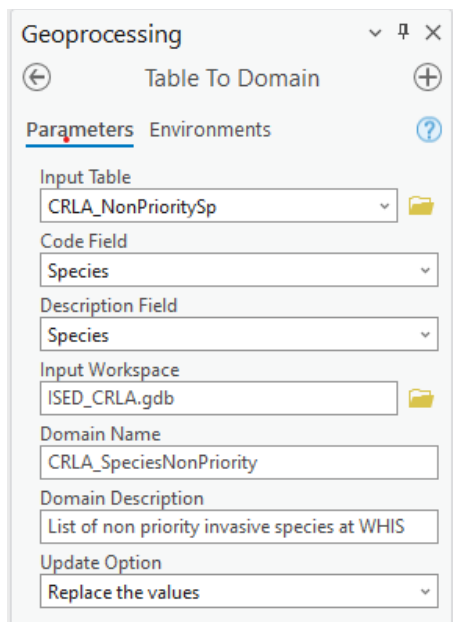
*Domains: ISED_CRLA						
Domain Name	Description	Field Type	Domain Type	Split Policy	Merge Policy	
Contact_1	Contact name of observers	Text	Coded Value Domain	Default	Default	
CRLA_SpeciesNonPriority	List of non priority invasive species at WHIS	Text	Coded Value Domain	Default	Default	
ESRI_FIX_TYPE_DOMAIN	Fix Type	Short	Coded Value Domain	Default	Default	
ESRI_FIX_TYPE_DOMAIN_1		Short	Coded Value Domain	Default	Default	
ESRI_NUM_SATS_DOMAIN	Number of Satellites	Short	Range Domain	Default	Default	
ESRI_NUM_SATS_DOMAIN_1		Short	Range Domain	Default	Default	
ESRI_POSITIONSOURCETYPE_DOMAIN	Position Source Type	Short	Coded Value Domain	Default	Default	
ESRI_STATION_ID_DOMAIN	Station ID	Short	Range Domain	Default	Default	
ESRI_STATION_ID_DOMAIN_1		Short	Range Domain	Default	Default	
GPS_Unit_1		Text	Coded Value Domain	Default	Default	
InfestCover	The percent cover of the infestation	Text	Coded Value Domain	Default	Default	
InfestSize	The infestation size of species	Text	Coded Value Domain	Default	Default	
InfestSize_1		Text	Coded Value Domain	Default	Default	
Park_Unit	Park codes	Text	Coded Value Domain	Default	Default	
Percentage	numbers between 1 and 100 for percentages	Short	Range Domain	Default	Default	
Phenology	The phenology of the species	Text	Coded Value Domain	Default	Default	

Code	Description
Bolting	Bolting
Bud	Bud
Dead	Dead
Flowering	Flowering
Mature	Mature
Rosette	Rosette
Seed Set	Seed Set
Seedling	Seedling
Click here to add coded value.	

Use the Save icon in the ribbon bar to save the edits and the green bars will disappear.

Creating or Updating Many Domain Values

Updating lots of values is easier if you have a table of appropriate domain values. These values can either be in a spreadsheet, such as a species list from a park, or in a feature layer, such as the roads/trails layers. If the list is in a spreadsheet, first turn it into a table using the **Excel to Table** geoprocessing tool. There is no need if the table is in an existing feature layer of stand-alone geodatabase database table. Then use geoprocessing tool **Table to Domain**:

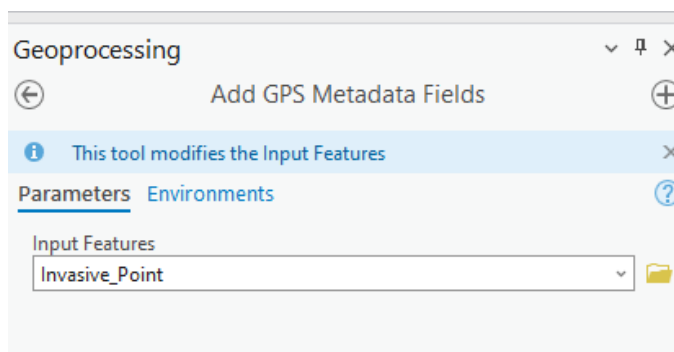


In the dialog:

1. select the same column for both the Code Field and Description Field.
2. the Input Workspace is the GDB of the project.
3. type the domain name as an exact match of the one that already exists.
4. select the option to replace the values that already exist in the domain.

Add Metadata Fields

Metadata fields need to be added to both layers to collect GPS information. This is done using the **Add GPS Metadata Fields** geoprocessing tool. Select a layer and click Run. Then do this for the other layer.



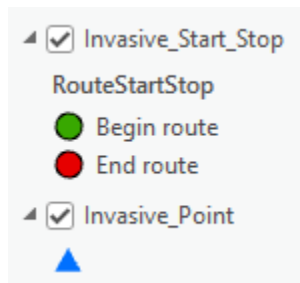
This tool adds many GPS metadata fields. Not all will be used for all types of data collection. The picture below shows the fields added to the date time feature layer:

☒	☐	ESRIGNSS_RECEIVER	Receiver Name	Text	☒	☐		
☒	☐	ESRIGNSS_H_RMS	Horizontal Accuracy (m)	Double	☒	☐	Numeric	
☒	☐	ESRIGNSS_V_RMS	Vertical Accuracy (m)	Double	☒	☐	Numeric	
☒	☐	ESRIGNSS_LATITUDE	Latitude	Double	☒	☐	Numeric	
☒	☐	ESRIGNSS_LONGITUDE	Longitude	Double	☒	☐	Numeric	
☒	☐	ESRIGNSS_ALTITUDE	Altitude	Double	☒	☐	Numeric	
☒	☐	ESRIGNSS_PDOP	PDOP	Double	☒	☐	Numeric	
☒	☐	ESRIGNSS_HDOP	HDOP	Double	☒	☐	Numeric	
☒	☐	ESRIGNSS_VDOP	VDOP	Double	☒	☐	Numeric	
☒	☐	ESRIGNSS_FIXTYPE	Fix Type	Short	☒	☐	Numeric	ESRI_FIX_TYPE_DOMAIN
☒	☐	ESRIGNSS_CORRECTIONAGE	Correction Age	Double	☒	☐	Numeric	
☒	☐	ESRIGNSS_STATIONID	Station ID	Short	☒	☐	Numeric	ESRI_STATION_ID_DOMAIN
☒	☐	ESRIGNSS_NUMSATS	Number of Satellites	Short	☒	☐	Numeric	ESRI_NUM_SATS_DOMAIN
☒	☐	ESRIGNSS_FIXDATETIME	Fix Time	Date	☒	☐		
☒	☐	ESRIGNSS_AVG_H_RMS	Average Horizontal Accuracy (m)	Double	☒	☐	Numeric	
☒	☐	ESRIGNSS_AVG_V_RMS	Average Vertical Accuracy (m)	Double	☒	☐	Numeric	
☒	☐	ESRIGNSS_AVG_POSITIONS	Averaged Positions	Short	☒	☐	Numeric	
☒	☐	ESRIGNSS_H_STDDEV	Standard Deviation (m)	Double	☒	☐	Numeric	

Data Entry Layer Symbology

While any symbology can be used, we have been using:

- Invasive_Point- a Cretan Blue 10-point triangle
- Invasive_Start_Stop- symbology is based on Unique Values
 - Begin- Leaf Green 10-point circle with a 0.6 point black outline
 - End- Poinsettia Red 10-point circle with a 0.6 point black outline



Reference Layers

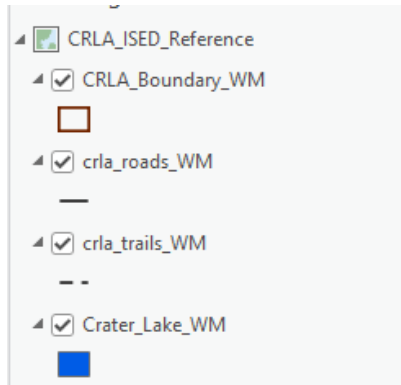
Reference layers can include roads, trails, park boundary, streams, lakes, and any other data that is useful to the crew. Some source data are stored in N:\Monitoring\ISED\ISED_GIS\ReferenceData but a new roads/trails layer should be requested from each park before the sampling season begins. At a minimum, park boundary, roads, and trails layers should be included. Reference layers should be added or copied into the geodatabase for that year (e.g., N:\Monitoring\ISED\ISED_GIS\Seasonal_Data\2025\ReferenceData\ISED_CRLA.gdb) so that it can later be archived as a reference for which datasets were used each year. This can be done in the Catalog Pane.

Once the layers have been moved into the correct geodatabase, add them to the PARK_ISED_Reference map.

Reference Layer Symbology

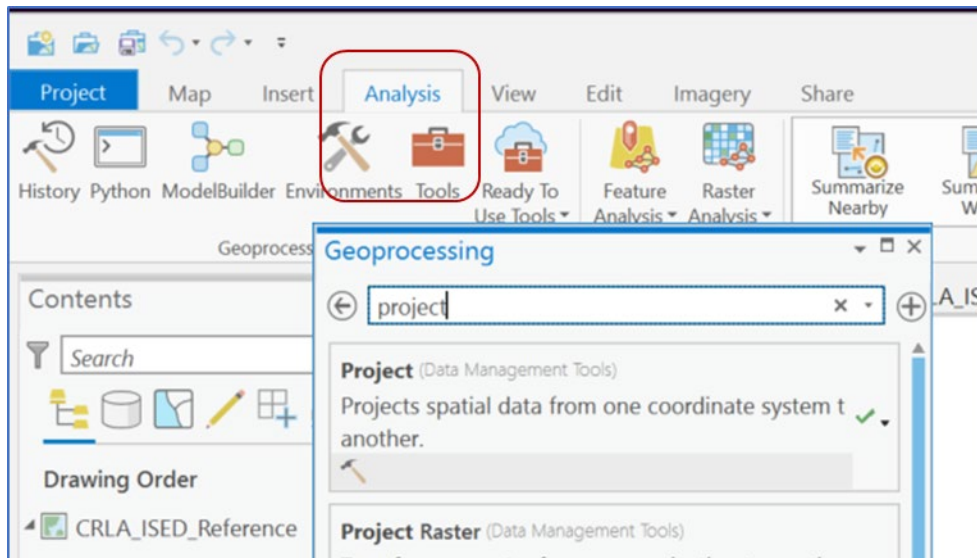
While any symbology can be used, we have been using:

- Park Boundary- no fill, Cherrywood Brown 2-point outline
- Roads- Black, 1-point solid line
- Trails- Black, 1-point dashed line



Reference layers may also include the segments to be sampled. Park staff likely will provide names or general areas they want sampled, and the Data Manager can create these featured classes. This is generally done by selecting the segments from the existing roads/trails layer and exporting linear features to create a separate dataset.

If needed, reference layers should be projected into the coordinate system of **WGS 1984 Web Mercator Auxiliary Sphere** (WKID: 3857 Authority: EPSG) using Data Management Tools-> *Project*.



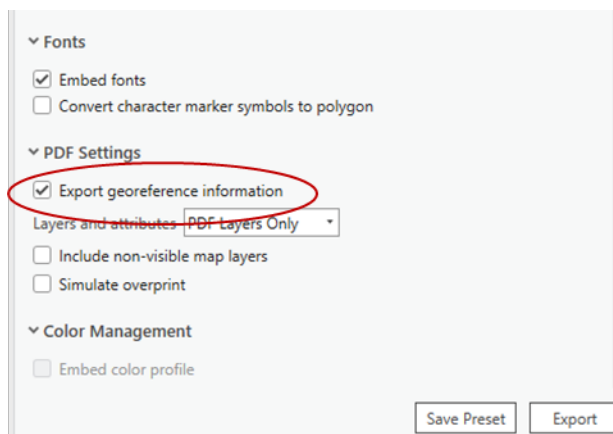
Projecting is necessary because ArcGIS Online uses **Web Mercator Auxiliary Sphere** for base maps and, therefore, web maps, whereas National Park Service GIS layers are all in NAD 83 UTM.

Add “_WM” to the output feature classes from running the *Project* tool to signify they are in Web Mercator. If new reference layers are received from the parks, these will need to be imported to the ArcGIS Pro project GDB and projected as well.

The layers are now ready for publishing to ArcGIS Online.

Creating Avenza Maps

At this point, reference maps can be exported for use with Avenza. On the Insert menu, select New Layout. Pick the appropriate size (usually 8.5” x 11” works). In Insert, select Map Frame. Select the map you want to export and then draw/insert it in the new layout. Add a legend, north arrow, and scale if desired. Then select Share and Export Layout. Choose GeoReferenced PDF. Give the layout a useful name and be sure that “Export georeferenced information” is checked.



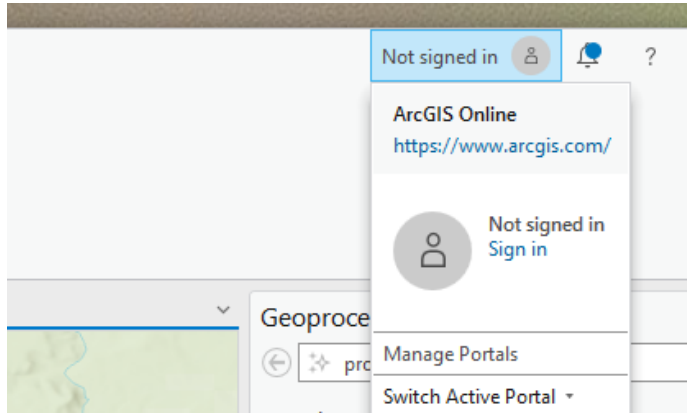
Then click Export. These PDFs can be loaded to the tablet for use in the Avenza app.

Publishing to feature services

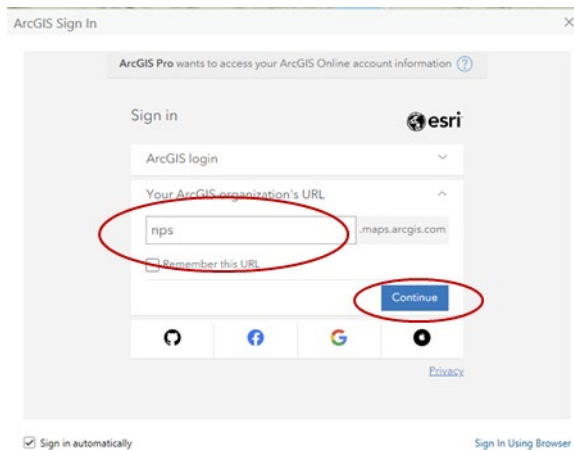
In order to publish to ArcGIS Online (AGOL) a user must have an ESRI organizational account with publishing rights. Please contact the regional GIS administrator if this is not the case.

Sign in to ArcGIS Online

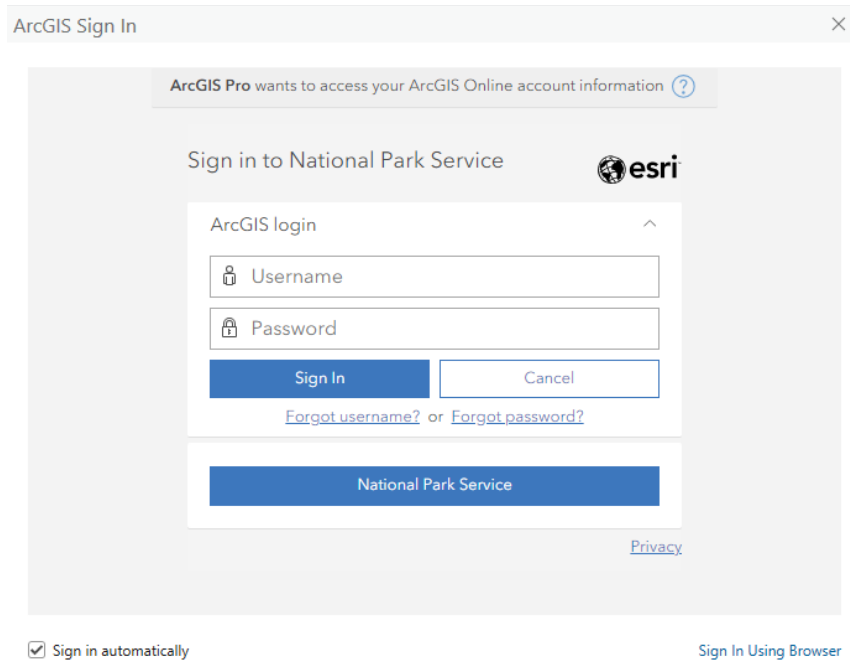
Open the project that is to be published to AGOL. In the upper right corner, select the user and select Sign in.



Type “nps” into the organization URL box. Then click Continue.



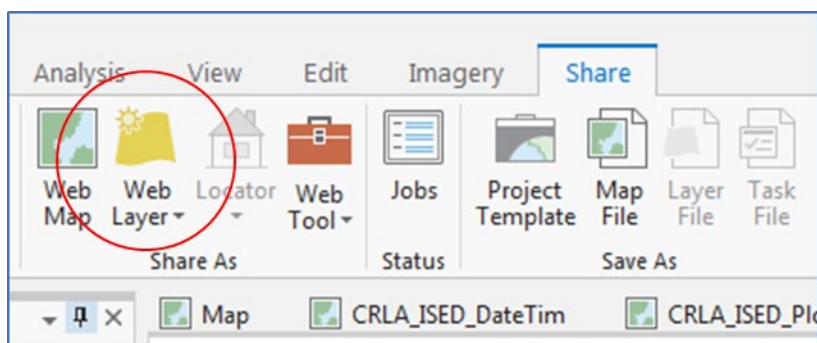
Then click National Park Service.



Sign in with your PIV card.

Publish Web Layer

Click on one of the map layers in the project. From the Share As ribbon, select Web Layer and then select Publish Web Layer. If this is greyed out, check to make sure you are signed in.



Fill out the Share As Web Layer fields.

Share As Web Layer ? v 4 x

Sharing CRLA_ISED_DataEntry As A Web Layer

General Configuration Content

Item Details

Name

CRLA_ISED_DataEntry_2025

Summary

For collecting invasive plant data at Crater Lake National Park (CRLA).

Tags

CRLA x ISED x invasive plants x

Layer Type ⓘ

☒ Feature

☐ Tile

☐ Vector Tile

☒ Feature ⓘ

Location

Folder

Select or create folder

Share with

☐ Everyone

☐ National Park Service

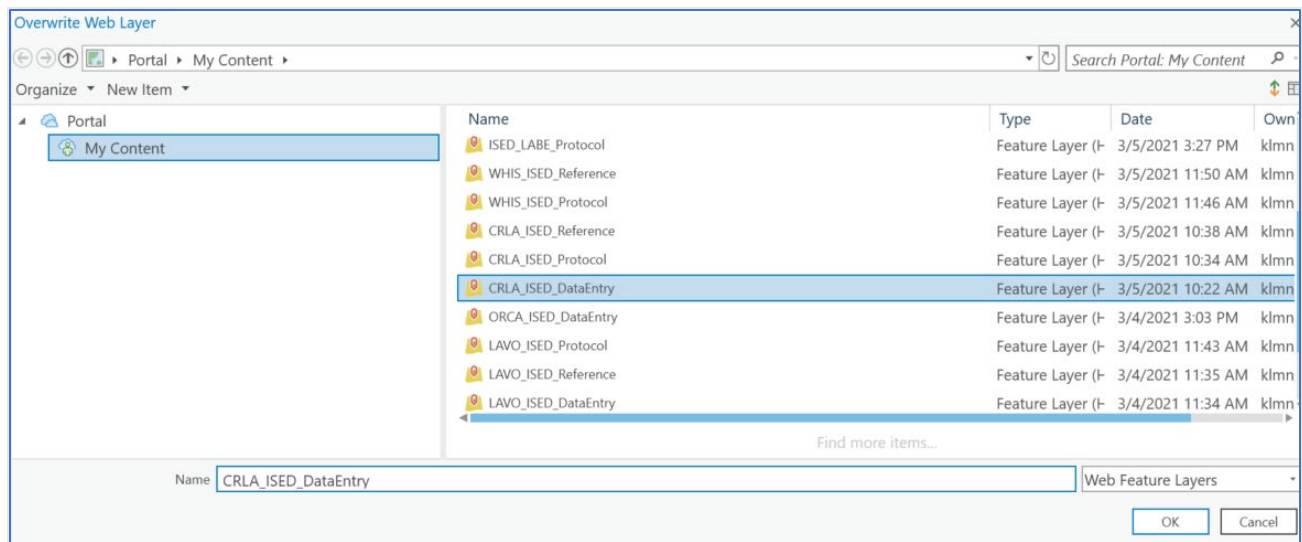
Groups v

Then click **Analyze**. As above, if there are any errors of High Severity, you will not be able to publish and need to go back and correct the error.

When ready, click **Publish**.

Overwrite Web Layer

Do this for all maps as needed. If for any reason you need to republish a map to ArcGIS Online again, for example if you have added a field or changed the domains, you can overwrite the version that is already in ArcGIS Online by publishing to the same service definition. To do this click on the Share As/ Web Layer button, but select Overwrite Web Layer instead, and select the correct service from the popup window.



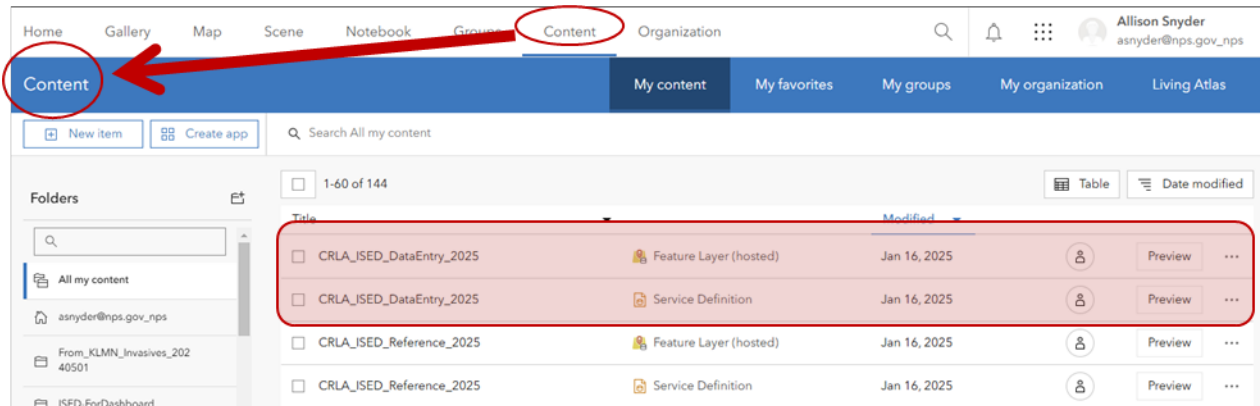
Do not do this if anyone has a version of the layer checked out on a tablet as you will cause the connection between the tablet version and the live version to break completely, and the tablet won't be able to sync back to ArcGIS Online!

ArcGIS Online: Web Map creation

Go to <https://www.arcgis.com/home> and sign into ArcGIS Online using the same steps as above (Sign in to ArcGIS Online).

AGOL Content

Go to the Content tab. In Content there will be two types of files with the same name, the Feature Layer and the Service Definition.



The Feature Layer holds the actual data layers (feature classes) published to AGOL and are used to create the specific web maps for use on the Field Map app. The Service Definition gets created whenever a feature is published to AGOL and provides the correct parameters to use when publishing. If there is a need to republish or update a feature class (e.g., the symbology changes or there is an updated park boundary) this can be done easily by overwriting the service definition rather than removing/replacing the Feature Layer. See the section above (Overwrite Web Layer) on how to do this.

Click on the Feature Layer name to open it and click the **Settings** tab.

The screenshot shows the 'Settings' tab for a feature layer named 'CRLA_ISED_DataEntry_2025'. Under the 'General' section, there are two main areas: 'Content Status' and 'Delete Protection'. The 'Content Status' section has a text label 'Discourage the use of this item.' and a button labeled 'Mark as Deprecated'. The 'Delete Protection' section has a checkbox labeled 'Prevent this item from being accidentally deleted.' and a button labeled 'Delete Item'.

For each newly published feature layer, make sure the following are checked:

For all layers:

- Delete Protection- Prevent this item from being accidentally deleted
- Editing-
 - Enable Sync (required for offline use and collaboration)
- Export Data- Allow others to export to different formats

For those layers needed for data collection (Data_Entry):

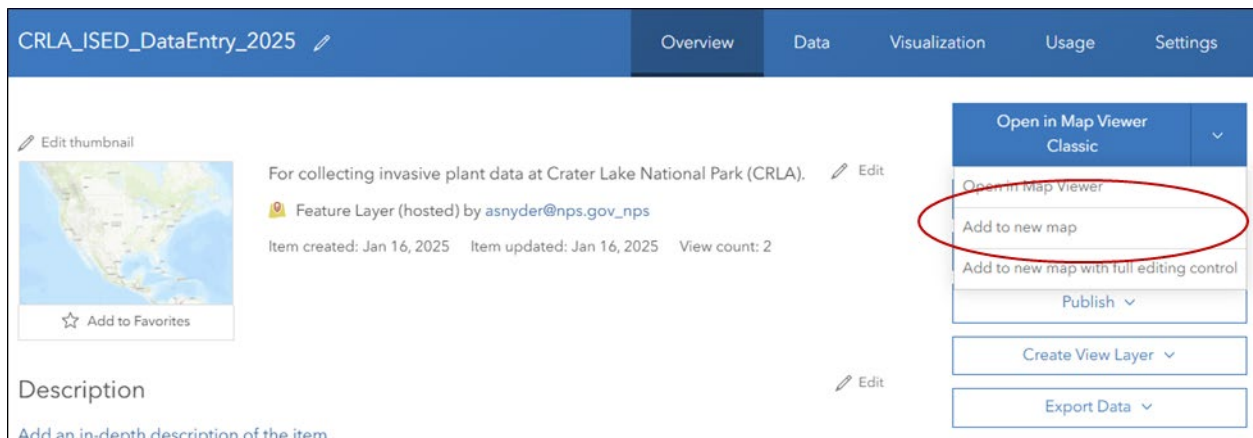
- Editing
 - Enable editing
 - Keep track of changes to the data
 - Keep track of who edited the data
 - What kind of editing is allowed?
 - Add, Delete, and Update.

Keep the default for other settings and then scroll to the bottom and **Save** the settings.

It is important that all layers have enabled syncing for taking tablets offline.

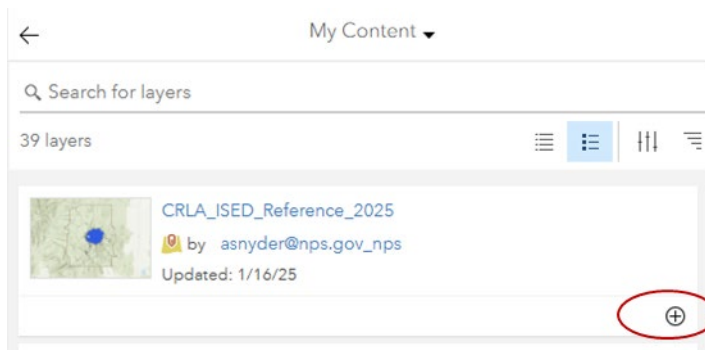
Creating the Web Map

In Content, click on one of the Feature Layer records and select the option to **Add to new map with full editing control**.



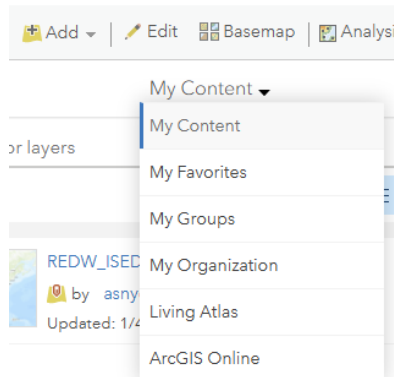
Once it loads, the feature classes are listed in the Contents pane on the left-hand side of the browser, and a zoomed out world map will be in the map pane to the right. Add all the other feature layers to the map by going to the **Add** button, and clicking **Search for Layers**.

The default is to search in “My Content” which should quickly display all the feature layers just published.

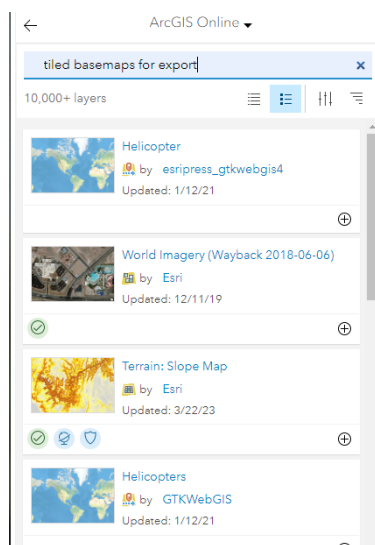


Click the plus symbol next to all layers that need to be added (in this case the Reference and Data_Entry layers). The web map is given an ESRI Basemap by default, which will zoom to the extent of the feature layer. In order for the map to be used offline, a tiled basemap service must be selected instead.

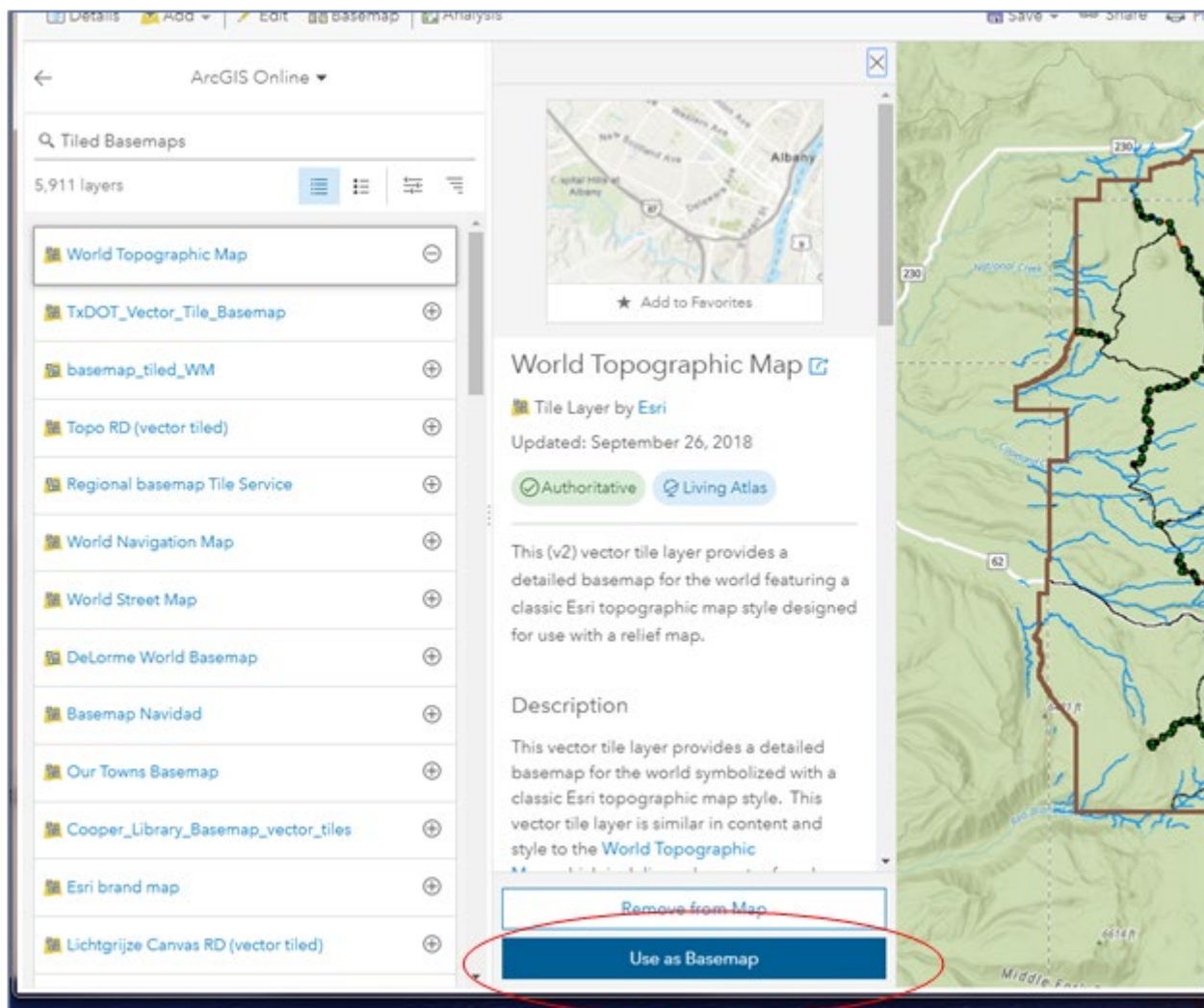
Change My Content to ArcGIS Online.



Then Type “tilted basemaps for export” in the search box



Click the name of a chosen basemap to get more details about it and click the option to **Use as Basemap**.



Please note that clicking on the **Plus sign** instead of the map name, will add the layer but not automatically make it a basemap (this can be done later if necessary by clicking on the **more options** three dots under the layer name in the contents pane, and selecting **Move to basemap**).

This is a good time to save your web map.

Save Map

Title:

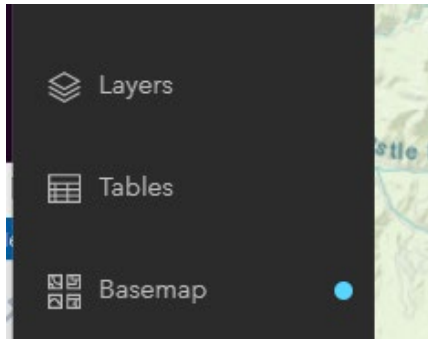
Categories: Assign Category

Tags:

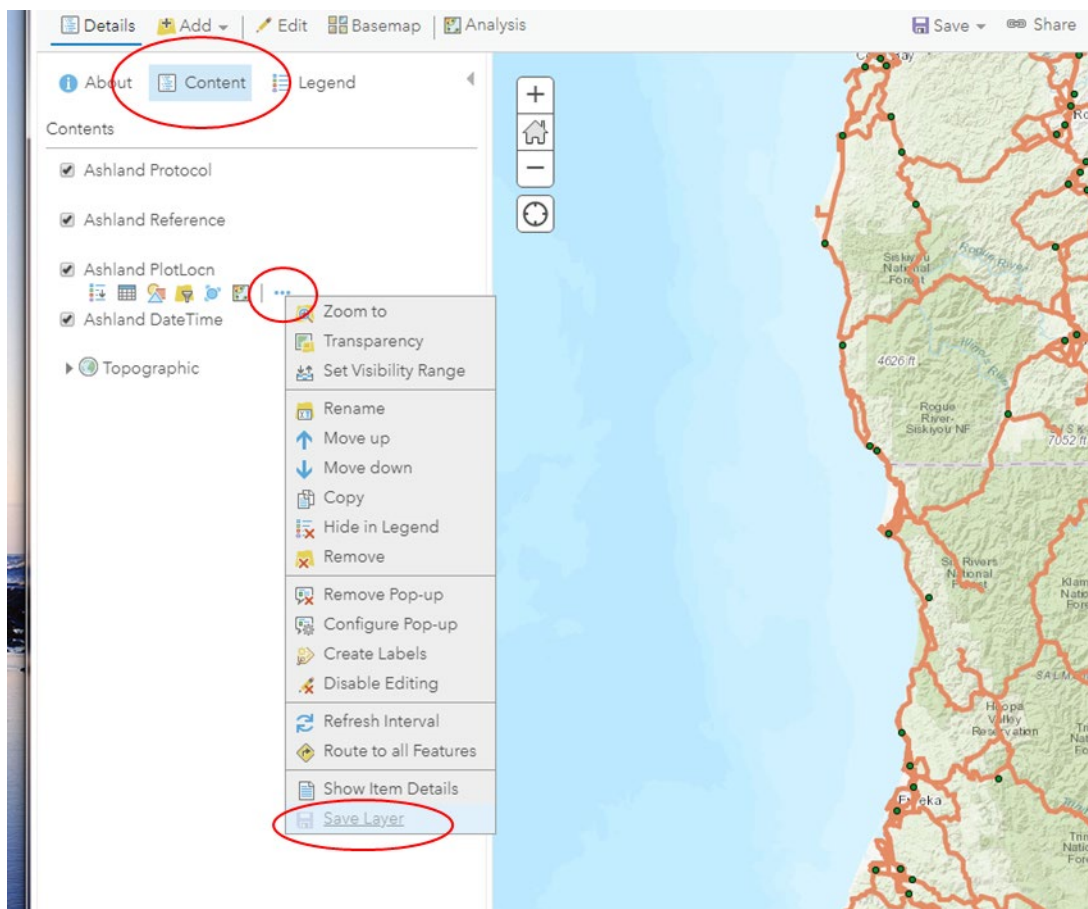
Summary:

Save in folder:

In the black side bar to the left, blue dots show which elements have been edited, and that you need to save:



If ArcGIS Pro was used to publish the map, it is possible that features will not be visible in Collector, even if they are visible in ArcGIS Online. To ensure visibility, open the Web Map and then click “Open in Map Viewer”. Under Content, click the three dots next to the layer and click Save Layer. Be sure to do this for all layers (figure 24).



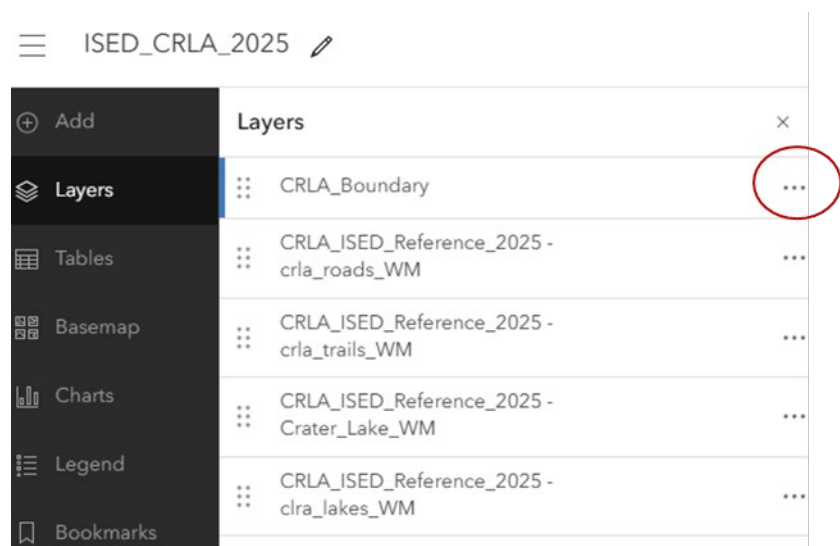
Click **Save** and give the web map a title.

Go to My content and click on the Web Map. Go to **Settings**. If Offline is not enabled, go back and adjust the setting on the Feature Layers.

Customize the Web Map Layers and Popups

Customize the Layers

Where applicable, clean up the layer names to remove the WM part of the name and leave just the feature class name. This is done by clicking on the **more options** symbol of 3 dots on the right of a layer and selecting **Rename**. If the 3 dots and other layer options aren't visible, just hover the mouse over the layer name.

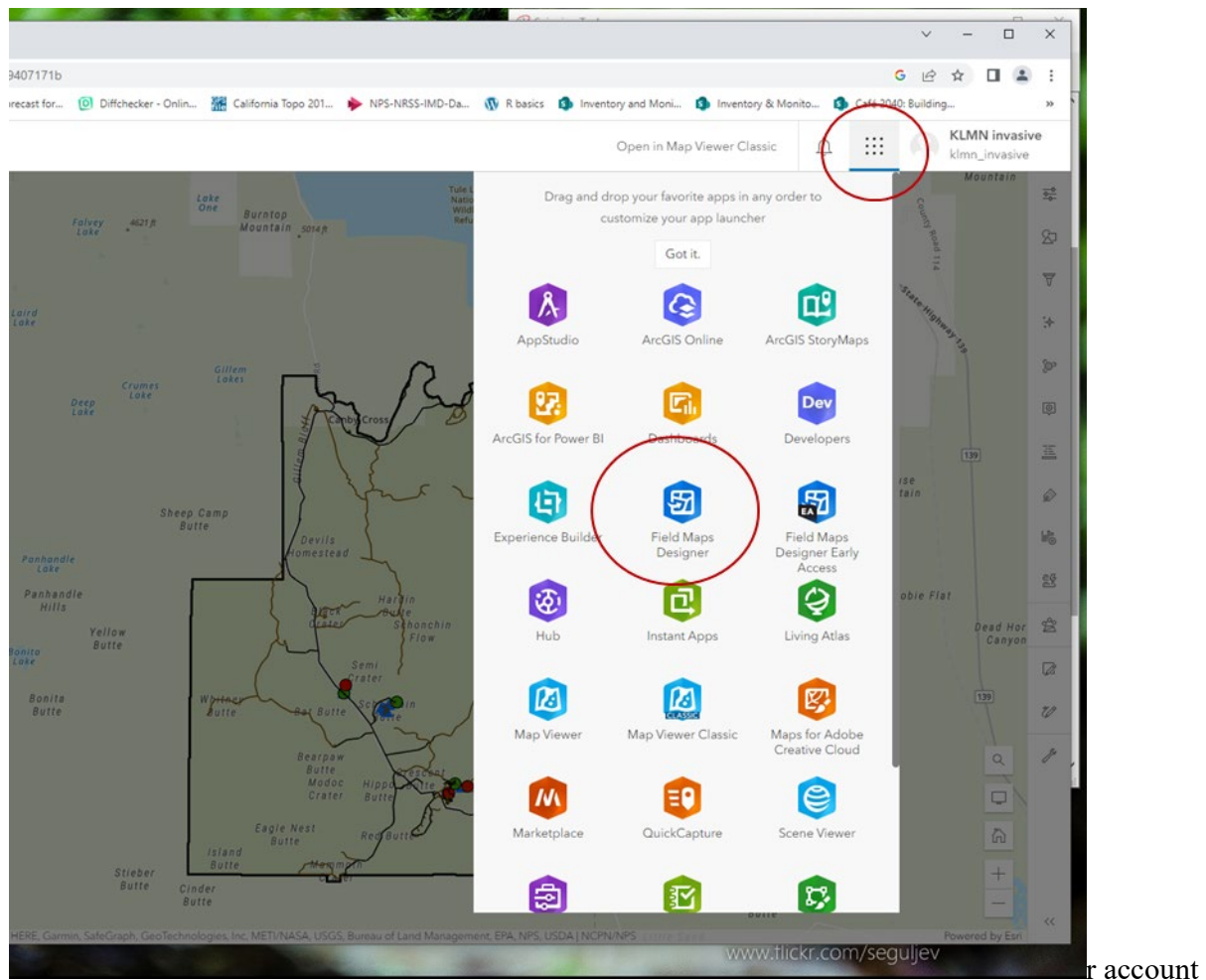


The feature class layers can be moved into an appropriate order if required by clicking the **6 dots to the left of the layer name** and dragging the layer up or down to a new position.

If a layer is accidentally removed, it can be re-added, by searching for layers within your **My Contents**. However, if the layer was part of one of the reference groups, there is no way to add just one layer from that group, as adding the feature layer will add all the feature classes it contains.

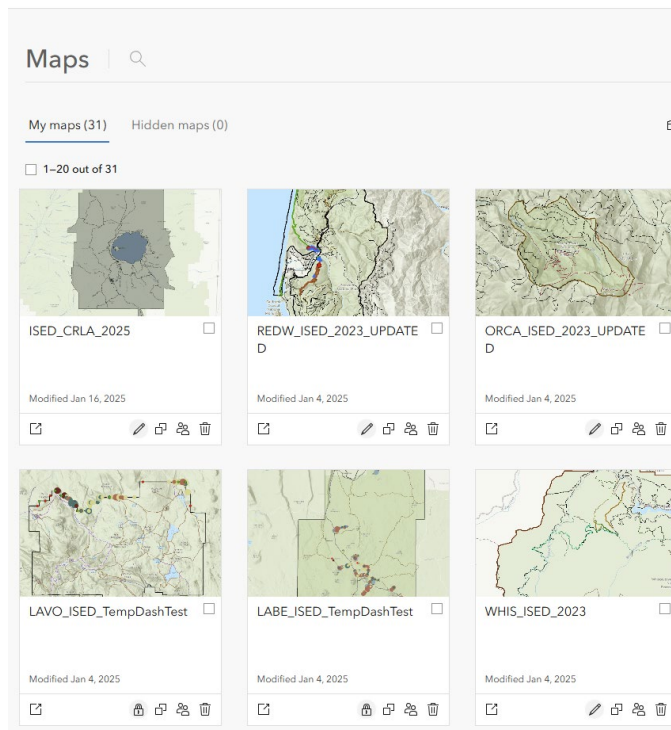
Customize Forms with Field Maps Designer

Data entry forms can be customized using **Field Maps Designer**. Access this by clicking on the 9 little dots next to you



name in ArcGIS Online. You may need to sign in again.

Select the map you want to customize.



When the map opens, select the layer you want to customize from the left-hand side.

On the right-hand side, you will see the Form builder. Click on a field in the form to open the Formatting pane. Here you can edit the **Display name** and check if you want the field to be required.

Form

Templates

Invasive_Start_Stop

RouteStartStop

* Required

Route

* Required

Comments

Effective Detection Distance (m)

* Required

Date/Time

* Required

Properties

Formatting

Display name*

Route

Field name

MonRoute

Field type

String

Input type

Combo box

Description

Field length*

255

Edit list (1018)

Default value

Default values can be set on the Templates tab

Include "No value" option

Logic

Set dynamic behavior with Arcade expressions

Editable

Required

Visible

Calculated expression

Use the following display names for the fields in the Invasive_Start_Stop feature layer:

Field Name	Display Name
RouteStartStop	Route Start/Stop
MonRoute	Route
Comments	Comments
EDSWm	Effective Detection Distance (m)
GPSTime	Date/Time

Use the following display names for the Invasive_Point feature layer:

Field Name	Display Name
SPECIES	Species from Priority List
Species_NonPriority	NonPriority Species
Survey_Date	Survey Date
ExtraArea	Is this an Extra Area survey?

SOP 4-25

GPSUNIT	GPS Unit
PHENOLOGY	Phenology
DISTANCE	Distance from road/trail to infestation (m)
INFESTSIZE	Infestation size (sq. meters)
PLOTINFEST	Percent of area infested
TREATED	Was the infestation treated?
VISITNOTES	Notes
ROUTE	Route
PARK_Unit	Park code

You can also select Edit list to edit Domain values. In the center pane, you can also drag and drop the fields into the order you want.

Go through each Layer to customize forms for each. Be sure to click the Save icon when done.

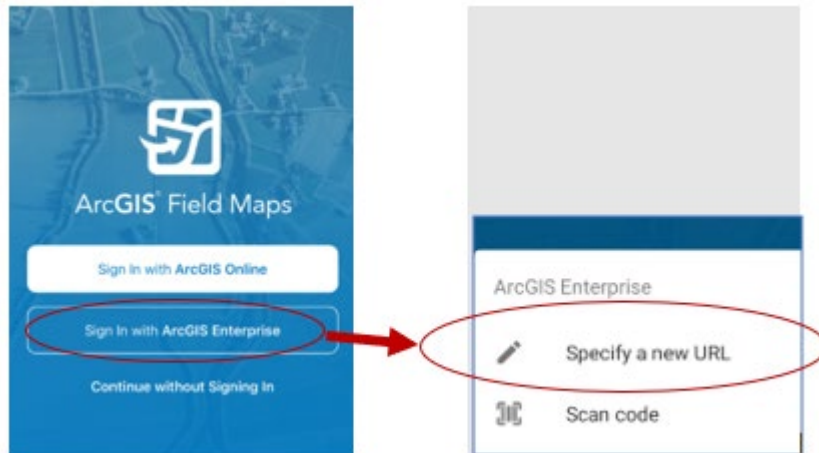
Details about using the web map for field collection can be found in SOP 6. Data Collection and Entry. Details about handling the data in ArcGIS Online after field collection can be found in SOP 6b. Post-Data Collection.

Preparing the Tablet for Field Use

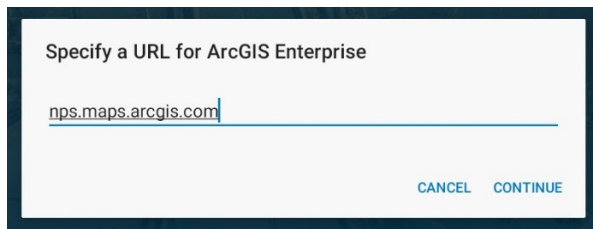
Install Field Maps

If not already done, install the Field Maps app on a mobile device. Contact IT if needed.

When launching the app, sign in by tapping on **Sign in with an Enterprise Account**.



Select Specify a new URL in the popup in the bottom of the screen, then Type **nps.maps.arcgis.com** in the url box in the next pop up window.



Click the National Park Service button.

Install Trimble Mobile Manager

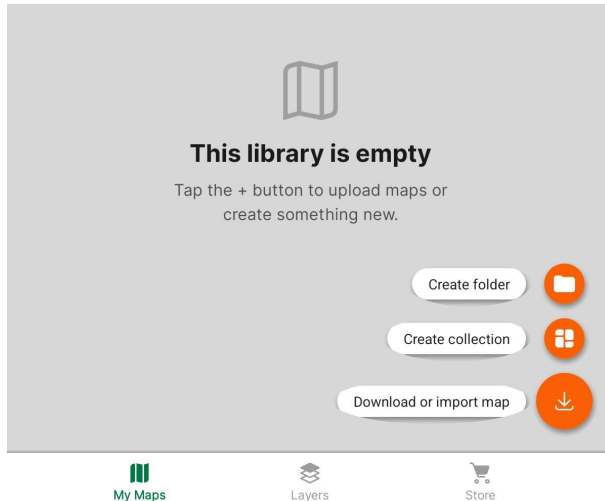
If not already done, download the Trimble Mobile Manager app. See SOP 6. Data Collection and Entry for instructions on using this App.

Install Avenza

If not already done, download the Avenza app. See SOP 6. Data Collection and Entry for instructions on using this App.

Connect the tablet to your computer. Move PDFs to This PC\Galaxy Tab Active5 5G\Internal storage\Documents.

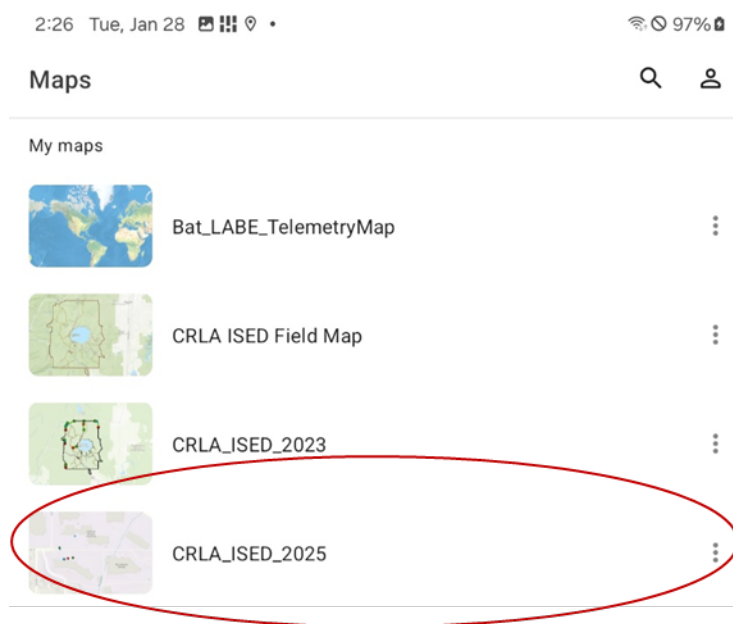
On the tablet, press Download or import map.



Then select Cloud storage or device. Navigate to the Documents folder and select the pdf.

Downloading Maps to Work Offline

Make sure that the tablet is in a place where it can receive sufficient Wi-Fi signal. The first view is of all the web maps that are available to the user who logged in. To search for a specific map, use the magnifying glass to open the search bar. You can also choose to toggle between editable and read only maps.

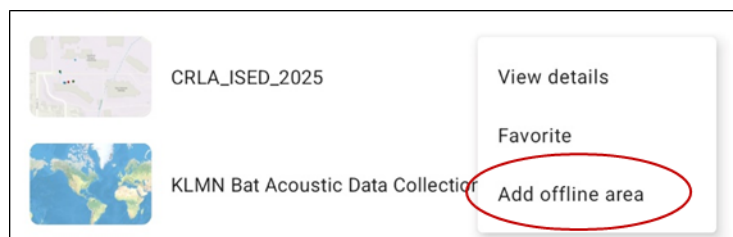


It is best to refresh this view, in case changes or additions to the available maps have happened in ArcGIS Online (AGOL) since the last time Field Maps was opened. This can be done by pulling down slightly on the screen and releasing.

Maps intended for offline use are downloaded from the web and stored locally to the tablet, for syncing back after data collection. To start the process, tap on the **three dots** at the right hand of the webmap icon.

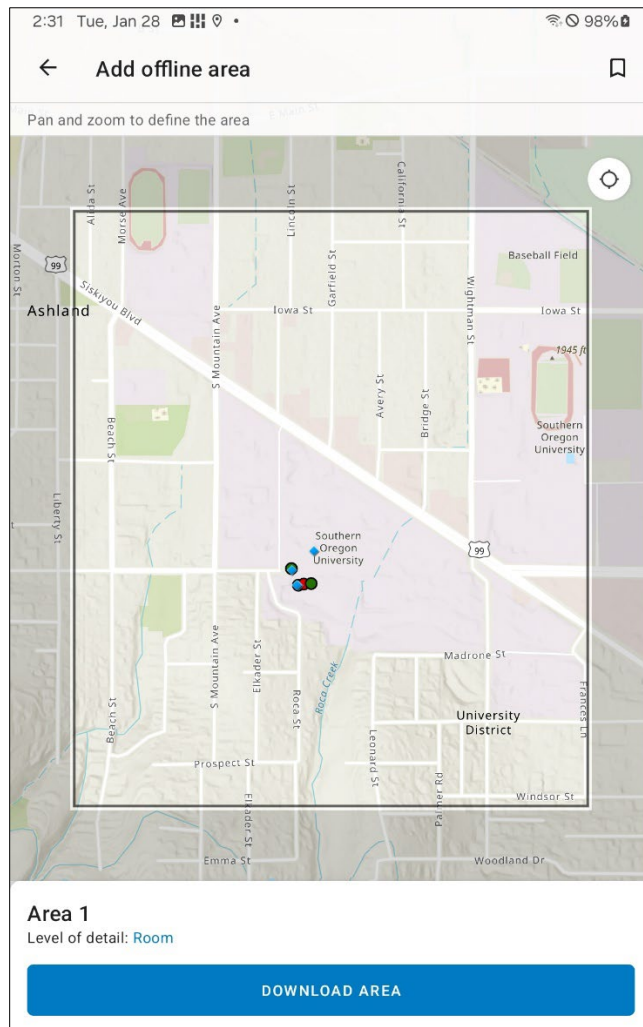


Select **Add offline area**

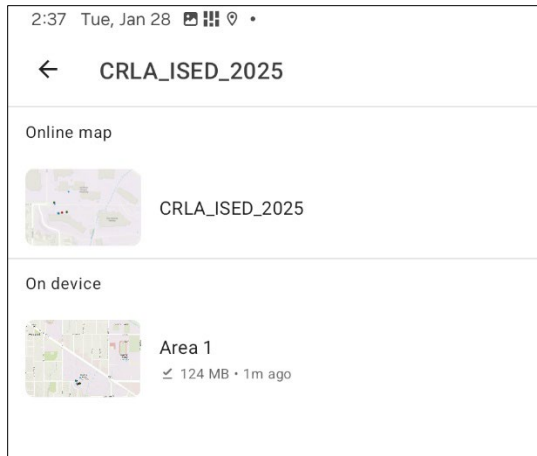


Zoom in or out, and scroll until the entire **work area** fits within the highlighted square on the screen. The highlighted square is the extent of the basemap that will be downloaded to the tablet. When the

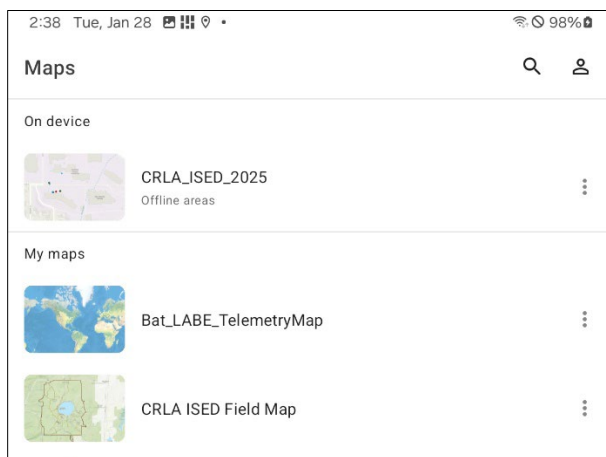
correct area is select, click **Download Area**. Depending on the size of the map it may take quite a while.



Once the download is complete, the new Area will be listed under *On device*. Multiple offline areas can be downloaded. Clicking on the 3 dots next to the offline area icon allows you to rename or remove the offline map.



On the *Maps* page, you will see the words *Offline areas* indicating that there are some offline maps.



Before you head into the field, be sure to turn the WiFi off or put the tablet in Airplane Mode until you are back from the field and ready to sync the data. Ensure you can see/use your maps before leaving the office.