

Wyoming Fence Mapping User Guide

Thank you for spending your time and energy mapping fences with us. This work would be impossible without lots of boots on the ground. We're grateful to have yours.

If you're using the digital version of this guide, you can jump to specific sections by clicking on them in the table of contents below or by following the links throughout the document.



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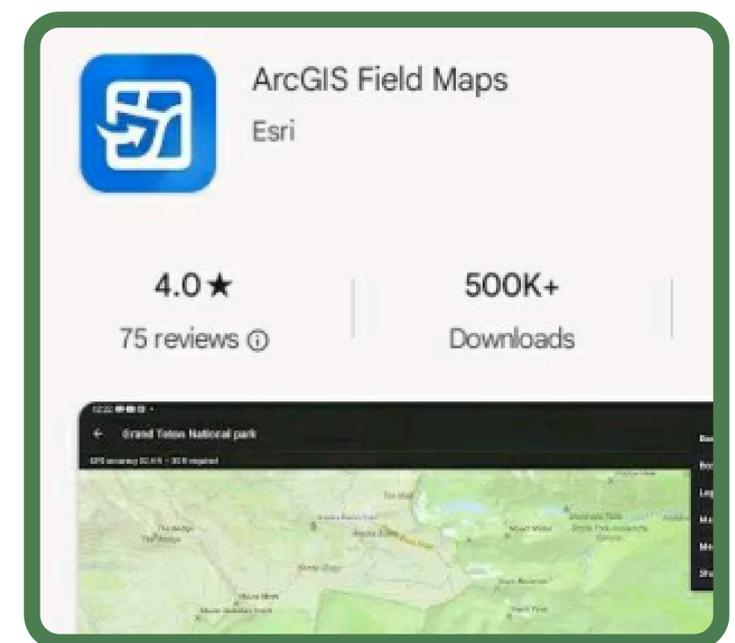
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Getting Started: What you'll need

To get started with mapping fence, you will need three things:

1. The ArcGIS Field Maps app on your smartphone or tablet. The app is free from the app store, and looks like this.>



2. An AGOL (ArcGIS OnLine) account from your organization.

3. Membership to the AGOL group. Please reach out to Jessie Shapiro for access.
(jessie.shapiro@uwyo.edu)

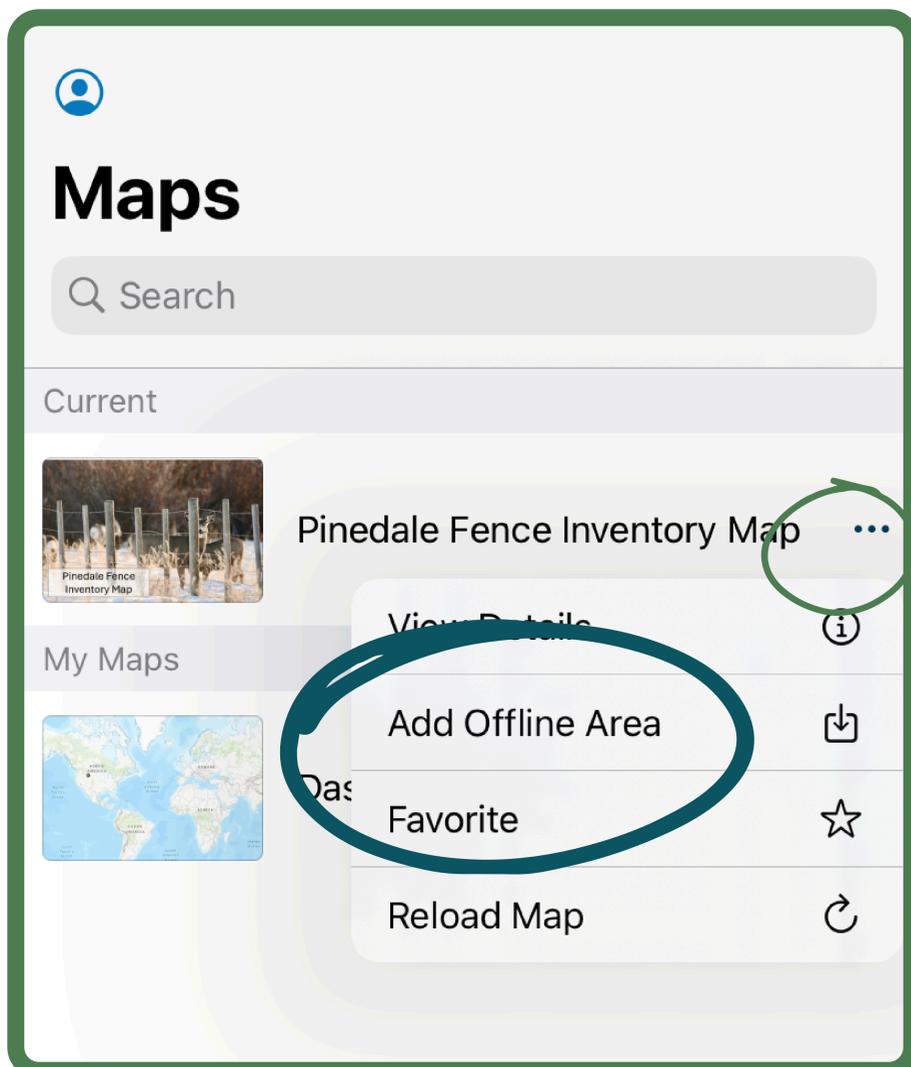
Getting Started:

Working offline

Before you leave service, you will want to download an offline version of the map you need. This will ensure the work you do in the field is saved.

To do this, open the FieldMaps app on your device and log in using your credentials. Upon logging in, the maps that you have access to will pop up.

When you see the map you need, click the three dots on the right of the map's title and select '**Add Offline Area**'.



Note: It is always good practice to click the “Reload Map” button if it pops up as an option. doing so will make sure the map you’re using is the most up-to-date version!

The **“Add Offline Area”** button will bring you to a map with a square in the middle. The area inside of the square depicts which area of the map will be downloaded for offline use.

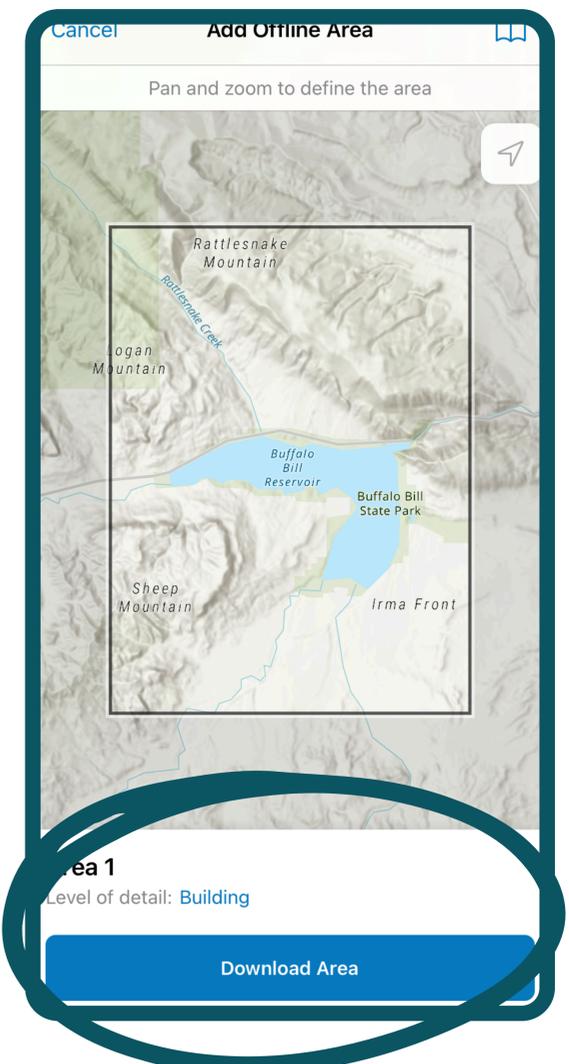
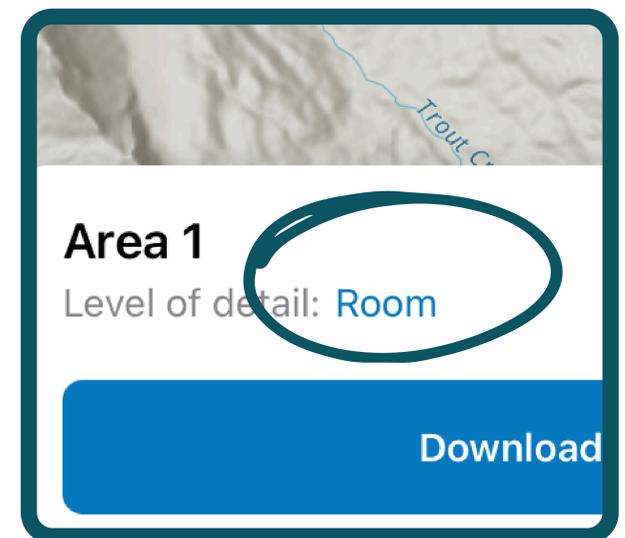
Use two fingers to zoom in and out of the map. To change the size of the download area, click the blue word **“Room”** at the bottom.

- The default setting for download area is ‘Room’, but the setting ‘Building’ is generally a good size area to download.

Once you’ve chosen the right amount of area for your map, use a finger to navigate to the area on that map you’d like to download.

When you feel that the land you’re working on is entirely within the boundary of the square, you can go ahead and click **‘Download Area’**.

In this example, I chose to have the entirety of Buffalo Bill Reservoir in my map.

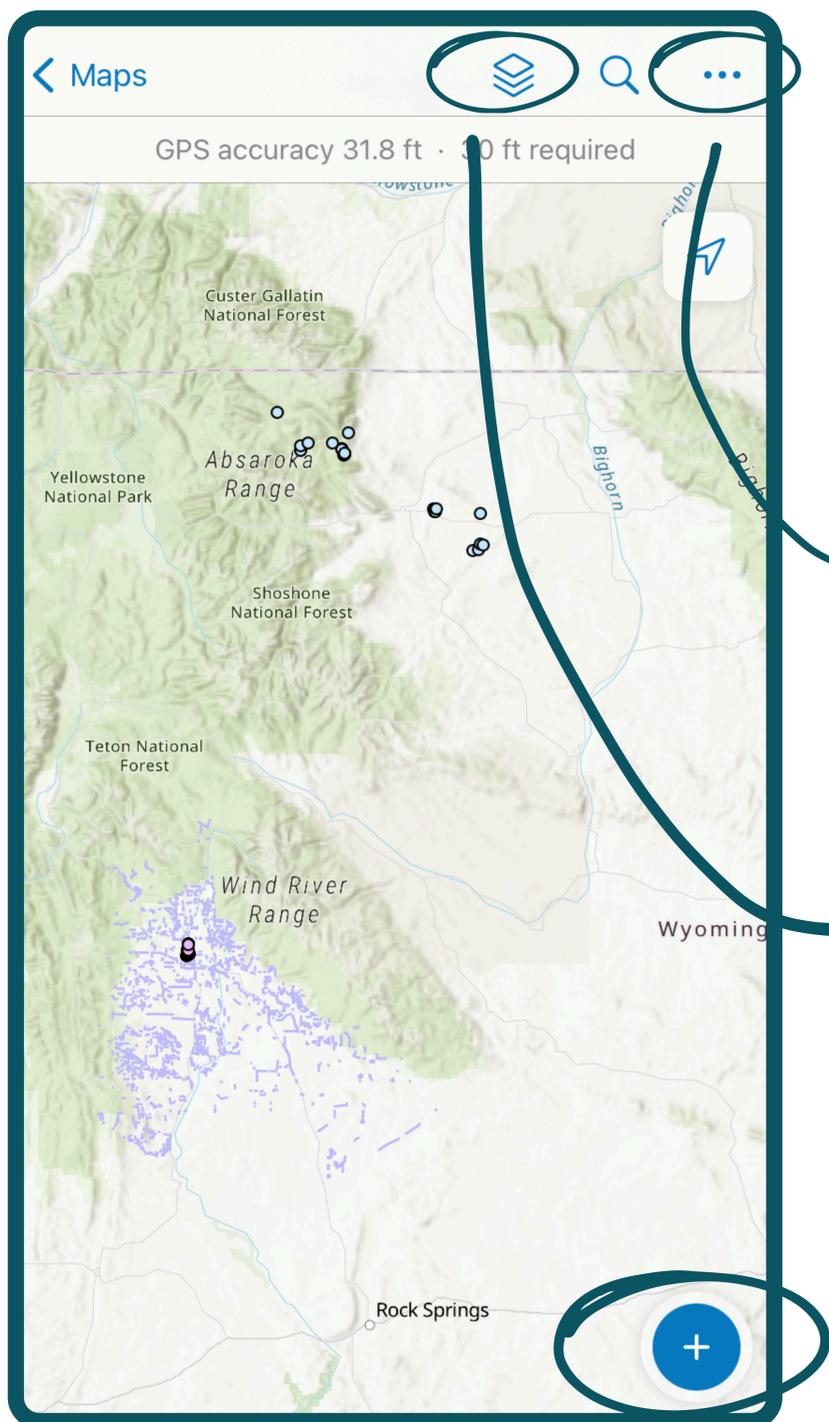


In the Field: Using the map

Open the FieldMaps app on your device. The first thing you'll see is a list of the maps you have access to.

Click on the map for your region. The map will open and zoom in to where you're located.

Note: you will want to have location services turned on for FieldMaps.



From the map page, you can do a few things:

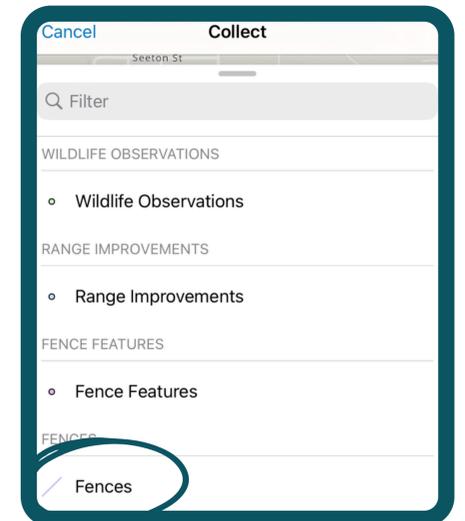
Options: Here, you can change the basemap, draw on the map, view the legend and measure distances.

Layers: Here you will find the layers associated with the data on the map. You can toggle layers on or off to make them visible/invisible.

Add Data: This button gives you several ways to add data to the map. We will go into the details of this tool below.

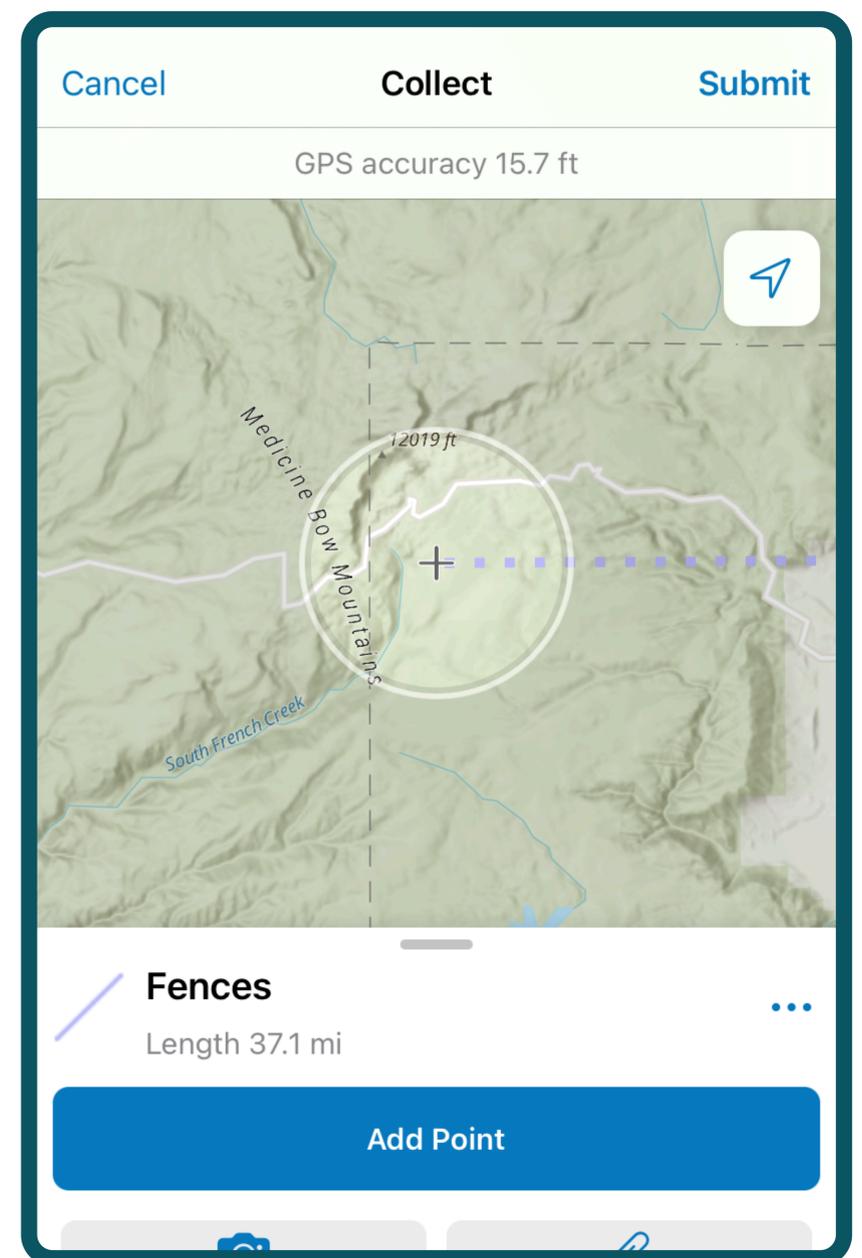
Gathering Data: Mapping a fence

Clicking on the blue button on the bottom right-hand corner of the screen will bring you to a list of options you can choose from to add to the map. We'll start by choosing the 'Fences' option to add a new fence.



To start mapping a fence line, stand at the beginning of the fence or a corner post. Tap the blue **'Add Point'** button at the bottom of the map. The button will briefly flash green.

From there, move to another spot along the fence and tap 'Add Point' again. Draw the whole fence by adding as many points as needed. If the fence is straight, you only need one point at each corner post.



Note: You can also add points in places where you're not standing. To do this, move the map until the point you want to add is below the small crosshairs in the center of your screen. Then, tap the Add Point button. This can be handy if parts of the fence are visible but hard to get to.

Be sure to enter all the attributes you know about the fence (like fence material, material type, condition, organization, etc.) into the correct fields.

Fences
Length 4.2 mi

Take Photo Attach

COLLECTOR INFORMATION

Agency/Organization
Bureau of Land Management

Date of Collection
6/10/25, 12:35 PM

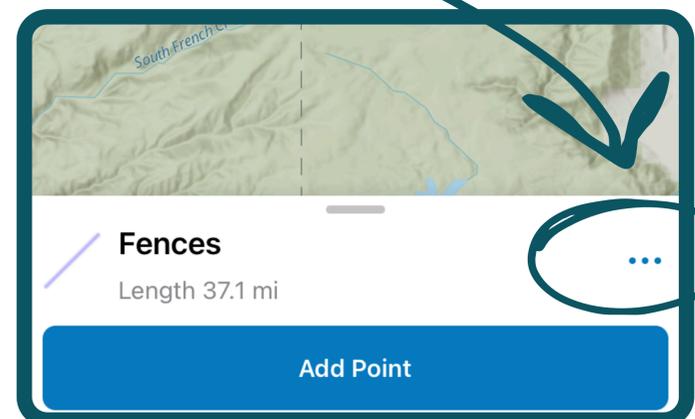
FENCE ATTRIBUTES *

Inventory Status *
No Value

Railtop
No Value

Fence Material
Wire

If you make a mistake, just tap the 3 vertical dots on the right to access the edit, undo, and delete options.

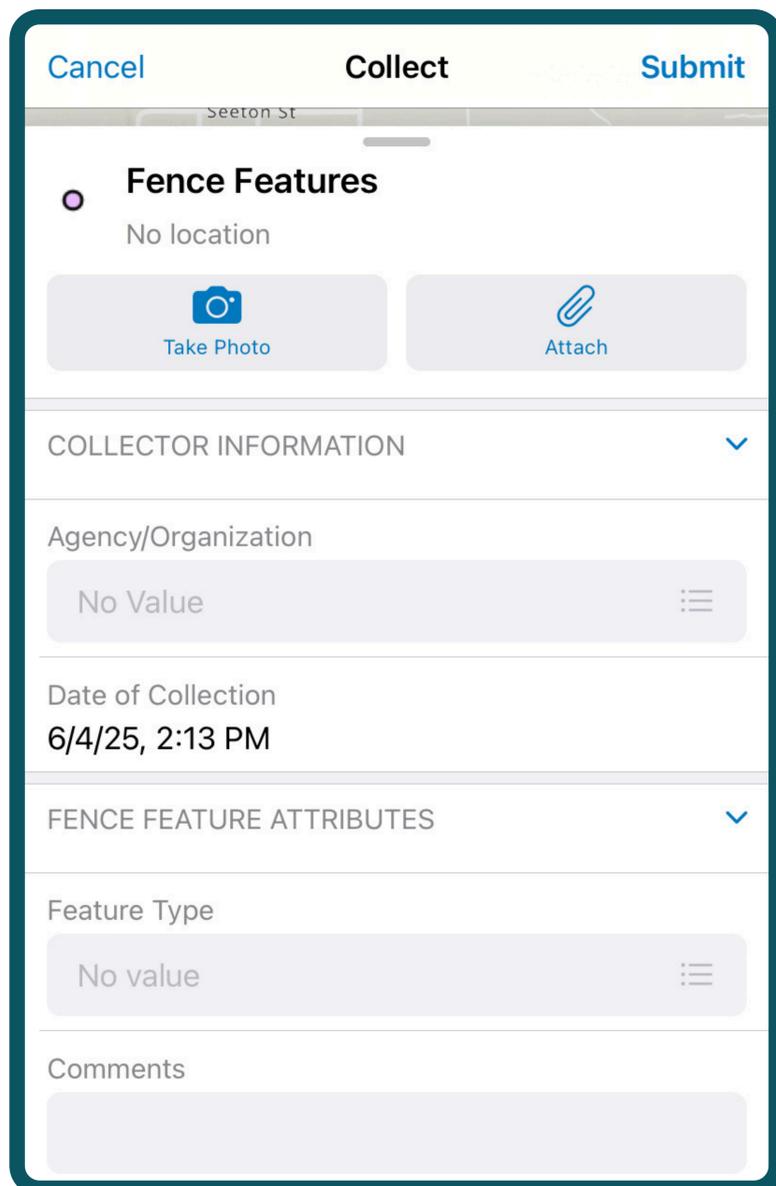


When you're done, click **'Submit'** in the top right corner. That's it. Your fence is now on the map.

Gathering Data: Recording fence features

To record a fence feature, tap the blue plus sign on the bottom right corner of the map. Select 'Fence Features' from the list of data options that comes up.

Whenever possible, record all the braces and gates along each fence line. This information is extremely valuable for planning fence modifications and removals.



The screenshot shows a mobile application interface for data collection. At the top, there are three buttons: 'Cancel', 'Collect', and 'Submit'. Below this is a map showing a location on 'Seaton St'. The main content area is titled 'Fence Features' and includes a 'No location' indicator, a 'Take Photo' button with a camera icon, and an 'Attach' button with a paperclip icon. Below these are two expandable sections: 'COLLECTOR INFORMATION' and 'FENCE FEATURE ATTRIBUTES'. The 'COLLECTOR INFORMATION' section contains a dropdown menu for 'Agency/Organization' (currently showing 'No Value') and a text field for 'Date of Collection' (showing '6/4/25, 2:13 PM'). The 'FENCE FEATURE ATTRIBUTES' section contains a dropdown menu for 'Feature Type' (currently showing 'No value') and a text field for 'Comments'.

Enter all the information about the feature and any comments you may have into the fields.

When you're done, click '**Submit**' in the top right corner of your screen to save the feature.

Unfortunately, you cannot collect fence features and fence lines at the same time.

Some ways to handle this are:

- 1.** As you're mapping the fence, stop and save every time you come to a fence feature. Add the fence feature to the map. Then, tap on the fenceline you just saved and tap the Edit (pencil) icon button at the bottom of the screen. You can now continue mapping the fence where you left off.
- 2.** Map the fenceline first, then go back and add all the fence features along the line.
- 3.** Work with a buddy. One of you maps the fenceline; the other maps the features.

Gathering Data:

Edit existing fences

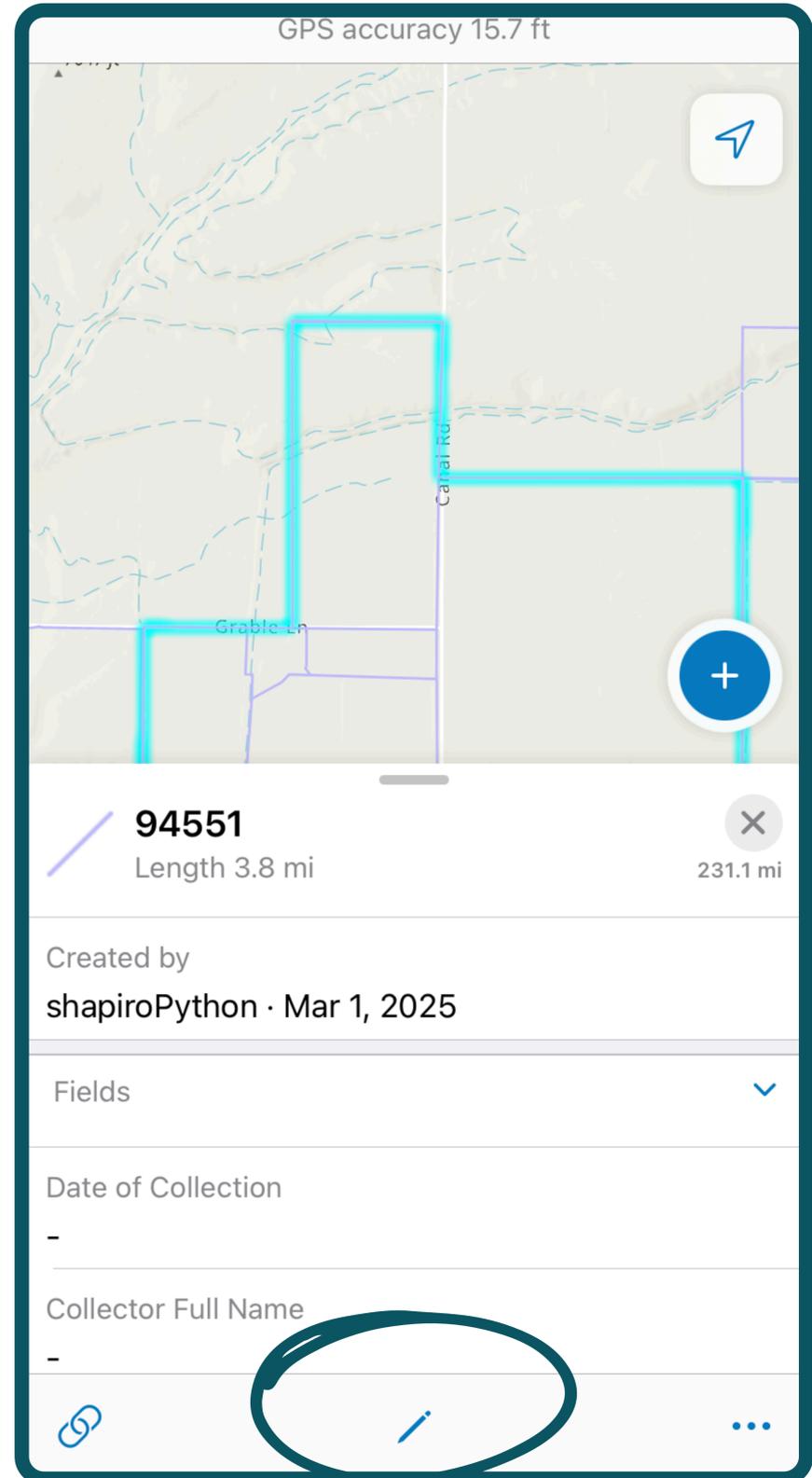
You may need to edit an existing fence if:

- You made a mistake in a fence you just mapped
- A fence is missing information
- The fence type or condition changed

Whenever you come across a fence in the real world, tap the fence on the map to see the information associated with it.

If the fence is missing important data, tap the Edit icon (pencil) in the bottom middle of your screen .

In the following pages, we will go over how to make different types of edits.



To add missing information

You may see incomplete or inaccurate information filled out for a fence line. To correct this, after you tap the Edit icon, add or change information for any of the fields, as you would for a new fence (see [Mapping a fence](#)).

To delete an incorrect fence

If you come across a fence on your map that does not exist in real life, we'd appreciate if you delete it.

Delete a fence:

- 1.** Tap the fence on the map. You'll know you've selected it if it turns bright blue and its information appears at the bottom of the screen.
- 2.** Tap the 3 vertical dots in the bottom right corner. Tap Delete.

To record changing fence types

Sometimes, a single fence will have multiple fence types. For example, a fence may be mostly barbed wire but have a section of woven wire in the middle.

Record this information by mapping the different fence types separately. Use the information in the [Mapping a fence](#) and [Edit an existing fence](#) sections to guide you in mapping each segment.

To collect additional data

In addition to mapping fencelines and features, you can also map the locations of range improvements and wildlife sign. This information is optional but useful. Tap on the blue plus sign to add:

- **Range Improvements** (infrastructure such as stock tanks, polypipe, and salt blocks)
- **Wildlife Observations** (carcass on fences, signs of wildlife crossings, etc.)

Troubleshooting

Discarding changes

If you've made a mistake while mapping or editing a fence and you just want to start over, tap the X at the top left of the screen, and then tap Discard.

None of the changes you made will be saved.

Alternatively, you can save all your changes by tapping the checkmark in the top right corner, then tap on the fence and delete it entirely.

Making a mistake you can't fix

If you made a mistake and you can't fix it, don't worry. Making mistakes is an unavoidable consequence of being human. The only real mistake would be not telling someone that you made a mistake. We have backups and can almost certainly fix the issue.

Just record as much information as you can about what happened - on paper, in a comment of a fence data form, in your phone notes, wherever.

If you're not sure who to share it with, (**email Jessie at jessie.shapiro@uwyo.edu**)

Data Dictionary: Fences

This section will help you with filling out attribute fields of fences, fence features, range improvements and wildlife observations.

Fence Attributes

Railtop

Is there a wooden railing running along the top of the fence? (This could be the case even if the rest of the fence is wire.)



Fence Material

This is the material the fence is made of. Options include:

- Wire
- Wood
- Vinyl
- Electric
- Combo (More than one material, but having a railtop does NOT count).
- Other (Please specify)

Material Type

This is a 'sub-style' of the material type above. The options depend on what the fence material is:

Wire fencing can be:

- Barbed
- Smooth
- Barbed/smooth: fence includes both barbed and smooth wires
- Woven/net: Wires are woven, an example would be a sheep fence.
- Woven Wire Combo: Woven wire (sheep fencing) plus a few more strands of wire (typically barbed or smooth wire strands above the woven section.)



Wooden fencing can be:

- Post and Rail



- Buck and Rail



Vinyl fencing: does not have any sub-categories.

Electric fencing can be:

- Permanent: Solid, deeply buried fencing with posts.
- Temporary: Secured with thin poles, easy to remove.



Combo fencing: Multiple fence type options. You will not often select this, because it's best to map each fence type separately See 'Record changing fence types')

Number of wires/poles

If it's a wire fence, count the number of wires from top to bottom.

If it's a wooden fence, count the number of horizontal poles from top to bottom.

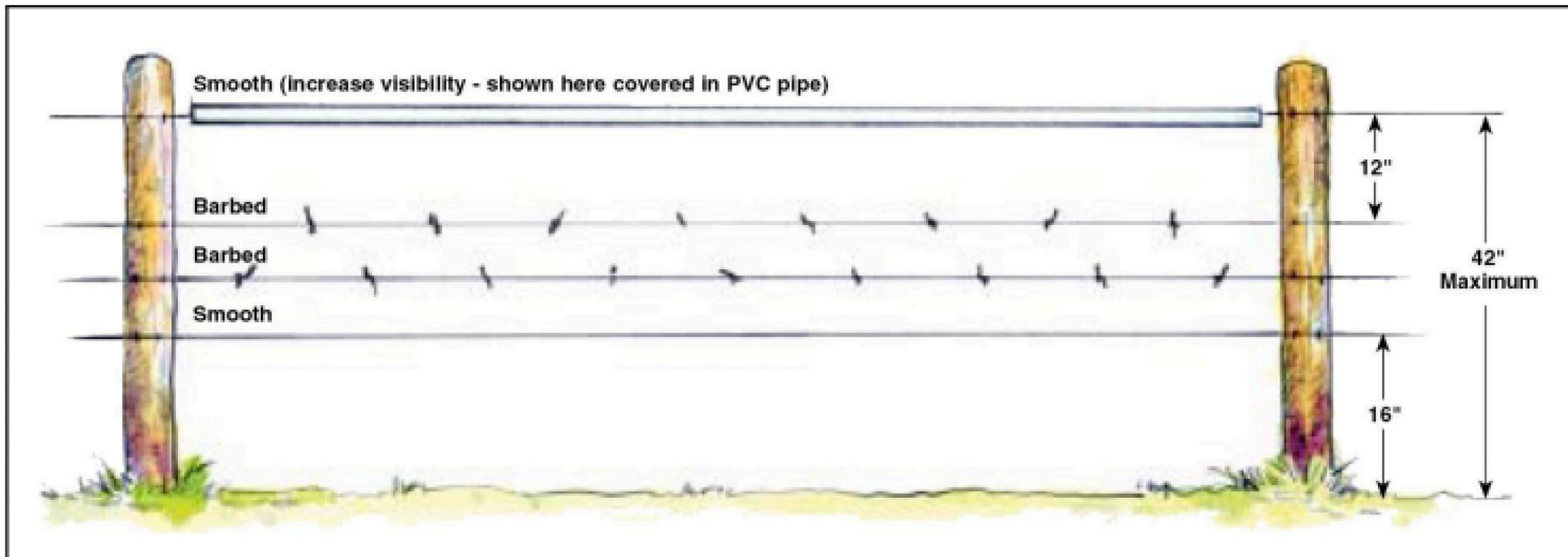
Fence Wire Spacing

These are standard wire spacing specifications that most people use when they build a fence.

The numbers indicate the height of the wire above the ground (in inches), **starting with the bottom wire and measuring up**. The letters denote whether the wire is smooth (S) or barbed (B).

See the illustrated example below.

Note: If you don't have a tape measure, please take a photo of the fence with an object for scale so we can try to estimate the wire heights later.



This fence wire spacing is **16S 23B 30B 42S**

- The first (bottom) wire is **Smooth** and **16"** off the ground - **16S**
- The second wire is **Barbed** and **23"** (# made up for this example) off the ground - **23B**
- The third wire is **Barbed** and **30"** off the ground - **30B**
- The last (top) wire is **Smooth** and **42"** off the ground - **42S**

Tip: You can type into the Filter Fence Wire Spacing box at the top to filter out the options. For example, if you measure the first wire at 16" off the ground, type 16 in the box to only see the spacing options that include that number.

Fence Condition

How well does the fence appear to do its job?

Poor: Cattle can get out of this fence.

-Wires are sagging

-Posts are bent

Fair: Somewhere between good and poor.

-Showing signs of degradation

Good: Cattle cannot get out of this fence.

-Wires are tight

-Posts are in good shape

Project Accessibility

How easy is it for someone to get to the fence so they can work on it?

- Easily accessible by vehicle
- Easily accessible by short (.25 mile) hike
- Other
- Not as accessible as above (not easily arrived to by foot or vehicle)

Project Urgency.

How important is it for this fence to be evaluated for repair, modification or removal?

Time sensitive:

Likely impedes big game movement; high fence/loose wire

- Fence is too high for wildlife to jump, or fence has loose wire/s that animals' legs could get caught in.

OR

Migratory path and/or crucial winter range

- If you're not sure whether you're in a migratory path or crucial winter range, but you think you might be, use the Other category and type more information in the comment box

Other:

Important for some other reason

Not time sensitive:

- The fence is in good shape, doing its job, and not located in any crucial wildlife habitat

Fence Feature Attributes

Feature

The type of fence feature.

Brace: Something more than a single post that helps make the fence more structurally sound.



Cattle guard: a grate in the ground, typically at a fence line where a road intercepts.



Erosional/watershed feature: A wash, gully, creek or canal that crosses the fence.



Gate: a doorway through the fence.

Natural barrier: a natural part of the landscape that acts like a fence (cliff, steep gully, rock formation, etc).



Depending on the feature type you selected from above, you may then see more fields to complete.

Brace type

Horizontal brace: Two vertical posts connected by a horizontal post.
Looks like an uppercase H.



Corner brace: Any brace at the corner of a fence.



Diagonal brace: Vertical posts supported by diagonal posts (as opposed to horizontal).



Double brace: Two H braces right next to each other.



Rock basket brace: A wire basket full of rocks.

Data Dictionary:

Fence Features, Range Improvements and Wildlife Signs

Gate type

Wire: A gate made out of wire that typically has wood sticks for extra support.

Metal: Solid metal gate.

Other

Range Improvements

Infrastructure (or pieces of infrastructure) that indicate some kind of rangeland improvement work has taken place, often related to water management. These include stock tanks, polypipe, salt blocks, or anything related.

Wildlife Sign

Evidence of wildlife interacting with a fence. Please note things like:

blood

**tracks crossing a fenceline,
a carcass on or under the fence**

a whole pile of bones

feathers

chunks of animal hair

scat