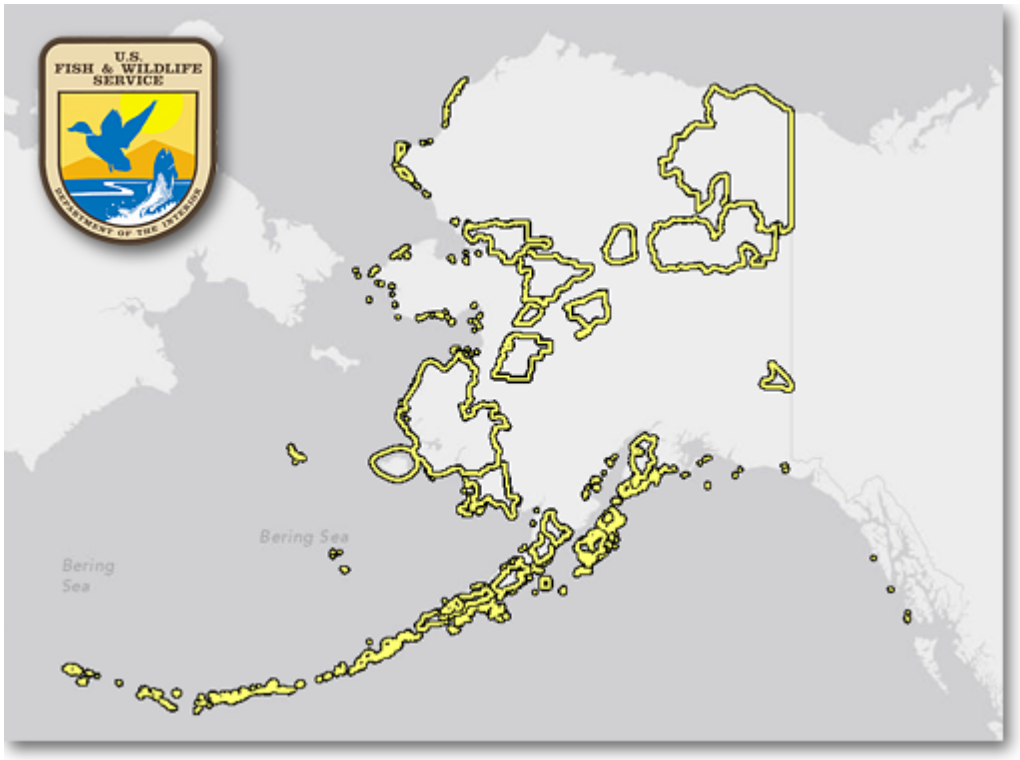
USFWS Region 7 Land Mapper (public version)

Contents

Welcome to the USFWS Region 7 Land Mapper

The U.S. Fish & Wildlife Service's Region 7 (Alaska) Land Mapper is a web-based, near-real-time view of the Region 7 - Division of Realty land status GIS database. This database depicts the surface estate and subsurface estate ownership status within the sixteen National Wildlife Refuges within the State of Alaska.



Geographic extent of National Wildlife Refuges in the State of Alaska

Please take some time to review the various **Help** topics. Of particular importance is an understanding of the land ownership information (refer to the Land Status topic).

If you are unfamiliar with datums and coordinate systems, the coordinate systems and datums topic gives a brief introduction to these important concepts.

If you're like most people and just want to get your work done without spending hours or days wading through technical details, see the Using the Tools and Browse Map Features topics. These provide a quick way to get up-to-speed on using the Land Mapper to accomplish your tasks.

The Region 7 Land Mapper was developed, and is maintained by, the U.S. Fish & Wildlife Service, Region 7, Division of Realty. Questions, comments,and suggestions should be directed to ak_realty@fws.gov

This page was last updated: Monday, August 12, 2024

Ideas for Using the Land Mapper

After starting the Land Mapper and exploring it a bit, you may wonder what you might use it for. Below are a few ideas.

Determine Land Ownership

The primary use of the Land Mapper is to determine land ownership within the National Wildlife Refuges of Alaska. You would need to know this, for example, if you are planning a trip to a Refuge. There are large tracts of privately-owned native corporation land and thousands of privately-owned native allotments within the Refuges. Knowing where you can travel without trespassing on private land is an important aspect of trip planning. Refer to the Other Land Status Resources topic for information on additional sources of land ownership information.

Make a Map for a Specific Area

You can use the **Print** tool to save the map displayed on the screen to a file. You can then print the map and take it with you on your Refuge adventures.

Find Out How Many River Miles it is Between Villages

Maybe you're planning a trip on one of the many rivers within the Refuges. You need to figure out how many miles it is between several villages, so that you can determine how much fuel you'll need to carry on the boat. In this case, you can use the satellite basemap and the Drawing Tools to trace and measure your anticipated river route.

Plan a Fly-in Fishing Trip

You can use the Mapper to help plan your fly-in fishing trip. In this case, you can use the satellite basemap to find lakes of sufficient size for landing and taking off, and which are not within private land. You can use the **Measure** tool to find out if the lake is long enough for a safe landing and take-off.

See How Things Have Changed Over Time

Are you interested in how things have changed through time? Maybe you'd like to see how much glaciers have retreated or advanced over the past several decades. Or maybe you're interested in coastal erosion or lakes evolving into meadows. You can do all of this with the Mapper. Simply go to your area of interest and switch between the topographic basemap and the satellite basemap.

Obtain Topographic Maps from the U.S. Geological Survey

It's always a good idea to have a hard-copy map when you're on a trip. The U.S. Geological Survey is the definitive source for topographic maps of Alaska. In the Mapper, turn on the two **USGS Topo Maps** layers and view your area of interest. Click on the map to see which USGS topo map you'll need, and then click the link in the pop-up box to be directed to the USGS website where you can download the map.

View Guide Use Areas

If you have a Guide Use permit from the Fish & Wildlife Service, you can use the Mapper to get a detailed look at the boundaries of your unit and the land ownership within it. First, turn on the **Guide Use Areas** layer and then switch between the satellite and topographic basemaps to get an understanding of the terrain. Click anywhere within a Guide Use Area to get a pop-up box with additional information, and click the link in the pop-up to download an 8.5" x 11" map of your Guide Use Area.

Download Detailed Land Status Maps for Your Phone/Tablet

The FWS Region 7 Division of Realty has compiled hillshaded topographic geoPDF land status maps for the Alaska refuges that you can use on your smartphone or GPS-capable tablet. You can download these maps from the Land Status Maps topic.

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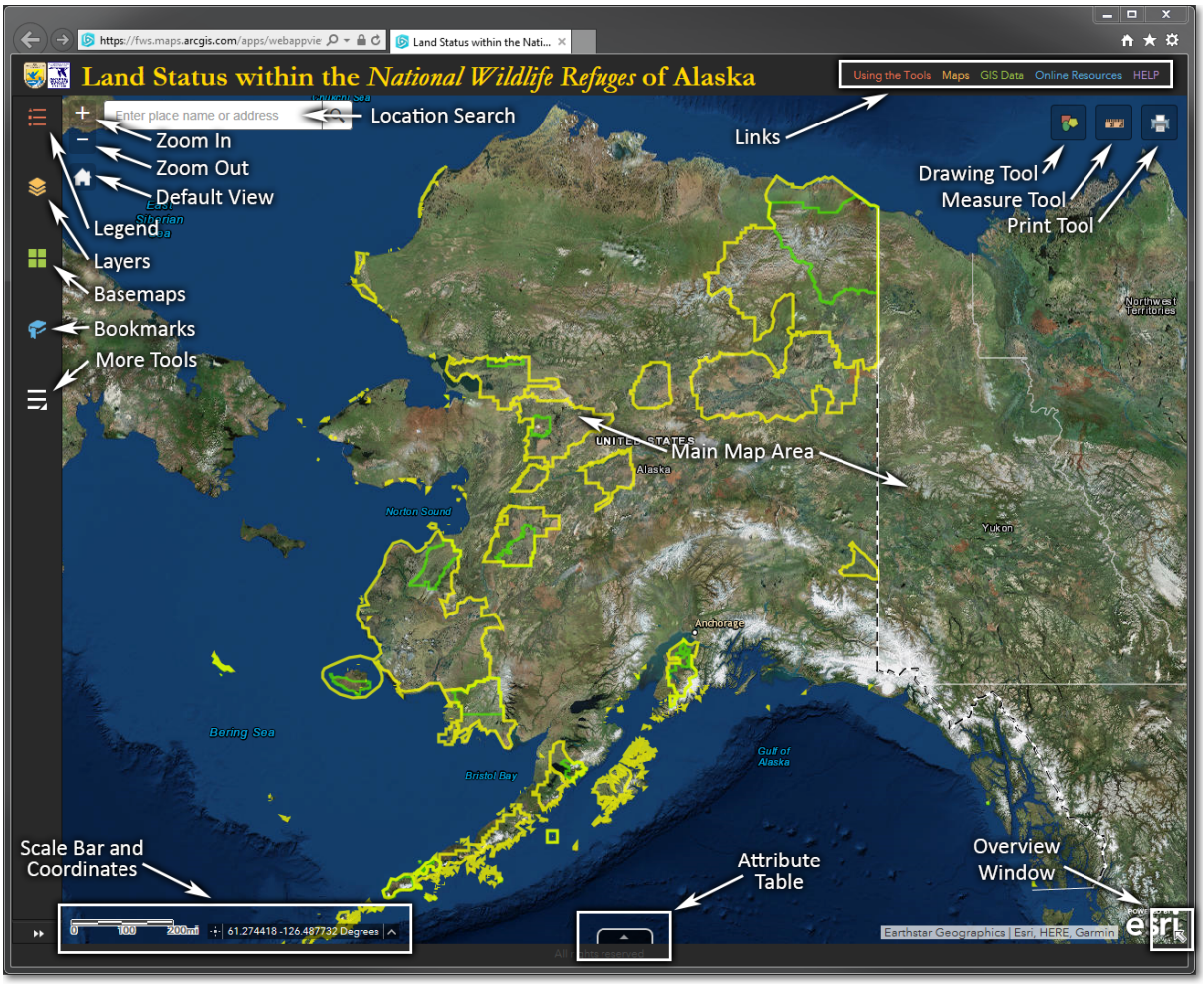
Becoming Familiar with the Land Mapper Interface

While the Mapper has been designed to be intuitive enough to jump right in and start using, it is a good idea to spend a bit of time familiarizing yourself with the Mapper's interface. This will show you how to interact with the Mapper's components and introduce the various tools that are available. Refer to the Using the Tools topic for detailed descriptions of each tool.

The Land Mapper Interface

Below is an annotated screenshot of the Mapper's default appearance when you first open it in a web browser. In this example, it is open in Internet Explorer.



The ***Land Mapper*** shown in its default appearance

The primary components of the Land Mapper are:

Component	**How To Use It**
Location Search	*Enter a place name or an address and press Enter*
Zoom In	*Click to zoom in on the map*
Zoom Out	*Click to zoom out on the map*
Legend	*Click to display the map legend*
Layers	*Click to display the list of data layers that you can turn on and off*
Basemaps	*Click to display a selection of basemaps from which you can choose*
Bookmarks	*Click to display a selection of bookmarks that zoom in on a particular Refuge*
More Tools	*Click to display a list of additional tools that you can use*
Links	*Click the links to view tool information, download maps and GIS data layers, and view the Mapper's **Help***
Drawing Tool	*Click to display pop-up window of drawing tools*
Measure Tool	*Click to display a pop-up window of measuring tools*
Print Tool	*Click to display a pop-up window with various options to save and print*

	the map
Main Map Area	*This is the main display area of the map*
Scale bar and Coordinates	*These update dynamically as you pan around, zoom in, and zoom out; also lets you choose a coordinate system*
Attribute Table	*Click to display the attribute tables of the various data layers*
Overview Window	*Click to display an overview map window*

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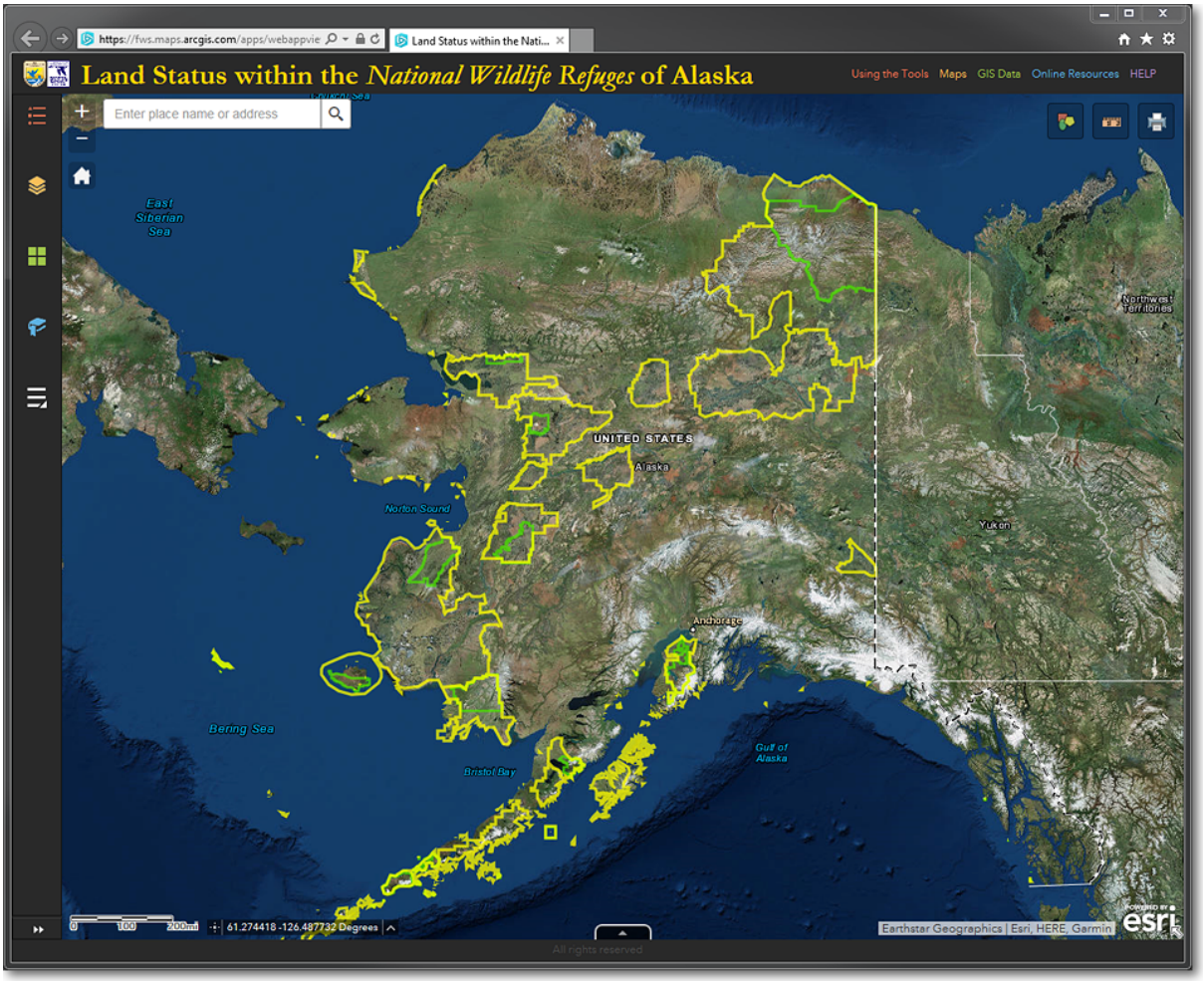
Using the Land Mapper in Full-screen Mode

By default, when you open the Land Mapper in your web browser, the Mapper will be displayed along with all the menus, toolbars, icons, and other interface elements of the web browser. If you prefer to see just the Mapper and its tools, you can switch your web browser to full-screen mode. This will hide the browser's interface elements, leaving only the Land Mapper on-screen.

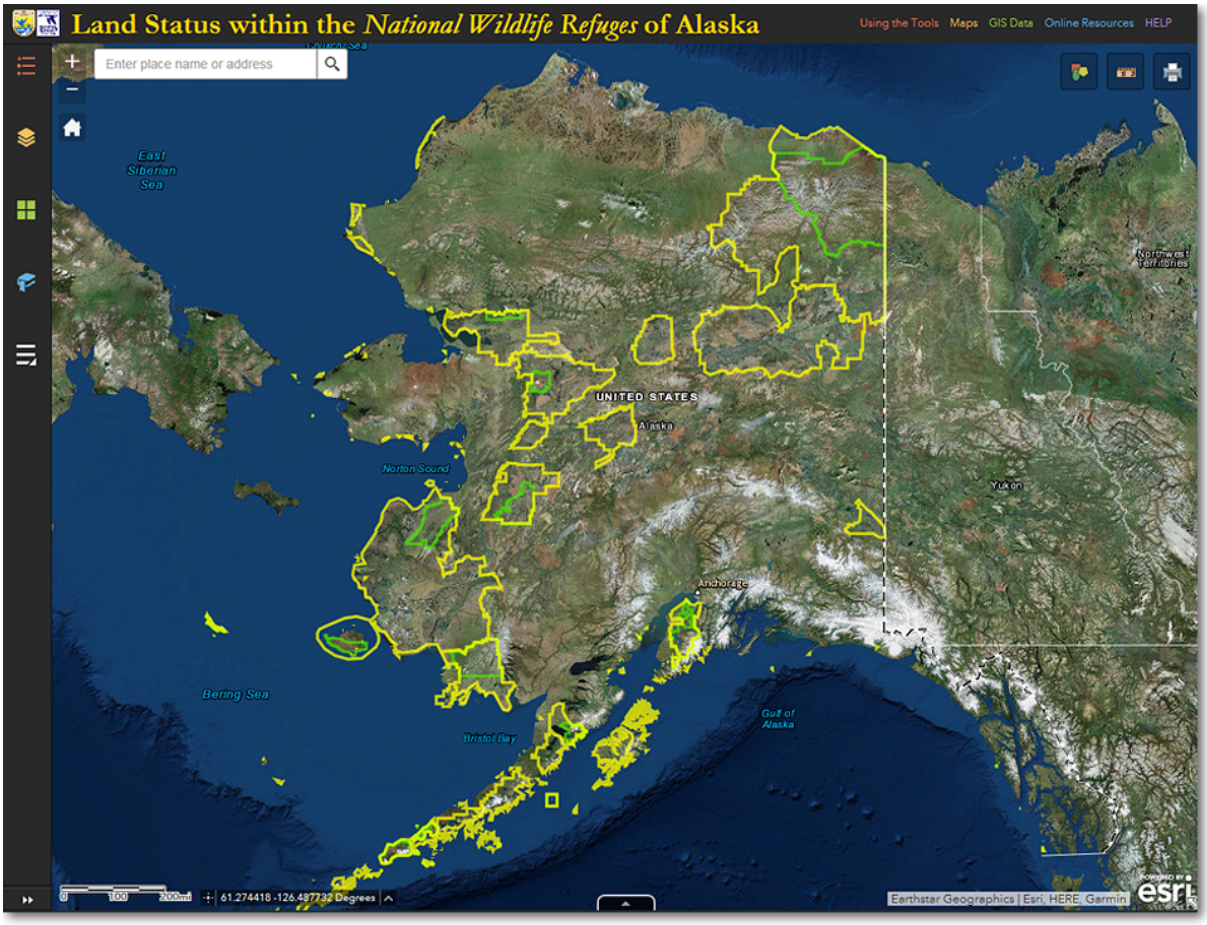
To Switch to Full-screen Mode

1) Open the Land Mapper in your web browser, then press the F11 key on your keyboard.

2) To switch back to the default mode, press F11 again.



The ***Land Mapper*** as it appears in your web browser's default display mode. Note that the browser's
menu, icons, toolbars, and other interface elements are shown.



The ***Land Mapper*** as it appears in your web browser's full-screen display mode. The web browser's
interface is removed from the screen, leaving only the ***Land Mapper***.

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Visibility of Map Layers is Scale-Dependent

The Land Mapper utilizes scale-dependent drawing to display the various map layers. This means that the map layers automatically switch from invisible to visible based on the scale of the current map view. For example, when zoomed out to the extent of the State of Alaska, only a few layers are shown. As you continue to zoom in, more and more layers become visible - keep this in mind when using the Mapper. If you cannot see some layers in the current map view, and you know you've seen them before, it is due to the scale-dependent drawing. Just zoom in and you'll be able to see all the layers.

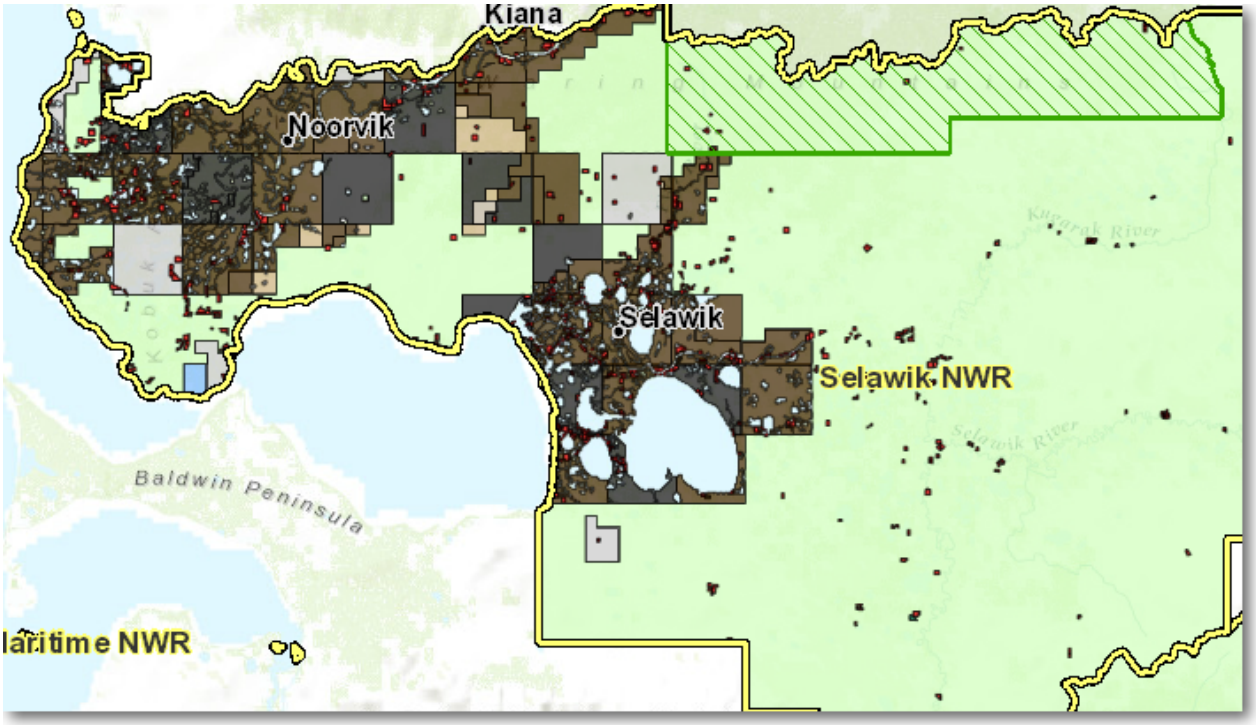
When viewing the Layers panel, those layers which are not active due to the currently-viewed map scale, will have names that are greyed-out. This is an easy way to tell which layers have scale-dependent drawing turned on. As you zoom in on the map, the greyed-out names will be shown in black text when you reach the appropriate zoom level.

Below are a few examples showing the results of scale-dependent drawing.

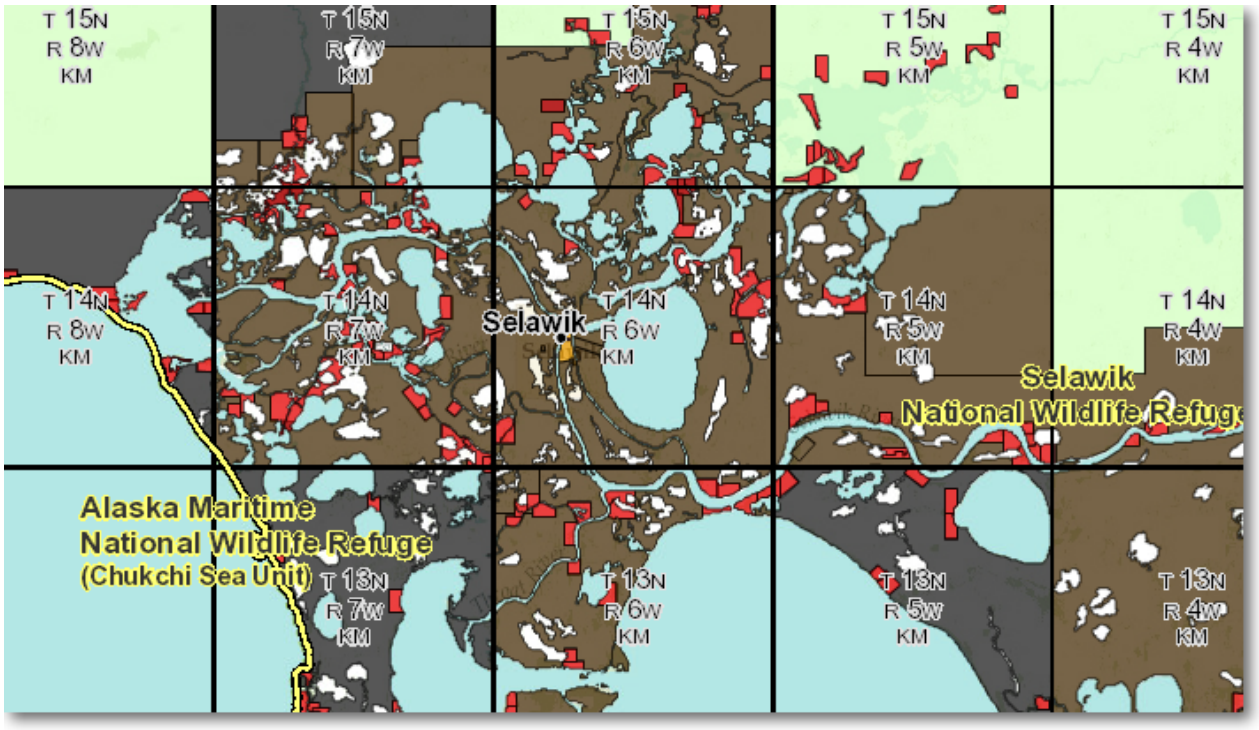
1 to 148,000,000
*Only the **basemap** is drawn*

1 to 74,000,000
*The **refuge boundaries** are now visible*

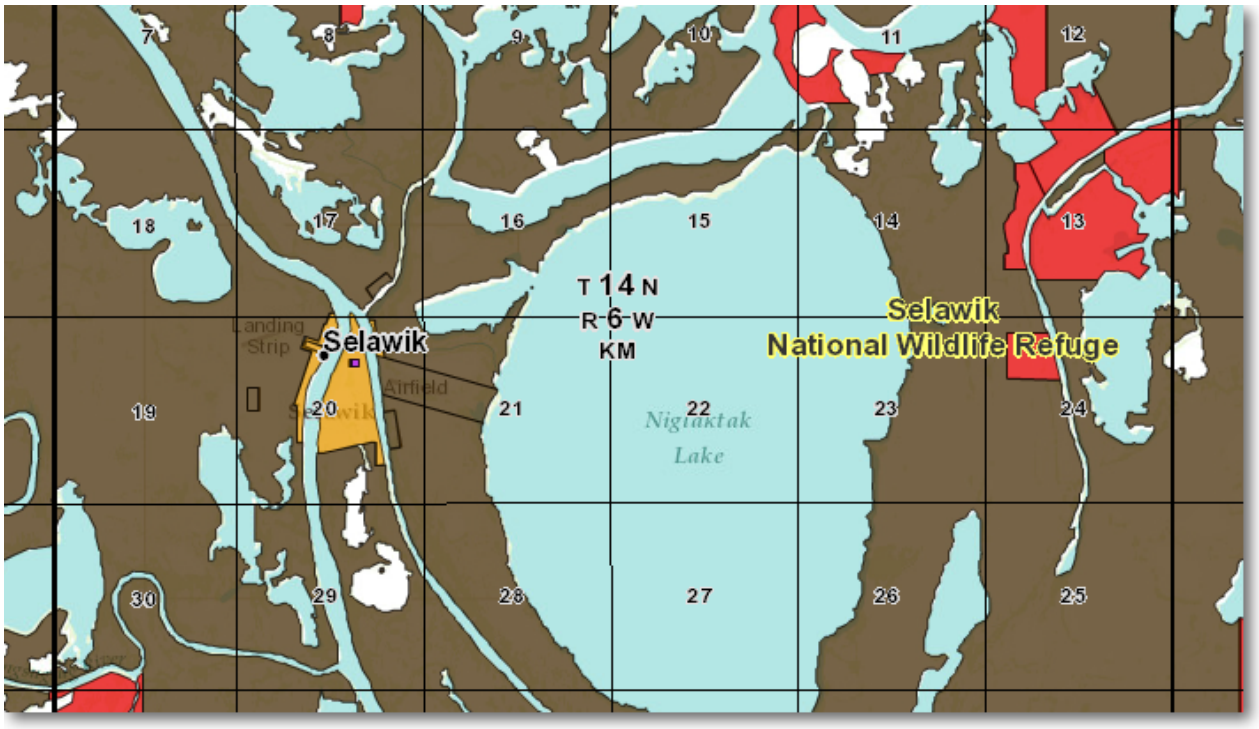
1 to 9,000,000
*The **refuge names** are now shown*



1 to 4,600,000
*Now the **land status** and **towns** are visible*



1 to 600,000
***Townships** are added to the map display*



1 to 145,000
***Sections** and section numbers are shown. All layers are now visible in the map as you pan around*

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Disclaimers

Limitations of Use

The boundaries of public and private lands presented in the Land Mapper are only approximations of their true locations. Except in a few isolated cases, all parcel boundaries were digitized from either paper Master Title Plats, or from on-screen digitizing of MTPs in TIFF format. As such, parcel boundaries shown in the Mapper are not of survey-grade quality and should not be used for legal purposes or be represented as surveyed boundaries. If you require high-accuracy boundaries, consult with the Bureau of Land Management and/or the State of Alaska Department of Natural Resources for official survey plats of the parcels in question.

Data Accuracy

The U. S Fish and Wildlife Service makes no stated or implied warranty that the land status information presented by the Land Mapper is error-free. While the Division of Realty has made every effort to ensure that the land status information is correct, errors may still be present. This may include out-of-date land ownership information, incorrectly represented parcel boundaries, or missing or incorrect acreages.

The Division of Realty updates the land status information monthly, as changes are received from the Bureau of Land Management. Occasionally, the Division may not receive notice from BLM of an update, in which case the land status of a township or townships may reflect outdated ownership information. If you suspect this may be the case for an area you are working with, you can check the update status by comparing the MTP date for a section (or sections) against the MTP date of BLM's current online MTP. If you find an out-of-date township or townships in the Land Mapper, please contact the Division of Realty and we will queue the township(s) for updating.

Mis-alignment of Data Layers

The Land Mapper uses data derived from different sources. These data layers were digitally-compiled by various agencies from various source documents and map scales. As a result, there are instances where you will see what appear to be errors in the position of features in the Mapper.

Acreage Figures

The Land Mapper reports two categories of acreage: legal acreage, and GIS-computed acreage. Legal acreage is the official acreage of a parcel. It is the acreage recorded by a land survey, Patent, Warranty Deed, or other officially-recognized legal document. GIS-computed acreage is calculated based on the dimensions of a digitized parcel, the accuracy of which is dependent on the source and scale from which the parcel was digitized. GIS-computed acreage can not be represented as the official, legal acreage of a parcel; it is only an approximation and is subject to change.

The National Wildlife Refuges in Alaska encompass all public land and Federally-reserved water within external boundaries that were established by the Alaska National Interest Lands Conservation Act (ANILCA). The ANILCA boundaries have not been surveyed, and likely never will be surveyed. Thus the GIS-computed acreage provides the best approximation of Refuge land and water that is available. When reporting Refuge acreage, you must also note that the acreage is not derived from a legal survey or other legal document, but rather is a GIS-computed approximation.

Private Land

The primary objective of the Land Mapper is to provide information about the location of public and private lands within the National Wildlife Refuges within the State of Alaska. Although private lands within the external Refuge boundaries are identified in the Mapper, this does not in any way permit or authorize the entry or use of such lands without the land owner's expressed permission.

It is the user's responsibility to ascertain their position with respect to public versus private land. The U.S. Fish and Wildlife Service shall therefore not be held accountable or responsible for any possible trespass on private land by users of the Land Mapper.

If you desire, or need to access private land, you must first contact the land owner for permission. To determine ownership, use the Mapper's links to online land ownership resources. These links access the Bureau of Land Management's official land records, as well as the State of Alaska, Department of Natural Resources Recorder's Office.

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Help in Other Formats

If you prefer to have the R7 Land Mapper Help in a format that you can download to your device, we have provided the Help in the following formats. Click on a format to download it.

Microsoft Windows Help Format (.chm)

Adobe PDF (.pdf)

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Before You Begin

Before you get too wrapped up in working with the Land Mapper, it's a good idea to glance over a few things that will make using the Mapper easier and more efficient. These topics are listed under ***First Things First*** and will give you a background understanding of the land status layers that are contained in the Mapper, as well as a basic understanding of key geographic concepts such as datums, projections, and coordinate systems. It is also a good idea to read the topic about how the Mapper interacts with your web browser and Internet connection. Following are a few additional things to consider.

The Land Mapper is a *Viewer*, Not a Full-featured GIS

This version of the Land Mapper is intended to be a user-friendly tool for viewing the land ownership within the Alaska National Wildlife Refuges. As such, it provides read-only access to the land status database - web-based editing of the underlying GIS data is not supported, and there are no future plans to enable web-based editing functions. Additionally, many abilities of a full-featured GIS are not currently present in the Mapper. However, as with all things computer-related, newer software versions typically provide increased capabilities and functions. As new software versions are released, they will be evaluated with respect to enhancing the functionality of the Mapper.

Future Data Layers

Currently, the Land Mapper is focused on the surface and subsurface estate land status. However, it is flexible enough to accommodate additional data layers, such as USFWS administrative sites, ANCSA 17(b) public easements, and visitor facilities. These layers will be added in future updates of the Mapper, as time and resources allow.

Software Platform

The Land Mapper has been built using ESRI's ArcGIS Online system, which utilizes Javascript and HTML 5 to provide universal access on many types of devices. The Mapper can be used with any device or web browser that can connect to the Internet. However, note that although the Mapper can be viewed on a tablet or phone, the Mapper is designed for viewing on a larger screen. The Mapper's usability on a low-resolution monitor or small-screened device will be greatly impaired.

Tips and Warnings

Tips and ***Warnings*** - if applicable to a topic - are displayed at the bottom of the pages. Be sure to scroll to the bottom of a page to see if these apply to the topic you're viewing.

This is a Helpful Tip - it provides supplementary information that you may find useful

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This is a Warning - it provides information that you need to know

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About the Land Mapper and Internet Connection Speeds

The Land Mapper accesses land status and other information that is stored in, and served from, ESRI's ***ArcGIS Online*** platform. The vector-based land status layers are approximately 4 GB in size, while the raster-based base maps can be anywhere from several hundred gigabytes to a few terabytes in size.

Because the Mapper is a web-based application, it uses your Internet connection to access huge datasets which are stored online. Even with the fastest gigabit connection, displaying a terabyte-size raster basemap in your browser would be unreasonably slow. The solution to this problem is to break up the data into smaller chunks, and for the browser to request only the chunks of data that are in the current display extent. These chunks, called tiles, are 256 x 256 pixels in size and are referenced by a row and column scheme. This is analogous to the rows and columns in an Excel spreadsheet, with each tile corresponding to a cell in the spreadsheet.

When you pan around the map and zoom in and out, your web browser requests the data it needs from the data servers. The request is for only those tiles within the current map display extent. Whatever is off-screen is ignored. This approach decreases the time needed to draw the map on the screen. To speed things even further, your web browser utilizes a cache. This cache is a temporary repository for data which has already been requested and displayed by the browser. It's purpose is to increase the apparent speed of your browser by supplying previously-requested data whenever you pan or zoom to a location you have already viewed in the Mapper. The increase in speed is due to the fact that accessing data from your local hard drive is significantly faster than accessing the same data via your Internet connection.

The More You Use the Mapper, the Faster it Becomes

The first few times you use the Land Mapper, it may seem unbearably slow, particularly if you have a slow Internet connection. Connections that rely on a series of satellites, as is typical with Internet connections in rural Alaska, will seem especially slow. Unfortunately, there is nothing the Division of Realty or your web browser can do about this. But all is not hopeless. Try zooming in to various scales, as this sometimes make the data layers load quicker. Additionally, the more you use the Mapper - panning around and zooming in and out - the more tiles will be cached on your hard drive. When you re-view an area you have previously viewed, your browser will utilize the cached tiles from your hard drive, and this may dramatically increase the responsiveness of the Mapper.

Web Browsers and the Cache

The Land Mapper has been tested in, and will work with current versions of Internet Explorer, Google Chrome, and Mozilla Firefox. Its functionality and appearance are identical in each of these browsers. Because the Mapper is based on Javascript and HTML 5, it will also work with other web browsers and mobile devices that can connect to the Internet.

Under normal use, you usually don't need to be concerned about your web browser's cache. However, there may be times when you need to clear the cache. This may be necessary if you are having computer problems or if you need to recover hard drive space by deleting temporary files. Uninstalling and reinstalling your web browser will also clear the cache. Clearing the cache has no effect on the functionality of the Land Mapper - after clearing the cache, the Mapper will work as expected. The only effect that clearing the cache has is that it deletes any cached tiles stored on your computer, thus when you start using the Mapper again, it will be a bit slower, as it has to download the tiles from the Internet again.

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A Geodesy Primer

Geodesy is the science of measuring and monitoring the size and shape of the Earth. Although it is a field of science that most people never encounter in an academic sense, it is one which affects everyone in a practical sense. Without geodesy...

- We could not figure out precisely where we are
- Accurate maps would be impossible to make
- GPS navigation would lead you astray
- ...and other horrible stuff

The ability to accurately determine locations on the surface of the Earth is fundamental to GIS and GPS, and this is accomplished by using various datums, map projections, and coordinate systems. When working with the Land Mapper, or any geographic data, it is essential to have a basic understanding of these concepts.

The discussion below will give you a basic understanding of essential geodesy concepts. To learn more, refer to the ArcGIS Help Library.

Datum - What is it?

Simply put, a datum is a set of numbers that define the shape, size, and position of an ellipsoid which best approximates the true surface of the Earth, either locally or globally.

Ok, what's an ellipsoid?

Consider a bowling ball. It is a sphere. That is, its equatorial radius of 4.25" is the same as its polar radius. If you could spin a bowling ball so fast that centrifugal force were able to deform the ball, its equatorial radius would be slightly larger than 4.25" and its polar radius would be slightly less than 4.25". The result would be a sphere that appears to be squashed, similar to what would happen to a round balloon if you squeezed it from both sides simultaneously. This flattened shape is called an oblate spheroid (basically, a three-dimensional ellipse). The example of the deformation of the spinning bowling ball is exactly what happens to the Earth - its rotation about the polar axis causes an equatorial bulge, with a resultant flattening at the poles.

The Earth represented as an oblate spheroid
(scale is greatly exaggerated)

So, what is the "set of numbers that define the size, shape, and position of the ellipsoid"?

An ellipsoid can be mathematically described by four parameters: semi-major axis (the equatorial radius), semi-minor axis (the polar radius), the degree of flattening, and the ellipsoid's position with respect to the center of the Earth. For example, here are the parameters for several datums that are commonly used in the United States:

Datum	NAD27	NAD83	WGS84
Ellipsoid name	Clarke 1866	GRS 1980	WGS 1984
Semi-major axis (meters)	6,378,**206.400**	6,378,**137.000**	6,378,**137.000**
Semi-minor axis (meters)	6,356,**583.800**	6,356,**752.314**	6,356,**752.314**

Inverse flattening	0.0033**9008**	0.0033**5281**	0.0033**5281**
Eccentricity squared	0.006**76866**	0.006**69438**	0.006**69438**
Datum type	Local (N. America)	Local (N. America)	Global

You can see that there are slight differences in the values (indicated by bold type). The position of the ellipsoid with respect to the center of the Earth (indicated by the *eccentricity*) also varies among datums. The Clarke 1866 and GRS 1980 ellipsoids are positioned such that the surface of the ellipsoid better matches the North American continent. These are local datums, because they are optimized for use only in a certain part of the world. Conversely, the ellipsoids of global datums such as WGS84 are positioned to be closer to the center of the Earth, which gives the best approximation of the Earth's surface on a global scale.

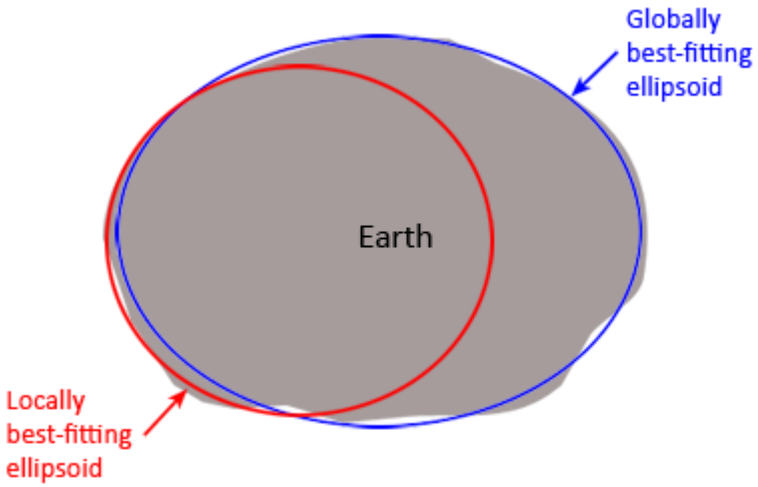


Illustration of the differences between local and global datums. The ellipsoid for a global datum is sized and positioned to best represent the surface of the Earth on a global scale. Local datums have their ellipsoids sized and positioned to better match a particular region of the Earth.

So the ellipsoids are different. Why does this matter?

All geographic coordinates (latitude and longitude) are derived from an ellipsoid. And since the ellipsoids have different numerical values, a latitude and longitude value for a particular datum will not have the same value in a different datum. Consider the following example:

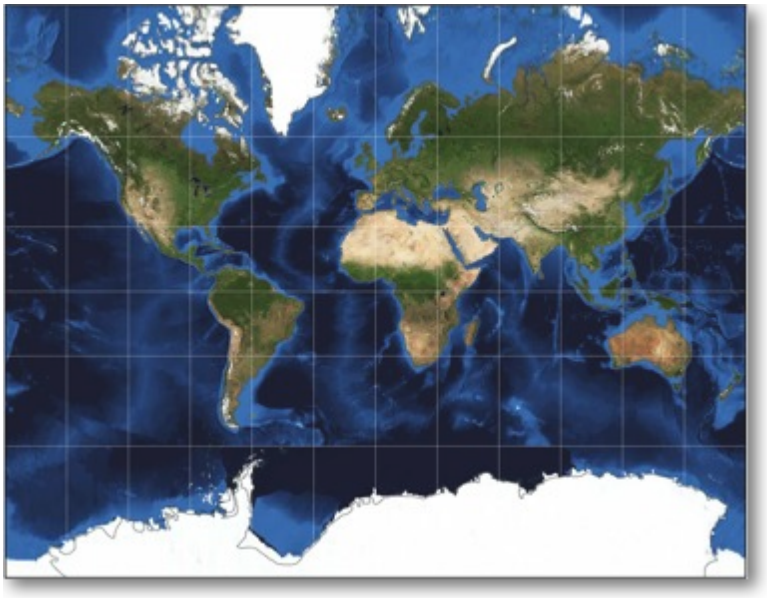
Datum	NAD27	NAD83	WGS84
Longitude	134° 21' **49.21**"	134° 21' **55.59**"	134° 21' **55.66**"
Latitude	58° 22' **3.30**"	58° 22' **2.13**"	58° 22' **2.15**"

All three coordinates above identify the same physical point on the Earth's surface, but the seconds value varies. This is due to the different ellipsoids associated with the datums. The reason why this matters is because if you don't know what datum your

data is in, you or someone else will have to guess which datum the data are in, and this greatly increases the probability of positional errors when you import your data into the Land Mapper or GIS.

Map Projection - What is it?

A map projection is simply a method for converting, or*projecting*, the three-dimensional surface of the Earth onto a two-dimensional plane (for example, a piece of paper or a computer monitor) for the purpose of making a map and/or performing distance, direction, and area computations. There are numerous projections, each optimized for a particular purpose. For example, the Mercator projection is best used for marine navigation, because directions are correct, while other qualities such as area are distorted. Conversely, the Mollweide projection gives accurate areas, while directions are distorted. The examples below illustrate the differences between these two projections.



***Mercator** projection. Directions are accurate, but area is greatly distorted*

***Mollweide** projection. Areas are accurate, but direction is distorted*

Coordinate System - What is it?

A coordinate system is a way to describe positions on the surface of the Earth. The coordinates of a point can be expressed in several ways - as latitude and longitude, or as meters or feet. Latitude and longitude coordinates are used to express points within a geographic coordinate system, such as NAD27 or WGS84. Meters or feet are used with projected coordinate systems, such as Alaska Albers Equal Area Conic.

The $64,000 Question - Why do I need to know all this stuff?

The simple answer: if you don't know what datum and projection your data are referenced to, there's a very high probability that your data will not align correctly with other features when viewed in the Land Mapper or GIS. If you, as the owner of your data, don't know what datum it is referenced to, others who try to use it will have to guess, with likely incorrect results.

The Bottom Line - How to Properly Reference Geographic Coordinates

When documenting your data or when giving coordinates to others, you should **always cite the datum and projection of the data**. For example:

Datum	Projection	Coordinate	
NAD27	Geographic	134° 21' 49.21" West	58° 22' 3.30" North

WGS84	Geographic	134° 21' 55.66" West	58° 22' 2.15" North
NAD83	Alaska Albers Conic	125,000 meters Easting	2,570,000 meters Northing

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Know Your X and Y...

In the examples above, a point on the Earth is noted as an XY coordinate. ***X*** and ***Y*** refer to locations within a Cartesian coordinate system, where *X* identifies a position along the horizontal (X) axis and *Y* identifies a position along the vertical (Y) axis.

- In a ***geographic*** coordinate system, longitude is expressed by the X value, and latitude is expressed by the Y value.
- In a ***projected*** coordinate system, Easting is expressed by the X value, and Northing is expressed by the Y value.

...and Know Your Signs

With geographic coordinate systems, it is critically important to understand how north, south, east, and west are represented by the coordinate values. Algebraic signs, plus (+) and minus (-) are used to indicate the compass directions, as such:

- ***North latitude*** is represented as a ***positive*** value (+)
- ***South latitude*** is represented as a ***negative*** value (-)
- ***East longitude*** is represented as a ***positive*** value (+)
- ***West longitude*** is represented as a ***negative*** value (-)

Converting between latitude and longitude formats

Latitudes and longitudes can be expressed in several different formats, such as:

- 45° 24' 13.4" (Degrees, minutes, seconds)
- 45° 24.223 (Degrees and decimal minutes)
- 45.40372222° (Decimal degrees)

All three examples above are equivalent, that is, they identify the same spot on the Earth. You may run into situations where you must provide latitude and longitude values in a particular format. For example, you might have a lat/long coordinate in degrees, minutes, and seconds format, but the program you're working with might require you to input the lat/long in decimal degrees format. To do this, you have to convert from one format to another. You can do this using an online lat/long converter. There are many such converters available online, but here's one that's very easy to use:

http://rumkin.com/tools/gps/degrees.php

This site converts from any of the three formats to any of the other three.

Latitude + Longitude + Datum = A Complete Coordinate, aka LLD = Problem Free!

Casual use of latitude and longitude positions generally doesn't involve referencing the datum to which the lat/long is tied. However, when dealing with GIS a higher level of precision is required, thus lat/long values must always include the associated datum.

When noting lat/long coordinates or giving lat/long coordinates to someone, ***you must always report the datum which is used by the coordinates***. Without the datum information, the user will have to guess which datum your lat/long coordinates are in, and this often leads to misalignment of features. Following are several examples of the correct way to note lat/long coordinates:

- 45.50, -150.25, ***NAD27***
- 45.50 N, 150.25 W, ***NAD83***
- 45° 30' 00" N, 150° 15' 00" W, ***WGS84***

Note that for each example, the datum has been specified. ***A lat/long coordinate should never leave your desk without a datum specified***.
Remember: ***LLD = Problem Free!***

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How Far is a Degree?

You're familiar with latitude, longitude, degrees, minutes, and seconds. But do you know the ground distance of one degree of arc? How about one minute of arc - how long is that? One second of arc? When dealing with latitude and longitude coordinates, it is often helpful to have a general idea of the ground distance covered by various arc lengths.

You learned in the previous topic that the Earth is not a perfect sphere, but is in fact an ellipsoid. To determine the ground distance of various arc lengths for an ellipse, we have to calculate the perimeter of an ellipse. This is found by the following formula*, where *a* is the equatorial radius (aka, semi-major axis) and *b* is the polar radius (aka, semi-minor axis):

$$perimeter\ of\ ellipse = \pi\left[3(a+b) - \sqrt{(a+3b)(3a+b)}\right]$$

The table below shows the ground distance covered by various great circle arc lengths along the longitudinal meridians (a longitudinal great circle follows a line of longitude from the North Pole to the equator to the South Pole, then north to the equator and back to the starting point at the North Pole - for example: starting at the North Pole along the 0° meridian, then following the 0° meridian south to the South Pole, then north following the 180° meridian back to the starting point at the North Pole).

	Meters	Feet
WGS84 equatorial radius (a)	6,378,137.00	20,925,646.33
WGS84 polar radius (b)	6,356,752.30	20,855,486.55
WGS84 average radius	6,367,444.65	20,890,566.44
circumference of a circle = (2)(pi)(radius)	40,007,834.67	131,259,300.10
perimeter of WGS84 ellipse *	40,007,862.87	131,259,392.63
360° =	40,007,862.87	131,259,392.63
1 degree =	111,132.95	364,609.42
0.1 degree =	11,113.30	36,460.94
0.01 degree =	1,111.33	3,646.09
0.001 degree =	111.13	364.61
0.000,1 degree =	11.11	36.46
0.000,01 degree =	1.11	3.65
0.000,001 degree =	0.11	0.36
1 minute =	1,852.22	6,076.82
0.1 minute =	185.22	607.68
0.01 minute =	18.52	60.77
0.001 minute =	1.85	6.08
0.000,1 minute =	0.19	0.61
1 second =	30.87	101.28
0.1 second =	3.09	10.13
0.01 second =	0.31	1.01
0.001 second =	0.03	0.10
0.001 second =	0.03	0.10
0.000,001 degree =	0.11	0.36
0.000,1 minute =	0.19	0.61
0.01 second =	0.31	1.01
0.000,01 degree =	1.11	3.65
0.001 minute =	1.85	6.08
0.1 second =	3.09	10.13
0.000,1 degree =	11.11	36.46
0.01 minute =	18.52	60.77
1 second =	30.87	101.28
0.001 degree =	111.13	364.61
0.1 minute =	185.22	607.68
0.01 degree =	1,111.33	3,646.09
1 minute =	1,852.22	6,076.82
0.1 degree =	11,113.30	36,460.94
1 degree =	111,132.95	364,609.42

Arc lengths and their corresponding longitudinal great circle ground distances for the WGS84 ellipsoid

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* The formula to approximate the perimeter of an ellipse was obtained from http://mathworld.wolfram.com/Ellipse.html#eqn70

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Understanding the Land Status Layers

To utilize the Land Mapper to its full potential, it is important to understand the various land status layers, associated attributes, and how the layers were created.

The following land status layers are used in the Mapper:

Layer Name	Layer Represents These Features
NWR Surface Estate (USFWS)	Surface estate under the jurisdiction and management of the U.S. Fish & Wildlife Service
NWR Surface Estate (Other Federal)	Surface estate under the jurisdiction and management of other Federal agencies
NWR Surface Estate (Patented)	Surface estate that is patented to individuals, native corporations, or State of Alaska
NWR Surface Estate (Selected)	Surface estate that is selected by individuals, native corporations, or State of Alaska, but still managed by FWS
NWR Subsurface Estate (USFWS)	Subsurface estate under the jurisdiction and management of the U.S. Fish & Wildlife Service
NWR Subsurface Estate (Other Federal)	Subsurface estate under the jurisdiction and management of other Federal agencies
NWR Subsurface Estate (Patented)	Subsurface estate that is patented to individuals, native corporations, or State of Alaska
NWR Subsurface Estate (Selected)	Subsurface estate that is selected by individuals, native corporations, or State of Alaska, but still managed by FWS
National Wildlife Refuge	External ANILCA boundaries of National Wildlife Refuges in Alaska
National Wildlife Refuge Wilderness	External ANILCA boundaries of wilderness areas within National Wildlife Refuges in Alaska
Pre-ANILCA (1980) "Old" NWR	External boundaries of National Wildlife Refuges that existed

	before the passage of ANILCA in 1980
Townships	Public Land Survey System townships within Alaska
Sections	Public Land Survey System sections within Alaska
Conservation and Non-development Easements	Various types of easements managed by the U.S. and State of Alaska
Alaska Statewide Land Status (per BLM)	Generalized surface estate land status for the entire state of Alaska (compiled by the Bureau of Land Management)

Data Sources and Creation of Surface, Subsurface, and Easement Layers

Data Sources

The primary data source for the creation of the land status layers is the Bureau of Land Management's Master Title Plats (MTP). These are the official record of ownership for Federal land and water in the State of Alaska. Each MTP covers a geographic extent of one township (36 square miles). In addition to Federal land and water, the MTPs depict private land, State of Alaska land, areas managed by other Federal agencies, and areas selected by individuals and native corporations for possible acquisition.

The Bureau of Land Management uses official survey plats and notes in the creation of the Master Title Plats. MTPs produced before the mid-1990s were drawn using ink and mylar at a scale of 1:23,760 (i.e., one inch on the MTP represents 23,760 inches on the ground [or 30 chains on the ground - one chain equals 66 feet or 792 inches]). The mylars were then transferred to microfiche cards, and 24" x 18" paper prints were produced from the microfiche cards. From the mid-1990's onward, BLM has produced all MTPs digitally, using Autocad software, also at a scale of 1:23,760. The digital MTPs are then converted to TIF and PDF formats for distribution. An example of a Master Title Plat can be seen here.

In a few isolated cases, USFWS used the distances and directions shown on survey plats to create parcel boundaries.

Many of the hydrographic (river bank, lake shore, coastline) boundaries of parcels shown on the Master Title Plats are based on surveys of the parcels. These surveys were performed at a certain point in time and do not reflect the current on-the-ground position of these ambulatory water features. Because the legal boundaries of such parcels actually conforms to the location of ambulatory water features at any point in time, it is necessary for the parcels in the Surface and Subsurface layers to depict, as closely as possible, the current on-the-ground positions of hydrographic features. To accomplish this, USFWS is using satellite imagery and aerial photographs compiled by the Alaska Statewide Digital Mapping Initiative (see http://www.alaskamapped.org) as the reference for adjusting the original MTP-based hydrographic boundaries of parcels.

Creation of Land Status Layers

The land status layers were digitized from the two primary sources: paper MTPs, and digital MTPs in TIF format. From the late-1980's to the mid-1990's, the Division of Realty used digitizing tables to manually digitize the 24" x 18" paper MTPs. With the availability of digital MTPs in TIF format in the mid-1990's, the Division switched to on-screen digitizing of the MTPs.

Regardless of the source format - paper or TIF file - each MTP was georeferenced to the Public Land Survey System township grid. Parcel boundaries were then traced from the MTP to create the digital land status layers. Attribute information such as serial number, owner type, and status were then entered into the GIS.

While all land features have been digitized, not all hydrographic features have been digitized. Only those water features (lakes 50 acres and larger and rivers three chains wide or wider) within surveyed townships and surrounded by conveyed or selected land have been digitized. You will therefore encounter situations where only a portion of a lake is shown. You will also see areas where a river was not digitized beyond a section or township line. Additionally, there are areas where a hydrographic feature is shown in the surface and subsurface layers, but a corresponding feature is not shown on the Mapper's basemap. This is due to the sources and scales of the various data layers. FWS is currently in the process of adjusting hydrographic boundaries derived from BLM's Master Title Plats to match water features depicted by the Alaska SDMI satellite imagery and aerial photographs (commonly referred to as the Alaskamapped.org*Best Data Layer*, or simply, *BDL*).

BLM's Generalized Surface Estate Layer

This layer shows the surface estate land status for the entire state of Alaska. It was compiled by the Alaska office of the federal Bureau of Land Management, using the official land records held by BLM. The status has been generalized, meaning that it doesn't show anything less than one section (one square mile) in size. For example, if a 640 acre section contains a 40 acre private parcel surrounded by 600 acres of Federal land, then only the Federal land is depicted - the 40 acre private parcel is not shown. For this reason, the BLM Generalized layer should be used only as a rough look at the land status, and is suitable for small-scale, statewide mapping. If you are working on a more detailed project or need to know the exact land status of an area, you should consult the BLM Master Title Plats and/or Alaska DNR Status Plats for your area of interest. The exception to this is the land within the National Wildlife Refuges. In this case, the land status shown in the Land Mapper is the same status that is shown on the MTPs.

When viewing the BLM Generalized Surface Estate layer, it is usually best to switch the base map to the Basic Gray base map. This makes it much easier to discern the various land status colors.

Maintenance/Update of Land Status Layers

The Division of Realty updates the land status each month, subject to receiving updated MTPs from BLM. For each township which has some type of land status, the date from the MTP is entered into the Sections layer. You can verify the currency of the land status for a township by comparing the MTP date shown in the Sections layer against the MTP date for the most current MTP that is posted on BLM's website. If you find an instance where a township in the Land Mapper is not current, please contact the USFWS Region 7 Division of Realty with the township and range in question. The MTP will then be queued for updating.

Note that the Division of Realty does not track the complete transactional history of parcels within the boundaries of the National Wildlife Refuges in Alaska. The land status layers displayed in this Mapper *generally* reflect only the first transaction of parcels. For example, when the Bureau of Land Management issues a patent to a native allottee or native corporation, that patent is shown in the land status layers. If the native allottee or native corporation later sells or otherwise transfers legal ownership of their patented parcel to another party, the land status layers in this Mapper do not reflect that transfer of ownership. The exception to this is when the U.S. Fish & Wildlife Service acquires privately patented land via purchases, land exchanges, or donations. In such cases, the land status layers in the Mapper are updated to reflect the change in ownership from private to Federal.

Attribute Schema

The fields and field values for all the layers are documented in the pages following this topic. Refer to these pages for detailed information about the land status attributes for each layer.

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Alaska Native Corporation Serial Numbers

When working with the land status shown in the Land Mapper, you might be concerned with land owned by Alaska Native village and regional corporations. The primary identifier for the native corporations is the BLM-assigned serial number, rather than the name of the native corporation. Although the corporation names are contained in a separate database table, you can still view them in the Mapper. Unfortunately though, you can't query or search by corporation name - you must use the serial numbers. And this presents the problem - how do you find out the serial numbers for the corporations?

To address this issue, you can download a Microsoft Excel file that cross-references the BLM-assigned serial numbers with the native corporation names. Refer to this listing when you need to find a serial number for a corporation. Click the link below to download the file.

Native Corporation Serial Numbers

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Land Status Legends

Shown below are the legends for the various land status layers in the Land Mapper.

Because of the number of land status layers and categories of status, it is not possible to give each layer and category its own distinct color. Thus, the surface and subsurface layers use the same colors for the categories. When working with the Land Mapper, it is advisable to work with the surface and subsurface layers independently. For example, if you are working with the surface layers, be sure to turn off the subsurface layers in the Map Layers list. Conversely, if dealing with the subsurface estate, turn off the surface layers.

Surface Estate Land Status

Managed by FWS

- Withdrawn by PL, PLO, EO, etc.
- Acquired by purchase, exchange, or donation
- Federally-reserved submerged land

Selected Land, Managed by FWS

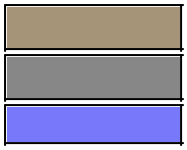
- Selected by Alaska native allotee
- Selected by other private entity
- Selected by Native village corporation
- Selected by Native regional corporation
- Selected by State of Alaska

Managed by Other Federal Agency

- Withdrawn by PL, PLO, EO, etc.
- Federally-reserved submerged land

Private Land

- Patented to Alaska native allotee
- Patented to other private entity



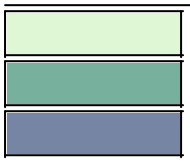
Patented to Native village corporation

Patented to Native regional corporation

Patented to State of Alaska

Subsurface Estate Land Status

Managed by FWS

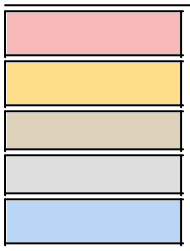


Withdrawn by PL, PLO, EO, etc.

Acquired by purchase, exchange, or donation

Federally-reserved submerged land

Selected Land, Managed by FWS



Selected by Alaska native allotee

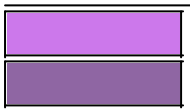
Selected by other private entity

Selected by Native village corporation

Selected by Native regional corporation

Selected by State of Alaska

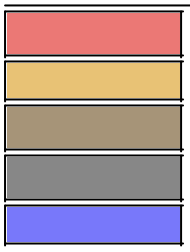
Managed by Other Federal Agency



Withdrawn by PL, PLO, EO, etc.

Federally-reserved submerged land

Private Land



Patented to Alaska native allotee

Patented to other private entity

Patented to Native village corporation

Patented to Native regional corporation

Patented to State of Alaska

Easements

State of Alaska conservation easement

U.S. conservation easement
U.S. non-development easement

BLM's Generalized Surface Estate

U.S. Bureau of Land Management
U.S. Fish and Wildlife Service
U.S. Forest Service
U.S. National Park Service
U.S. Military

Alaska Native (Selected)
Alaska Native (Patent or IC)

State of Alaska (Selected)
State of Alaska (Patent or TA)

Private Owner

Metlakatla Indian Reservation

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Surface Estate (Managed by FWS)

This layer identifies the ***surface estate that is administered by the U.S. Fish and Wildlife Service***. These lands were incorporated into the National Wildlife Refuge System by a variety of actions: Public Law, Public Land Order, Executive Order, Federal regulation, fee purchase, land exchange, donation, etc.

Attribute Schema

Field (Alias)	Type	Values (Domain Description)
Otyp (Owner Code)	Integer	1 (USFWS)

Owntyp (Owner Type)	Text	fws (USFWS)
Surstat (Surface Status)	Text	w (Withdrawn) a (Acquired) y (Federal Submerged Land)
Refuge (Refuge Name)	Text	akm (Alaska Maritime) akp (Alaska Peninsula) arc (Arctic) bch (Becharof) inn (Innoko) izm (Izembek) kan (Kanuti) kna (Kenai) kdk (Kodiak) kuk (Koyukuk) now (Nowitna) swk (Selawik) tet (Tetlin) tgk (Togiak) ykd (Yukon Delta) ykf (Yukon Flats)
NWR_Unit (NWR Unit)	Text	afo (Afognak) akp (Alaska Peninsula) ali (Aleutian Islands) ber (Bering Sea) chi (Chignik) chu (Chukchi Sea) gul (Gulf of Alaska) hag (Hagemeister Island) inn (Innoko) kai (Kaiyuh) kdk (Kodiak Island) ncr (North Creek) new (Cape Newenham) pav (Pavlof) slc (Seal Cape) tgk (Togiak) uga (Ugashik) uni (Unimak Island)
IFWS (IFWS No.)	Text	991 (Alaska Maritime) 992 (Alaska Peninsula) 993(Arctic) 994 (Becharof) 995 (Innoko) 996 (Izembek) 997 (Kanuti) 998 (Kenai) 999 (Kodiak) 1000 (Koyukuk)

		1001 (Nowitna) 1002 (Selawik) 1003 (Tetlin) 1004 (Togiak) 1005 (Yukon Delta) 1006 (Yukon Flats)
Casetype (Case Type)	Text	007502 (Acquired easement) 007516 (Acquired Land) 215005 (Acquired Land) 216001 (Acquired Land) 225002 (Exchanges - Natl. Wildlife Refuges) 231101 (Hot Springs Withdrawal) 231110 (Power Site Wdl & Cl) 231304 (Cemetery) 231401 (Natl Wildlife Refuge Wdl) 231403 (Wild and Scenic Rivers (FWS)) 231404 (Wilderness Area Wdl (FWS)) 231470 (FWS Misc Wdl) 320070 (Geological KGRA)
Serial_full (Full Serial No.)	Text	Variable values (examples: FF014970AZ, A 004798C, AA006687 A)
Serial_main (Main Serial No.)	Text	Variable values (examples: FF014970, A 004798, AA006687)
	Text	Variable values (examples: 231401, Village Native Corp.)
Cvyno (Conveyance No.)	Text	Variable values (examples: 50-95-0125, 50-2010-237, IC 560, IC 1236)
Cvydate (Conveyance Date)	Date	Variable values (examples: 01/15/1998, 12/04/2001)
Acres_GIS (Acres (GIS))	Double	Variable values (examples: 40.45876, 42578.54024)
Acres_LGL (Acres (Legal))	Double	Variable values (examples: 39.98, 159.99, 1245.85)
USS (US Survey No.)	Text	Variable values (examples: 245, 945, 13408)
Lot (Lot No.)	Text	Variable values (examples: 1, 2, 3, 4)
Block (Block No.)	Text	Variable values (examples,: 1, 2, 3, 4)
Survey_Tract (Survey Tract)	Text	Variable values (examples: 1, 2, A, B)
LRS_Tract (LRS Tract)	Text	Variable values (examples: 1, 2a, 14, 22c)
Notes (Notes)	Text	Variable values (examples: free-form text and numbers)

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Surface Estate (Selected land, managed by FWS)

This layer identifies the ***surface estate that is selected by other entities***. These lands have been selected by entities such as Alaska natives, Village Native Corporations, Regional Native Corporations, the State of Alaska, or other private individuals.

All selected lands contained in this layer remain under the control and administration of the U.S. Fish and Wildlife Service until such time as they are officially conveyed or patented to the selectee.

Attribute Schema

Field (Alias)	Type	Values (Domain Description)
Otyp (Owner Code)	Integer	2 (Native Allotment) 3 (Village Native Corp.) 4 (Regional Native Corp.) 5 (State of Alaska) 7 (Other Private)
Owntyp (Owner Type)	Text	na (Native Allotment) vnc (Village Native Corp.) rnc (Regional Native Corp.) ak (State of Alaska) op (Other Private)
Surstat (Surface Status)	Text	s (Selected)
Refuge (Refuge Name)	Text	akm (Alaska Maritime) akp (Alaska Peninsula) arc (Arctic) bch (Becharof) inn (Innoko) izm (Izembek) kan (Kanuti) kna (Kenai) kdk (Kodiak) kuk (Koyukuk) now (Nowitna) swk (Selawik) tet (Tetlin) tgk (Togiak) ykd (Yukon Delta) ykf (Yukon Flats)
NWR_Unit (NWR Unit)	Text	afo (Afognak) akp (Alaska Peninsula)

		ali (Aleutian Islands) ber (Bering Sea) chi (Chignik) chu (Chukchi Sea) gul (Gulf of Alaska) hag (Hagemeister Island) inn (Innoko) kai (Kaiyuh) kdk (Kodiak Island) ncr (North Creek) new (Cape Newenham) pav (Pavlof) slc (Seal Cape) tgk (Togiak) uga (Ugashik) uni (Unimak Island)
IFWS (IFWS No.)	Text	991 (Alaska Maritime) 992 (Alaska Peninsula) 993(Arctic) 994 (Becharof) 995 (Innoko) 996 (Izembek) 997 (Kanuti) 998 (Kenai) 999 (Kodiak) 1000 (Koyukuk) 1001 (Nowitna) 1002 (Selawik) 1003 (Tetlin) 1004 (Togiak) 1005 (Yukon Delta) 1006 (Yukon Flats)
Casetype (Case Type)	Text	007503 (Quit Claim Deed from U.S. (BLM)) 007509 (NA in Litigation) 186001 (Quit Claim deed by GSA) 186002 (Omnibus Act QCD - Alaska) 186003 (Quit Claim Deed by BIA) 186004 (Quit Claim Deed) 186008 (Quit Claim Deed Public Laws) 186009 (Quit Claim to U.S. (BLM)) 215005 (Acquired Land) 222005 (Ex-Alaska Natives) 251101 (HE Original) 251102 (Adjoining Farm) 251201 (HE addl-after proof) 251202 (HE addl-contiguous) 251300 (HE second entry) 256100 (AK Native Allotment) 256200 (T and M site)

		256301 (Headquarters site) 256302 (Homesite) 256400 (Native Townsite) 256500 (Non-Native Townsite) 256600 (Alaska R.R. Townsites) 256700 (Homestead settlement) 256800 (AK V.Vet Nat. Allot) 260010 (Soldier's Additional Homestead (SAHA)) 261000 (Soldier's Additional Homestead (SAHA)) 262400 (St gnt schl sec in place) 262710 (AK Mental Health Grants) 262711 (State Community Grant) 262720 (Ak University Grant) 262730 (General Grant) 262740 (State Grant reserved mineral estate) 264000 (Airport Conveyances) 265101 (Village Selection (12A)) 265102 (Village Selection (12B)) 265200 (Regional Selection) 265201 (Subsurface Estate Conv) 265202 (Mineral Lieu Sel) 265203 (CIRI nom out of reg pool) 265204 (GSA pool selection - CIRI) 265205 (CIRI sel restricted min) 265206 (Conv state to US to CIRI) 265208 (CNI 12C/14H8 ANILCA exch) 265209 (CIRI dfncy recon to vlg) 265210 (CIRI - Misc & Coal/O&G) 265301 (Cemetery-Historical site (14H1)) 265302 (Native Group selection) 265303 (Four Cities selection) 265304 (Four Cities nomination) 265305 (Four Cities withdrawal) 265306 (Primary Place Residence) 265308 (ANCSA 14H8 selection) 265311 (Reg-Sel-14H5 & 14H6 AK) 273000 (Small Tracts) 274000 (SALE - Rec & Pub Purposes) 274001 (Mission site) 275000 (SALE - Cemetery Land) 276200 (Townsite settlement) 276300 (Townsite) 277100 (Sale - AK Public Sale Act) 278005 (Sale - PLO 1613 Highway Lot) 282102 (Material Sites (sec 107)) 289004 (ROW - Misc & Special) 291100 (Airport Lease) 291200 (R & PP Lease) 291300 (Small Tract Lease) 311111 (Oil & Gas Lease Noncomp Public Land)

		341001 (Coal Exploration License) 372000 (Coal Land-Mine (PL 357)) 384101 (Mining Claim (Lode)) 384200 (Mining Claim (Placer)) 384300 (Mining Claim (Tunnels)) 384400 (Mining Claim (Millsites)) 386000 (Mineral Patent Application) 386100 (Mineral Surveys (MS)) 386201 (Mineral Patent (Lode)) 386301 (Mineral Patent (Placer)) 386401 (Mineral Patent (Millsite))
Serial_full (Full Serial No.)	Text	Variable values (examples: FF014970AZ, A 004798C, AA006687 A)
Serial_main (Main Serial No.)	Text	Variable values (examples: FF014970, A 004798, AA006687)
Cvyno (Conveyance No.)	Text	Variable values (examples: 50-95-0125, 50-2010-237, IC 560, IC 1236)
Cvydate (Conveyance Date)	Date	Variable values (examples: 01/15/1998, 12/04/2001)
Acres_GIS (Acres (GIS))	Double	Variable values (examples: 40.45876, 42578.54024)
Acres_LGL (Acres (Legal))	Double	Variable values (examples: 39.98, 159.99, 1245.85)
USS (US Survey No.)	Text	Variable values (examples: 245, 945, 13408)
Lot (Lot No.)	Text	Variable values (examples: 1, 2, 3, 4)
Block (Block No.)	Text	Variable values (examples,: 1, 2, 3, 4)
Survey_Tract (Survey Tract)	Text	Variable values (examples: 1, 2, A, B)
LRS_Tract (LRS Tract)	Text	Variable values (examples: 1, 2a, 14, 22c)
Notes (Notes)	Text	Variable values (examples: free-form text and numbers)

The Region 7 Land Mapper was developed, and is maintained by, the U.S. Fish & Wildlife Service, Region 7, Division of Realty. Questions, comments,and suggestions should be directed to ak_realty@fws.gov

This page was last updated: Monday, August 12, 2024

Surface Estate (Managed by other Federal agency)

This layer identifies the ***surface estate that is administered by Federal agencies other than the U.S. Fish and Wildlife Service***. These lands were placed under the primary administration of other Federal agencies by a variety of actions: Public Law, Public Land Order, Executive Order, Federal regulation, fee purchase, land exchange, donation, etc.

Attribute Schema

Field (Alias)	Type	Values (Domain Description)
Otyp (Owner Code)	Integer	6 (Other Federal)
Owntyp (Owner Type)	Text	of (Other Federal)
Surstat (Surface Status)	Text	w (Withdrawn) a (Acquired) y (Federal Submerged Land)
Refuge (Refuge Name)	Text	akm (Alaska Maritime) akp (Alaska Peninsula) arc (Arctic) bch (Becharof) inn (Innoko) izm (Izembek) kan (Kanuti) kna (Kenai) kdk (Kodiak) kuk (Koyukuk) now (Nowitna) swk (Selawik) tet (Tetlin) tgk (Togiak) ykd (Yukon Delta) ykf (Yukon Flats)
NWR_Unit (NWR Unit)	Text	afo (Afognak) akp (Alaska Peninsula) ali (Aleutian Islands) ber (Bering Sea) chi (Chignik) chu (Chukchi Sea) gul (Gulf of Alaska) hag (Hagemeister Island) inn (Innoko) kai (Kaiyuh) kdk (Kodiak Island) ncr (North Creek) new (Cape Newenham) pav (Pavlof) slc (Seal Cape) tgk (Togiak) uga (Ugashik) uni (Unimak Island)
IFWS (IFWS No.)	Text	991 (Alaska Maritime) 992 (Alaska Peninsula) 993(Arctic) 994 (Becharof)

		995 (Innoko) 996 (Izembek) 997 (Kanuti) 998 (Kenai) 999 (Kodiak) 1000 (Koyukuk) 1001 (Nowitna) 1002 (Selawik) 1003 (Tetlin) 1004 (Togiak) 1005 (Yukon Delta) 1006 (Yukon Flats)
Casetype (Case Type)	Text	007500 (Natl Register Historical Place) 186009 (Quit Claim to U.S. (BLM)) 211000 (Donation of lands to US) 218060 (Acquired Military Purposes) 231120 (ANCSA 17(d)(1) Withdrawl) 231170 (BLM Misc Wdl) 231370 (Misc BIA Withdrawal) 233200 (Army Withdrawal) 233201 (Corps of Engineers Wdl (C of E)) 233300 (Navy Withdrawal) 233400 (FERC Wdl (Power projects)) 235100 (Fed Aviation Admin Wdl (FAA)) 235113 (Light House Wdl (LH)) 235200 (Coast Guard Wdl (CG)) 236100 (NOAA Wdl) 236102 (Natl Marine Fisheries Wdl) 240006 (Recreation & Public Purposes (R & PP)) 264000 (Airport Conveyance) 265501 (Det Area ANCSA sec 3(E)) 281008 (ROW-Roads Federal 44LD513) 289008 (ROW-Other fed 44LD513)
(Serial_full (Full Serial No.)	Text	Variable values (examples: FF014970AZ, A 004798C, AA006687 A)
Serial_main (Main Serial No.)	Text	Variable values (examples: FF014970, A 004798, AA006687)
Cvyno (Conveyance No.)	Text	Variable values (examples: 50-95-0125, 50-2010-237, IC 560, IC 1236)
Cvydate (Conveyance Date)	Date	Variable values (examples: 01/15/1998, 12/04/2001)
Acres_GIS (Acres (GIS))	Double	Variable values (examples: 40.45876, 42578.54024)
Acres_LGL (Acres (Legal))	Double	Variable values (examples: 39.98, 159.99, 1245.85)
USS (US Survey No.)	Text	Variable values (examples: 245, 945, 13408)
Lot (Lot No.)	Text	Variable values (examples: 1, 2, 3, 4)

Block (Block No.)	Text	Variable values (examples,: 1, 2, 3, 4)
Survey_Tract (Survey Tract)	Text	Variable values (examples: 1, 2, A, B)
LRS_Tract (LRS Tract)	Text	Variable values (examples: 1, 2a, 14, 22c)
Notes (Notes)	Text	Variable values (examples: free-form text and numbers)

The Region 7 Land Mapper was developed, and is maintained by, the U.S. Fish & Wildlife Service, Region 7, Division of Realty. Questions, comments,and suggestions should be directed to ak_realty@fws.gov

This page was last updated: Monday, August 12, 2024

Surface Estate (Private land)

This layer identifies the ***surface estate that is privately owned***. These lands may belong to Alaska natives, Village Native Corporations, Regional Native Corporations, the State of Alaska, or other private entities.

Attribute Schema

Field (Alias)	Type	Values (Domain Description)
Otyp (Owner Code)	Integer	2 (Native Allotment) 3 (Village Native Corp.) 4 (Regional Native Corp.) 5 (State of Alaska) 7 (Other Private)
Owntyp (Owner Type)	Text	na (Native Allotment) vnc (Village Native Corp.) rnc (Regional Native Corp.) ak (State of Alaska) op (Other Private)
Surstat (Surface Status)	Text	c (Conveyed) z (State of Alaska Submerged Land)
Refuge (Refuge Name)	Text	akm (Alaska Maritime) akp (Alaska Peninsula) arc (Arctic) bch (Becharof) inn (Innoko) izm (Izembek) kan (Kanuti) kna (Kenai) kdk (Kodiak) kuk (Koyukuk) now (Nowitna)

		swk (Selawik) tet (Tetlin) tgk (Togiak) ykd (Yukon Delta) ykf (Yukon Flats)
NWR_Unit (NWR Unit)	Text	afo (Afognak) akp (Alaska Peninsula) ali (Aleutian Islands) ber (Bering Sea) chi (Chignik) chu (Chukchi Sea) gul (Gulf of Alaska) hag (Hagemeister Island) inn (Innoko) kai (Kaiyuh) kdk (Kodiak Island) ncr (North Creek) new (Cape Newenham) pav (Pavlof) slc (Seal Cape) tgk (Togiak) uga (Ugashik) uni (Unimak Island)
IFWS (IFWS No.)	Text	991 (Alaska Maritime) 992 (Alaska Peninsula) 993(Arctic) 994 (Becharof) 995 (Innoko) 996 (Izembek) 997 (Kanuti) 998 (Kenai) 999 (Kodiak) 1000 (Koyukuk) 1001 (Nowitna) 1002 (Selawik) 1003 (Tetlin) 1004 (Togiak) 1005 (Yukon Delta) 1006 (Yukon Flats)
Casetype (Case Type)	Text	007503 (Quit Claim Deed from U.S. (BLM)) 007509 (NA in Litigation) 186001 (Quit Claim deed by GSA) 186002 (Omnibus Act QCD - Alaska) 186003 (Quit Claim Deed by BIA) 186004 (Quit Claim Deed) 186008 (Quit Claim Deed Public Laws) 186009 (Quit Claim to U.S. (BLM)) 215005 (Acquired Land) 222005 (Ex-Alaska Natives)

		251101 (HE Original) 251102 (Adjoining Farm) 251201 (HE addl-after proof) 251202 (HE addl-contiguous) 251300 (HE second entry) 256100 (AK Native Allotment) 256200 (T and M site) 256301 (Headquarters site) 256302 (Homesite) 256400 (Native Townsite) 256500 (Non-Native Townsite) 256600 (Alaska R.R. Townsites) 256700 (Homestead settlement) 256800 (AK V.Vet Nat. Allot) 260010 (Soldier's Additional Homestead (SAHA)) 261000 (Soldier's Additional Homestead (SAHA)) 262400 (St gnt schl sec in place) 262710 (AK Mental Health Grants) 262711 (State Community Grant) 262720 (Ak University Grant) 262730 (General Grant) 262740 (State Grant reserved mineral estate) 264000 (Airport Conveyances) 265101 (Village Selection (12A)) 265102 (Village Selection (12B)) 265200 (Regional Selection) 265201 (Subsurface Estate Conv) 265202 (Mineral Lieu Sel) 265203 (CIRI nom out of reg pool) 265204 (GSA pool selection - CIRI) 265205 (CIRI sel restricted min) 265206 (Conv state to US to CIRI) 265208 (CNI 12C/14H8 ANILCA exch) 265209 (CIRI dfncy recon to vlg) 265210 (CIRI - Misc & Coal/O&G) 265301 (265301-14H1) 265302 (Native Group selection) 265303 (Four Cities selection) 265304 (Four Cities nomination) 265305 (Four Cities withdrawal) 265306 (Primary Place Residence) 265308 (ANCSA 14H8 selection) 265311 (Reg-Sel-14H5 & 14H6 AK) 273000 (Small Tracts) 274000 (SALE - Rec & Pub Purposes) 274001 (Mission site) 275000 (SALE - Cemetery Land) 276200 (Townsite settlement) 276300 (Townsite) 277100 (Sale - AK Public Sale Act)

		278005 (Sale - PLO 1613 Highway Lot) 282102 (Material Sites (sec 107)) 289004 (ROW - Misc & Special) 291100 (Airport Lease) 291200 (R & PP Lease) 291300 (Small Tract Lease) 311111 (Oil & Gas Lease Noncomp Public Land) 341001 (Coal Exploration License) 372000 (Coal Land-Mine (PL 357)) 384101 (Mining Claim (Lode)) 384200 (Mining Claim (Placer)) 384300 (Mining Claim (Tunnels)) 384400 (Mining Claim (Millsites)) 386000 (Mineral Patent Application) 386100 (Mineral Surveys (MS)) 386201 (Mineral Patent (Lode)) 386301 (Mineral Patent (Placer)) 386401 (Mineral Patent (Millsite))
Serial_full (Full Serial No.)	Text	Variable values (examples: FF014970AZ, A 004798C, AA006687 A)
Serial_main (Main Serial No.)	Text	Variable values (examples: FF014970, A 004798, AA006687)
Cvyno (Conveyance No.)	Text	Variable values (examples: 50-95-0125, 50-2010-237, IC 560, IC 1236)
Cvydate (Conveyance Date)	Date	Variable values (examples: 01/15/1998, 12/04/2001)
Acres_GIS (Acres (GIS))	Double	Variable values (examples: 40.45876, 42578.54024)
Acres_LGL (Acres (Legal))	Double	Variable values (examples: 39.98, 159.99, 1245.85)
USS (US Survey No.)	Text	Variable values (examples: 245, 945, 13408)
Lot (Lot No.)	Text	Variable values (examples: 1, 2, 3, 4)
Block (Block No.)	Text	Variable values (examples,: 1, 2, 3, 4)
Survey_Tract (Survey Tract)	Text	Variable values (examples: 1, 2, A, B)
LRS_Tract (LRS Tract)	Text	Variable values (examples: 1, 2a, 14, 22c)
Notes (Notes)	Text	Variable values (examples: free-form text and numbers)

The Region 7 Land Mapper was developed, and is maintained by, the U.S. Fish & Wildlife Service, Region 7, Division of Realty. Questions, comments,and suggestions should be directed to ak_realty@fws.gov

This page was last updated: Monday, August 12, 2024

Subsurface Estate (Managed by FWS)

This layer identifies the ***subsurface estate that is administered by the U.S. Fish and Wildlife Service***. These lands were incorporated into the National Wildlife Refuge System by a variety of actions: Public Law, Public Land Order, Executive Order, Federal regulation, fee purchase, land exchange, donation, etc.

Attribute Schema

Field (Alias)	Type	Values (Domain Description)
Otyp (Owner Code)	Integer	1 (USFWS)
Owntyp (Owner Type)	Text	fws (USFWS)
Substat (Subsurface Status)	Text	w (Withdrawn) a (Acquired) y (Federal Submerged Land)
Refuge (Refuge Name)	Text	akm (Alaska Maritime) akp (Alaska Peninsula) arc (Arctic) bch (Becharof) inn (Innoko) izm (Izembek) kan (Kanuti) kna (Kenai) kdk (Kodiak) kuk (Koyukuk) now (Nowitna) swk (Selawik) tet (Tetlin) tgk (Togiak) ykd (Yukon Delta) ykf (Yukon Flats)
NWR_Unit (NWR Unit)	Text	afo (Afognak) akp (Alaska Peninsula) ali (Aleutian Islands) ber (Bering Sea) chi (Chignik) chu (Chukchi Sea) gul (Gulf of Alaska) hag (Hagemeister Island) inn (Innoko) kai (Kaiyuh) kdk (Kodiak Island) ncr (North Creek) new (Cape Newenham) pav (Pavlof) slc (Seal Cape) tgk (Togiak)

		uga (Ugashik) uni (Unimak Island)
IFWS (IFWS No.)	Text	991 (Alaska Maritime) 992 (Alaska Peninsula) 993(Arctic) 994 (Becharof) 995 (Innoko) 996 (Izembek) 997 (Kanuti) 998 (Kenai) 999 (Kodiak) 1000 (Koyukuk) 1001 (Nowitna) 1002 (Selawik) 1003 (Tetlin) 1004 (Togiak) 1005 (Yukon Delta) 1006 (Yukon Flats)
Casetype (Case Type)	Text	007502 (Acquired easement) 007516 (Acquired Land) 215005 (Acquired Land) 216001 (Acquired Land) 225002 (Exchanges - Natl. Wildlife Refuges) 231101 (Hot Springs Withdrawal) 231110 (Power Site Wdl & Cl) 231304 (Cemetery) 231401 (Natl Wildlife Refuge Wdl) 231403 (Wild and Scenic Rivers (FWS)) 231404 (Wilderness Area Wdl (FWS)) 231470 (FWS Misc Wdl) 320070 (Geological KGRA)
Serial_full (Full Serial No.)	Text	Variable values (examples: FF014970AZ, A 004798C, AA006687 A)
Serial_main (Main Serial No.)	Text	Variable values (examples: FF014970, A 004798, AA006687)
Cvyno (Conveyance No.)	Text	Variable values (examples: 50-95-0125, 50-2010-237, IC 560, IC 1236)
Cvydate (Conveyance Date)	Date	Variable values (examples: 01/15/1998, 12/04/2001)
Acres_GIS (Acres (GIS))	Double	Variable values (examples: 40.45876, 42578.54024)
Acres_LGL (Acres (Legal))	Double	Variable values (examples: 39.98, 159.99, 1245.85)
USS (US Survey No.)	Text	Variable values (examples: 245, 945, 13408)
Lot (Lot No.)	Text	Variable values (examples: 1, 2, 3, 4)
Block (Block No.)	Text	Variable values (examples,: 1, 2, 3, 4)

Survey_Tract (Survey Tract)	Text	Variable values (examples: 1, 2, A, B)
LRS_Tract (LRS Tract)	Text	Variable values (examples: 1, 2a, 14, 22c)
Coal (Coal)	Text	r (Reserved to U.S.)
Oil (Oil)	Text	r (Reserved to U.S.)
Gas (Gas)	Text	r (Reserved to U.S.)
Sand (Sand)	Text	r (Reserved to U.S.)
Gravel (Gravel)	Text	r (Reserved to U.S.)
Minerals (Minerals)	Text	r (Reserved to U.S.)
Notes (Notes)	Text	Variable values (examples: free-form text and numbers)

The Region 7 Land Mapper was developed, and is maintained by, the U.S. Fish & Wildlife Service, Region 7, Division of Realty. Questions, comments,and suggestions should be directed to ak_realty@fws.gov

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Subsurface Estate (Selected land, managed by FWS)

This layer identifies the ***subsurface estate that is selected by other entities***. These lands have been selected by entities such as Alaska natives, Village Native Corporations, Regional Native Corporations, the State of Alaska, or other private individuals.

All selected lands contained in this layer remain under the control and administration of the U.S. Fish and Wildlife Service until such time as they are officially conveyed or patented to the selectee.

Attribute Schema

Field (Alias)	Type	Values (Domain Description)
Otyp (Owner Code)	Integer	2 (Native Allotment) 3 (Village Native Corp.) 4 (Regional Native Corp.) 5 (State of Alaska) 7 (Other Private)
Owntyp (Owner Type)	Text	na (Native Allotment) vnc (Village Native Corp.) rnc (Regional Native Corp.) ak (State of Alaska) op (Other Private)
Substat (Subsurface Status)	Text	s (Selected) z (State of Alaska Submerged Land)
Refuge (Refuge	Text	akm (Alaska Maritime)

Name)		akp (Alaska Peninsula) arc (Arctic) bch (Becharof) inn (Innoko) izm (Izembek) kan (Kanuti) kna (Kenai) kdk (Kodiak) kuk (Koyukuk) now (Nowitna) swk (Selawik) tet (Tetlin) tgk (Togiak) ykd (Yukon Delta) ykf (Yukon Flats)
NWR_Unit (NWR Unit)	Text	afo (Afognak) akp (Alaska Peninsula) ali (Aleutian Islands) ber (Bering Sea) chi (Chignik) chu (Chukchi Sea) gul (Gulf of Alaska) hag (Hagemeister Island) inn (Innoko) kai (Kaiyuh) kdk (Kodiak Island) ncr (North Creek) new (Cape Newenham) pav (Pavlof) slc (Seal Cape) tgk (Togiak) uga (Ugashik) uni (Unimak Island)
IFWS (IFWS No.)	Text	991 (Alaska Maritime) 992 (Alaska Peninsula) 993(Arctic) 994 (Becharof) 995 (Innoko) 996 (Izembek) 997 (Kanuti) 998 (Kenai) 999 (Kodiak) 1000 (Koyukuk) 1001 (Nowitna) 1002 (Selawik) 1003 (Tetlin) 1004 (Togiak) 1005 (Yukon Delta) 1006 (Yukon Flats)

Casetype (Case Type)	Text	007503 (Quit Claim Deed from U.S. (BLM)) 007509 (NA in Litigation) 186001 (Quit Claim deed by GSA) 186002 (Omnibus Act QCD - Alaska) 186003 (Quit Claim Deed by BIA) 186004 (Quit Claim Deed) 186008 (Quit Claim Deed Public Laws) 186009 (Quit Claim to U.S. (BLM)) 215005 (Acquired Land) 222005 (Ex-Alaska Natives) 251101 (HE Original) 251102 (Adjoining Farm) 251201 (HE addl-after proof) 251202 (HE addl-contiguous) 251300 (HE second entry) 256100 (AK Native Allotment) 256200 (T and M site) 256301 (Headquarters site) 256302 (Homesite) 256400 (Native Townsite) 256500 (Non-Native Townsite) 256600 (Alaska R.R. Townsites) 256700 (Homestead settlement) 256800 (AK V.Vet Nat. Allot) 260010 (Soldier's Additional Homestead (SAHA)) 261000 (Soldier's Additional Homestead (SAHA)) 262400 (St gnt schl sec in place) 262710 (AK Mental Health Grants) 262711 (State Community Grant) 262720 (Ak University Grant) 262730 (General Grant) 262740 (State Grant reserved mineral estate) 264000 (Airport Conveyances) 265101 (Village Selection (12A)) 265102 (Village Selection (12B)) 265200 (Regional Selection) 265201 (Subsurface Estate Conv) 265202 (Mineral Lieu Sel) 265203 (CIRI nom out of reg pool) 265204 (GSA pool selection - CIRI) 265205 (CIRI sel restricted min) 265206 (Conv state to US to CIRI) 265208 (CNI 12C/14H8 ANILCA exch) 265209 (CIRI dfncy recon to vlg) 265210 (CIRI - Misc & Coal/O&G) 265301 (Cemetery-Historical site (14H1)) 265302 (Native Group selection) 265303 (Four Cities selection) 265304 (Four Cities nomination) 265305 (Four Cities withdrawal)

		265306 (Primary Place Residence) 265308 (ANCSA 14H8 selection) 265311 (Reg-Sel-14H5 & 14H6 AK) 273000 (Small Tracts) 274000 (SALE - Rec & Pub Purposes) 274001 (Mission site) 275000 (SALE - Cemetery Land) 276200 (Townsite settlement) 276300 (Townsite) 277100 (Sale - AK Public Sale Act) 278005 (Sale - PLO 1613 Highway Lot) 282102 (Material Sites (sec 107)) 289004 (ROW - Misc & Special) 291100 (Airport Lease) 291200 (R & PP Lease) 291300 (Small Tract Lease) 311111 (Oil & Gas Lease Noncomp Public Land) 341001 (Coal Exploration License) 372000 (Coal Land-Mine (PL 357)) 384101 (Mining Claim (Lode)) 384200 (Mining Claim (Placer)) 384300 (Mining Claim (Tunnels)) 384400 (Mining Claim (Millsites)) 386000 (Mineral Patent Application) 386100 (Mineral Surveys (MS)) 386201 (Mineral Patent (Lode)) 386301 (Mineral Patent (Placer)) 386401 (Mineral Patent (Millsite))
Serial_full (Full Serial No.)	Text	Variable values (examples: FF014970AZ, A 004798C, AA006687 A)
Serial_main (Main Serial No.)	Text	Variable values (examples: FF014970, A 004798, AA006687)
Cvyno (Conveyance No.)	Text	Variable values (examples: 50-95-0125, 50-2010-237, IC 560, IC 1236)
Cvydate (Conveyance Date)	Date	Variable values (examples: 01/15/1998, 12/04/2001)
Acres_GIS (Acres (GIS))	Double	Variable values (examples: 40.45876, 42578.54024)
Acres_LGL (Acres (Legal))	Double	Variable values (examples: 39.98, 159.99, 1245.85)
USS (US Survey No.)	Text	Variable values (examples: 245, 945, 13408)
Lot (Lot No.)	Text	Variable values (examples: 1, 2, 3, 4)
Block (Block No.)	Text	Variable values (examples,: 1, 2, 3, 4)
Survey_Tract (Survey Tract)	Text	Variable values (examples: 1, 2, A, B)
LRS_Tract (LRS Tract)	Text	Variable values (examples: 1, 2a, 14, 22c)

Coal (Coal)	Text	s (Selected) n (Not conveyed)
Oil (Oil)	Text	s (Selected) n (Not conveyed)
Gas (Gas)	Text	s (Selected) n (Not conveyed)
Sand (Sand)	Text	s (Selected) n (Not conveyed)
Gravel (Gravel)	Text	s (Selected) n (Not conveyed)
Minerals (Minerals)	Text	s (Selected) n (Not conveyed)
Notes (Notes)	Text	Variable values (examples: free-form text and numbers)

The Region 7 Land Mapper was developed, and is maintained by, the U.S. Fish & Wildlife Service, Region 7, Division of Realty. Questions, comments,and suggestions should be directed to ak_realty@fws.gov

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Subsurface Estate (Managed by other Federal agency)

This layer identifies the ***subsurface estate that is administered by Federal agencies other than the U.S. Fish and Wildlife Service***. These lands were placed under the primary administration of other Federal agencies by a variety of actions: Public Law, Public Land Order, Executive Order, Federal regulation, fee purchase, land exchange, donation, etc.

Attribute Schema

Field (Alias)	Type	Values (Domain Description)
Otyp (Owner Code)	Integer	6 (Other Federal)
Owntyp (Owner Type)	Text	of (Other Federal)
Substat (Subsurface Status)	Text	w (Withdrawn) a (Acquired) y (Federal Submerged Land)
Refuge (Refuge Name)	Text	akm (Alaska Maritime) akp (Alaska Peninsula) arc (Arctic) bch (Becharof) inn (Innoko) izm (Izembek) kan (Kanuti) kna (Kenai)

		kdk (Kodiak) kuk (Koyukuk) now (Nowitna) swk (Selawik) tet (Tetlin) tgk (Togiak) ykd (Yukon Delta) ykf (Yukon Flats)
NWR_Unit (NWR Unit)	Text	afo (Afognak) akp (Alaska Peninsula) ali (Aleutian Islands) ber (Bering Sea) chi (Chignik) chu (Chukchi Sea) gul (Gulf of Alaska) hag (Hagemeister Island) inn (Innoko) kai (Kaiyuh) kdk (Kodiak Island) ncr (North Creek) new (Cape Newenham) pav (Pavlof) slc (Seal Cape) tgk (Togiak) uga (Ugashik) uni (Unimak Island)
IFWS (IFWS No.)	Text	991 (Alaska Maritime) 992 (Alaska Peninsula) 993(Arctic) 994 (Becharof) 995 (Innoko) 996 (Izembek) 997 (Kanuti) 998 (Kenai) 999 (Kodiak) 1000 (Koyukuk) 1001 (Nowitna) 1002 (Selawik) 1003 (Tetlin) 1004 (Togiak) 1005 (Yukon Delta) 1006 (Yukon Flats)
Casetype (Case Type)	Text	007500 (Natl Register Historical Place) 186009 (Quit Claim to U.S. (BLM)) 211000 (Donation of lands to US) 218060 (Acquired Military Purposes) 231120 (ANCSA 17(d)(1) Withdrawl) 231170 (BLM Misc Wdl) 231370 (Misc BIA Withdrawal)

		233200 (Army Withdrawal) 233201 (Corps of Engineers Wdl (C of E)) 233300 (Navy Withdrawal) 233400 (FERC Wdl (Power projects)) 235100 (Fed Aviation Admin Wdl (FAA)) 235113 (Light House Wdl (LH)) 235200 (Coast Guard Wdl (CG)) 236100 (NOAA Wdl) 236102 (Natl Marine Fisheries Wdl) 240006 (Recreation & Public Purposes (R & PP)) 264000 (Airport Conveyance) 265501 (Det Area ANCSA sec 3(E)) 281008 (ROW-Roads Federal 44LD513) 289008 (ROW-Other fed 44LD513)
Serial_full (Full Serial No.)	Text	Variable values (examples: FF014970AZ, A 004798C, AA006687 A)
Serial_main (Main Serial No.)	Text	Variable values (examples: FF014970, A 004798, AA006687)
Cvyno (Conveyance No.)	Text	Variable values (examples: 50-95-0125, 50-2010-237, IC 560, IC 1236)
Cvydate (Conveyance Date)	Date	Variable values (examples: 01/15/1998, 12/04/2001)
Acres_GIS (Acres (GIS))	Double	Variable values (examples: 40.45876, 42578.54024)
Acres_LGL (Acres (Legal))	Double	Variable values (examples: 39.98, 159.99, 1245.85)
USS (US Survey No.)	Text	Variable values (examples: 245, 945, 13408)
Lot (Lot No.)	Text	Variable values (examples: 1, 2, 3, 4)
Block (Block No.)	Text	Variable values (examples,: 1, 2, 3, 4)
Survey_Tract (Survey Tract)	Text	Variable values (examples: 1, 2, A, B)
LRS_Tract (LRS Tract)	Text	Variable values (examples: 1, 2a, 14, 22c)
Coal (Coal)	Text	c (Conveyed) s (Selected) n (Not conveyed)
Oil (Oil)	Text	c (Conveyed) s (Selected) n (Not conveyed)
Gas (Gas)	Text	c (Conveyed) s (Selected) n (Not conveyed)
Sand (Sand)	Text	c (Conveyed) s (Selected) n (Not conveyed)

Gravel (Gravel)	Text	c (Conveyed) s (Selected) n (Not conveyed)
Minerals (Minerals)	Text	c (Conveyed) s (Selected) n (Not conveyed)
Notes (Notes)	Text	Variable values (examples: free-form text and numbers)

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Subsurface Estate (Private land)

This layer identifies the ***subsurface estate that is privately owned***. These lands may belong to Alaska natives, Village Native Corporations, Regional Native Corporations, the State of Alaska, or other private entities.

Attribute Schema

Field (Alias)	Type	Values (Domain Description)
Otyp (Owner Code)	Integer	2 (Native Allotment) 3 (Village Native Corp.) 4 (Regional Native Corp.) 5 (State of Alaska) 7 (Other Private)
Owntyp (Owner Type)	Text	na (Native Allotment) vnc (Village Native Corp.) rnc (Regional Native Corp.) ak (State of Alaska) op (Other Private)
Substat (Subsurface Status)	Text	c (Conveyed) z (State of Alaska Submerged Land)
Refuge (Refuge Name)	Text	akm (Alaska Maritime) akp (Alaska Peninsula) arc (Arctic) bch (Becharof) inn (Innoko) izm (Izembek) kan (Kanuti) kna (Kenai) kdk (Kodiak)

		kuk (Koyukuk) now (Nowitna) swk (Selawik) tet (Tetlin) tgk (Togiak) ykd (Yukon Delta) ykf (Yukon Flats)
NWR_Unit (NWR Unit)	Text	afo (Afognak) akp (Alaska Peninsula) ali (Aleutian Islands) ber (Bering Sea) chi (Chignik) chu (Chukchi Sea) gul (Gulf of Alaska) hag (Hagemeister Island) inn (Innoko) kai (Kaiyuh) kdk (Kodiak Island) ncr (North Creek) new (Cape Newenham) pav (Pavlof) slc (Seal Cape) tgk (Togiak) uga (Ugashik) uni (Unimak Island)
IFWS (IFWS No.)	Text	991 (Alaska Maritime) 992 (Alaska Peninsula) 993(Arctic) 994 (Becharof) 995 (Innoko) 996 (Izembek) 997 (Kanuti) 998 (Kenai) 999 (Kodiak) 1000 (Koyukuk) 1001 (Nowitna) 1002 (Selawik) 1003 (Tetlin) 1004 (Togiak) 1005 (Yukon Delta) 1006 (Yukon Flats)
Casetype (Case Type)	Text	007503 (Quit Claim Deed from U.S. (BLM)) 007509 (NA in Litigation) 186001 (Quit Claim deed by GSA) 186002 (Omnibus Act QCD - Alaska) 186003 (Quit Claim Deed by BIA) 186004 (Quit Claim Deed) 186008 (Quit Claim Deed Public Laws) 186009 (Quit Claim to U.S. (BLM))

		215005 (Acquired Land) 222005 (Ex-Alaska Natives) 251101 (HE Original) 251102 (Adjoining Farm) 251201 (HE addl-after proof) 251202 (HE addl-contiguous) 251300 (HE second entry) 256100 (AK Native Allotment) 256200 (T and M site) 256301 (Headquarters site) 256302 (Homesite) 256400 (Native Townsite) 256500 (Non-Native Townsite) 256600 (Alaska R.R. Townsites) 256700 (Homestead settlement) 256800 (AK V.Vet Nat. Allot) 260010 (Soldier's Additional Homestead (SAHA)) 261000 (Soldier's Additional Homestead (SAHA)) 262400 (St gnt schl sec in place) 262710 (AK Mental Health Grants) 262711 (State Community Grant) 262720 (Ak University Grant) 262730 (General Grant) 262740 (State Grant reserved mineral estate) 264000 (Airport Conveyances) 265101 (Village Selection (12A)) 265102 (Village Selection (12B)) 265200 (Regional Selection) 265201 (Subsurface Estate Conv) 265202 (Mineral Lieu Sel) 265203 (CIRI nom out of reg pool) 265204 (GSA pool selection - CIRI) 265205 (CIRI sel restricted min) 265206 (Conv state to US to CIRI) 265208 (CNI 12C/14H8 ANILCA exch) 265209 (CIRI dfncy recon to vlg) 265210 (CIRI - Misc & Coal/O&G) 265301 (265301-14H1) 265302 (Native Group selection) 265303 (Four Cities selection) 265304 (Four Cities nomination) 265305 (Four Cities withdrawal) 265306 (Primary Place Residence) 265308 (ANCSA 14H8 selection) 265311 (Reg-Sel-14H5 & 14H6 AK) 273000 (Small Tracts) 274000 (SALE - Rec & Pub Purposes) 274001 (Mission site) 275000 (SALE - Cemetery Land) 276200 (Townsite settlement)

		276300 (Townsite) 277100 (Sale - AK Public Sale Act) 278005 (Sale - PLO 1613 Highway Lot) 282102 (Material Sites (sec 107)) 289004 (ROW - Misc & Special) 291100 (Airport Lease) 291200 (R & PP Lease) 291300 (Small Tract Lease) 311111 (Oil & Gas Lease Noncomp Public Land) 341001 (Coal Exploration License) 372000 (Coal Land-Mine (PL 357)) 384101 (Mining Claim (Lode)) 384200 (Mining Claim (Placer)) 384300 (Mining Claim (Tunnels)) 384400 (Mining Claim (Millsites)) 386000 (Mineral Patent Application) 386100 (Mineral Surveys (MS)) 386201 (Mineral Patent (Lode)) 386301 (Mineral Patent (Placer)) 386401 (Mineral Patent (Millsite))
Serial_full (Full Serial No.)	Text	Variable values (examples: FF014970AZ, A 004798C, AA006687 A)
Serial_main (Main Serial No.)	Text	Variable values (examples: FF014970, A 004798, AA006687)
Cvyno (Conveyance No.)	Text	Variable values (examples: 50-95-0125, 50-2010-237, IC 560, IC 1236)
Cvydate (Conveyance Date)	Date	Variable values (examples: 01/15/1998, 12/04/2001)
Acres_GIS (Acres (GIS))	Double	Variable values (examples: 40.45876, 42578.54024)
Acres_LGL (Acres (Legal))	Double	Variable values (examples: 39.98, 159.99, 1245.85)
USS (US Survey No.)	Text	Variable values (examples: 245, 945, 13408)
Lot (Lot No.)	Text	Variable values (examples: 1, 2, 3, 4)
Block (Block No.)	Text	Variable values (examples,: 1, 2, 3, 4)
Survey_Tract (Survey Tract)	Text	Variable values (examples: 1, 2, A, B)
LRS_Tract (LRS Tract)	Text	Variable values (examples: 1, 2a, 14, 22c)
Coal (Coal)	Text	c (Conveyed) n (Not conveyed)
Oil (Oil)	Text	c (Conveyed) n (Not conveyed)
Gas (Gas)	Text	c (Conveyed) n (Not conveyed)

Sand (Sand)	Text	c (Conveyed) n (Not conveyed)
Gravel (Gravel)	Text	c (Conveyed) n (Not conveyed)
Minerals (Minerals)	Text	c (Conveyed) n (Not conveyed)
Notes (Notes)	Text	Variable values (examples: free-form text and numbers)

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Easements

This layer identifies various types of ***easements***. These are primarily conservation and non-development easements. Other easements, such as ANCSA 17(b) easements, will be added in the future.

Attribute Schema

Field (Alias)	Type	Values (Domain Description)
Easetype (Easement Type)	Text	11 (State Conservation) 12 (State Reversionary Clause) 21 (U.S. Conservation) 22 (U.S. Reversionary Clause) 23 (U.S. Non-Development)
Casetype (Case Type)	Text	007502 (Acquired easement) 007516 (Acquired Land) 215005 (Acquired Land) 216001 (Acquired Land) 225002 (Exchanges - Natl. Wildlife Refuges) 231101 (Hot Springs Withdrawal) 231110 (Power Site Wdl & Cl) 231304 (Cemetery) 231401 (Natl Wildlife Refuge Wdl) 231403 (Wild and Scenic Rivers (FWS)) 231404 (Wilderness Area Wdl (FWS)) 231470 (FWS Misc Wdl) 320070 (Geological KGRA)
Serial_full (Full Serial No.)	Text	Variable values (examples: FF014970AZ, A 004798C, AA006687 A)
Serial_main (Main Serial	Text	Variable values (examples: FF014970, A 004798,

No.)		AA006687)
Serial_Old (Old Serial No.)	Text	Variable values (examples: FF014970, A 004798, AA006687)
Closing (Closing Phase)	Integer	1 (AKI Cons. Esmt. closing one) 2 (AKI Cons. Esmt. closing two) 3 (AKI Cons. Esmt. closing three) 4 (AKI Cons. Esmt. closing four) 5 (OHC Cons. Esmt. closing two)
State_Cons_Esmt_Closing (State Cons. Esmt. Closing Phase)	Integer	1 (AKI closing one) 2 (AKI closing two) 3 (AKI closing three) 4 (AKI closing four) 5 (OHC closing one) 6 (OHC closing two) 7 (KON closing one) 8 (KON closing two) 9 (KON closing three) 10 (KON closing four)
Acres_GIS (Acres (GIS))	Double	Variable values (examples: 40.45876, 42578.54024)
Acres_LGL (Acres (Legal))	Double	Variable values (examples: 39.98, 159.99, 1245.85)
Notes (Notes)	Text	Variable values (examples: free-form text and numbers)

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BLM's Statewide Land Status

This layer identifies the various land status categories for BLM's statewide generalized surface estate layer.

Attribute Schema

Field (Alias)	Type	Values
STATUS_TYP (Status)	Text	Bureau of Land Management Fish and Wildlife Service Forest Service Metlakatla Indian Res. Military National Park Service Native Patent of IC

		Native Selected Private State Patent or TA State Selected
Current_To (Current To)	Date	Variable values (examples: 8/6/1993, 6/24/2001)
Acres_GIS (Acres (GIS))	Float	Variable values (examples: 40.45876, 42578.54024)

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Townships

This layer identifies the Public Land Survey System ***townships and ranges*** within Alaska.

Attribute Schema

Field (Alias)	Type	Values (Domain Description)
MTR (Meridian Township Range)	Text	Variable values (examples: S029N004W, F010N001E, C073S100E)
RNG (Range)	Integer	Variable values (examples: 1, 54, 67)
RNG_DIR (Range Direction)	Text	Variable values (examples: E, W)
RNG_FRAC (Range Fraction)	Integer	Variable values (examples: 0)
SEC_NO (Section No.)	Integer	Variable values (examples: 1 through 36)
TWP (Township)	Integer	Variable values (examples: 3, 15, 58)
TWP_DIR (Township Direction)	Text	Variable values (examples: N, S)
TWP_FRAC (Township Fraction)	Integer	Variable values (examples: 0)
Surveyed (Surveyed)	Text	Variable values (examples: y, n)
SurveyDate (Survey Date)	Date	Variable values (examples: 8/6/1993, 6/24/2001)
TWP_TIN_NO (Township Index No.)	Integer	Variable values (examples: 12457, 23589)
Description (Description)	Text	Variable values (examples: T16N, R1W, FM; T32S, R24W, SM)
Meridian (Meridian)	Text	C (Copper River)

		F (Fairbanks) K (Kateel) S (Seward) U (Umiat)

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Sections

This layer identifies the Public Land Survey System ***sections*** within Alaska.

Attribute Schema

Field (Alias)	Type	Values (Domain Description)
MTR (Meridian Township Range)	Text	Variable values (examples: K013N005W21, F007S012E29)
RNG (Range)	Integer	Variable values (examples: 1, 54, 67)
RNG_DIR (Range Direction)	Text	Variable values (examples: E, W)
RNG_FRAC (Range Fraction)	Integer	Variable values (examples: 0)
SEC_NO (Section No.)	Integer	Variable values (examples: 1 through 36)
TWP (Township)	Integer	Variable values (examples: 3, 15, 58)
TWP_DIR (Township Direction)	Text	Variable values (examples: N, S)
TWP_FRAC (Township Fraction)	Integer	Variable values (examples: 0)
TWP_TIN_NO (Township Index No.)	Integer	Variable values (examples: 12457, 23589)
Description (Description)	Text	Variable values (examples: T16N, R1W, FM; T32S, R24W, SM)
Meridian (Meridian)	Text	C (Copper River) F (Fairbanks) K (Kateel) S (Seward) U (Umiat)
MTP_DATE (MTP Date)	Date	Variable values (examples: 8/6/1993, 6/24/2001)

IndexSec (Index & Section)	Integer	Variable values (examples: 795003, 657627)

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Refuge Boundaries

This layer identifies the ***National Wildlife Refuge boundaries*** within Alaska.

Attribute Schema

Field (Alias)	Type	Values (Domain Description)
IFWSNO (IFWS No.)	Integer	991 (Alaska Maritime) 992 (Alaska Peninsula) 993(Arctic) 994 (Becharof) 995 (Innoko) 996 (Izembek) 997 (Kanuti) 998 (Kenai) 999 (Kodiak) 1000 (Koyukuk) 1001 (Nowitna) 1002 (Selawik) 1003 (Tetlin) 1004 (Togiak) 1005 (Yukon Delta) 1006 (Yukon Flats)
NWRNAME (NWR Name)	Text	akm (Alaska Maritime) akp (Alaska Peninsula) arc (Arctic) bch (Becharof) inn (Innoko) izm (Izembek) kan (Kanuti) kna (Kenai) kdk (Kodiak) kuk (Koyukuk) now (Nowitna) swk (Selawik) tet (Tetlin)

		tgk (Togiak) ykd (Yukon Delta) ykf (Yukon Flats)
UNIT (Unit)	Text	afo (Afognak) akp (Alaska Peninsula) ali (Aleutian Islands) ber (Bering Sea) chi (Chignik) chu (Chukchi Sea) gul (Gulf of Alaska) hag (Hagemeister Island) inn (Innoko) kai (Kaiyuh) kdk (Kodiak Island) ncr (North Creek) new (Cape Newenham) pav (Pavlof) slc (Seal Cape) tgk (Togiak) uga (Ugashik) uni (Unimak Island)
SUB_UNIT	Text	Aleutian Islands Bering Sea Bluff Cape Darby Cape Denbigh Cape Stephens Cape Thomson Cape York Chamisso Forrester Island Hazy Island Karluk Kotzebue Creek Pribilof Saint Lazaria Seal Cape Semidi Simeonof St. Anne - Cape Lisburne Tuxedni Womens Bay
ISLAND_NAME (Island Name)	Text	Variable values (examples: Unimak, Kodiak, Amchitka)
ACREAGE (Acreage)	Double	Variable values (examples: 245248.2456, 8452147.2548)

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Wilderness Boundaries

This layer identifies the ***National Wildlife Refuge Wilderness boundaries*** within Alaska.

Attribute Schema

Field (Alias)	Type	Values (Domain Description)
IFWSNO (IFWS No.)	Integer	991 (Alaska Maritime) 993(Arctic) 994 (Becharof) 995 (Innoko) 996 (Izembek) 998 (Kenai) 1000 (Koyukuk) 1002 (Selawik) 1004 (Togiak) 1005 (Yukon Delta)
NWRNAME (NWR Name)	Text	akm (Alaska Maritime) arc (Arctic) bch (Becharof) inn (Innoko) izm (Izembek) kna (Kenai) kuk (Koyukuk) swk (Selawik) tgk (Togiak) ykd (Yukon Delta)
NWRUNIT (NWR Unit)	Text	ali and ans bch ber bog chm dav est for haz inn kuk

		laz mol mys nun sem sim swk tgk tux wst
UNIT (Unit)	Text	Aleutian Islands Andreafsky Andrew Simons Becharof Bering Sea Bogoslof Chamisso Dave Spencer East Forrester Island Hazy Island Innoko Koyukuk Saint Lazaria Mollie Beattie Mystery Creek Nunivak Semidi Simeonof Selawik Togiak Tuxedni West
ACRES (Acres)	Double	Variable values (examples: 245248.2456, 8452147.2548)

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The Tools

Below is a short description of the Land Mapper's various tools. Refer to the individual topics within this section for additional details on using the tools.

Legend
Displays the legends of the data layers that are visible on the map

Data Layers
Use this to turn data layers on and off, change layer transparency, and perform other layer-r

Basemap
Provides a selection of basemaps that can be used in the Mapper

Bookmarks
Provides a quick and easy way to view and save different geographic areas

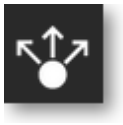
Query
Allows you to perform various queries on the land status layers

Add Data
Allows you to search for, and add, additional data layers to the Mapper

Swipe
Allows you to temporarily make a data layer invisible so that you can better see the layers ur

Get Coordinates
Gets the coordinates of a point on the map that you click, and presents the coordinates in va

Find Distance and Direction
Allows you to find the distance and direction between places on the map



Share
Allows you share a customized view of the R7 Land Mapper with others via URL

About the Land Mapper
Gives a bit of background information about the FWS Region 7 Land Mapper

Drawing Tools
Allows you draw shapes and text on the map and obtain distance and area measurements

Measure
This is another tool that allows you to measure distances and areas on the map

Print
Prints the currently viewed map and/or saves it to a file

Attribute Table
Shows detailed information about features in various data layers

Location Search
Zooms and pans the map to a place name or street address that you enter

Coordinates
Displays the map coordinates at the location of the cursor on the map

Zoom In
Zooms in on an area of the map

Zoom Out
Zooms out on an area of the map

Default View
Restores the default map view

Overview Map

Displays the location of the current map view within an overview

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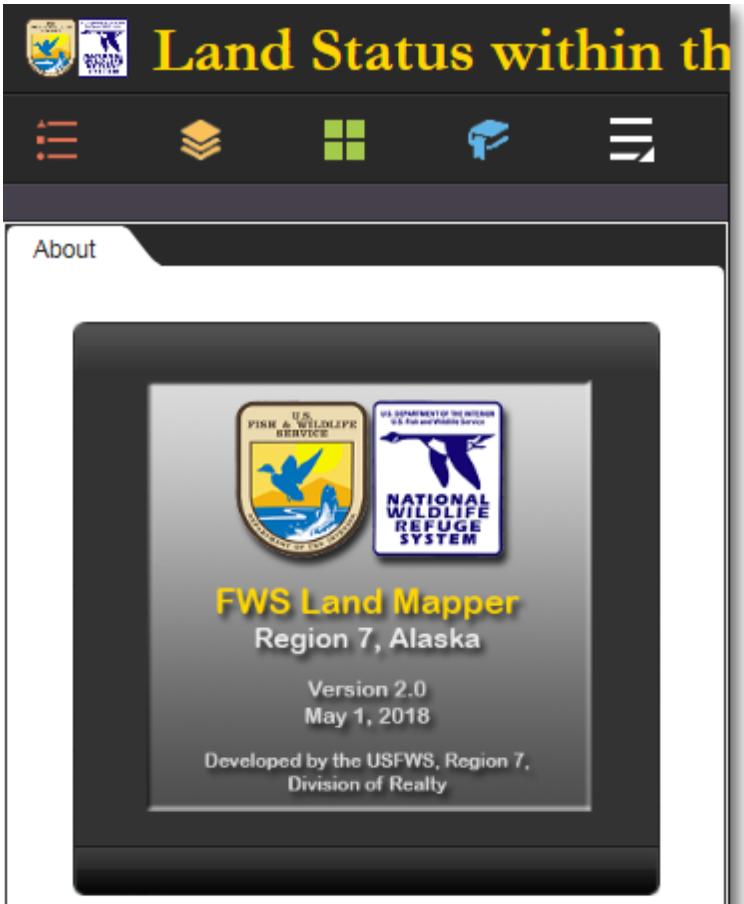
About the Land Mapper

This gives a bit of background information about the FWS Region 7 Land Mapper. Be sure to click the link to the Limitations and Disclaimers. If you have questions about the Mapper, you can direct them to the contact information shown at the bottom of the panel.



Conserving the Nature of America

The U.S. Fish & Wildlife Service manages nearly 77 million acres of public land and water within sixteen National Wildlife Refuges in the state of Alaska. The Service's mission is to work with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people. Central to this is understanding the complex land ownership patterns within the external boundaries of the Refuges. This interactive mapper allows you to explore the National Wildlife Refuges within Alaska to determine land ownership.

The U.S. Fish & Wildlife Service makes no guarantee regarding the accuracy or completeness of the data contained herein. For additional details, please refer to the ***Limitations and Disclaimers*****.**

Questions and comments regarding this land mapper may be directed to the following:

U.S.Fish & Wildlife Service
Division of Realty
1011 E. Tudor Road
Anchorage, AK 99503
(907) 786-3414
ak_realty@fws.gov

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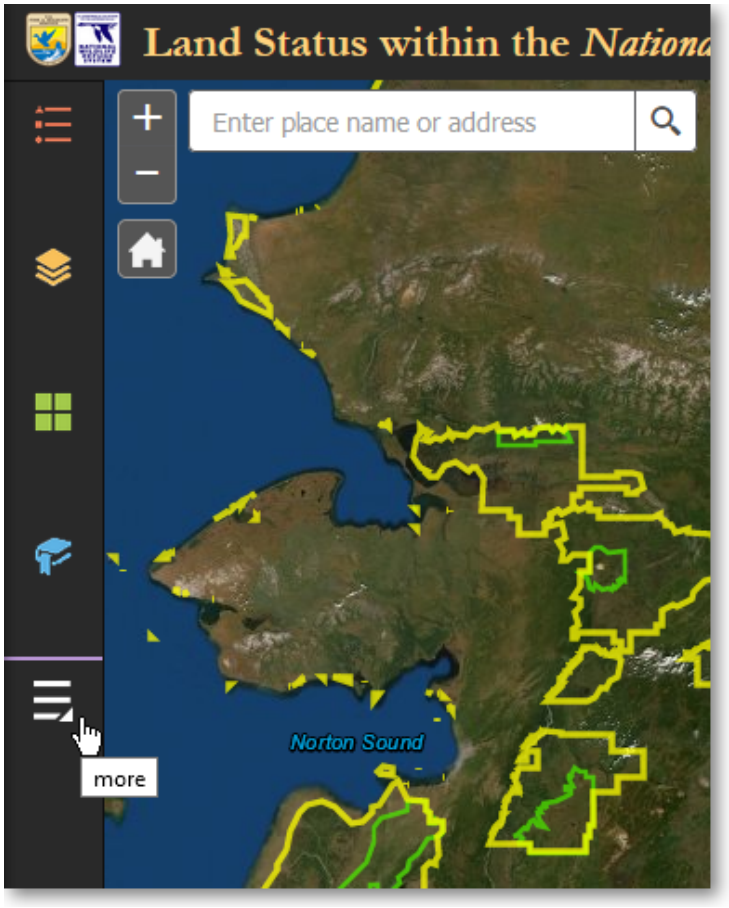
Adding Data Layers to the Mapper

The Land Mapper contains data layers representing the surface and subsurface estates within the Alaska National Wildlife Refuges. It also contains other supporting layers that you will find helpful. However, there could be situations in which you may need a data layer that is not included in the Mapper by default. In these cases, you can add your own data layers to the Mapper.

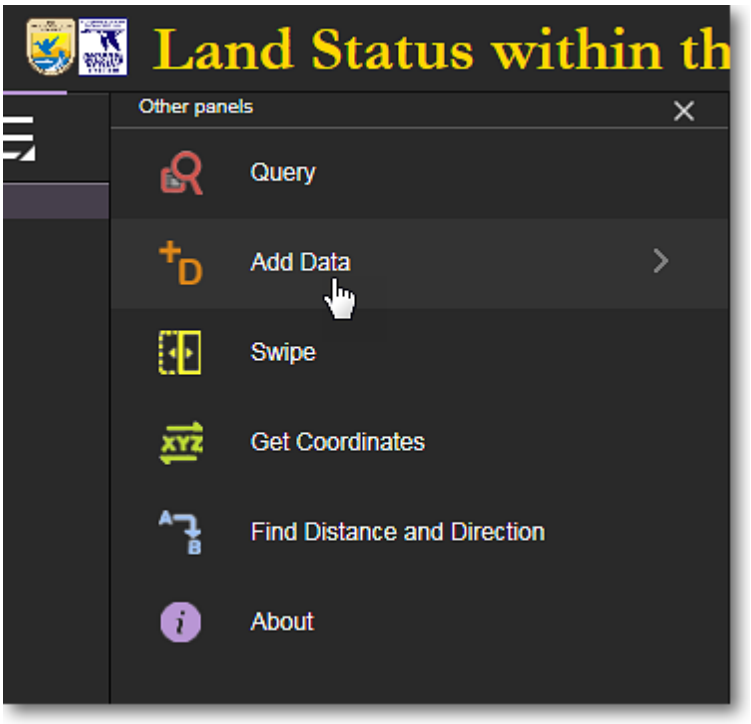
To Add a Data Layer

1) Click the ***More*** icon on the left-hand side of the Mapper window.



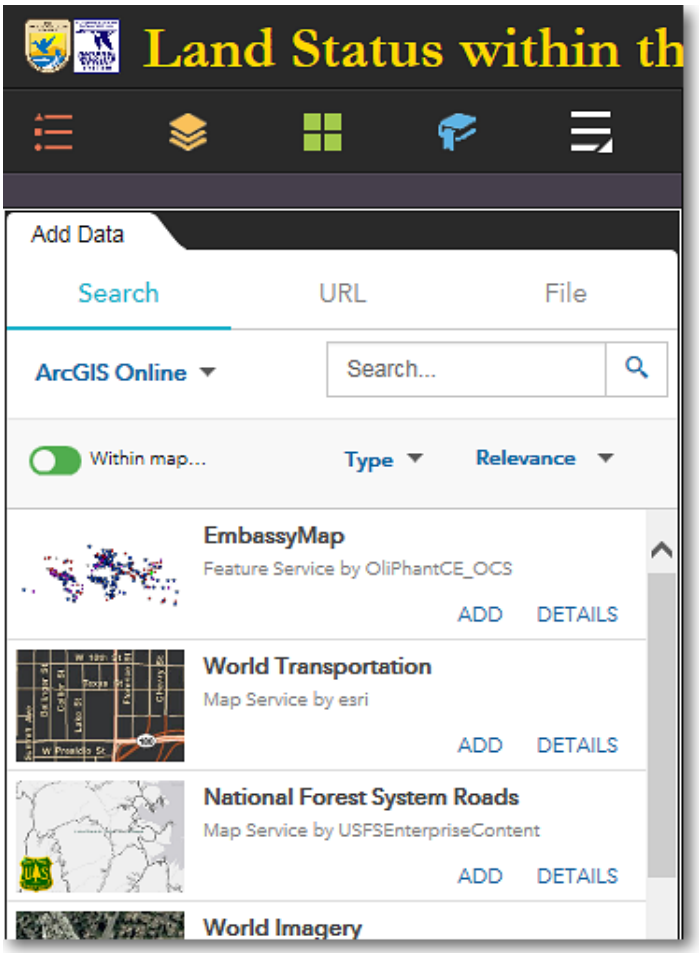
*Click the **More** icon to show the Add Data panel*

2) On the ***Other Panels*** panel, click ***Add Data***.

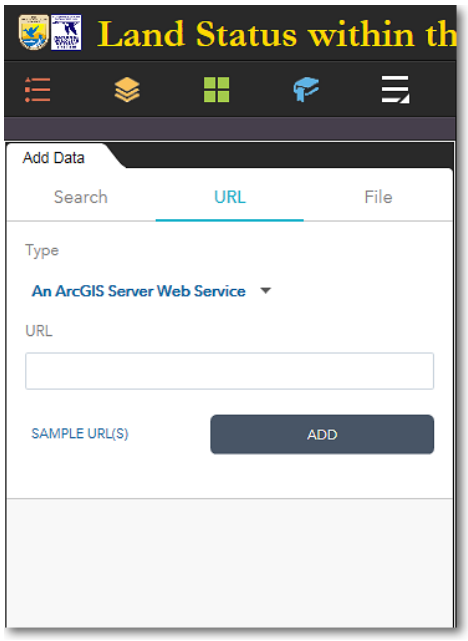


*Click **Add Data***

3) The ***Add Data*** panel has three tabs at the top of the panel. These tabs let you search for and add data layers that are in various formats. Below are examples of the three ***Add Data*** tabs.



The ***Search*** tab lets you search for data layers that are available on ArcGIS Online. For example, if you want to add UTM zones to the Mapper, enter ***utm zones*** in the Search box and press ***Enter***. Select the desired layer and click ***Add***. You can also customize your search using the ***Within Map***, ***Type***, and ***Relevance*** options.



The ***URL*** tab lets you add a layer by entering an online URL to its location. Click the ***Type*** drop-down list first to specify the type of data that the URL points to, and enter the URL in the input box. Finally, click ***Add***.

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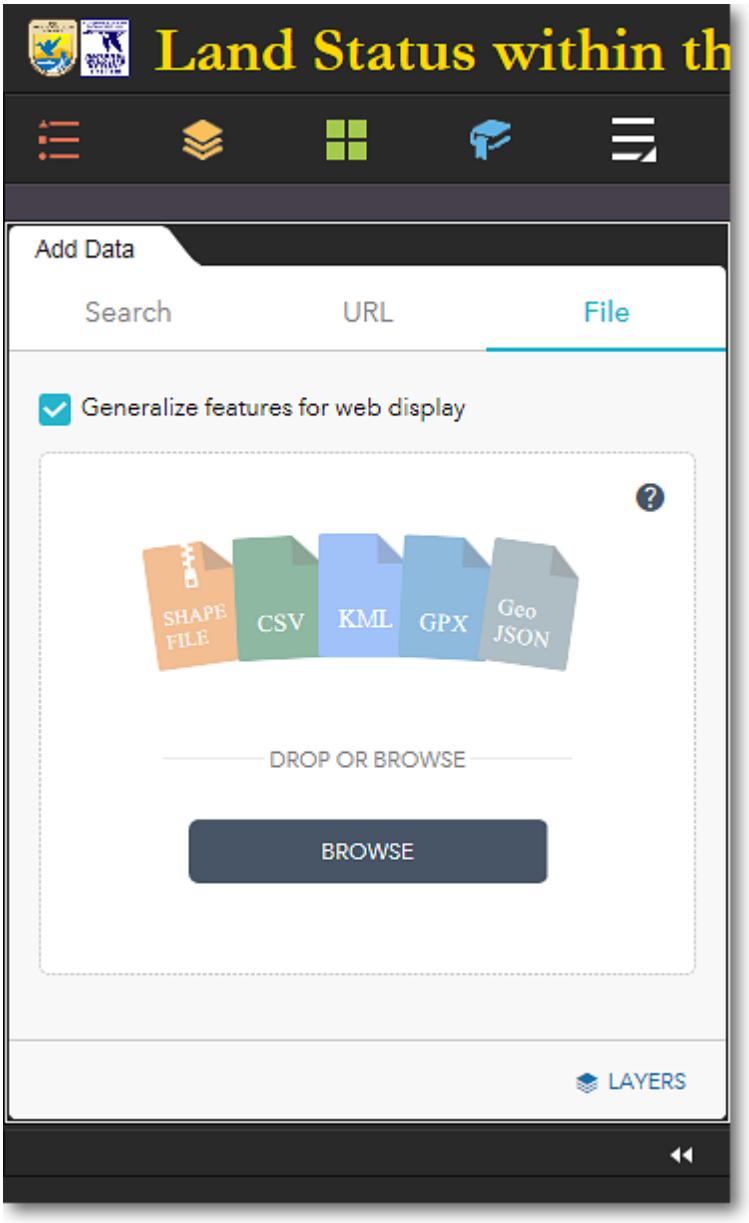
To Remove a Data Layer

1) Click ***Layers*** in the bottom-right corner of the ***Add Data*** panel.



Click ***Layers*** in the lower-right corner

2) All the layers you have added will be listed in the ***Add Data*** > ***Layers*** panel.To remove a data layer, click on the ***trash can*** (Remove Layer) icon for the layer.

User-added data layers are *TEMPORARY*

Data layers that you add to the Mapper are temporary. They are removed from the Mapper when:

- You remove them manually
- You close your web browser
- Your clear your web browser's cache

User-added data layers will be retained when...

- You minimize or close the ***Add Data*** panel
- You switch to another tool panel
- You leave your web browser open or minimize the browser window

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Attribute Table

The *Attribute Table* tool displays information associated with various data layers. When you want to see detailed information about the various layers, this is the tool to use.

Accessing the Attribute Table

To open the attribute table, click the ***Up*** arrow that is located at the bottom of the Mapper window. The table will expand upward and show several rows. If the table takes up too much of your screen, or if you want to see more rows, move your mouse cursor over the top border of the table, then click and drag up or down to resize the attribute table.

*Click the **Up** arrow at the bottom of the Mapper window to open the attribute table.*

To quickly close, or minimize, the attribute table, click the ***Down*** arrow in the center of the bar.

Main Features of the Attribute Table

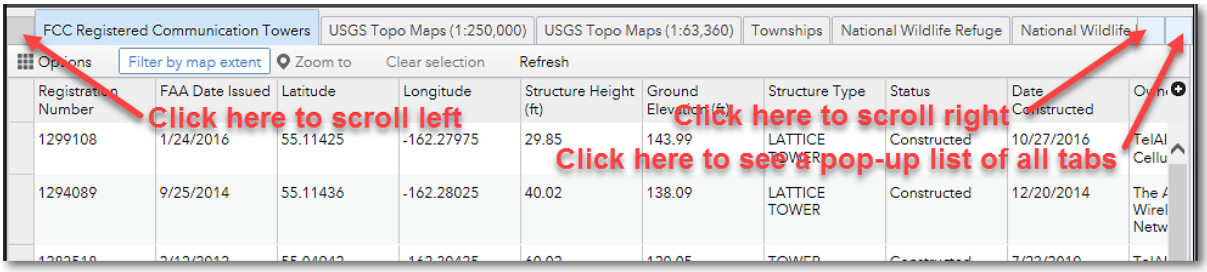
The *Attribute Table* tool is actually a container for multiple attribute tables. In other words, it shows information for many of the data layers in the Mapper. At the top of the attribute table are multiple tabs with the layer names. Each of these tabs shows the attribute table for that particular data layer. For example, the *National Wildlife Refuge* tab shows the attribute table for the *National Wildlife Refuge* layer. Simply click one of the tabs to switch to that particular attribute table.

By default, the attribute table is dynamic, meaning that it shows only the records for the features that are within the extent of the currently viewed map. Thus, as you pan around and zoom in and out in the map, the attribute table updates each of the individual data layer attribute tables to show the records for only those features which are visible in the map view.

Alternatively, the attribute tables can be switched to static mode. In this mode, the tables display all records within the various data layers, regardless of the current map zoom level or panning around in the map. To switch to static mode, click the ***Filter by map extent*** button that is located in the upper-left corner of the attribute table window.

Scrolling through the Attribute Table Tabs

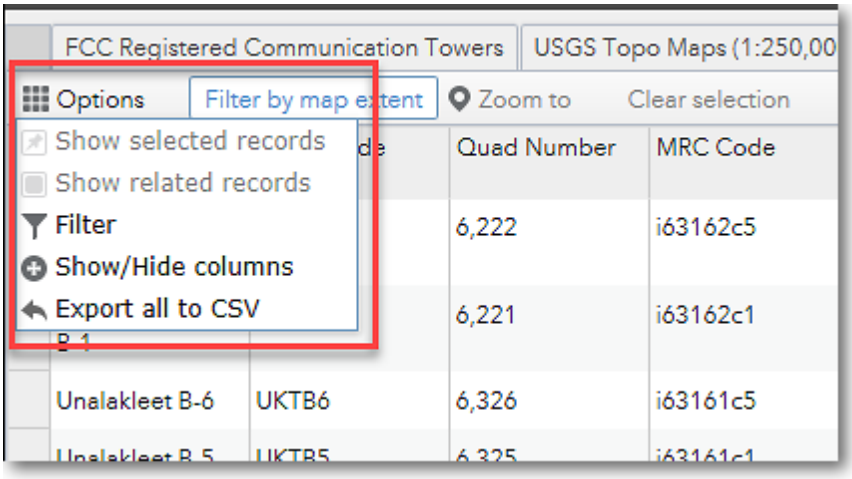
The tables of 18 data layers are displayed as individual tabs in the *Attribute Table* tool. You will not be able to see all 18 tabs on your display at one time. In order to see additional tabs, you will need to scroll left and right. Refer to the screenshot below.



*Click the **blank tabs** at the left and right ends of the Attribute Table tool in order to scroll left and right*

Specific Functionality

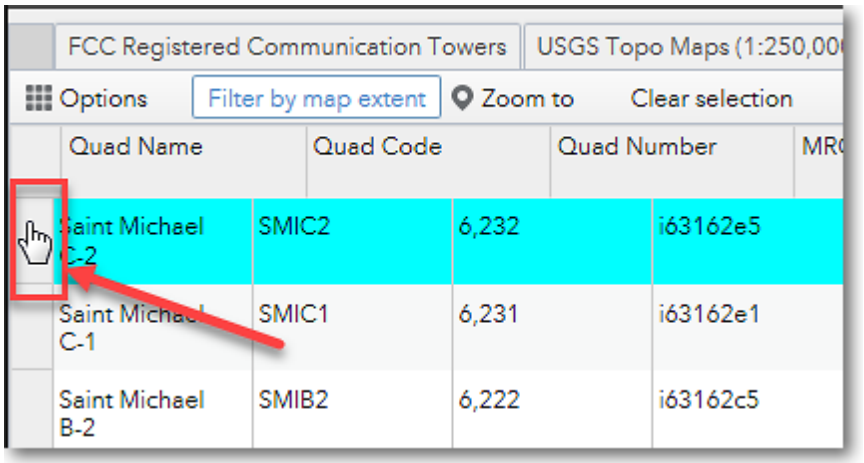
In addition to the main features of the *Attribute Table* tool, various other functions are available. These are accessed by clicking ***Options*** button in the upper-left corner of the *Attribute Table* window. Below is a screenshot showing the ***Options*** popup menu.



*The **Options** popup menu, showing the various features that can be used*

Selecting Individual Records

By default, all the features that are visible in the current viewing area for a data layer are displayed in the attribute table. If you want to focus only certain records in the attribute table, you can select those records. This is useful if you want to see only the selected records, zoom to them on the map, or export them to a file. To select a record, click on the blank space to the left of the first column. The record in the attribute table and it's corresponding feature in the map display will be highlighted with a cyan color.



*To select a record, click the **blank space** to the left of the first named column*

To select multiple consecutive records, click the first record, then hold the ***Shift*** key and click the last record. All records from the first record to the last record will be selected. To select non-consecutive records, hold the ***Ctrl*** key and click the records of interest.

Options > Show Selected Records

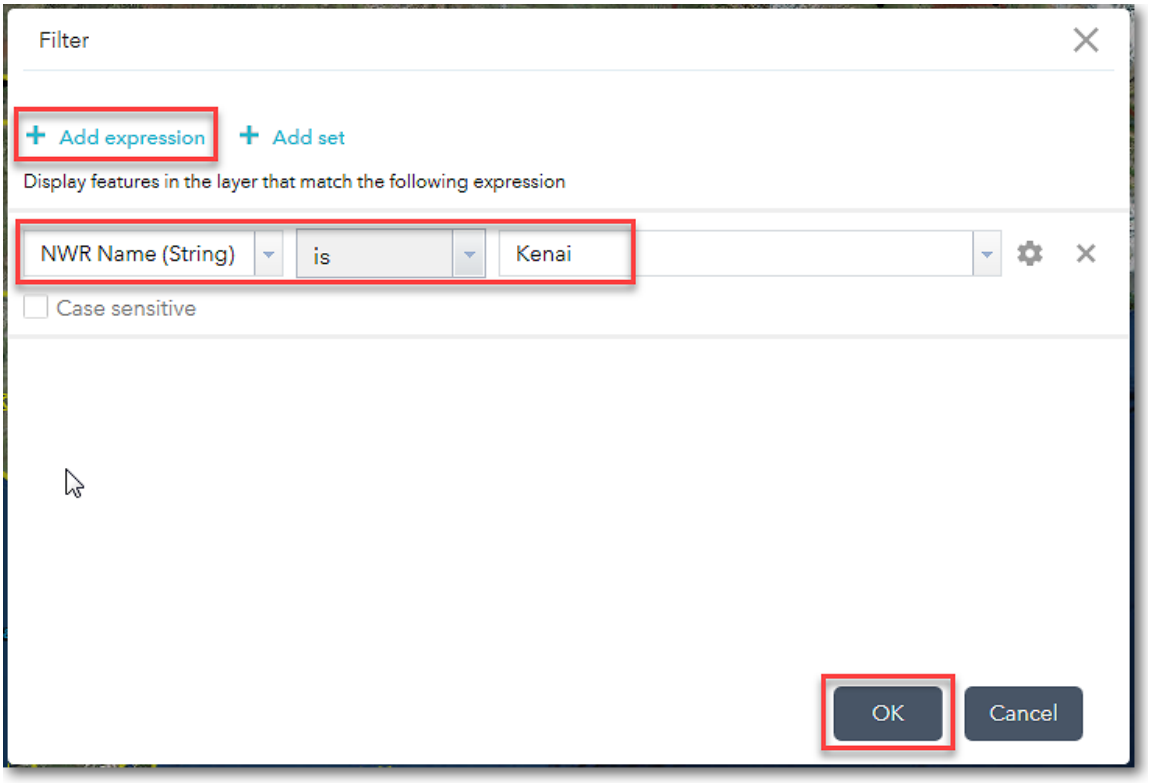
After selecting a single record, or multiple records, you might want to see only those records in the attribute table. To do so, click ***Options*** > ***Show Selected Records***.

Options > Show Related Records

Some data layers may have related records which provide more information about a record in the attribute table. Related records are stored in a separate database table and provide more detailed information for a parcel, such as the owner name. If a data layer has related records, the ***Options > Show related records*** command will be activated. Click ***Options*** > ***Show related records*** to view the related information.

Options > Filter

Another method of selecting records is to specify certain criteria. For example, if you want to see which wilderness areas are within Kenai NWR, you would first click on the National Wildlife Refuge Wilderness tab. Select ***Options > Filter***, click ***Add expression***, and specify ***NWR Name is Kenai***, as shown in the example below.



This filter expression selects the records for all the wilderness areas within Kenai NWR

Options > Show/Hide Columns

If you want to see only certain columns in a data layer's attribute table, click ***Options*** > ***Show/Hide Columns*** and then, in the op-up window, click the check box to the left of each field name to either show the column (check mark on) or hide the column (check mark off).

Options > Export to CSV

Select this option to export the records that are currently shown in the viewed attribute table to a comma-separated values (CSV) file. This is a generic file type that can be opened in many programs, such as Microsoft Excel. If you have selected some records, only the selected records will be exported to a CSV file.

Filter by Map Extent

By default, the attribute table shows records for only those features that are currently shown in the map view. However, if you want to see all of the records for a data layer, click ***Filter by map extent*** to unselect it. The attribute table will then dynamically update to show all records for the data layer, regardless of whether or not they ave visible in the map display. To again see only the records for the features that are visible in the map display, click ***Filter by map extent*** to turn it back on. Note that the ***Filter by map extent*** option works globally across all the various data layers that are shown in the attribute table.

Zoom To

If you want to zoom the map to a specific feature that is shown in the attribute table, first click on the record in the table to select it (selected records are shown with a cyan background). Then choose ***Zoom to*** at the top of the attribute table window.

Clear selection

This simply unselects any records that are selected in the attribute table.

Refresh

This just simply reloads the records in all the data layer attribute tables.

Records in columns are sortable

You can sort the records in each column of an attribute table by clicking on the column name, then select a sort option from the pop-up menu.

Get Statistics for Records

You can get basic statistics for the records that are currently shown in a data layer's attribute table. Note that statistics are available only for numeric fields, and not for text fields. To get statistics, click on a column heading and select ***Statistics*** from the pop-up menu. Note that you can't get statistics for only the records that you might have selected; the statistics are for all of the records that are currently shown in the data layer's attribute table.

Columns are re-sizeable

If a column is too narrow to see the entire values, you can make it wider. Move your cursor to the column header and drag the dividing line between columns left or right to re-size.

Related records are not exported to CSV files

When you use the Export to CSV file feature, only the records in the attribute table are exported. Information in related tables will not be exported.

The Region 7 Land Mapper was developed, and is maintained by, the U.S. Fish & Wildlife Service, Region 7, Division of Realty. Questions, comments,and suggestions should be directed to ak_realty@fws.gov

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Select a Basemap for the Mapper

By default, topography is shown as the basemap. However, you can choose from several different basemaps to use, depending on what you want to see.

To Change the Basemap

1) Click the ***Basemaps*** icon in the upper-left corner of the Mapper. The following menu will pop up:

Available basemaps that can be selected

2) To select a basemap, move your cursor over the desired basemap style and click it.

3) The following basemaps are available:

Satellite Imagery
This layer is composed of satellite imagery and aerial photographs. It is currently the best reference layer available for Alaska.

National Geographic
Includes topography and place names. This basemap is best used at statewide or regional scales.

USA Topo Maps

This is a seamless basemap comprised of the standard U.S. Geological Survey topographic maps of Alaska, at both 1:63,360 scale and 1:250,000 scale. The topo maps have been enhanced with hillshading to simulate a three-dimensional effect. One of the greatest benefits of this basemap is the inclusion of all Alaska place names.

Light Gray
This is a simple gray and white basemap. It is useful when you want to identify the various land status colors without the distraction of the colors in the Satellite Imagery or USA Topo Maps basemaps.

Get just the right colors for your screenshots, prints, and PDFs
When saving a screenshot of the Land Mapper or printing the map, it's important that the output focuses the viewer's attention on exactly what you want to convey. You can do this by making sure the basemap colors don't overpower the colors of the layers of interest. Experiment with the available basemaps to get the effect you want for your screenshots, prints, and PDFs.

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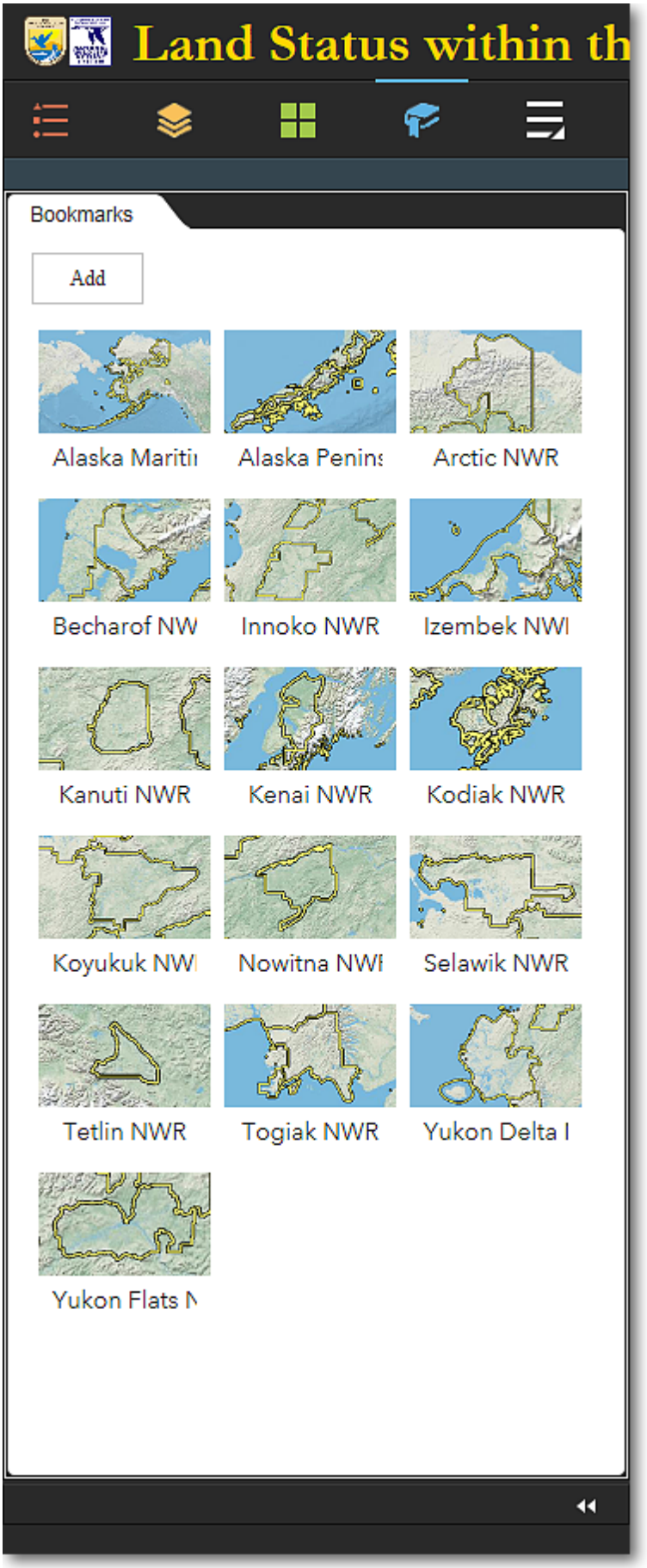
Using, Saving, and Deleting Bookmarks

Bookmarks provide a quick and easy way to navigate to various geographic locations in the Mapper. Rather than manually panning and zooming, you can simply click a bookmark to go directly to the location defined by the bookmark. The Mapper has several default bookmarks - one for each National Wildlife Refuge in Alaska. You can also save your own bookmarks to make it easier to return to a previously-viewed location.

To Use a Bookmark

1) Click the ***Bookmarks*** icon in the upper-left corner of the Mapper. The following panel will appear:



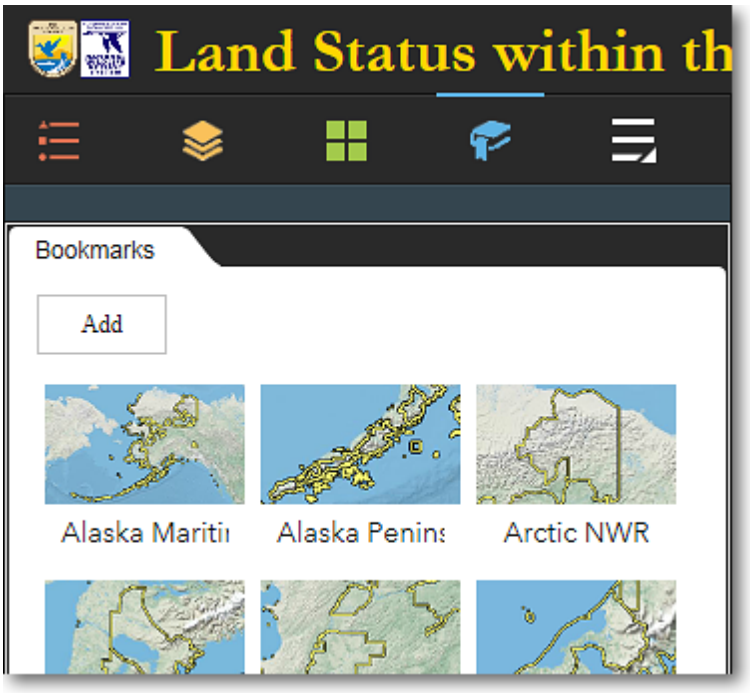
*The **Bookmarks** panel, showing the default bookmarks*

2) Click the bookmark for the desired location. If necessary, use the scroll bar to see all the bookmarks in the list.

To Save a Bookmark

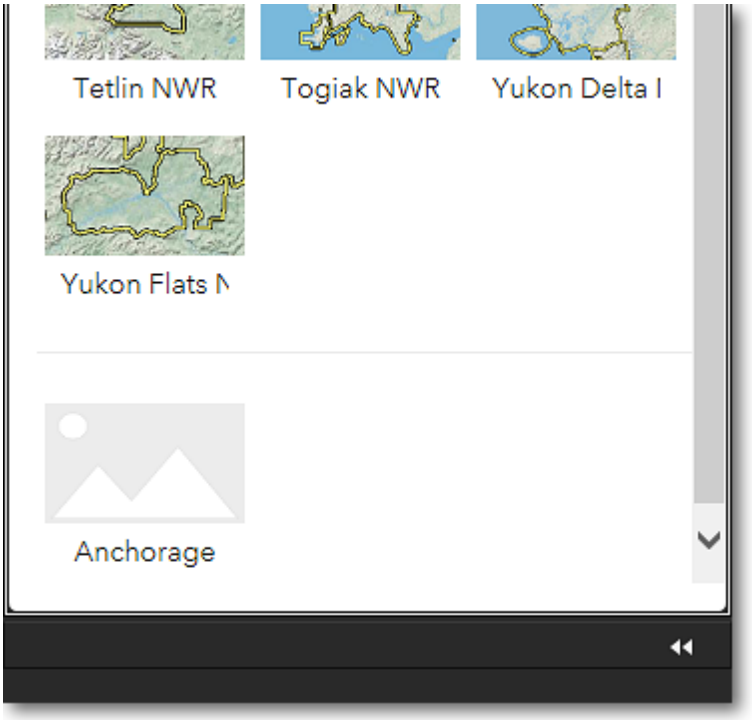
1) Pan and zoom the the area on the map that you want to bookmark.

2) At the top of the ***Bookmarks*** menu, click the Add button.



*To add a new bookmark, click the **Add** button*

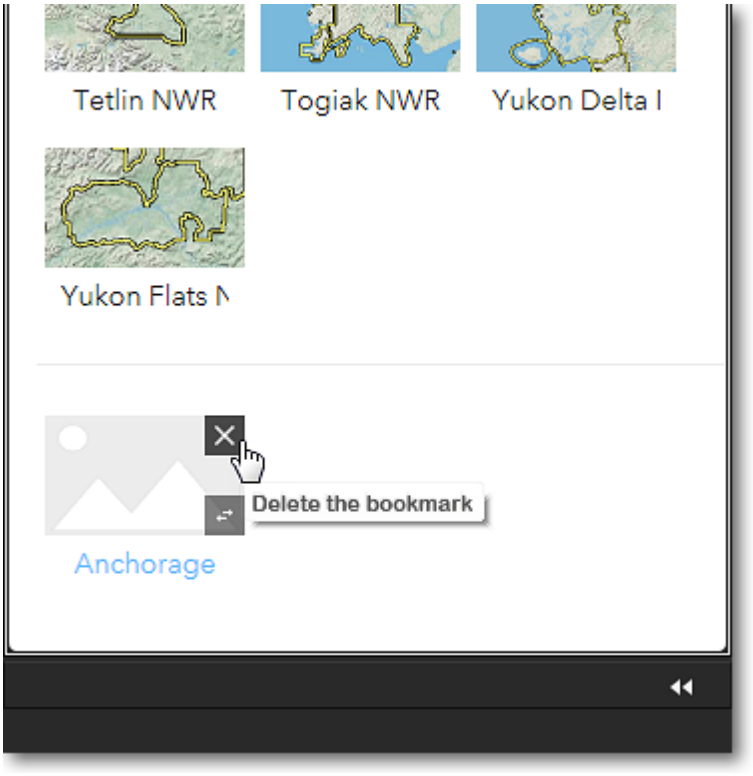
3) A new bookmark will be added to the bottom of the ***Bookmarks*** panel. Enter a name for your new bookmark and click anywhere outside of the bookmark icon.



*A new bookmark named **Anchorage** has been added to the Bookmarks panel*

To Delete a Bookmark

1) Open the ***Bookmarks*** panel and scroll to the bottom. Your user-added bookmarks are at the end of the bookmark list. They are identified by a generic gray icon with the name that you assigned.



*The **Bookmarks** panel showing a user-added bookmark (Anchorage) at the bottom of the list*

2) Move your mouse to the upper-right corner of the bookmark icon and click the ***X*** to delete the bookmark. Repeat as necessary.

3) You can delete only user-added bookmarks. The default bookmarks are permanent and cannot be deleted.

User-added bookmarks are *TEMPORARY*

Bookmarks that you add to the bookmark list are temporary. They are deleted from the bookmark panel when:

- You delete them manually using the ***Bookmarks*** panel
- You close your web browser
- You clear your web browser's cache

User-added bookmarks will be retained when...

- You minimize the ***Bookmarks*** panel
- You switch to another tool panel
- You clear your web browser's cache, refresh the page, and leave the web browser **open**

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Using Map Coordinates

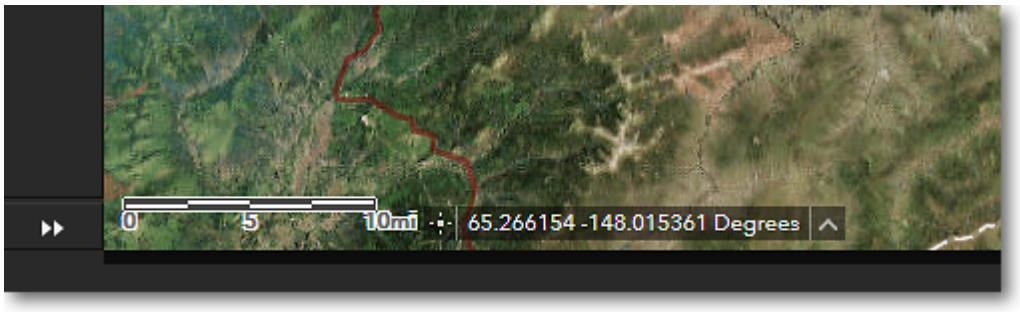
It is often useful to know the coordinates of a particular location. Typically, you'll likely be interested in determining the latitude and longitude of a spot on the map. You can do this by looking at the live coordinate display in the bottom-left corner of the Mapper window.

The *Coordinates* tool has several features that make it easy to work with map coordinates. You can click the map to get the coordinates of the clicked location, display coordinates as you move the mouse on the map, copy coordinates to the Windows clipboard, and convert latitude and longitude to a projected coordinate system.

Be sure to read the Helpful Tip at the bottom of this topic for important information concerning coordinate values and notation.

Getting Started

The *Coordinates* tool is always displayed in the lower-left corner of the Mapper window, just to the right of the scale bar.



TheCoordinates Tool is to the right of the scale bar

Modes of Operation

The *Coordinates* tool has two modes of operation:

- Continuous
- Point

The default ***continuous*** mode displays a continuous readout of coordinates as you move the mouse cursor around the map. The ***point*** mode displays the coordinates of a location in the map that you click on.

To switch between the two modes, click on the*Coordinates* icon that is shown to the left of the coordinate readout, as illustrated below.

Switching between coordinate readout modes

To See a Continuous Readout of Coordinates

By default, the *Coordinates* tool displays a continuous readout of coordinates as you move the mouse cursor around the map. This is the default mode; you don't have to do enable the continuous mode.

If you need to make a note of the coordinates at a particular spot on the map, leave the mouse cursor placed at the location on the map and then write down the coordinates, or use a screen capture tool to take a screenshot, making sure to include the coordinate readout.

If the coordinates don't change as you move around the map, then the*Coordinates* tool is currently in the point mode. To enable continuous mode, just click the *Coordinates* icon to the left of the coordinate readout.

To Use the Coordinates of a Point You Click

If you want to copy and paste the coordinates of a specific map location into another program or document, the easiest way is to enable the ***point*** mode of operation.

1) Click on the *Coordinates* icon to the left of the coordinate readout. This switches to point mode.

2) Click the point of interest on the map. The coordinates of the clicked point will be shown in the coordinate readout.

3) Use your mouse to select the text in the coordinate readout, then use your operating system's ***copy*** function (Ctrl-C on Microsoft Windows) to copy the coordinates to the clipboard.

4) Use your operating system's ***paste*** function (Ctrl-V on Microsoft Windows) to paste the coordinates into another program or document.

To Get Coordinates for a Location in Other Coordinate System Formats

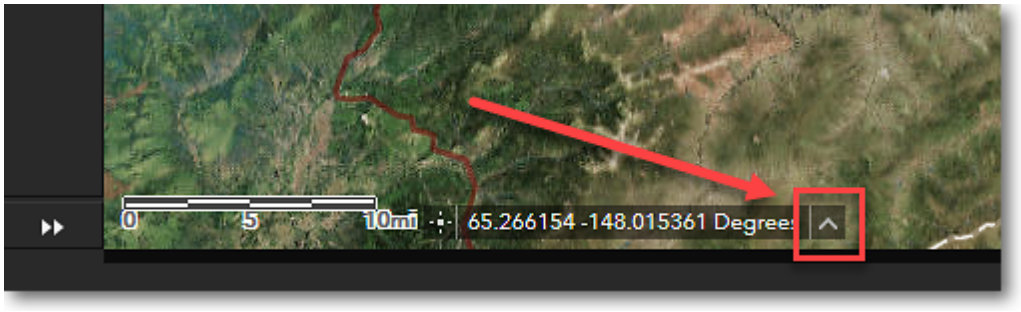
You can obtain map coordinates in either of two coordinate systems:

- Latitude and Longitude (WGS84 datum)
- Alaska Albers Equal Area Conic (NAD83 datum)

The default is ***latitude*** and ***longitude***, in decimal degrees. This format will likely be useful in most situations. If you need the latitude and longitude in other formats, you can use this handy converter: http://rumkin.com/tools/gps/degrees.php

The ***Alaska Albers Equal Area Conic*** format is a more specialized coordinate format, with the units being Easting and Northing in meters. This is the coordinate system that the land status layers are stored in, and is more applicable for GIS use. This format is likely of not much use to non-GIS users.

1) To select a different coordinate format, move the mouse cursor over the small upward-pointing triangle shown just to the right of the coordinate readout. A menu will pop-up, showing the two coordinate systems that are available. See below for an example.



*Move the mouse cursor over the triangle to display a menu of the available coordinate system formats. **Bold** text indicates the currently active coordinate system.*

2) Click on the name of the coordinate system that you want to use.

Know Your X and Y...

In the examples above, a point on the Earth is noted as an XY coordinate. ***X*** and ***Y*** refer to locations within a Cartesian coordinate system, where *X* identifies a position along the horizontal (X) axis and *Y* identifies a position along the vertical (Y) axis.

- In a ***geographic*** coordinate system, longitude is expressed by the X value, and latitude is expressed by the Y value.
- In a ***projected*** coordinate system, Easting is expressed by the X value, and Northing is expressed by the Y value.

...and Know Your Signs

With geographic coordinate systems, it is critically important to understand how north, south, east, and west are represented by the coordinate values. Algebraic signs, plus (+) and minus (-) are used to indicate the compass directions, as such:

- ***North latitude*** is represented as a ***positive*** value (+)
- ***South latitude*** is represented as a ***negative*** value (-)
- ***East longitude*** is represented as a ***positive*** value (+)
- ***West longitude*** is represented as a ***negative*** value (-)

Converting between latitude and longitude formats

Latitudes and longitudes can be expressed in several different formats, such as:

- 45° 24' 13.4" (Degrees, minutes, seconds)
- 45° 24.223 (Degrees and decimal minutes)
- 45.40372222° (Decimal degrees)

All three examples above are equivalent, that is, they identify the same spot on the Earth. You may run into situations where you must provide latitude and longitude values in a particular format. For example, you might have a lat/long coordinate in degrees, minutes, and seconds format, but the program you're working with might require you to input the lat/long in decimal degrees format. To do this, you have to convert from one format to another. You can do this using an online lat/long converter. There are many such converters available online, but here's one that's very easy to use:

http://rumkin.com/tools/gps/degrees.php

This site converts from any of the three formats to any of the other three.

Latitude + Longitude + Datum = A Complete Coordinate, aka LLD = Problem Free!

Casual use of latitude and longitude positions generally doesn't involve referencing the datum to which the lat/long is tied. However, when dealing with GIS a higher level of precision is required, thus lat/long values must always include the associated datum.

When noting lat/long coordinates or giving lat/long coordinates to someone, ***you must always report the datum which is used by the coordinates***. Without the datum information, the user will have to guess which datum your lat/long coordinates are in, and this often leads to misalignment of features. Following are several examples of the correct way to note lat/long coordinates:

- 45.50, -150.25, ***NAD27***
- 45.50 N, 150.25 W, ***NAD83***
- 45° 30' 00" N, 150° 15' 00" W, ***WGS84***

Note that for each example, the datum has been specified. A lat/long coordinate should never leave your desk without a datum specified. Remember: ***LLD = Problem Free!***

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Drawing Tools

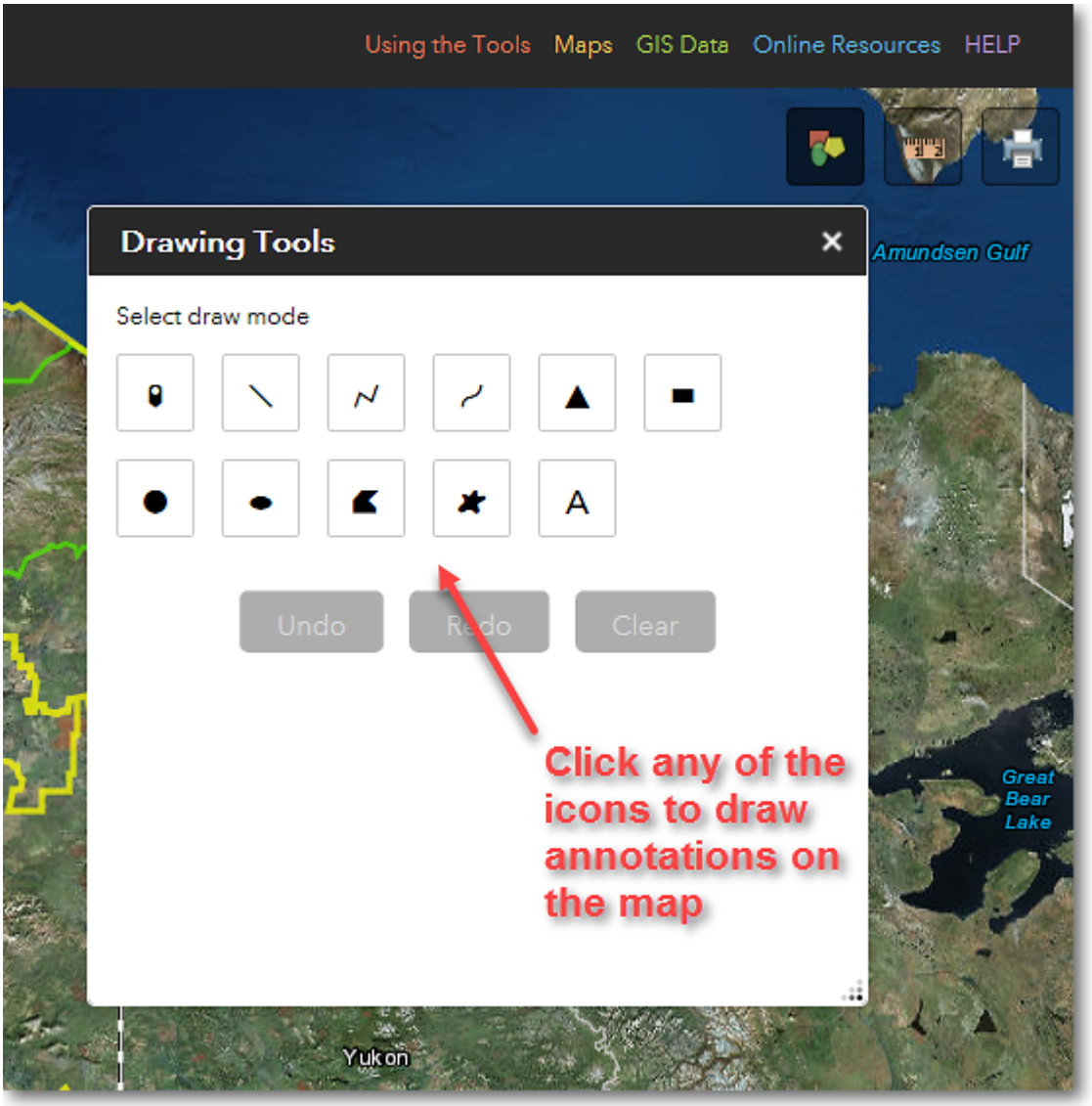
Some of the most useful tools available in the Land Mapper are the ***Drawing*** tools. These tools provides the ability to add annotations - points, lines, polygons, and text - to the map view. You can set various properties, such as line and fill colors and styles, transparency, text color, and text size. You can also automatically include distance and area measurements as part of your line and polygon annotations.

Annotations can be very useful for creating custom, project-specific maps. For example, suppose you are developing a land exchange and need to investigate several alternatives. In this case, you might add annotations that coincide with private parcels, sections, townships, or geographic features such as ridge lines, river banks, lake shores, or coastlines. Your annotations can include their associated distance or acreage.

The ***Drawing*** tools offer many options. It is beyond the scope of this Help to describe every feature in great detail, therefore a general overview is given below.

The Drawing Tools

1) Click the ***Drawing Tools*** icon in the upper-left corner of the Mapper. The following will be displayed:



*The **Drawing Tools** menu. Click any of the drawing tool icons to draw map annotations*

Drawing Annotations and Measuring

Assume you need to determine the size of a lake for a project you're working on. You can do this using the Drawing Tools, as detailed below.

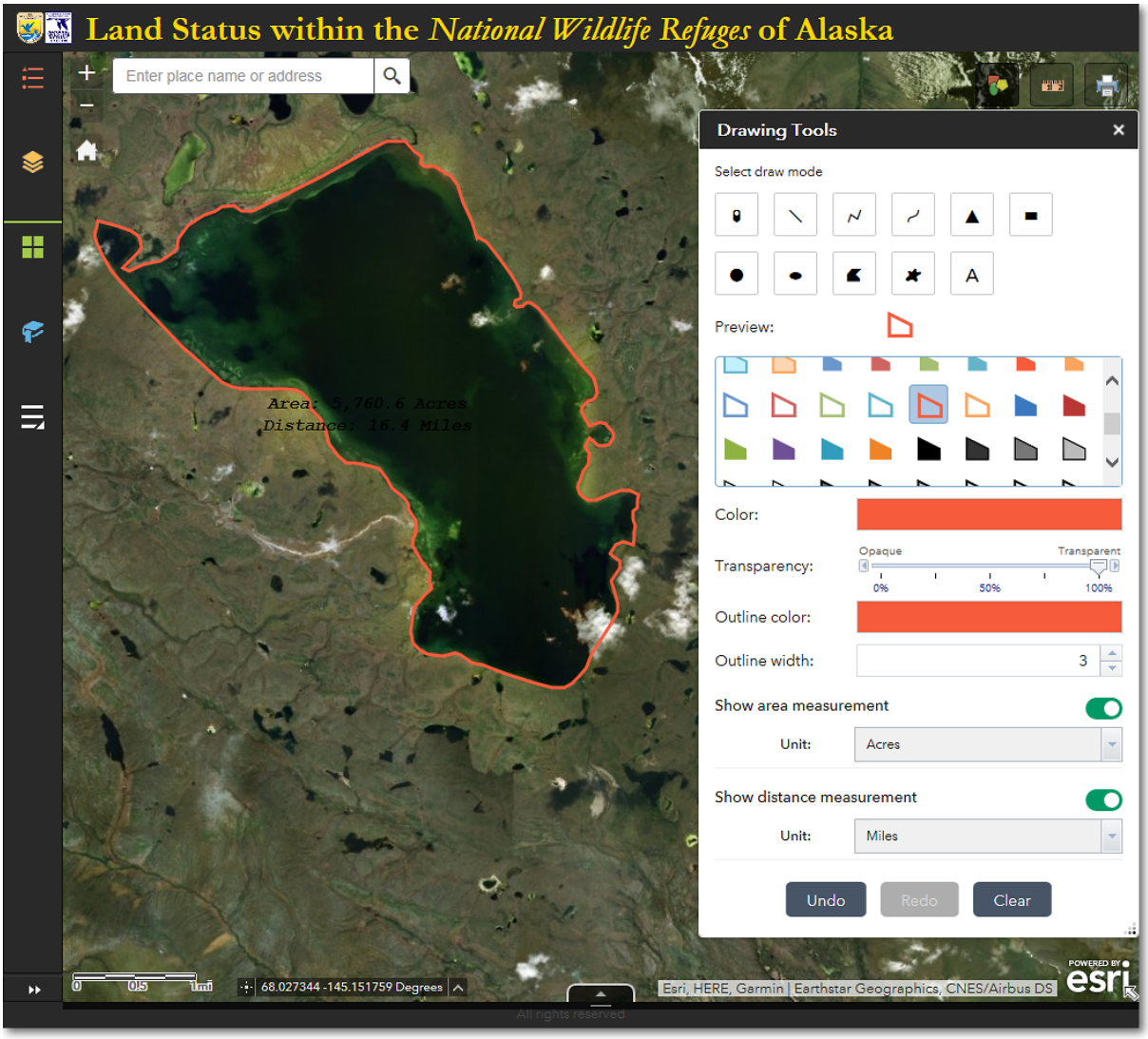


Illustration of using the drawing tools to highlight the shoreline of a lake and calculate its area and perimeter

1) Under ***Select draw mode***, click the star-shaped, ***Freehand Polygon*** tool icon.

2) Under ***Preview***, click one of the annotation styles.

3) Adjust ***Color***, ***Transparency***, ***Outline Color***, and ***Outline Width*** as desired.

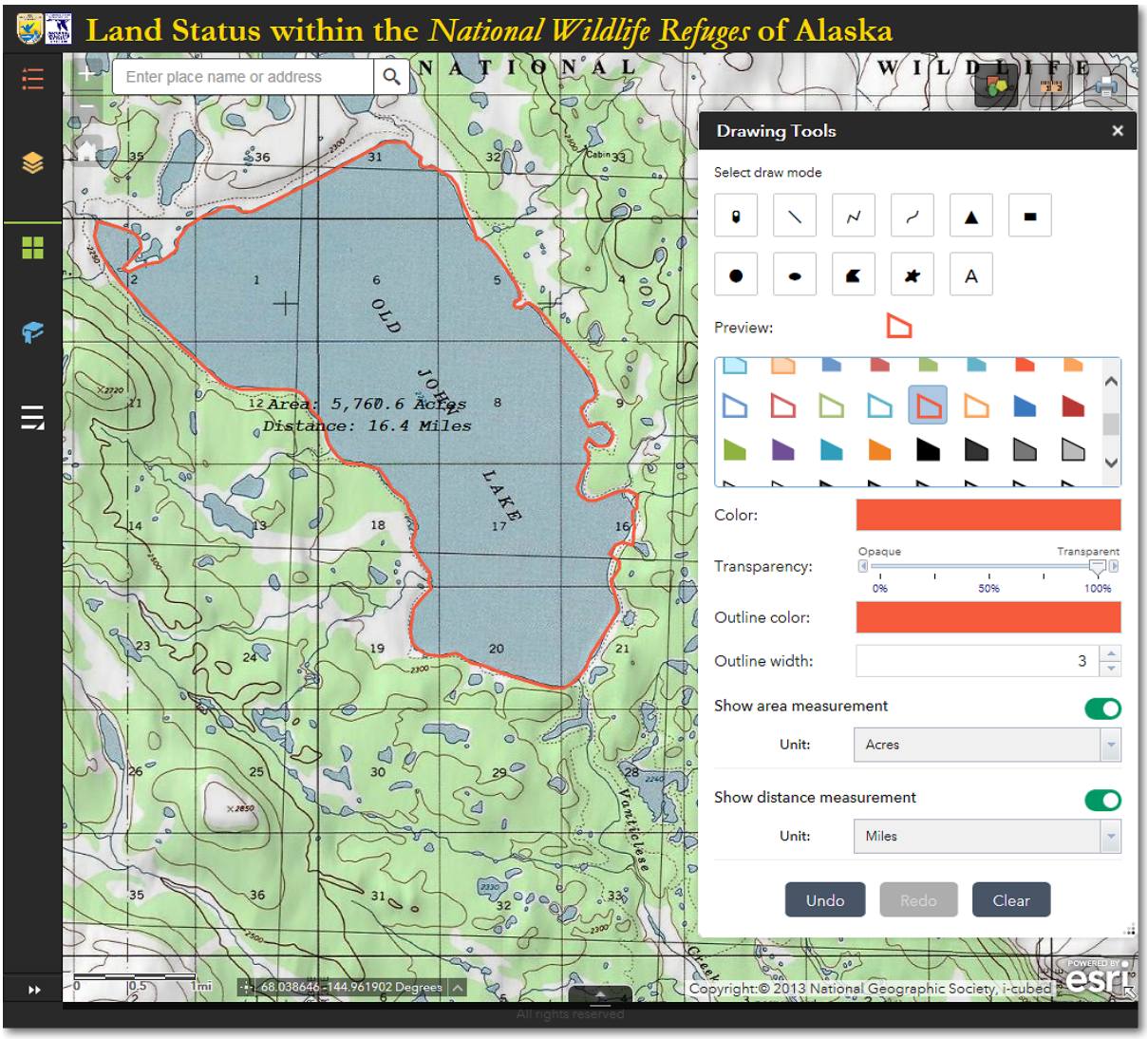
4) Put a check mark in the ***Show Measurements*** box.

5) Select your desired ***Area Units*** and ***Distance Units***.

6) Draw the outline of the lake. In this example, the shoreline of the lake is highlighted with a red line and the measurements are displayed. The lake is 28.5 acres in size and has a shoreline length of 1 mile.

7) If you have the satellite image set as the basemap, it is highly likely that it will be difficult or impossible to read the measurements that are in black text. In order to solve this problem, you can temporarily switch to a different basemap, such as the USA Topo

Maps basemap, as illustrated below.



After switching to the USA Topo Maps basemap, it is possible to read the measurements that were added to the polygon.
In this case, the lake covers an area of 5,760.6 acres and has a shoreline of 16.4 miles.

Experiment with the other drawing tools to add additional annotations to your map. You can use the ***Undo***, ***Redo***, and ***Clear*** buttons to manage your annotations.

User-added annotations are *TEMPORARY*

Annotations that you add to the map are temporary. They are deleted from the Land Mapper when:

- You delete them manually using the ***Undo*** or ***Clear*** buttons on the Drawing Tools menu.
- Your clear your web browser's cache ***and*** use the *Refresh* or *Reload* feature of your web browser

- You close your web browser

Try different basemaps

Depending on the basemap that you have displayed in the map, it may be difficult to read the measurements associated with your annotations. Unfortunately, the default - and unchangeable - text color is black. If you can't read the text, try switching to a different basemap. If none of the basemaps seems ideal, use the basemap that most closely fits your needs, then add your own text annotation for the measurements. The advantage of this method is that, when adding your own text, you can control the font, size, and color, making it much easier to get your desired result.

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Find Distance and Direction

There may be times when you need to know how far it is between two points, or the direction from one point to another. Alternatively, you might want to see all the area within a certain distance of a point. In these cases, you can use the ***Find Distance and Direction*** tool. The tool provides many options, so be sure to take some time to explore all the features in order to get the most value from it. Below are just a few examples of how you can use the tool.

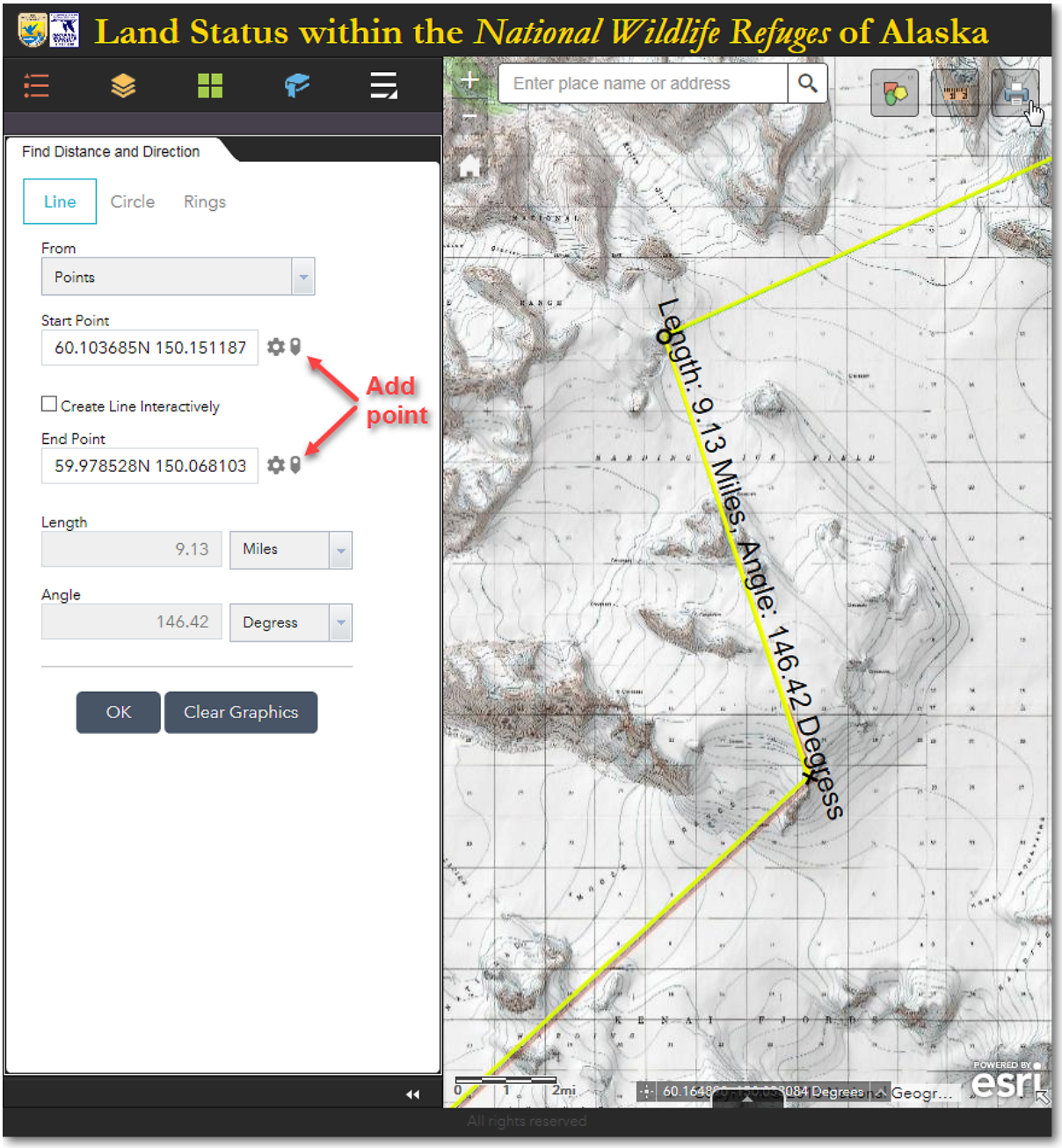
Find the Distance and Direction between Two Points

1) Click the ***More*** icon along the left-hand side of the Land Mapper window.

2) In the list of additional tools, click ***Find Distance and Direction***.

3) Specify your desired options in the *Find Distance and Direction* panel. To interactively identify the start and end points of the line on the map, click the ***Add point*** icons.

4) Click ***OK***. The distance and direction between the two points is shown on the map. See the screenshot below for an example.



The distance between the start point (O) and the end point (X) is 9.13 miles and the direction is 146.42 degrees

---

To Identify All the Areas within a Distance of a Point

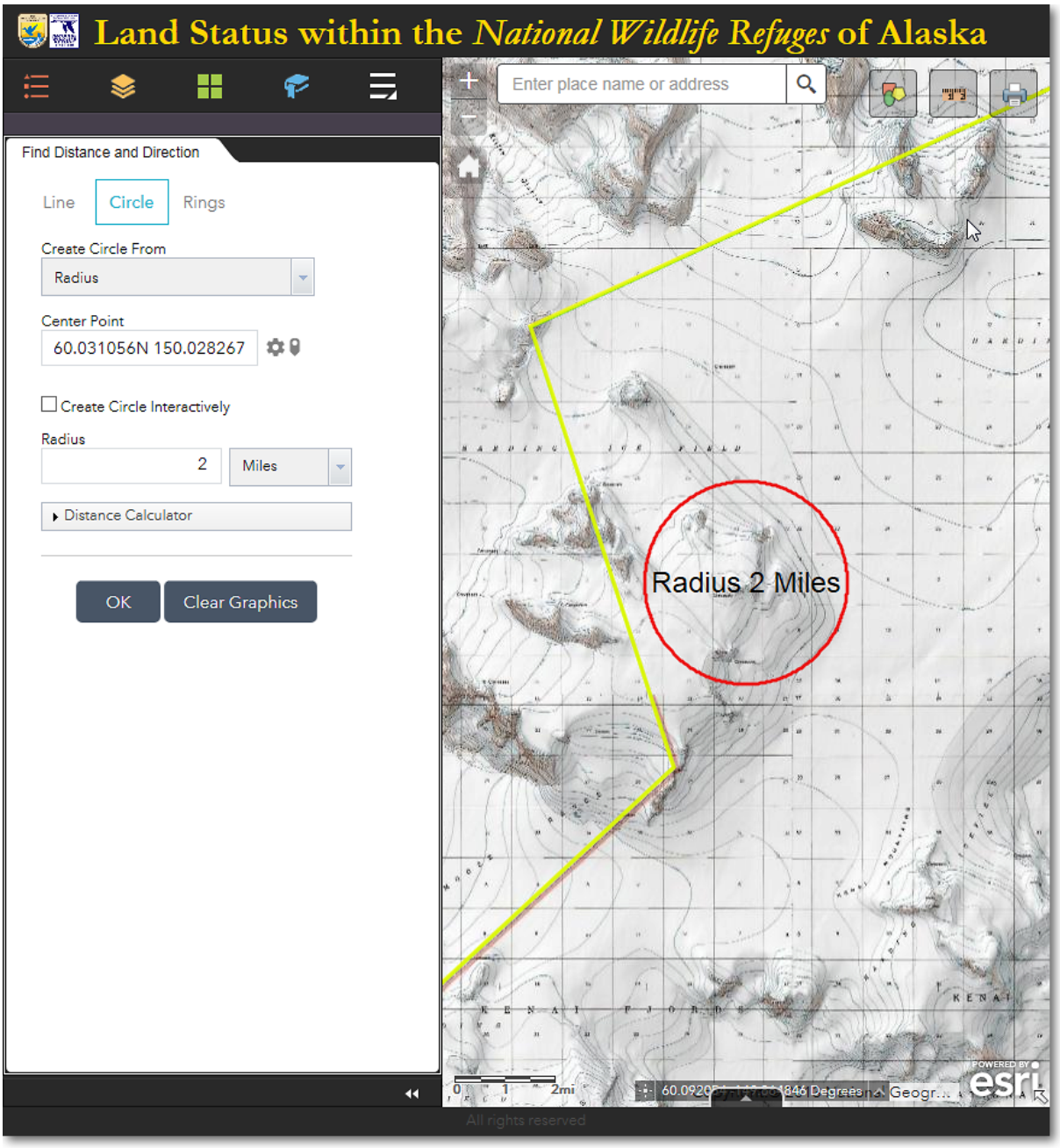
1) In the *Find Distance and Direction* panel, click the ***Circle*** option.

2) For the ***Create Circle From*** option, select ***Radius***.

3) For the ***Center Point***, click the ***Draw Circle*** icon and click the point on the map from which you want to obtain a distance.

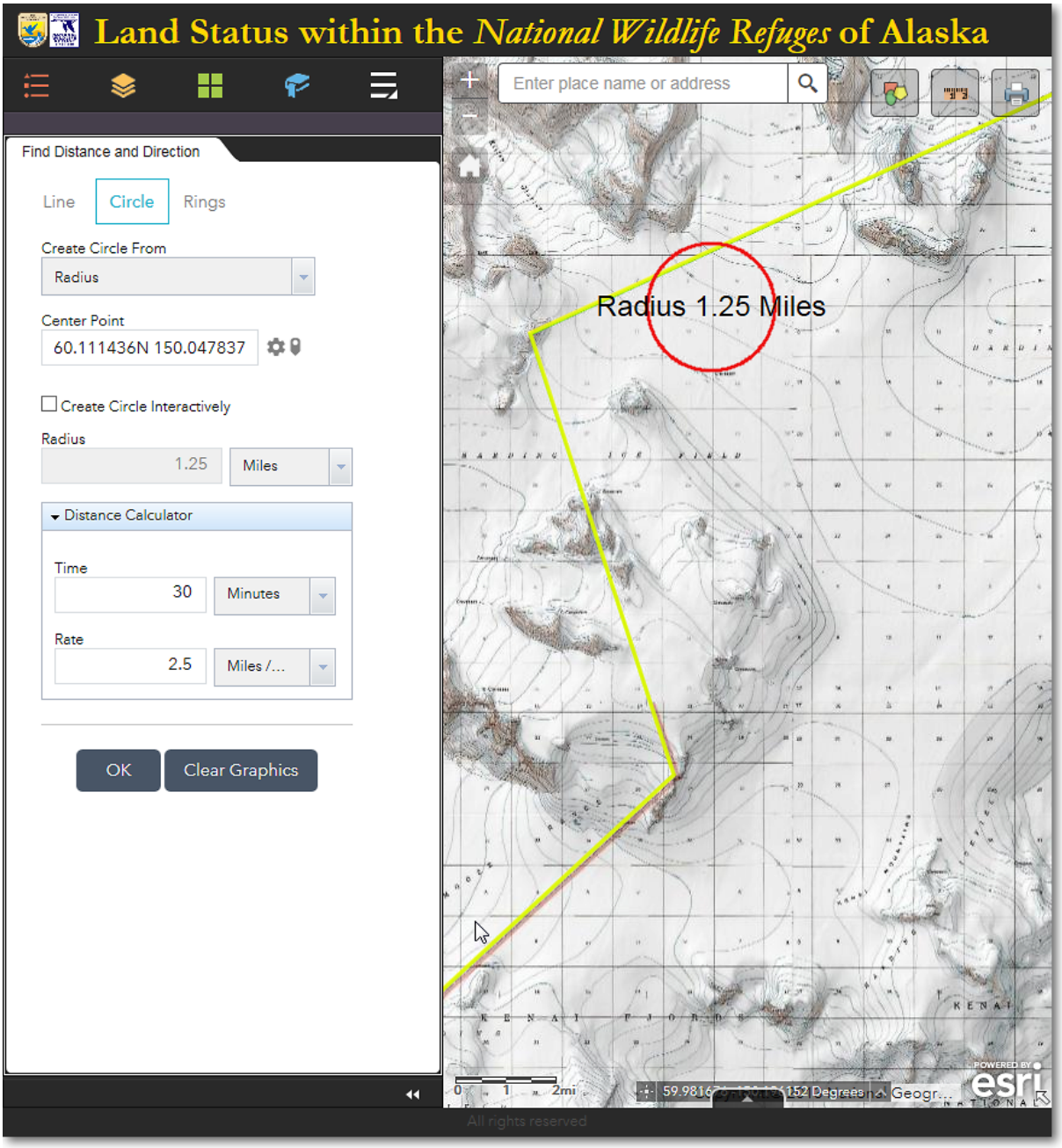
4) Specify a ***radius distance*** and the desired ***distance unit***.

5) Click ***OK***. See the screenshot below for an example.



The red circle indicates the areas that are within 2 miles of the mountain summit

6) You can also use the ***Distance Calculator*** option to find all the areas that are within a specified travel time and speed from a point, as shown in the example below.



The red circle indicates the areas that are within 30 minutes, at a speed of 2.5 miles per hour, from the specified center point

---

Explore the Find Distance and Direction Tool

The *Find Distance and Direction* tool has many different options that could come in handy for your purposes. Be sure to experiment with all the settings to see exactly what they do!

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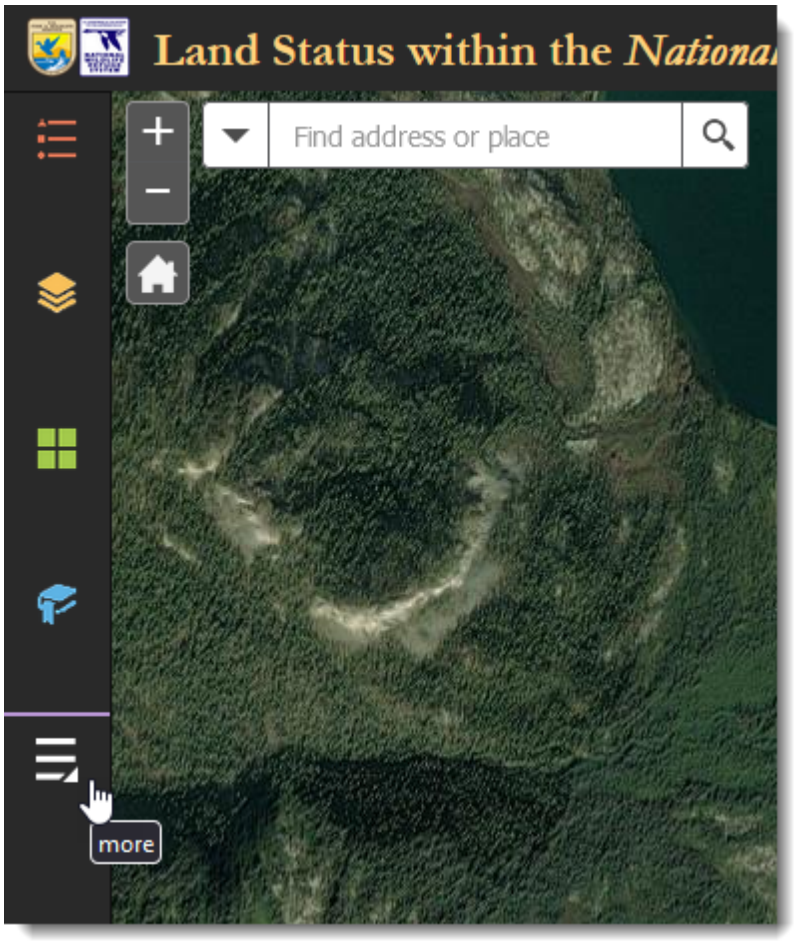
Get Coordinates

The ***Get Coordinates*** tool provides additional options and formats for obtaining and displaying coordinates on the map. Unlike the ***Coordinates*** tool at the bottom of the Mapper Window, this tool allows you to enter a specific coordinate to go to on the map, and to see the coordinates in up to nine different coordinate systems/formats.

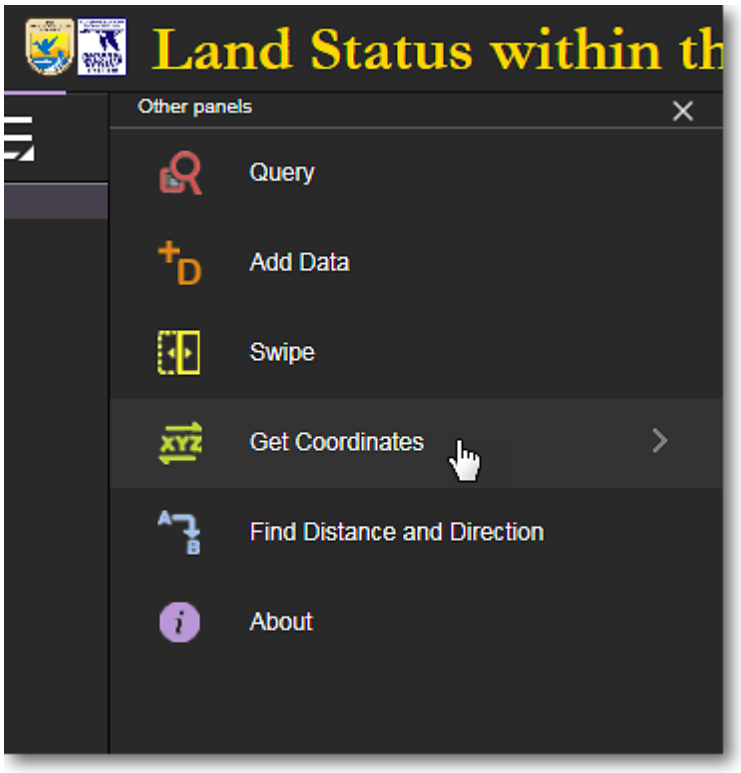
Getting Started

1) Click the ***More...*** icon on the left-hand side of the Mapper window.



*Click **More...** to access additional tools*

2) Click the ***Get Coordinates*** tool.

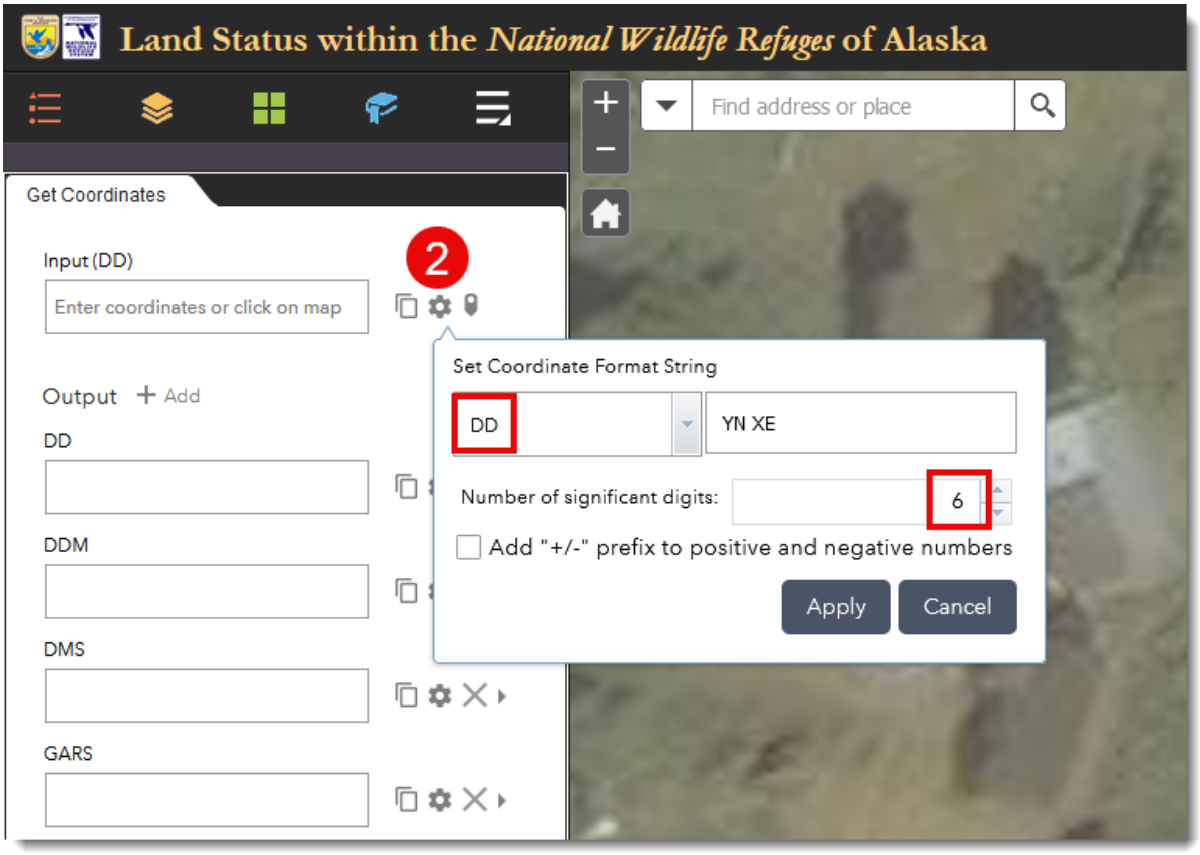


*Click the **Get Coordinates** tool*

To Get the Coordinates of a Point

1) Pan and zoom to the area on the map for which you want to get coordinates.

2) At the top of the ***Get Coordinates*** *panel,* for ***Input***, click the ***gear icon*** and set the desired ***coordinate format*** and ***number of significant digits***, then click ***Apply.***



3) Click the point on the map for which you want the coordinates.

4) A push pin will be displayed on the map at the point you clicked on. The coordinates of the clicked point are now displayed in the ***Input*** field and in several other output formats in the ***Get Coordinates*** panel.

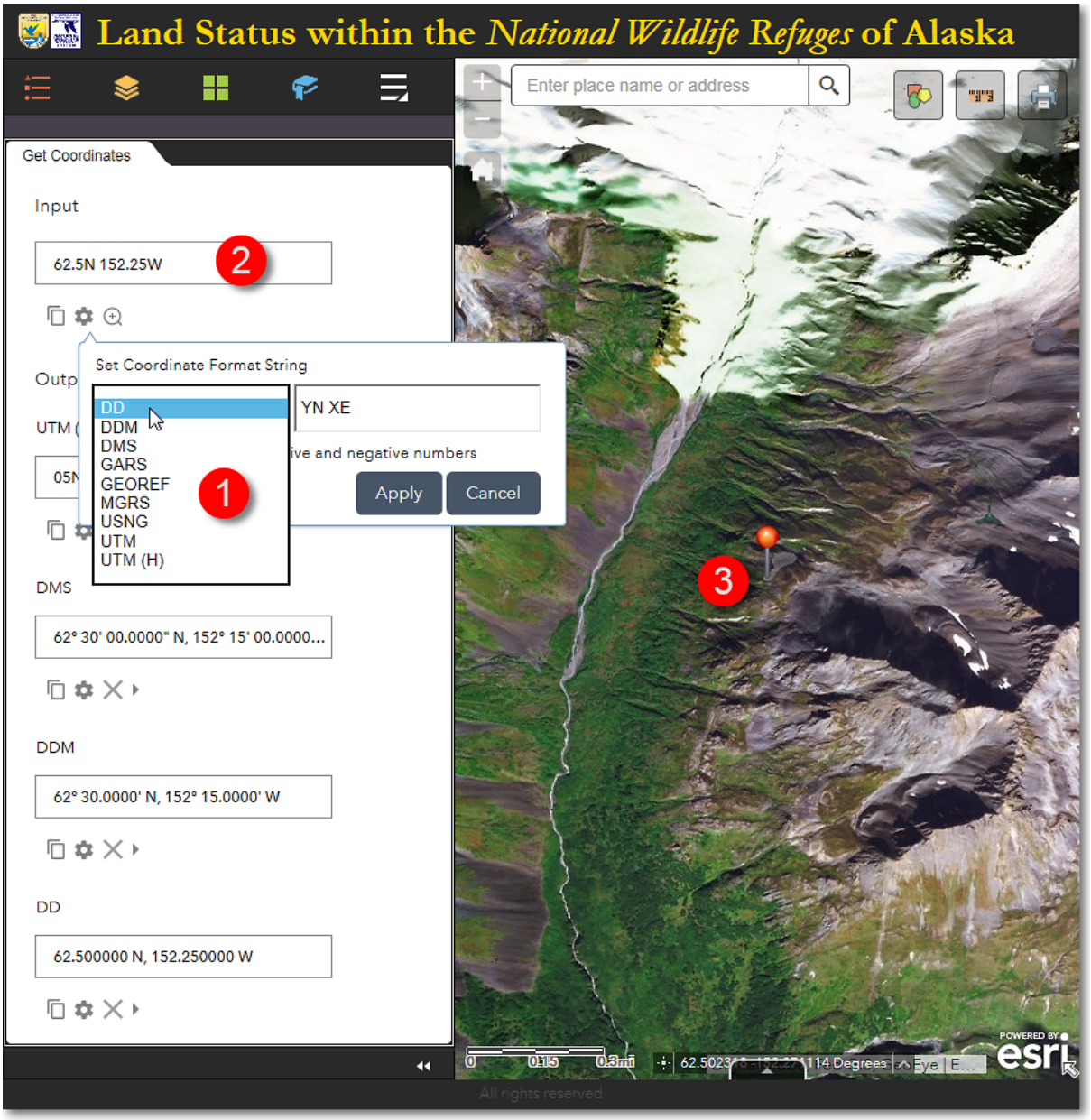
The coordinates of the clicked point on the map are displayed in several different formats. Customize the output formats to suit your needs by clicking the gear icon to the right of each format.

To Go To a Coordinate You Enter

1) You can enter your coordinates in various formats, as determined by the input format that you select when you click on the small ***gear icon*** to the right of the ***Input*** field. For example, you can enter coordinates in ***decimal degree*** format (62.5N 152.25W) or in ***degree, minute, second*** format (62 30 00N 152 15 00W). Select your desired ***coordinate input format*** and ***number of significant digits***, then click ***Apply***.

2) In the ***Input*** field, delete any coordinates that might already be in the Input field and enter your own coordinates. For example, ***62.5N 152.25W***. Press ***Enter*** after entering your coordinates.

3) A push pin will be displayed on the map at the coordinates you entered. The coordinates of the entered point are now displayed in various formats in the *Get Coordinates* panel.



*The Land Mapper, showing the location of the user-entered coordinate at **62.5° North, 152.25° West**.*

Additional Coordinate Options

By default, the *Get Coordinates* panel shows the *Input* box and four additional coordinate displays. You can add additional coordinate displays by clicking ***+ Add***.

Click the ***gear icon*** (*Format Input*) to select the desired coordinate format for each of the additional output coordinate displays.

Additional functions include copying the displayed coordinates to the clipboard, and removing a coordinate display if it is not needed.

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Data Layers

The ***Layers*** tool displays the various data layers that you can view in the Land Mapper.

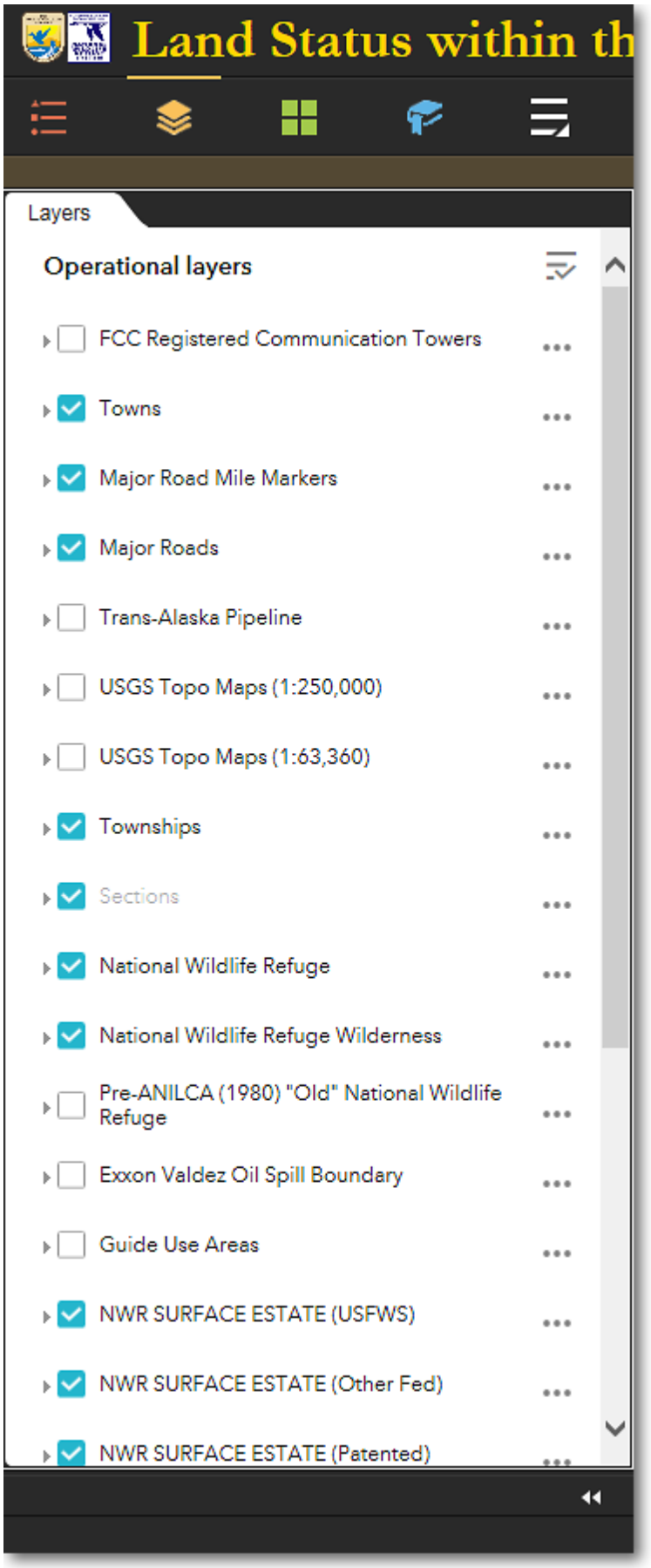
The Land Mapper's Layers

The Land Mapper currently contains 25 data layers, some of which are shown in the screenshot below. All the layers can be turned on and off, moved up and down in the*Layers* list, and made more or less transparent. You can also turn labels for a layer on and off. This functionality allows flexibility in displaying the layers as you need them to appear in the Mapper.

By default, only some of the data layers are turned on and visible in the map when you first open the Mapper. Layers that are turned on have a***check mark*** in from of the layer name. Click in the box to the left of a layer name in order to turn that layer on and off in the map display.

The visibility of many layers is dependent upon the display scale of the map. As you zoom in and out of the map, layers will turn on and off. This is to prevent the map display from getting too cluttered with data as you zoom out.

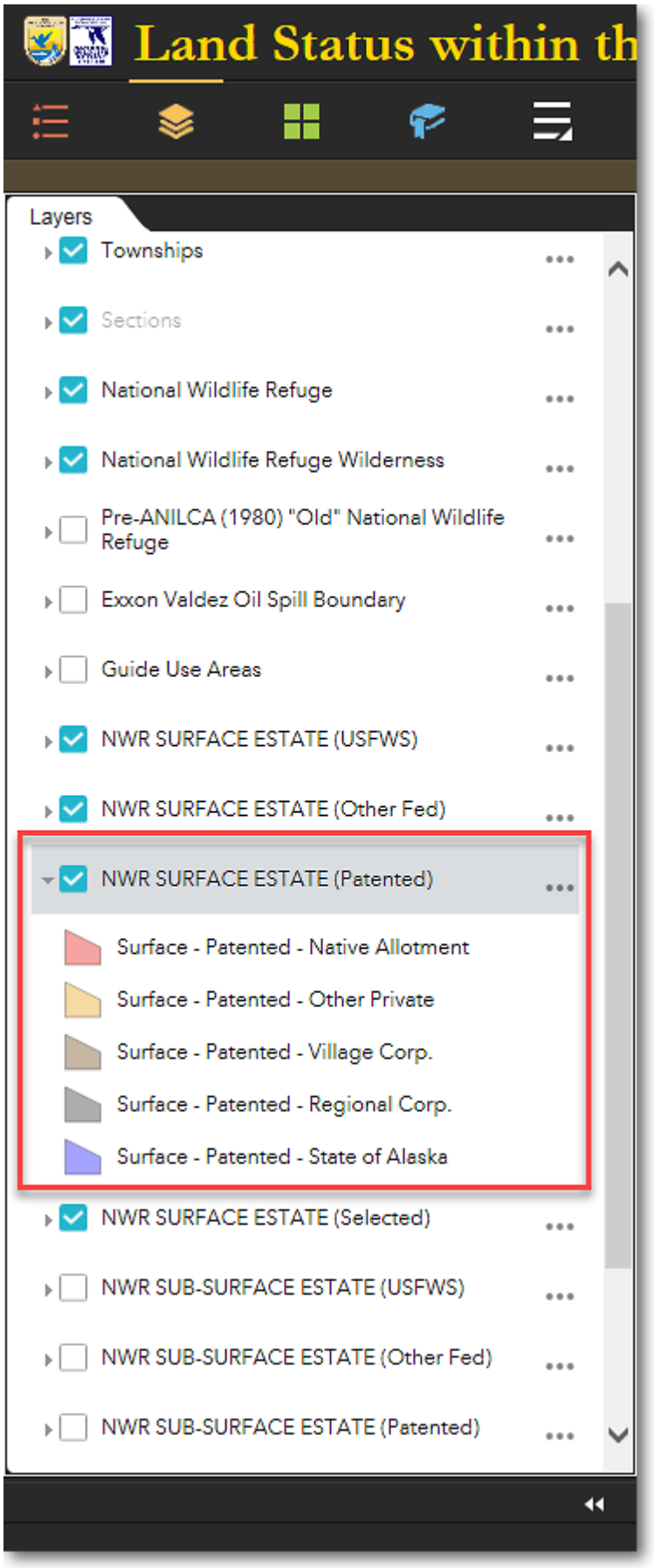
Layers that are turned off at the currently-viewed map scale will show in the*Layers* list with a ***light gray*** layer name, indicating that the layer is not visible due to the map scale. When you zoom in on the map, the layer name will change from light gray to***black***, and the layer will be displayed in the map area (assuming it has a check mark in front of the layer name).



The ***Layers*** list; scroll the list to see all layers

To Show the Legends for the Layers

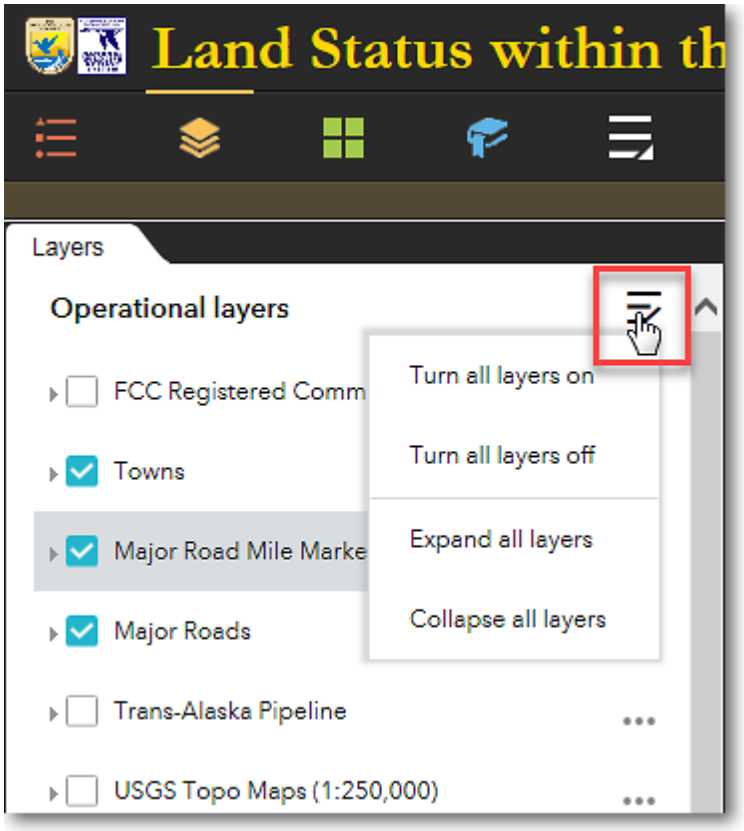
1) By default, all the map layers are in the collapsed state, as indicated by the small right-facing arrow to the left of the layer names. In this state, the symbol legends are not shown. To see the symbol legend for a layer, click either the ***layer name*** or the ***right-facing arrow*** to expand the layer. You will then see the legend which shows the symbology associated with each feature type in the layer.



The Layers list, showing the legend for the ***NWR SURFACE ESTATE (Patented)*** *layer*

Additional Layer Options

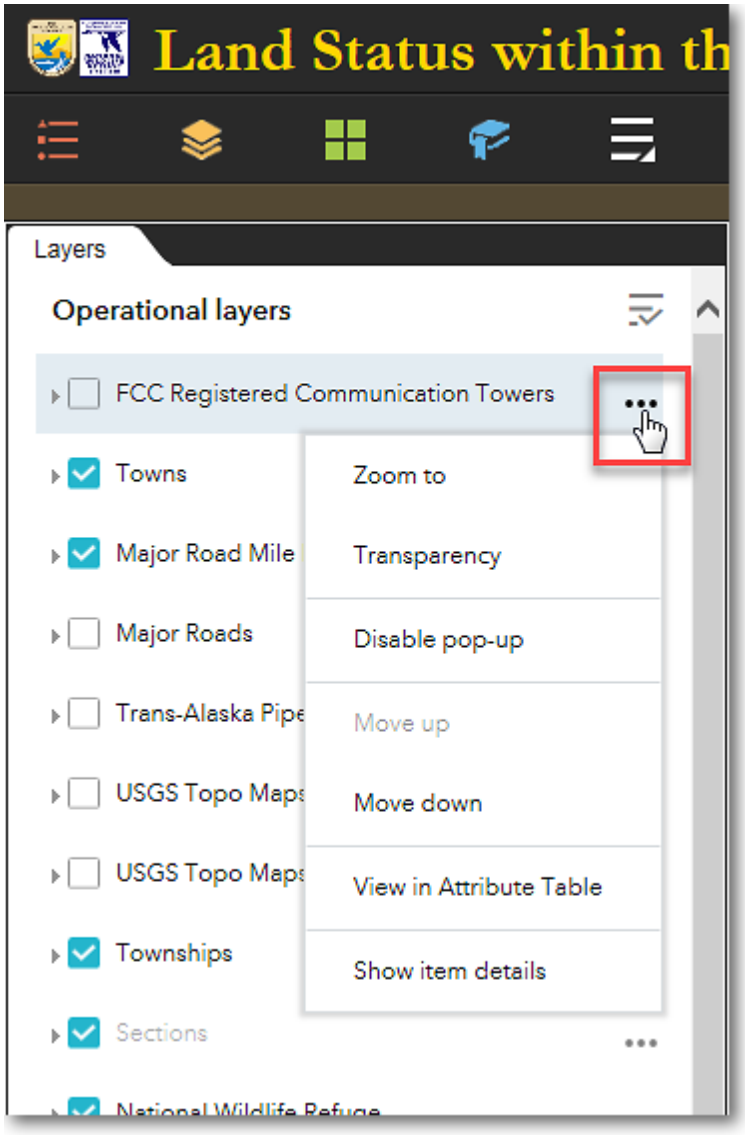
Several additional functions can be used with layers. To see these functions, click either ***Layers menu*** in the upper-right corner of the Layer list, or the ***menu for the individual layers*** (the three dots to the right of the layer names).



Layer Options Available in the Layers *Main Menu*

You can perform the following functions via the *Layer* list main menu:

- ***Turn all layers on***
  Makes all layers visible on the map (scale-dependent)
- ***Turn all layers off***
  Makes all layers invisible on the map
- ***Expand all layers***
  Displays the legends for all layers
- ***Collapse all layers***
  Moves the layer down in the Layer menu



Layer Options Available for each Individual Layer

You can perform the following functions via the individual layer menus:

- ***Zoom to***

Zooms the map to the full extent of the layer

- ***Transparency***

Allows you to set the level of trans

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- ***Disable pop-up***

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bottom) in the layer list

- ***View in attribute table***

  Displays the attribute table of the layer

- ***Show item details***

  Displays technical information about the

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er

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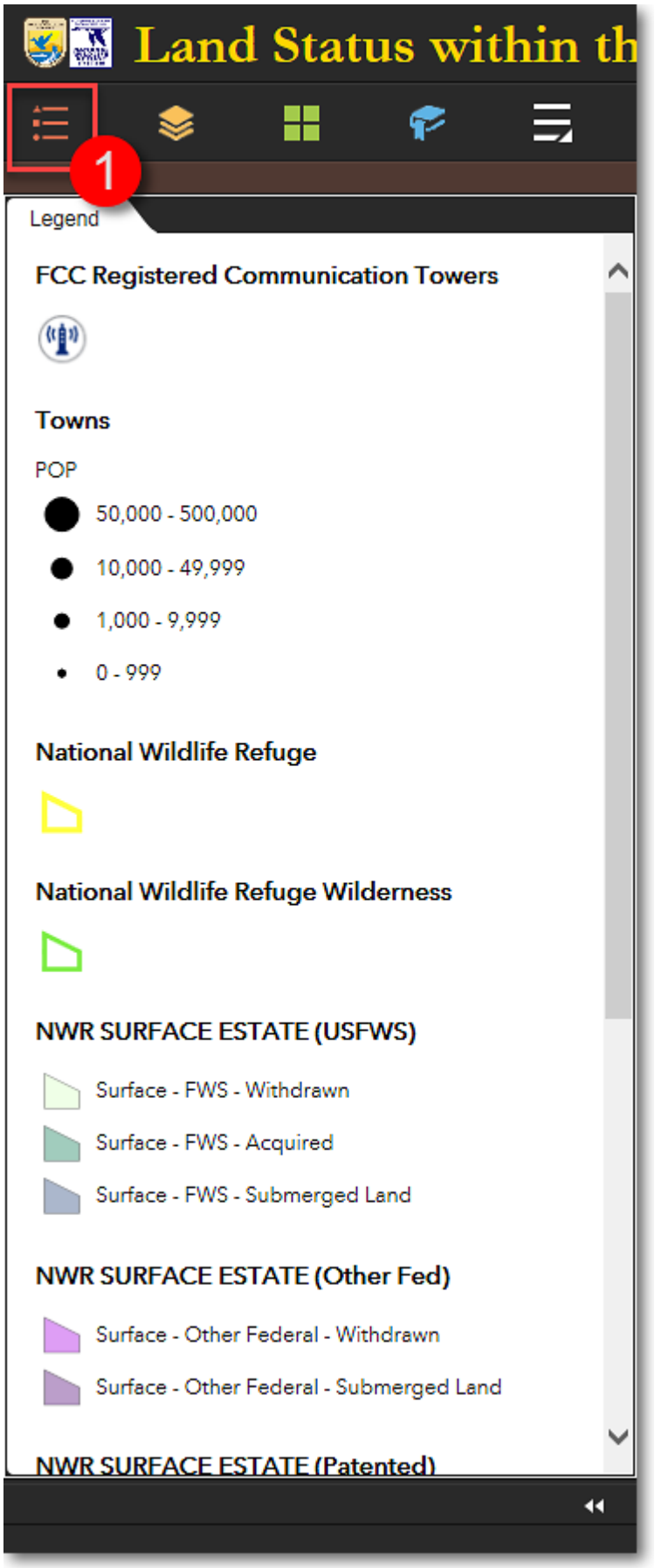
Legend

The ***Legend*** tool displays the legends for the various data layers in the Land Mapper.

To View the Legends

1) Click the ***Legend*** icon in the upper-left corner of the Mapper. The following will be displayed:



*An example of the **Legend** window, showing data layers that are turned on*

2) The Legend is dynamic, meaning that it shows the legends for only those data layers that are currently turned on in the ***Layers*** panel.

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Location Search

You can quickly pan and zoom the map view by using the***Location Search*** tool. This tool is located in the upper-left corner of the Mapper window. You can enter many types of locational information, as described below.

Getting Started

The Location Search tool is located in the upper-left corner of the Land Mapper window. Click in the ***input box*** and ***enter a search term***.

Enter a search term into the Location Search ***input box***

Types of Locations that You Can Search

Following are examples of just some of the types of things for which you can search. Generally, if you have a place name, give it a try. The ***Location Search*** tool will find suggestions as you type and present you with a list of items from which to choose. The more completely you enter your search term, the better the match will be.

Type of Feature	**Examples**

Continents	North America, South America, Europe
Countries	United States, Canada, Liechtenstein
States, Provinces, etc.	Alaska, Hawaii, California
U.S. Counties, Boroughs	Madison County, Davis County, Washington County
Cities	Anchorage, Moose Pass, Fairbanks, Seattle
Street Address	1011 E. Tudor Road, 600 East Benson Blvd.
U.S. Zip Code	99503, 99801, 90210
Postal Code (Non-US)	V0W 1A0, Y1A 0A1, V0T 1W0
Universities	Alaska Pacific University, University of Alaska, Harvard University
Libraries	Loussac Library, Library of Congress,
Businesses	Walmart, McDonald's, REI, Costco
Mountains	Blizzard Peak, Devil's Paw, Taku Towers
Lakes	Tustumena Lake, Crosswind Lake, Nuyakuk Lake
Rivers	Yukon River, Hulahula River, Kenai River
Glaciers	Taku Glacier, Matanuska Glacier, Knik Glacier
National Parks	Denali National Park, Kenai Fjords, Yellowstone National Park
National Wildlife Refuges	Arctic National Wildlife Refuge, Togiak National Wildlife Refuge

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Map Navigation

Various tools are provided that allow you to pan around the map, zoom in and zoom out, quickly go to the default view, and see an overview map. These tools are described below.

Zoom In

Zooms in on an area of the map. Alternatively, press and hold the ***Shift*** key while at the sam holding down the ***left mouse button*** and ***drag a rectangle*** on the map to zoom in.

Zoom Out

Zooms out on an area of the map. Alternatively, press and hold the ***Shift*** and ***Ctrl*** keys while pressing and holding down the ***left mouse button*** and ***drag a rectangle*** on the map to zoom

Default View

Restores the default map view.

Overview Map

Displays the location of the current map view within a small overview map. Click the ***arrow*** right corner of the map display to show the overview map. Click the arrow a second time to map.

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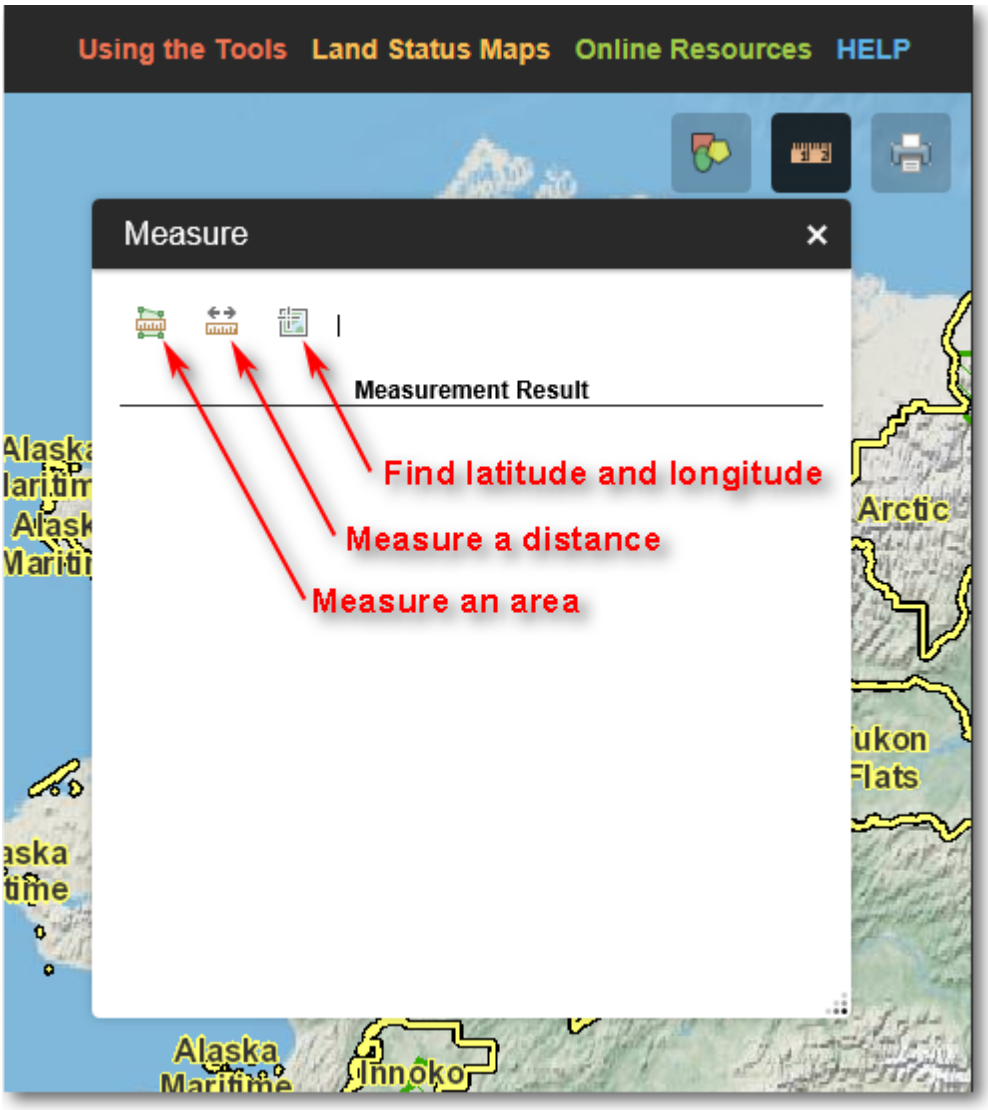
Measure

The ***Measure*** tool allows you to measure distances and areas on the map. You might use this if, for example, you want to determine the acreage of a lake, or to find out how far it is from one location to another.

The Measure Tool

1) Click the ***Measure*** icon in the upper-left corner of the Mapper. The following will be displayed:



*The **Drawing Tools** menu. Click any of the drawing tool icons to draw map annotations*

To Measure an Area

Assume you need to determine the size of a lake for a project you're working on. You can do this using the ***Measure > Area*** tool, as detailed below.

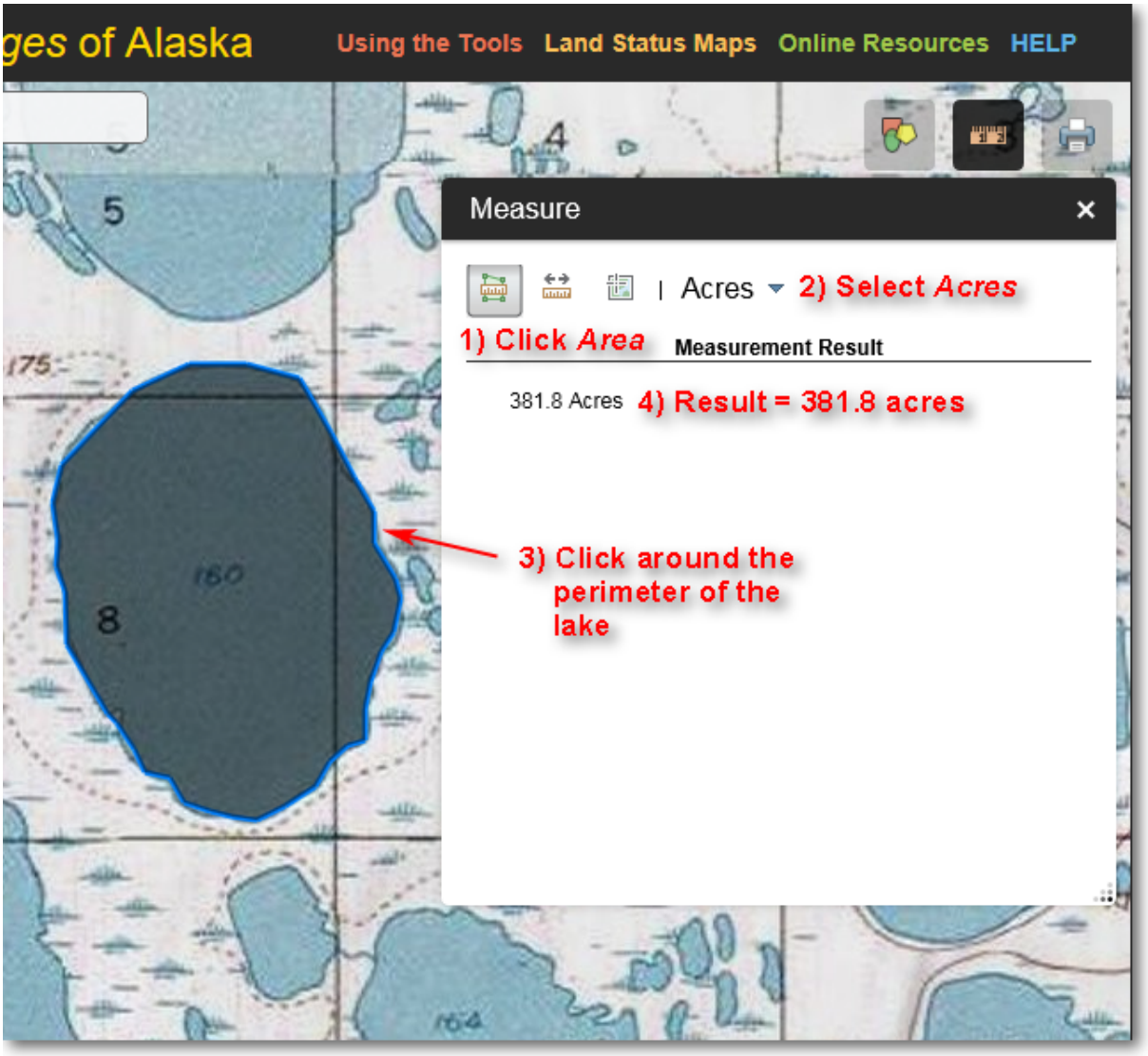


*Illustration of using the **Measure > Area** tool to determine the area of a lake*

1) Click the ***Area*** icon.

2) Select your desired area units. In this example, ***acres*** is selected.

3) Click the left mouse button all around the outline of the lake. To finish, double-click.

4) In this example, the shoreline of the lake is highlighted with a blue line and the area is displayed. The lake is 381.8 acres in size.

To Measure a Distance

Assume you need to determine the width of a river. You can do this using the***Measure > Distance*** tool, as detailed below.

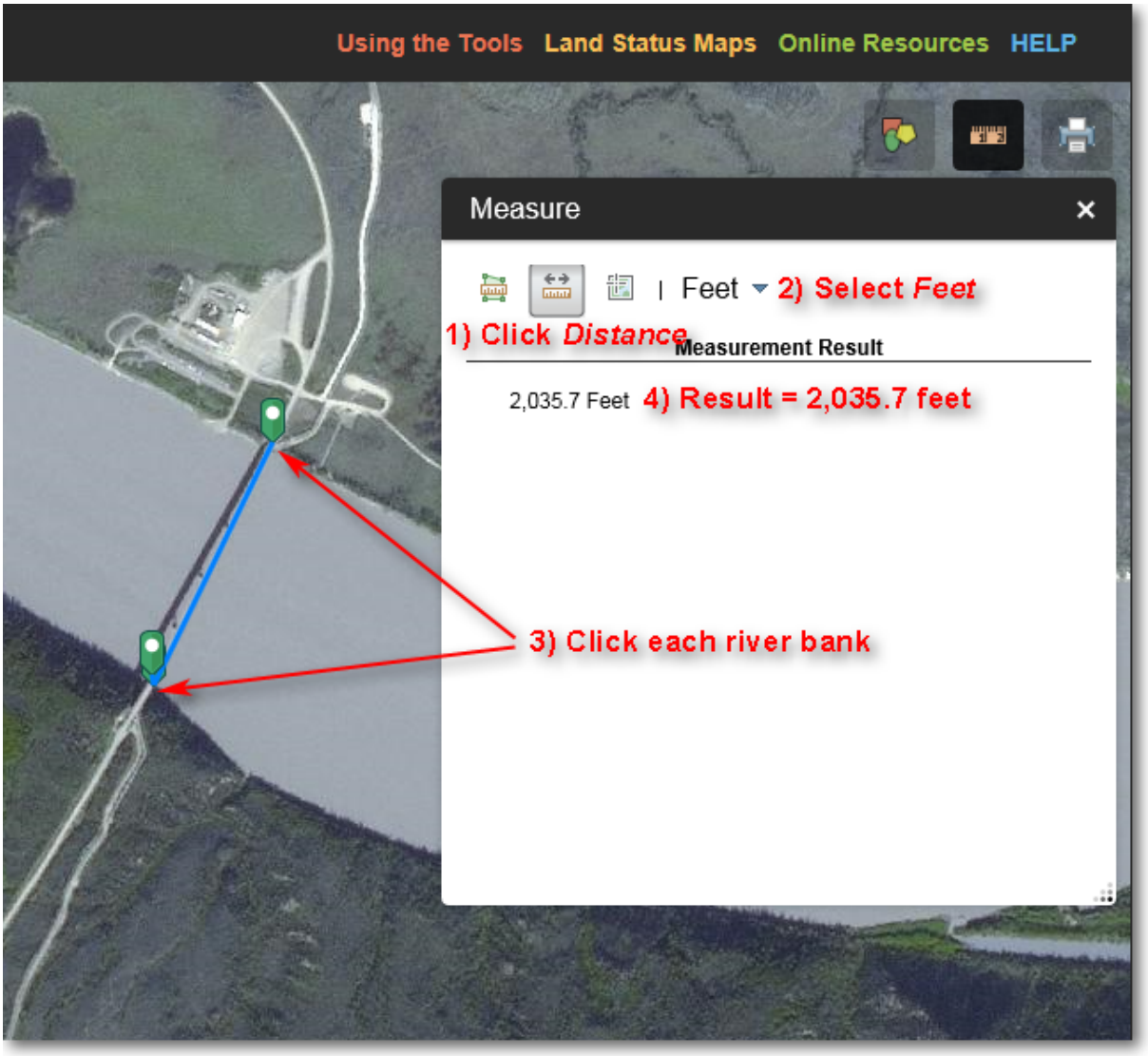


*Illustration of using the **Measure > Distance** tool to determine the width of a river*

1) Click the ***Distance*** icon.

2) Select your desired distance units. In this example, ***feet*** is selected.

3) Click the left mouse button on both sides of the river. To finish, double-click.

4) In this example, a blue line with green endpoint icons is displayed. The river is 2,036.7 feet wide.

Note:
You can also measure a meandering path. To do so, click the left mouse button along the length of whatever you want to measure, then double-click to end the line. The total distance will then be displayed.

To Find the Latitude and Longitude of a Location (Datum = WGS84)

Assume you need to know the latitude and longitude of the center of a bridge. You can do this using the ***Measure > Location*** tool, as detailed below.

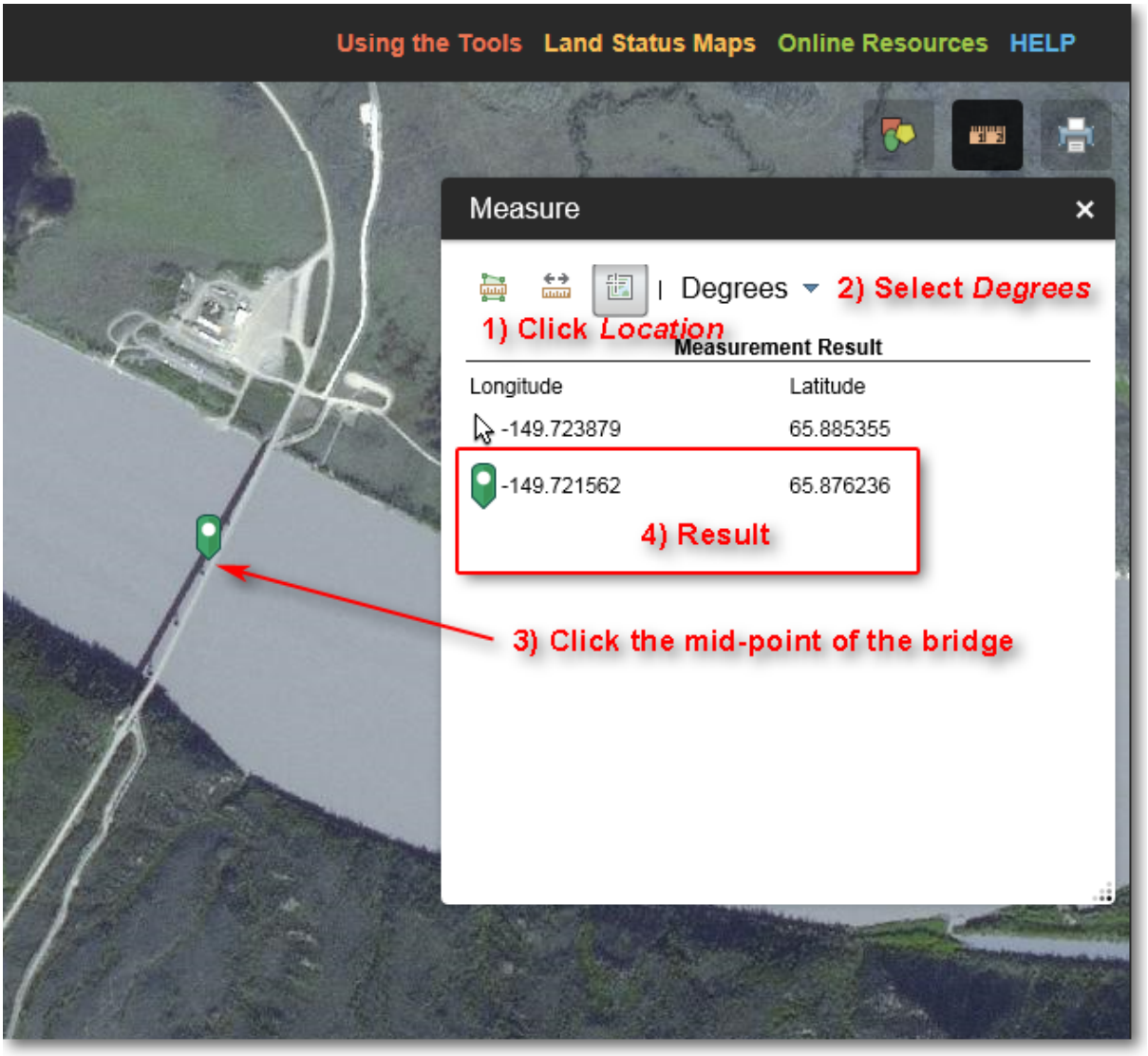


*Illustration of using the **Measure > Location** tool to determine the latitude and longitude of the center of a bridge*

1) Click the ***Location*** icon.

2) Select your desired coordinate units. In this example, ***degrees*** is selected.

3) Click the left mouse button at the location where you need the latitude and longitude.

4) In this example, a green icon is displayed at the location you clicked. The latitude is 65.876236 North and the longitude is 149.721562 West.

Note:
The reported latitude and longitude is with respect to the WGS84 datum. When reporting the coordinates, you must ***always*** include the datum (see below for additional details

concerning coordinates and datums).

Know Your X and Y...

A point on the Earth can noted as an XY coordinate. ***X*** and ***Y*** refer to locations within a Cartesian coordinate system, where *X* identifies a position along the horizontal (X) axis and *Y* identifies a position along the vertical (Y) axis.

- In a ***geographic*** coordinate system, longitude is expressed by the X value, and latitude is expressed by the Y value.
- In a ***projected*** coordinate system, Easting is expressed by the X value, and Northing is expressed by the Y value.

...and Know Your Signs

With geographic coordinate systems, it is critically important to understand how north, south, east, and west are represented by the coordinate values. Algebraic signs, plus (+) and minus (-) are used to indicate the compass directions, as such:

- ***North latitude*** is represented as a ***positive*** value (+)
- ***South latitude*** is represented as a ***negative*** value (-)
- ***East longitude*** is represented as a ***positive*** value (+)
- ***West longitude*** is represented as a ***negative*** value (-)

Converting between latitude and longitude formats

Latitudes and longitudes can be expressed in several different formats, such as:

- 45° 24' 13.4" (Degrees, minutes, seconds)
- 45° 24.223 (Degrees and decimal minutes)
- 45.40372222° (Decimal degrees)

All three examples above are equivalent, that is, they identify the same spot on the Earth. You may run into situations where you must provide latitude and longitude values in a particular format. For example, you might have a lat/long coordinate in degrees, minutes, and seconds format, but the program you're working with might require you to input the lat/long in decimal degrees format. To do this, you have to convert from one format to another. You can do this using an online lat/long converter. There are many such converters available online, but here's one that's very easy to use:

http://rumkin.com/tools/gps/degrees.php

This site converts from any of the three formats to any of the other three.

Latitude + Longitude + Datum = A Complete Coordinate, aka LLD = Problem Free!

Casual use of latitude and longitude positions generally doesn't involve referencing the datum to which the lat/long is tied. However, when dealing with GIS a higher level of precision is required, thus lat/long values must always include the associated datum.

When noting lat/long coordinates or giving lat/long coordinates to someone, ***you must always report the datum which is used by the coordinates***. Without the datum information, the user will have to guess which datum your lat/long coordinates are in, and this often leads to misalignment of features. Following are several examples of the correct way to note lat/long coordinates:

- 45.50, -150.25, ***NAD27***
- 45.50 N, 150.25 W, ***NAD83***
- 45° 30' 00" N, 150° 15' 00" W, ***WGS84***

Note that for each example, the datum has been specified. ***A lat/long coordinate should never leave your desk without a datum specified***. Remember: ***LLD = Problem Free!***

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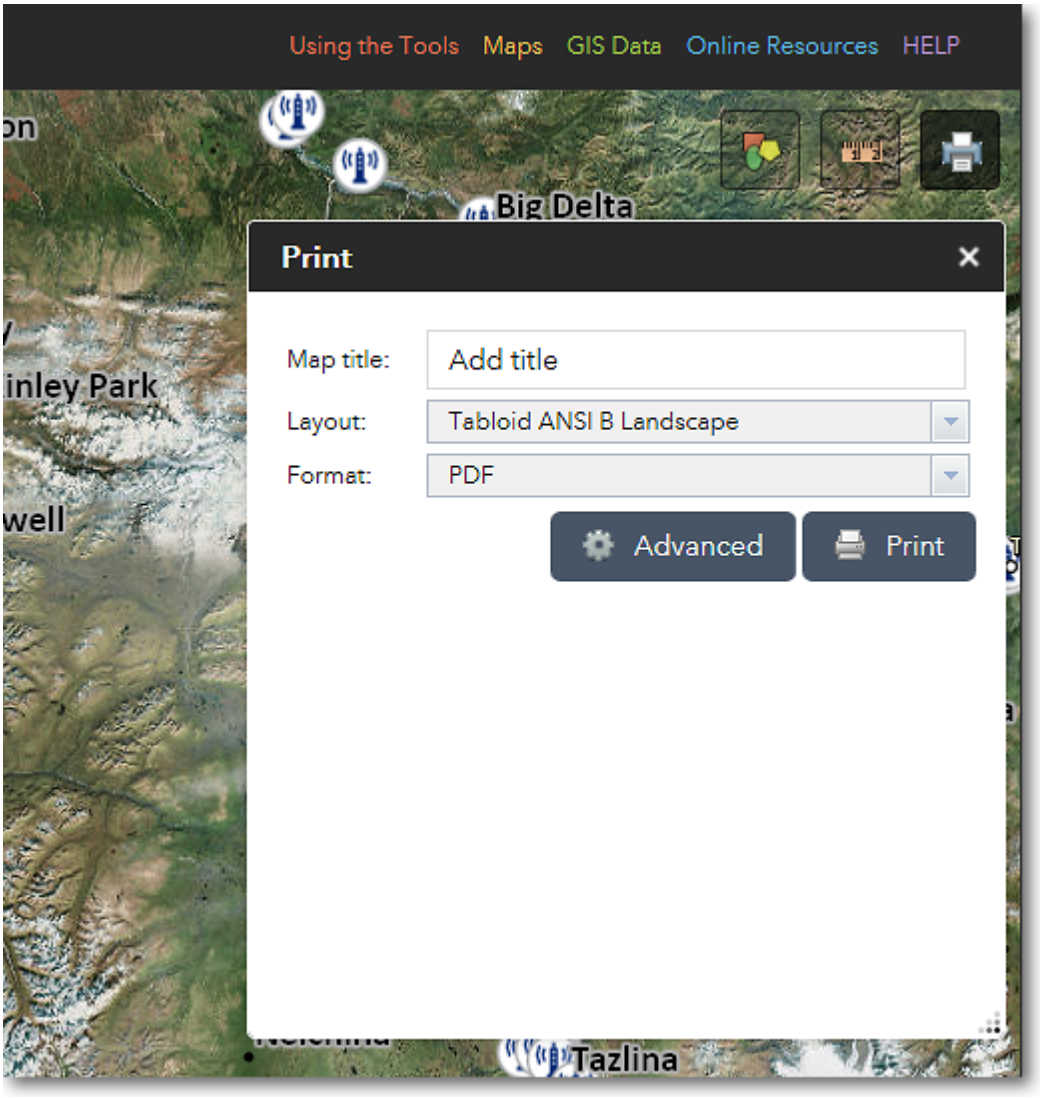
Printing and Saving the Currently Viewed Map

At any time while you are working with the Land Mapper, you can save the current view to a file, or just generate a temporary map for printing. *The Print* tool allows you to select from several page sizes and file formats for the saved map. You can also set several other advanced properties such as map scale, author, and copyright information.

To Print the Currently Viewed Map

1) Use the Mapper's various tools to create the view that you want to save to a file, or to print. The goal is to configure the view in the Land Mapper as you want it to appear in the printed or saved map. This can include resizing the web browser window, zooming in or out, panning around, turning layers on or off in the *Layers* list, changing the basemap, adding annotations, etc.

2) Click the ***Print*** icon in the upper-right corner of the Mapper window. The following dialog box will be shown.

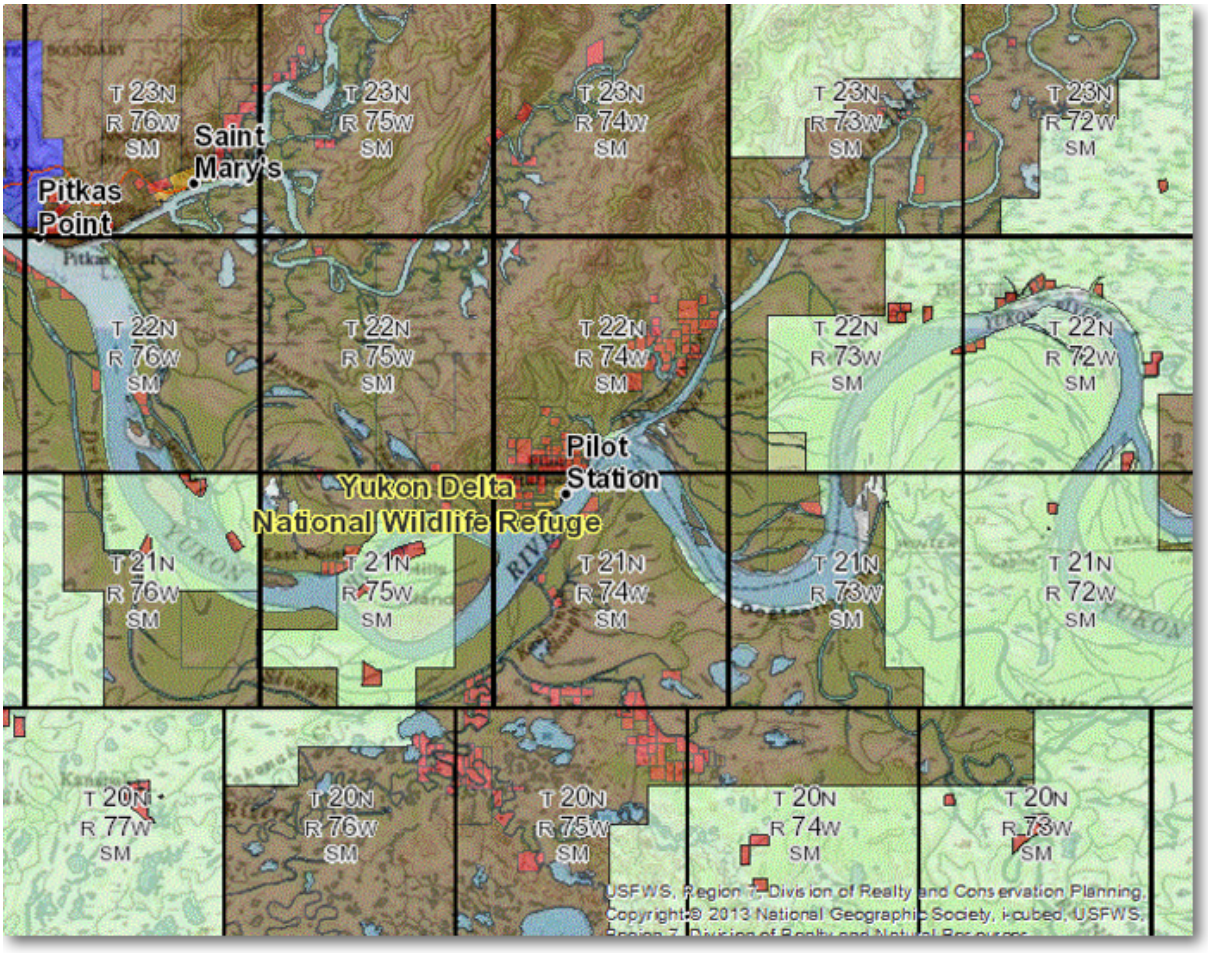


The ***Print*** dialog box

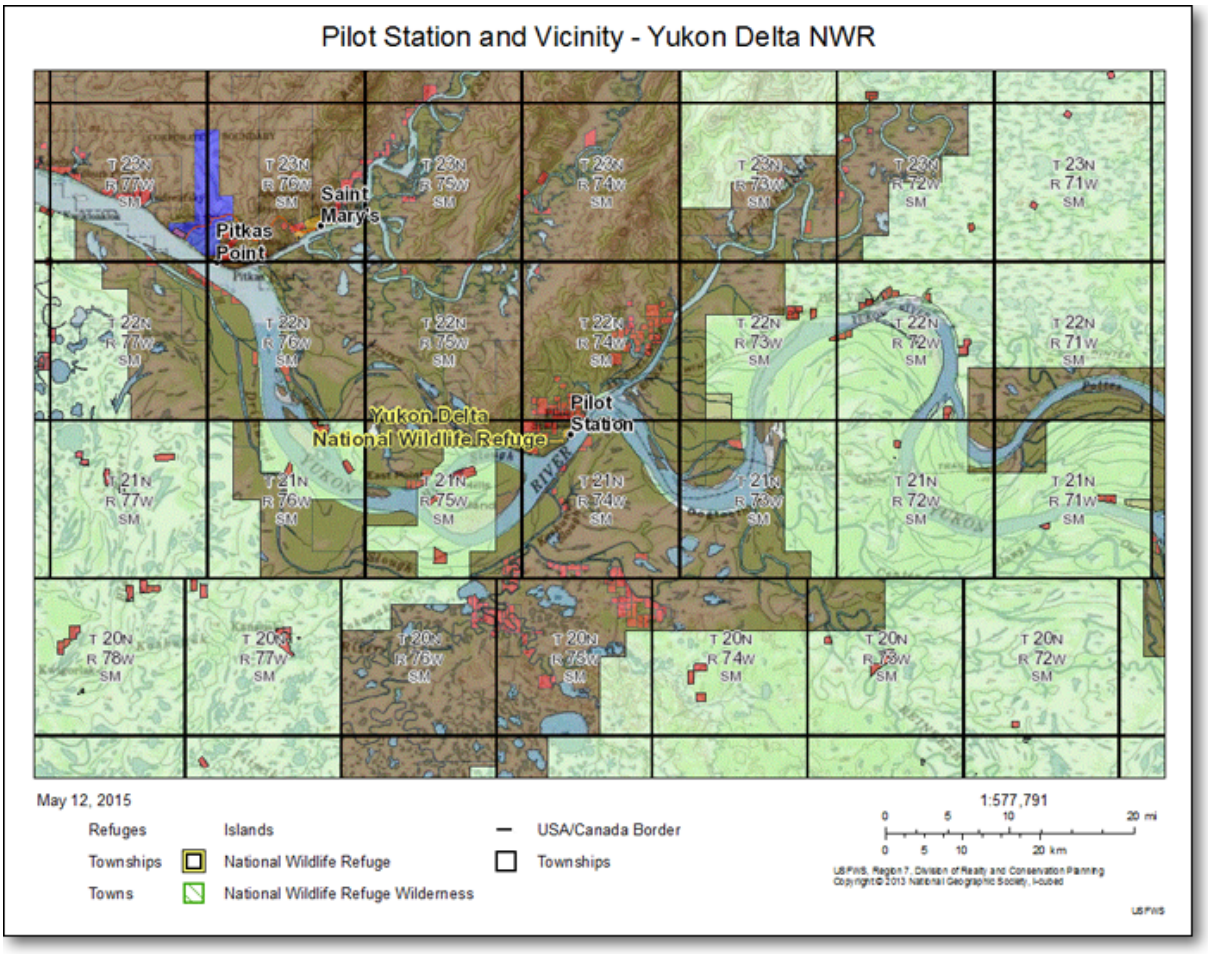
3) If desired, enter a ***title*** for your map. For example, ***National Wildlife Refuges in Alaska***.

4) Choose a layout for your map. You can choose from several page sizes. If you choose a ***page size***, the resultant map will have various map elements such as a border, title, legend, scale bar, etc. added to it. If you choose ***Map_Only***, these other map elements will not be added; only the content that is visible in the map area will be saved to the output map.

5) Set other options for your map by clicking the ***Advanced*** button. When you're ready to create the map, click the ***Print*** button. See below for examples.

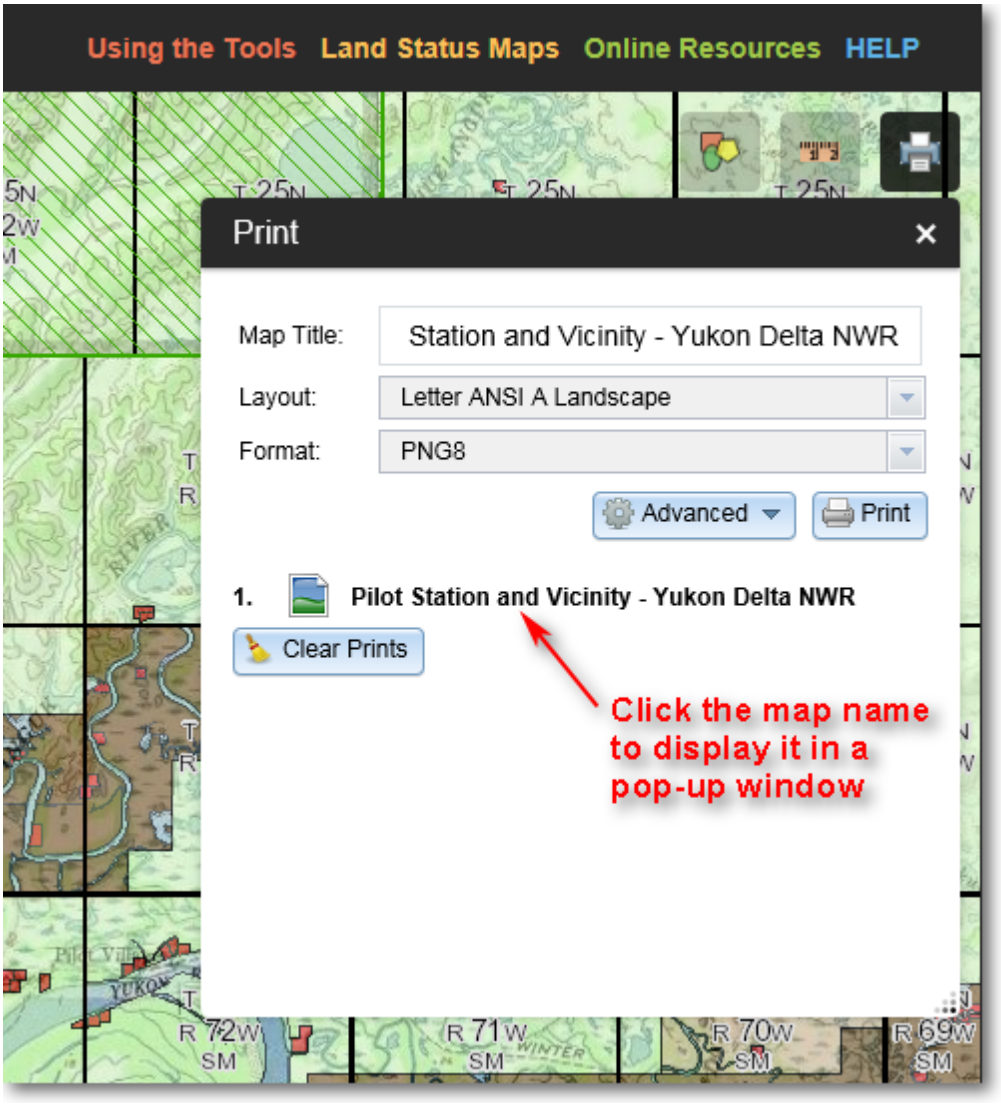


This is an example of a map generated with the ***Map_Only*** *layout*



This is an example of a map generated with the ***Letter ANSI A Landscape*** *layout*

6) After the map is created, it will be listed in the Print dialog box. See below for an example.



The name of the generated map is listed in the ***Print*** *dialog box*

7) Click on the name of the generated map. It will then appear in a separate pop-up window in your web browser. You can then use your browser's ***Save Picture As...*** command (or the equivalent command for your particular web browser) to save the map to a file. Alternatively, you can print the map if you wish.

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Query

The *Query* tool is a powerful tool that allows you to run a database query on various data layers to find features of interest. It is perfect for answering *what*, *where*, *how many*, and

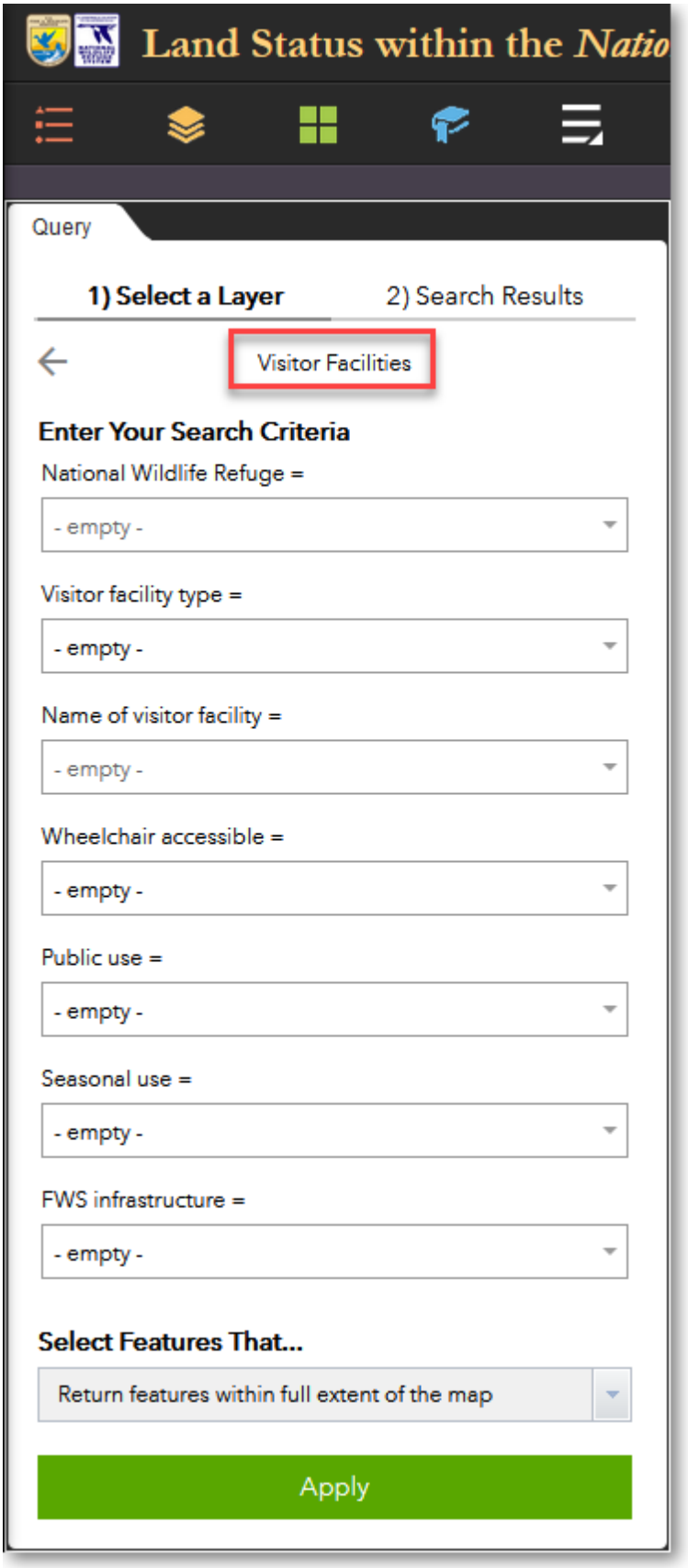
how much questions. For example, if you need to determine how many surface estate acres of land are patented to Alaska native village corporations within Kanuti National Wildlife Refuge, you can use the *Query* tool to find the answer.

The *Query* tool has many settings and options. Be sure to spend some time exploring all the various functions. Below is a step-by-step illustration of performing the query mentioned above.

How it Works

Using the *Query* tool is a two-step process: you first specify the ***data layer*** that you want to query, then you identify the ***search criteria*** in which you are interested. You can then ***interact with the query results*** by viewing the resultant features on the map, viewing details in the attribute table, calculating statistics, or exporting the attributes of the selected feature into several formats for use outside of the Mapper.

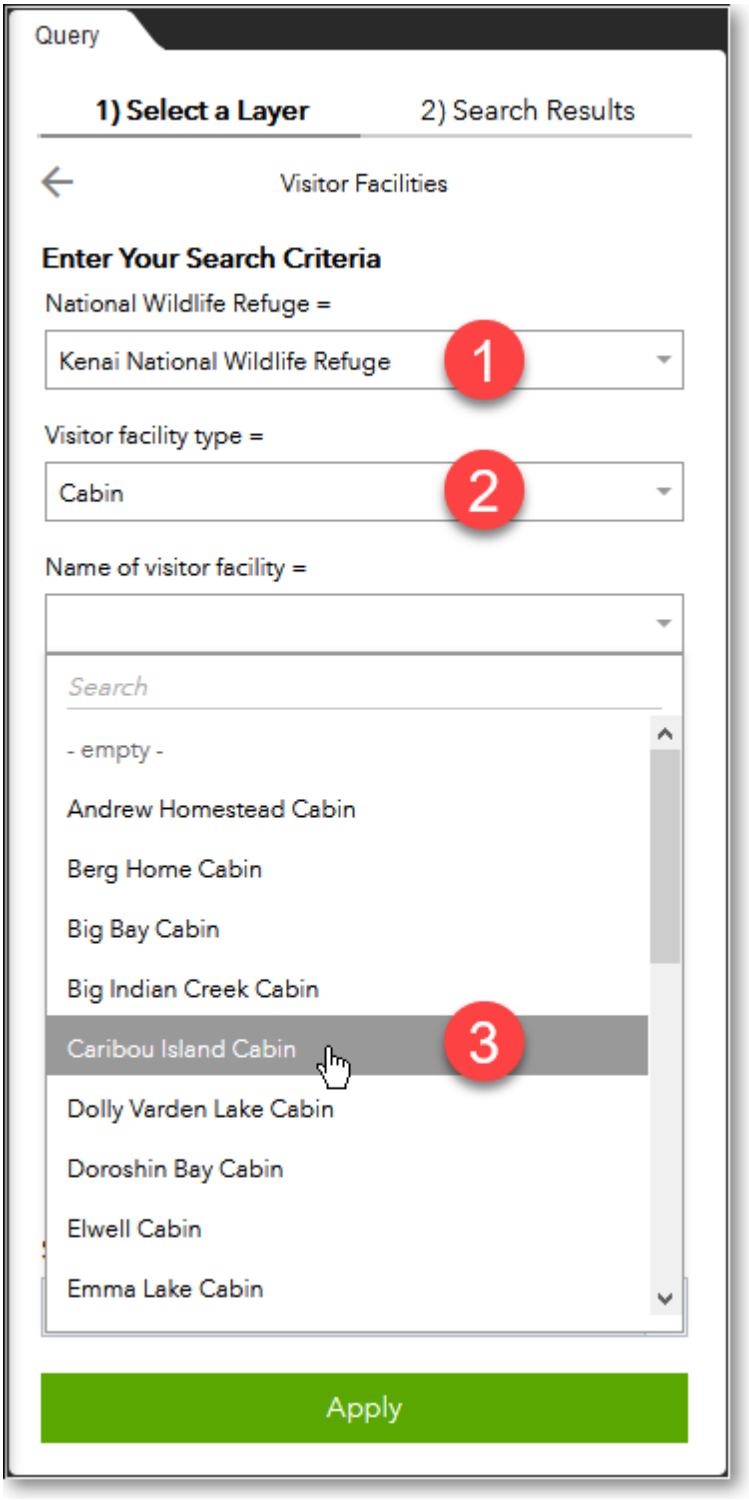
The power of the *Query* tool lies in the specification of your search criteria. Refer to the illustration below:



*The **Visitor Facilities** layer is selected, and is ready for specifying the query criteria*

You can see in the above example that the ***Visitor Facilities*** layer has been selected as the layer upon which the query will be conducted. The various search criteria pick lists allow

you to specify the criteria that you want to use in the query. You can specify as many criteria as you wish, in any order you wish. When you pick a value from a search criteria pick list, that value will be used to narrow down the values that will appear in the other pick lists. This process is cumulative, meaning that the first value you pick will narrow down the values in the other pick lists. When you then select another value from a second pick list, your chosen values from both the first and second pick lists will be used to narrow down the results of the remaining pick lists. For example, assuming you have picked values from four pick lists, the combination of those four values are used to narrow down the values in any remaining empty pick lists. This is a very powerful and intuitive method for performing queries, particularly if you are not already familiar with the attribute values of the data layer that you are querying. The following example illustrates this functionality.



Query criteria applied to the ***Visitor Facilities*** layer

In the above example, three search criteria have been specified. In this case, the user first selected ***Kenai National Wildlife Refuge*** (#1), then clicked on the ***Visitor Facility Type*** pick list. This pick list then showed all the various types of visitor facilities within only Kenai NWR, from which the user selected ***Cabin*** (#2). The ***visitor facility name*** pick list then presented a list of all the cabin names within Kenai NWR, and the user has selected the ***Caribou Island Cabin*** (#3). After specifying all of your desired search criteria, click the ***Apply*** button to perform the query.

It is important to note that your queries can be as general or specific as you desire, and your search criteria can be specified in any order. For example, if you want to see all the types of visitor facilities that are within Kenai NWR, you would first specify Kenai NWR , then click on the Visitor Facility Type pick list to see a complete list of all the types of facilities within Kenai NWR. Alternatively, if you want to see which National Wildlife Refuges have cabins, you would first select ***Cabin*** from the Visitor Facility Type pick list, then click the National Wildlife Refuge pick list to see a list of all refuges that have cabins.

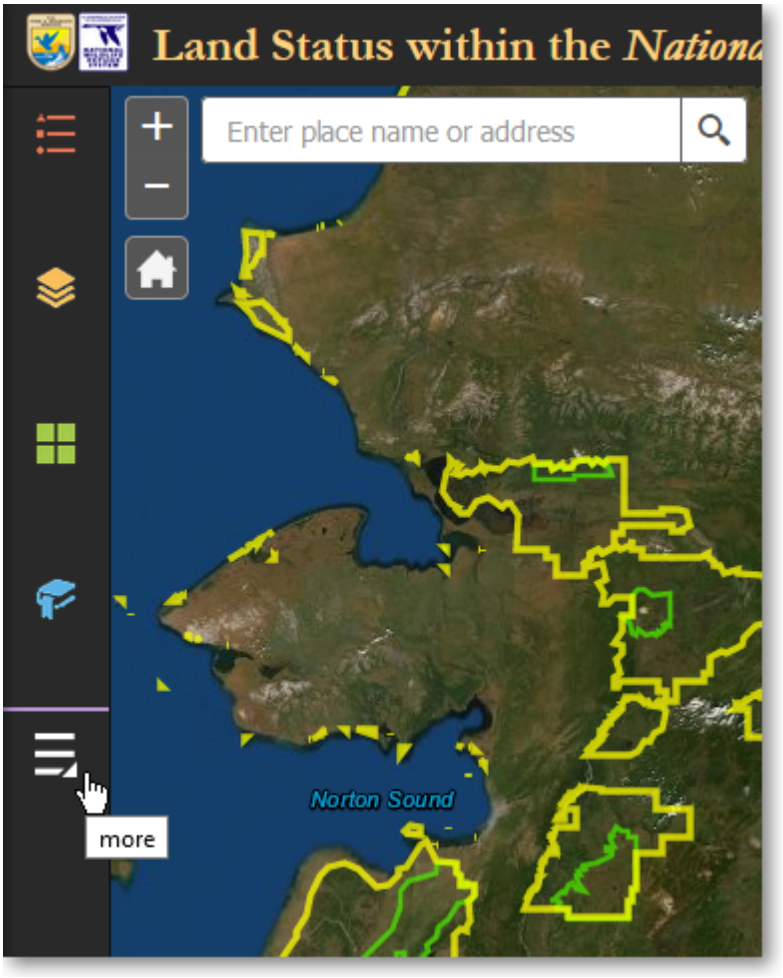
There are three main ways in which you can use the *Query* tool:

Attribute query:	specify search criteria for one data layer
Interactive query:	draw a shape on the map to find information about the selected data layer
Spatial query:	specify search criteria for one data layer and further filter the results based on a second data layer

Each of these methods is illustrated in the tutorials below.

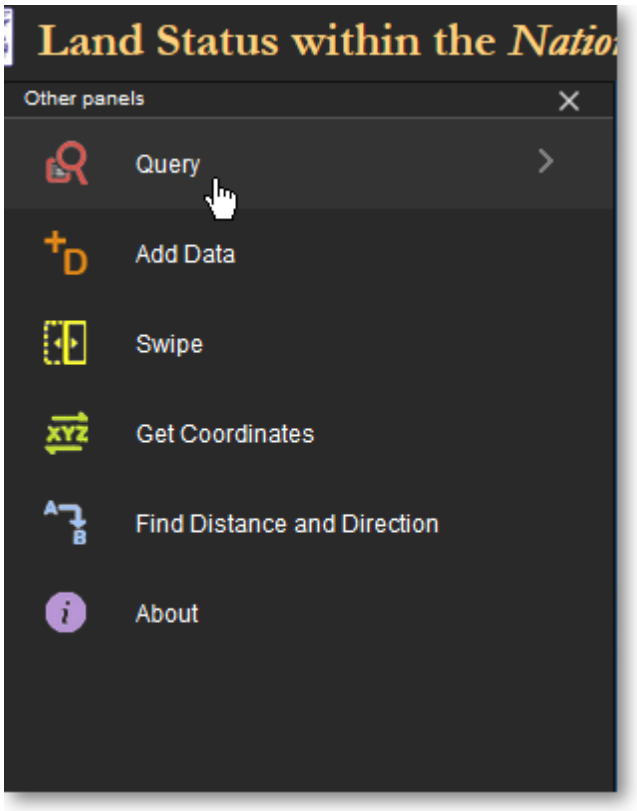
Getting Started

1) Click the ***More...*** icon on the left-hand side of the Mapper window.



*Click **More...** to access additional tools*

2) Click the ***Query*** tool.



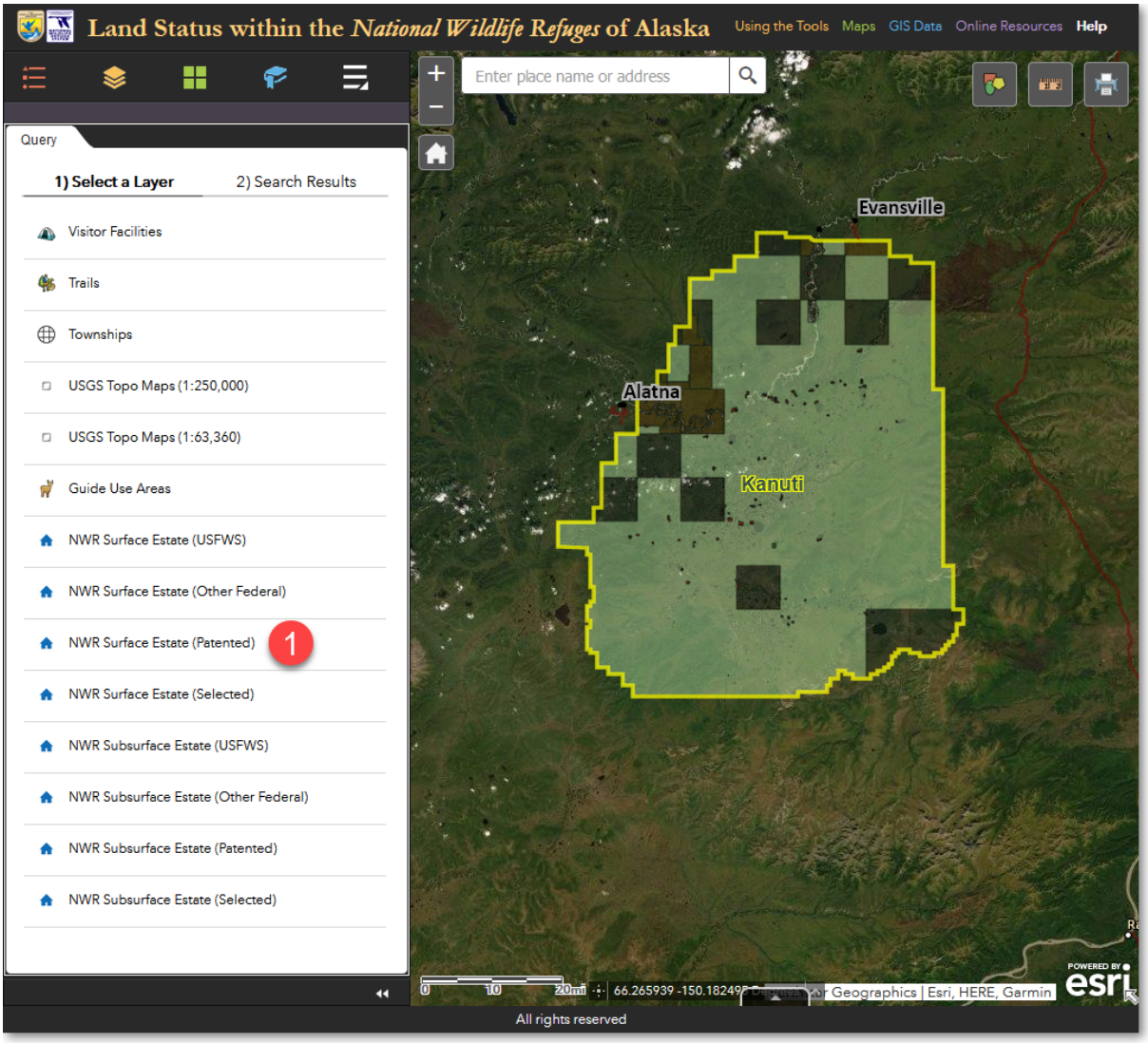
*Click the **Query** tool*

Attribute Query Tutorial: Find parcels that meet certain criteria and determine acreage

In this tutorial, you will calculate the ***acreage*** of ***surface estate land*** that is ***patented*** to Alaska native ***village corporations*** within ***Kanuti National Wildlife Refuge***. You will first perform a database query to select the parcels that meet your criteria. You will then examine the statistics of the selected parcels to determine the acreage. Finally, you will export the information for the selected parcels into CSV format for use with other programs outside of the *Land Mapper*.

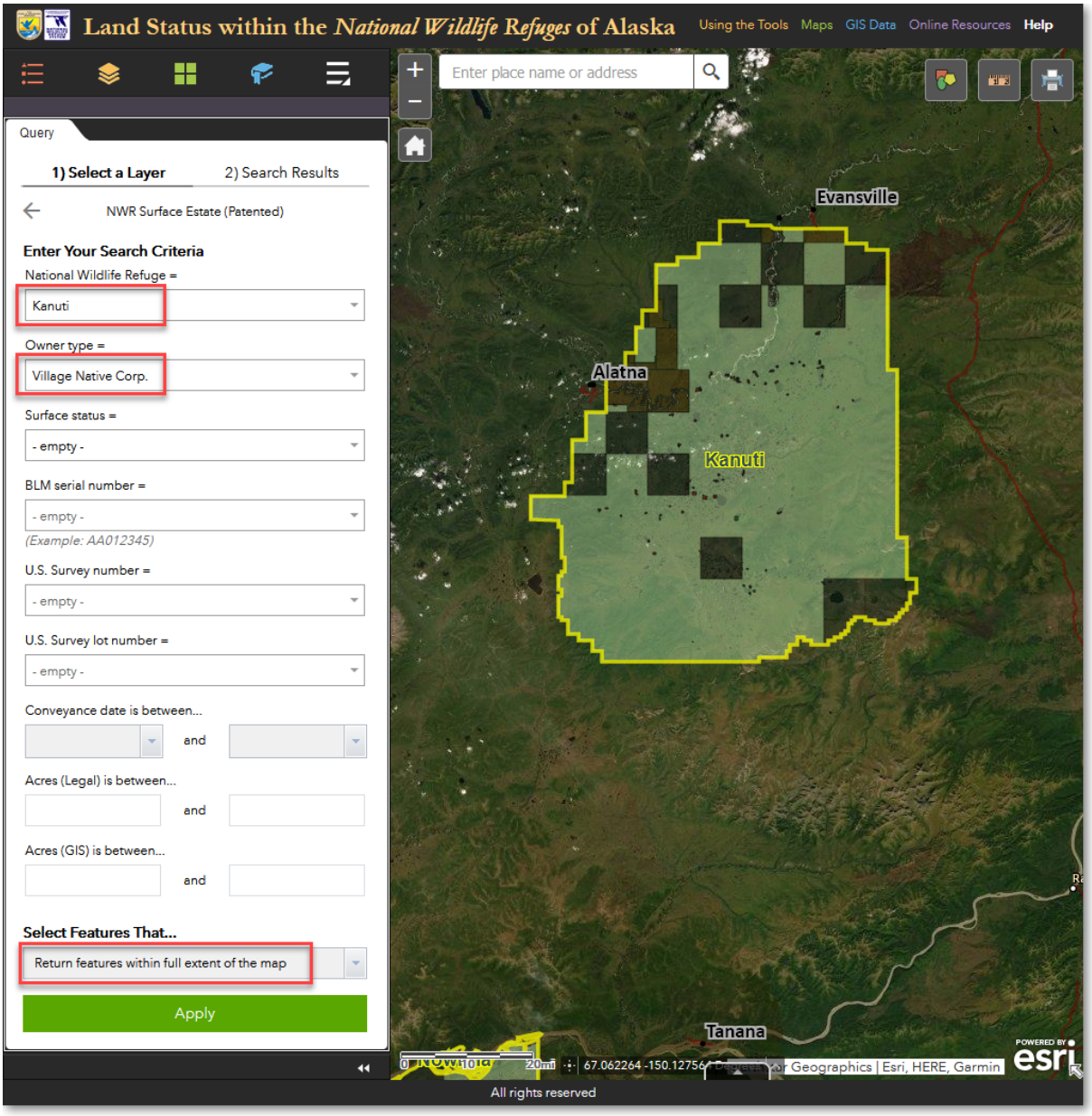
Stage 1: query the database to select parcels

1) With the *Query* panel open, under ***1) Select a Layer***, click on the ***NWR Surface Estate (Patented)*** layer. This layer contains all of the surface estate that has been patented within all 16 of the National Wildlife Refuges in Alaska.



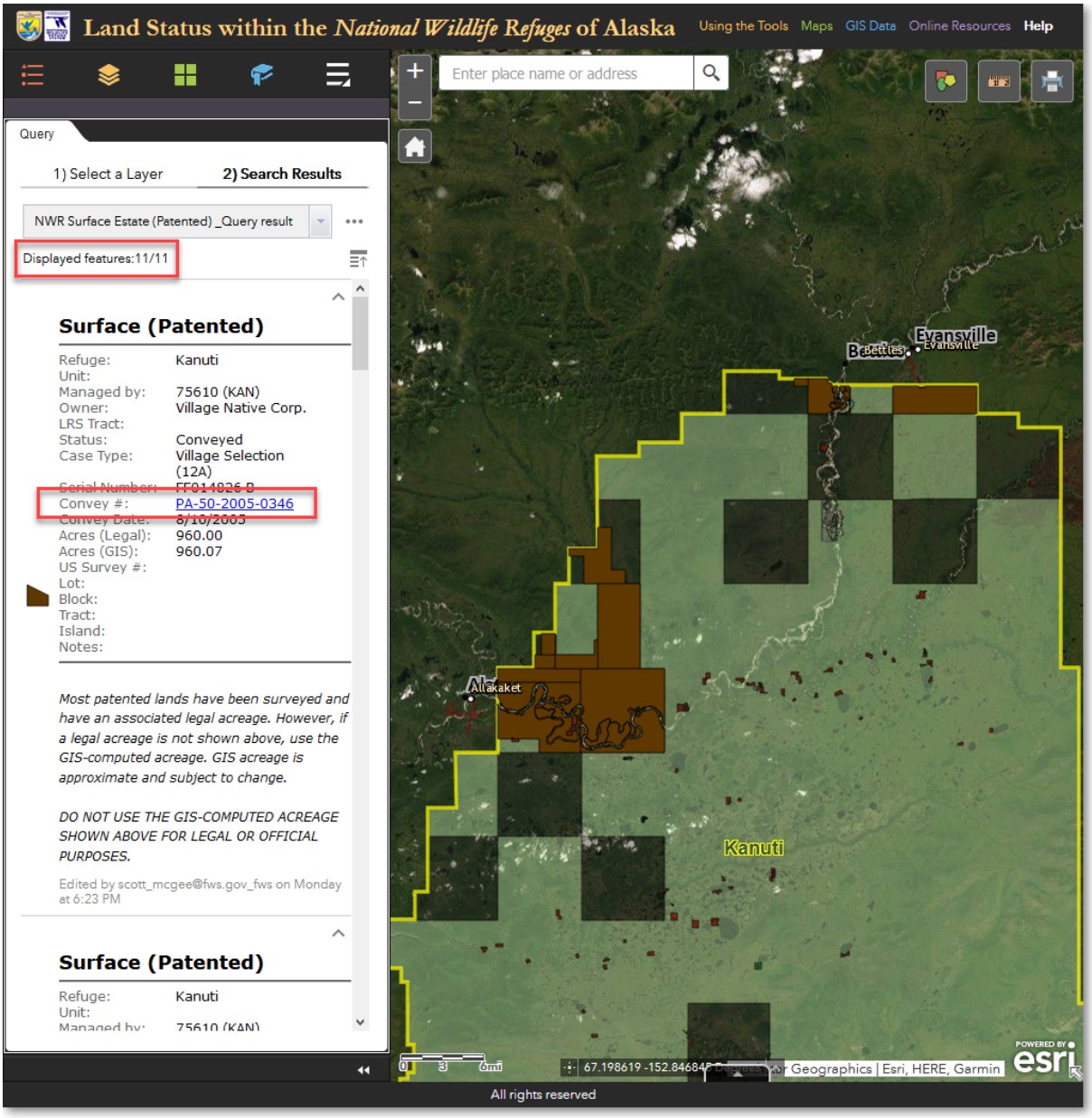
*Click the **NWR Surface Estate (Patented)** layer*

2) You now need to search for land that has been patented to Alaska native village corporations within Kanuti National Wildlife Refuge. Specify your search criteria as shown below, then click ***Apply***.



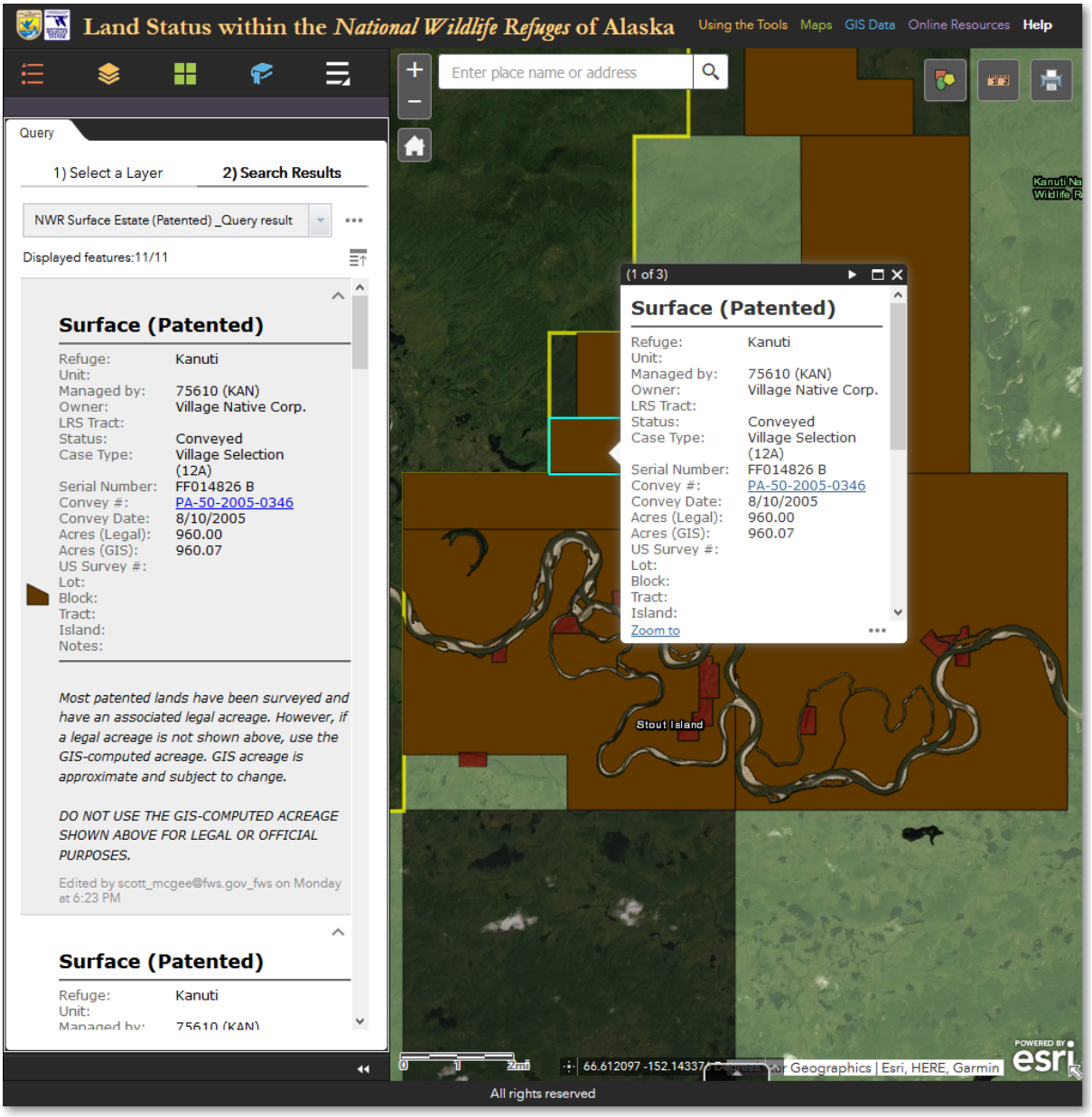
*Enter the criteria shown above and click **Apply***

3) The query is run and the search results indicate that ***11 features*** were found. You can scroll through the list of features in the results list. If you want to see the ***patent document*** for a feature, click the link to the right of the ***Convey #*** field name.



The query is run and the results are shown in the search results list

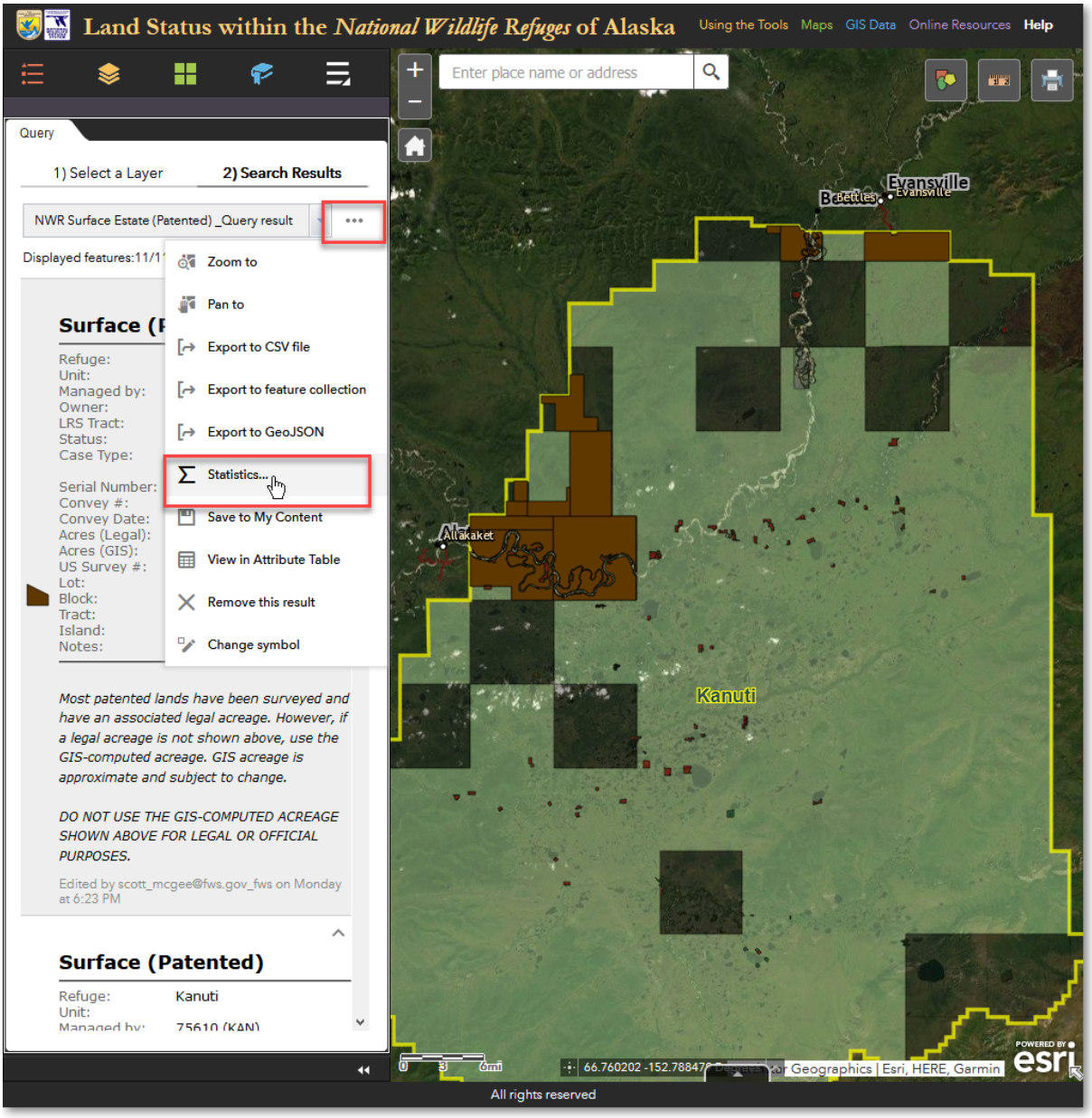
4) If you want to see a where a particular feature is located on the map, click anywhere on a search result in the results list. The map will then zoom to the feature and highlight it with a cyan-colored outline, and display the feature's associated info pop-up window.



An individual feature within the selected set of 11 features is highlighted on the map

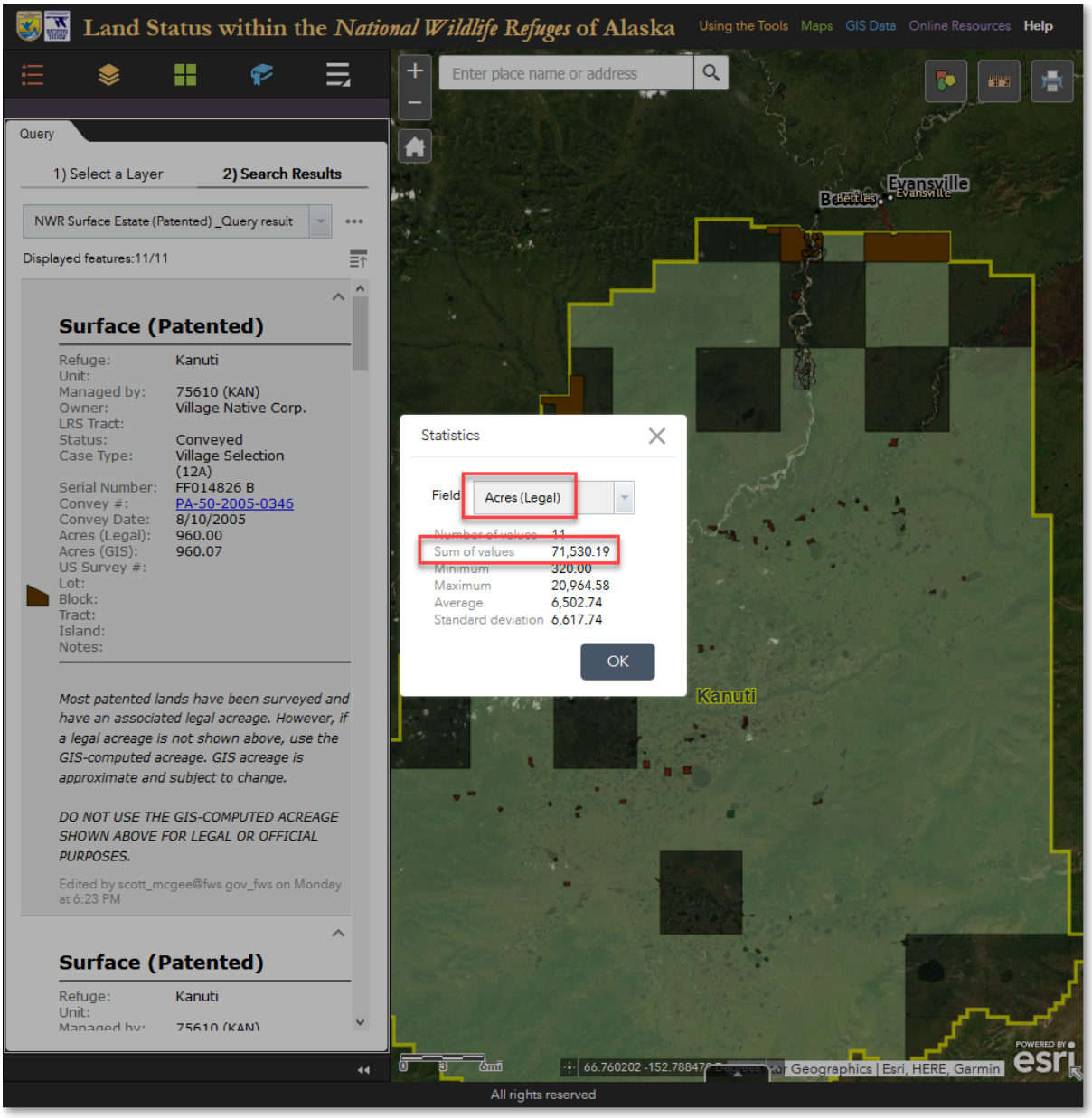
Stage 2: determine total acreage of the selected features

5) You now need to determine the total acreage of the selected features. The result will be the acreage of surface estate land that is patented to Alaska native village corporations within Kanuti National Wildlife Refuge. Under the ***2) Search Results*** heading, click the ***Feature actions*** menu (three horizontal dots). From the ***pop-up menu***, click ***Statistics***.



*Click **Statistics** to determine the total acreage of the 11 features that were selected by the query*

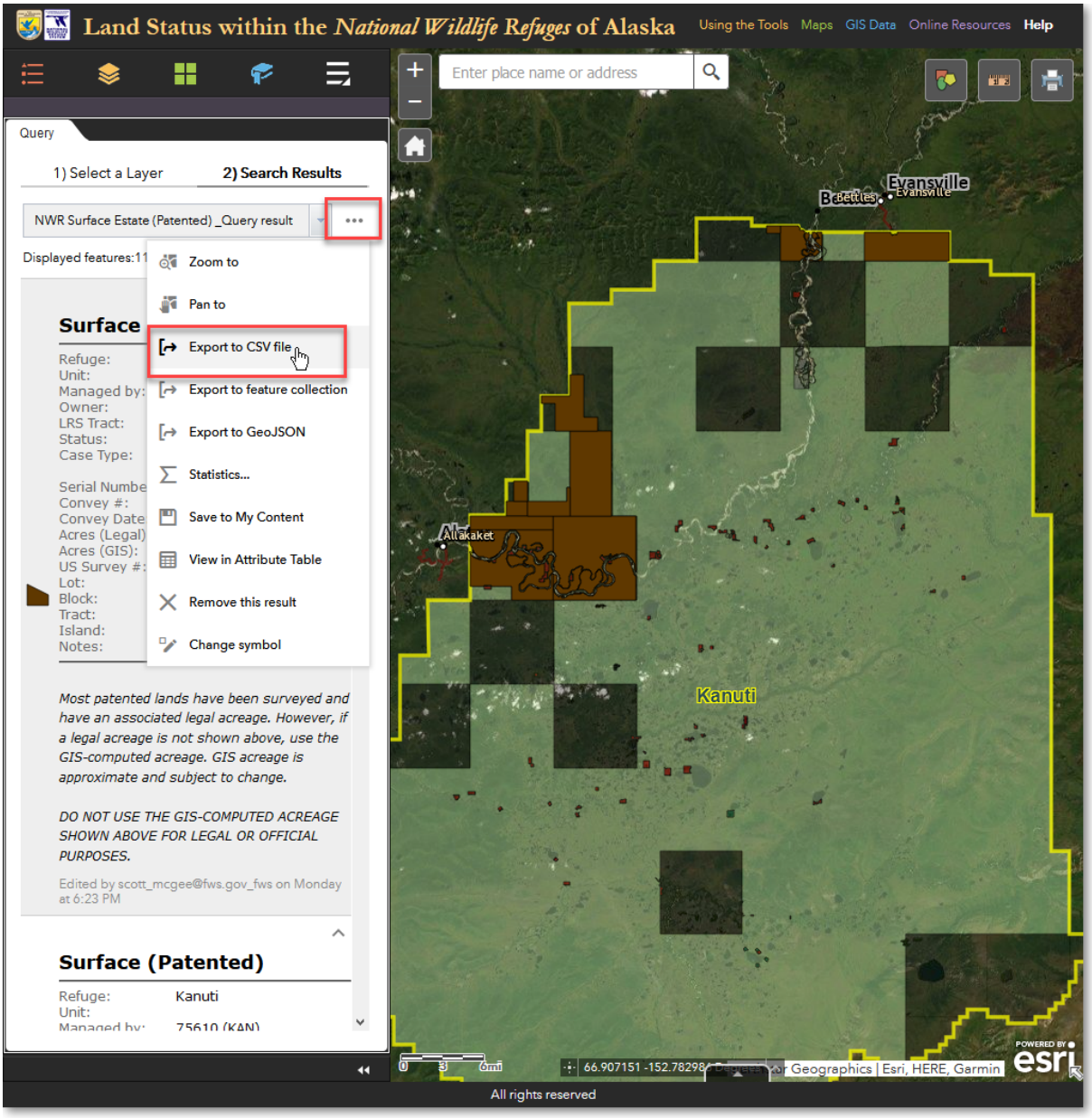
6) Now display the total acreage of the 11 features that were selected by the database query. In the ***Statistics*** pop-up window, select the ***Acres (Legal)*** field. Various statistics will be calculated and displayed. The ***Sum of values*** (71,530.19) is the acreage that you are interested in. This is the answer to your original question of how many acres of surface estate land are patented to Alaska native village corporations within Kanuti National Wildlife Refuge.



*Answer: **71,530.19 acres** of surface estate land are patented to Alaska native village corporations within Kanuti NWR*

Stage 3: export parcel information to CSV format

7) You will now export the information associated with the selected features to a comma-separated value (CSV) file. This file can then be opened in a spreadsheet program, such as Microsoft Excel, for further evaluation. Under the ***2) Search Results*** heading, click the ***Feature actions*** menu (three horizontal dots). From the ***pop-up menu***, click ***Export to CSV file***. Note that this exports only the attribute information for the selected features - the actual polygons are not included in the exported CSV file.



To export the information for the 11 selected features, click ***Export to CSV file***

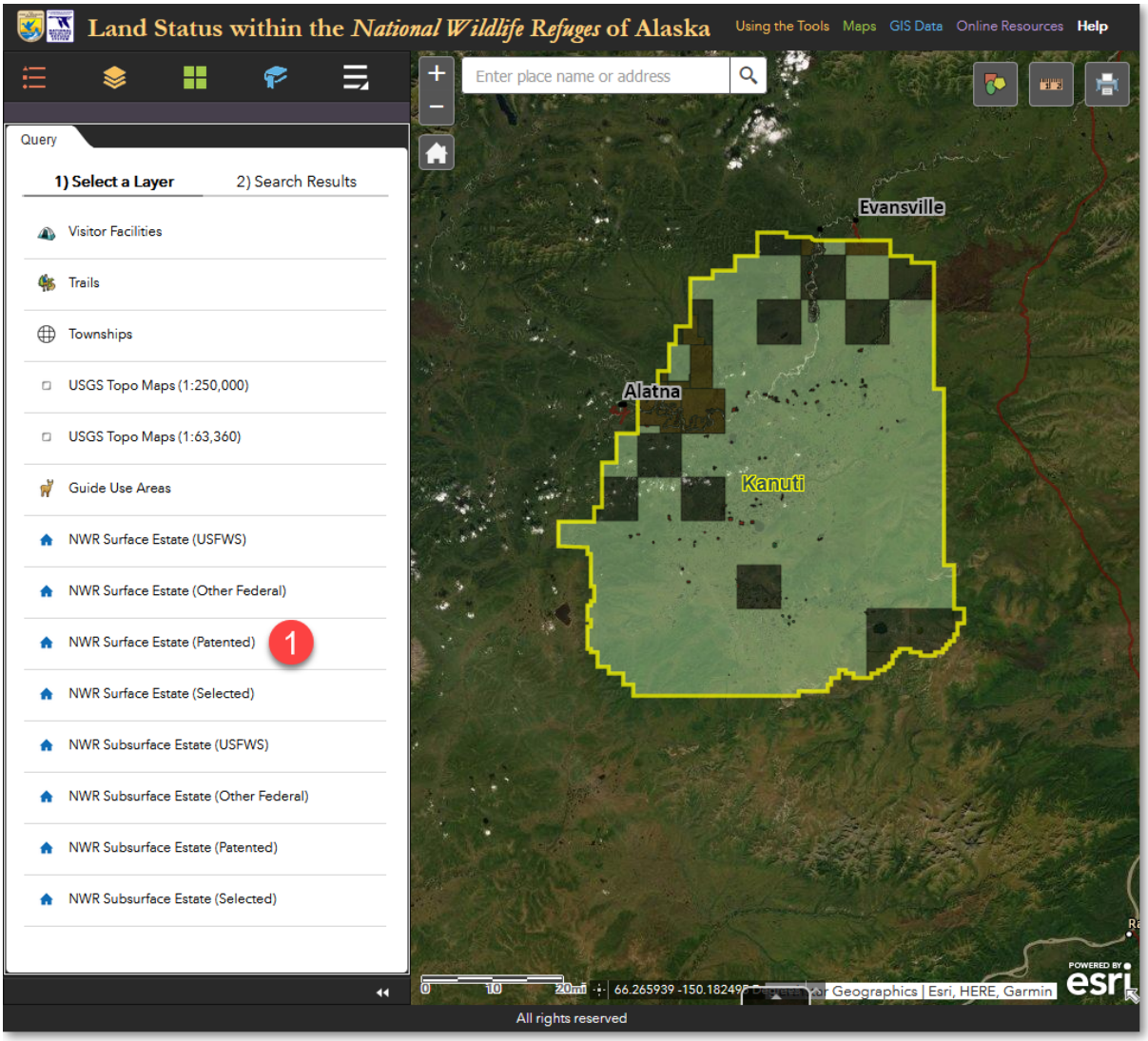
8) Save the CSV file to location of your choice on your computer. You can now open the CSV file in a text editor, spreadsheet, or other program that can open CSV files.

Interactive Query Tutorial: Find out information about parcels and features that you highlight on the map

In addition to performing queries based on attribute information, you can also perform ***interactive queries***. These are queries in which you draw a shape on the map and all the features of the chosen layer that are within the shape you draw are selected. You can base the query on just the shape you draw, or you can also combine an attribute query with the

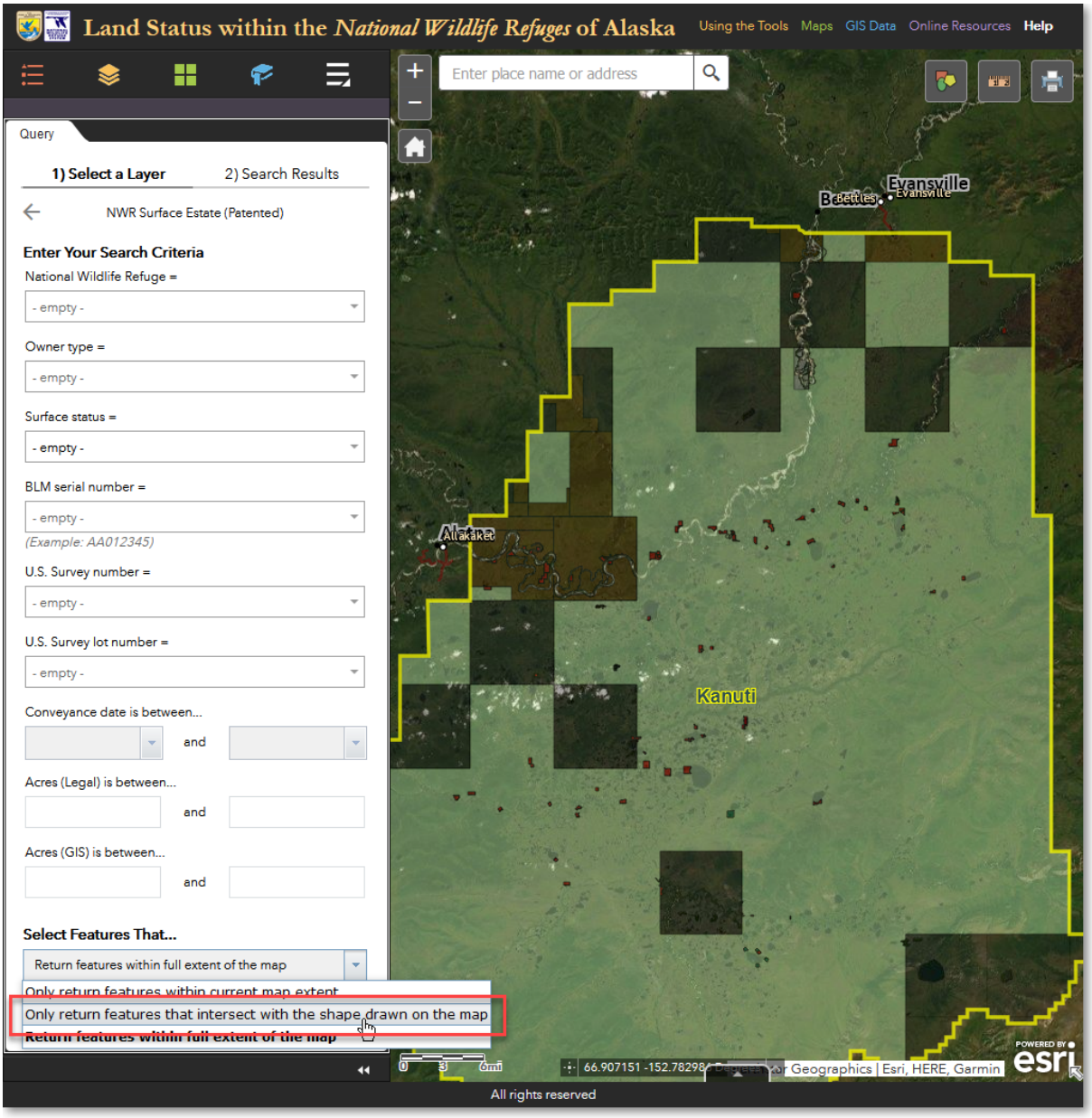
shape that you draw. Below is an example of using only a drawn shape to select features from the ***NWR Surface Estate (Patented)*** layer.

1) With the *Query* panel open, under ***1) Select a Layer***, click on the ***NWR Surface Estate (Patented)*** layer. This layer contains all of the surface estate that has been patented within all 16 of the National Wildlife Refuges in Alaska.



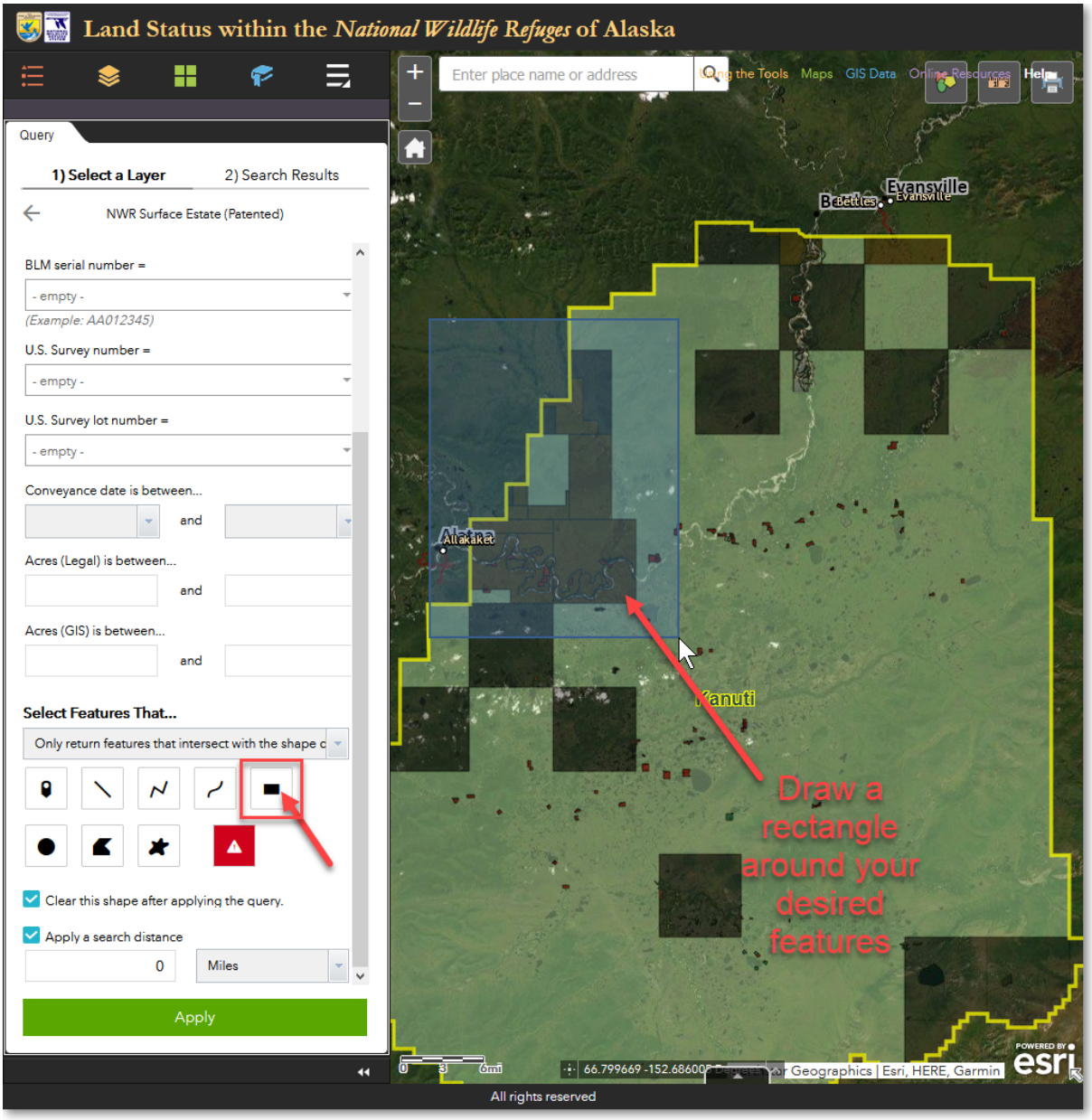
*Click the **NWR Surface Estate (Patented)** layer*

2) Under ***Select Features That...***, select the following option: ***Only return features that intersect with the shape drawn on the map***.



Specify that you want to select features by drawing a shape on the map

3) A set of ***drawing tools*** will be displayed in the ***Spatial filter*** section of the *Query* panel (you may have to scroll down). For this example, click on the rectangle shape and draw a rectangle over your desired features on the map. Then click ***Apply***.



*Select the **rectangle** tool and **draw a rectangle** over your desired features on the map*

4) All the features of the ***NWR Surface Estate (Patented)*** layer that are either ***fully or partially within*** the rectangle that you drew are selected and drawn on the map. You can then perform other actions on the selected features, as described in the above tutorial.

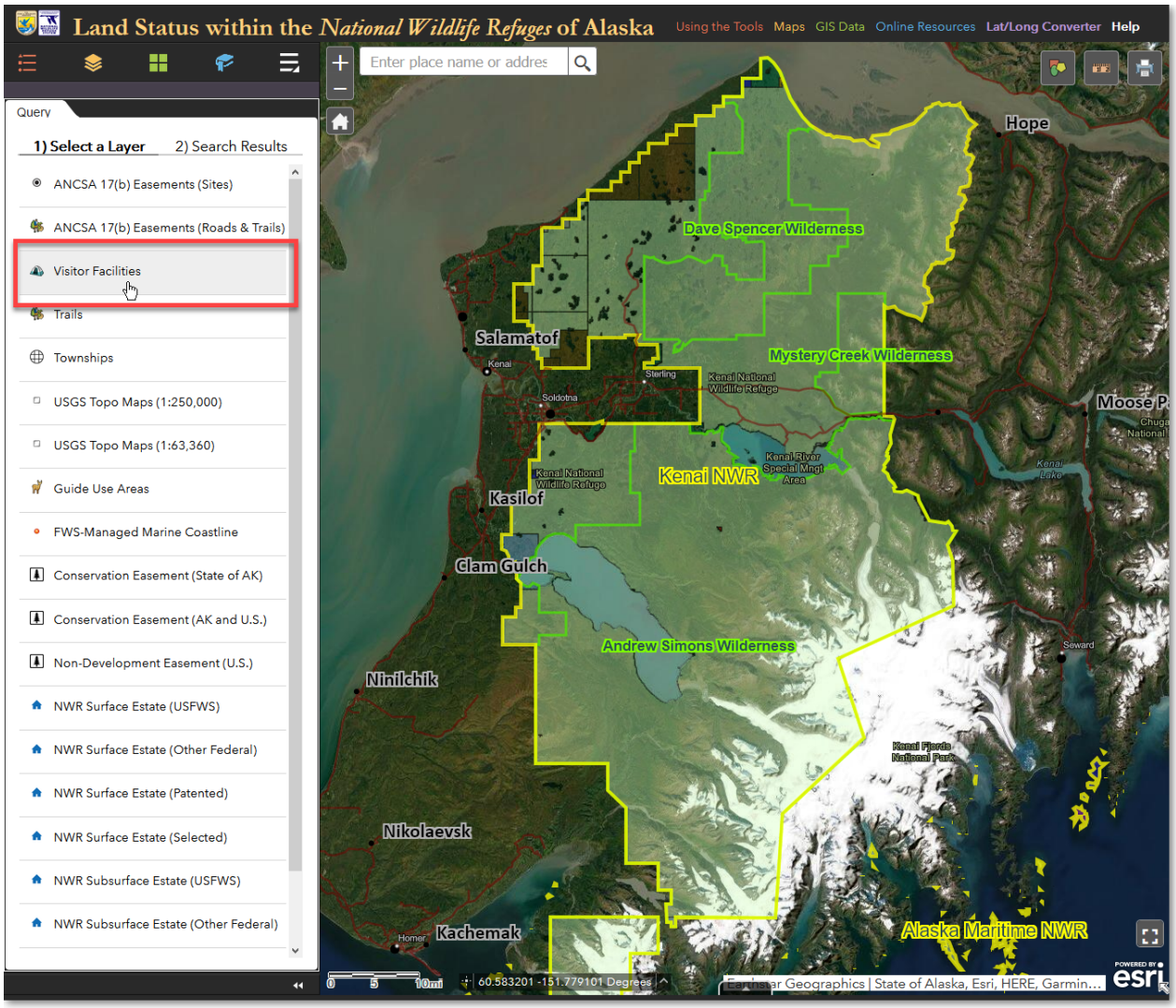
5) You can combine an attribute query with an interactive, shape-based query. This would be helpful in a situation where two National Wildlife Refuges share a common boundary, and you want your drawn shape to select features within only one of the refuges. In this case, you would specify a ***refuge name*** as part of the ***query criteria***, and then you would use the ***spatial filter*** to ***draw a shape*** on the map.

Spatial Query Tutorial: Find and report on all the types of visitor facilities within Kenai NWR wilderness areas

Assume you are in charge of maintenance at Kenai National Wildlife Refuge. Your job is to maintain all the visitor facilities within the Refuge, but with limited maintenance funds, the Refuge has to prioritize which facilities are most important. The Refuge has decided that visitor facilities within the three Designated Wilderness units should be the first priority. Your first task then is to compile a list of all facilities within the wilderness units.

Stage 1: select the first data layer of interest

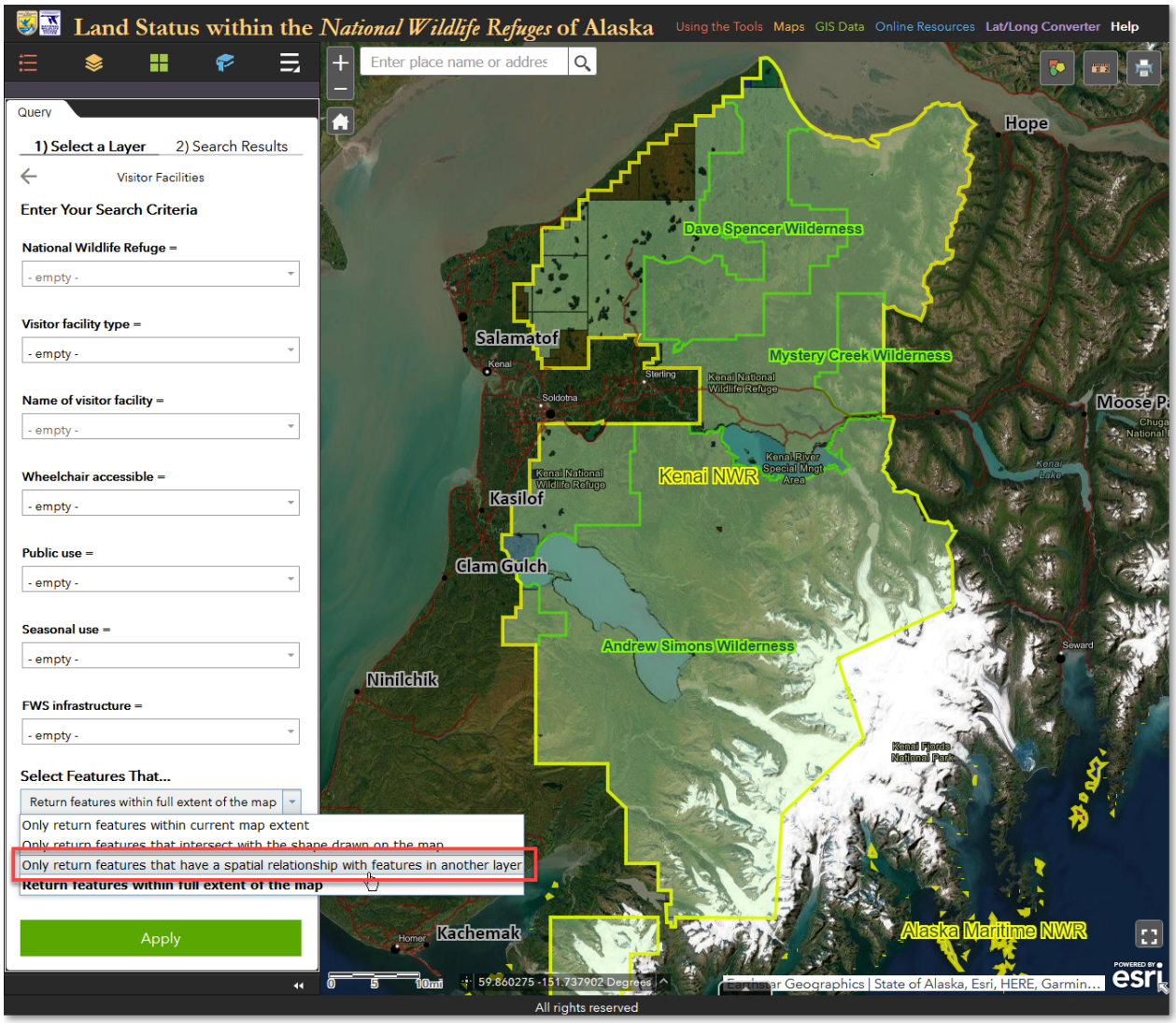
1) With the *Query* panel open, under ***1) Select a Layer***, click on the ***Visitor Facilities*** layer. This layer contains all of the visitor facilities for all National Wildlife Refuges in Alaska.



*Select the **Visitor Facilities** layer*

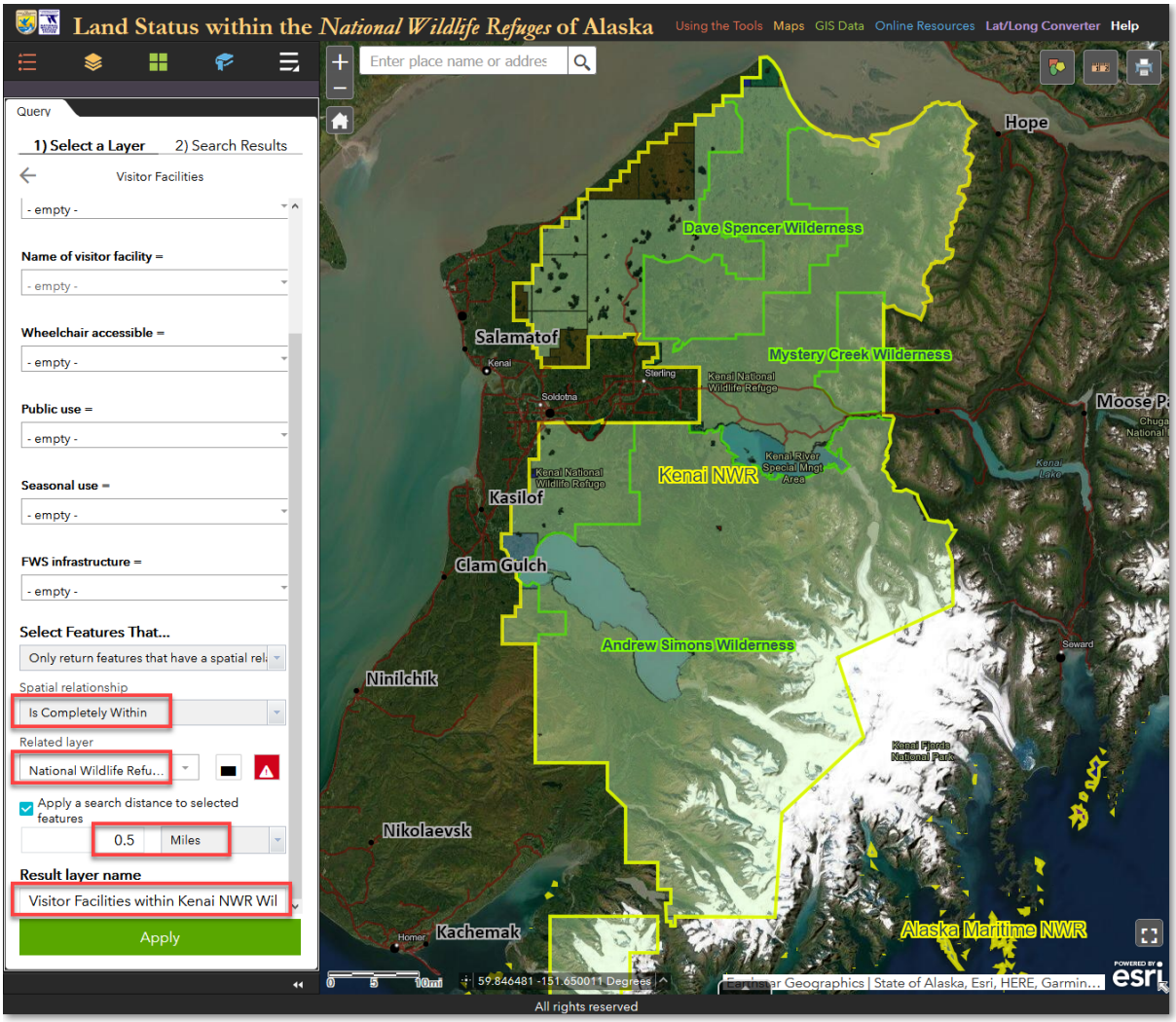
Stage 2: select the second data layer that will be used to further filter the first data layer

2) For this query, you don't need to specify any search criteria from the various pick lists. Scroll to the bottom, and from ***Select Features That...***, select ***Only return features that have a spatial relationship with features in another layer***.



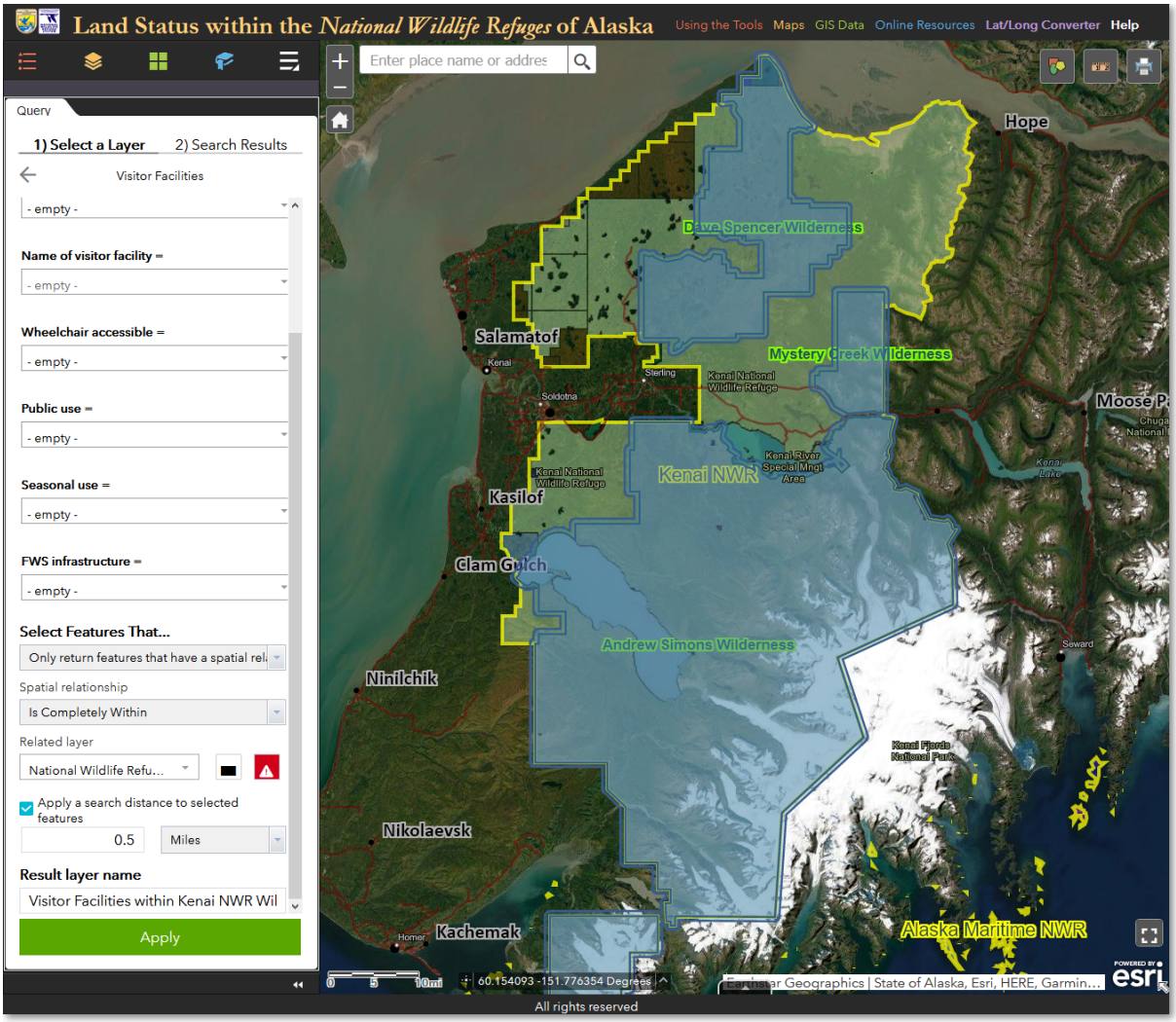
*Choose the **spatial relationship** query method*

3) If necessary, scroll down so that you can see the additional input fields. For ***Spatial relationship***, select ***Is Completely Within***. For ***Related layer***, select the ***National Wildlife Refuge Wilderness*** layer. These query criteria will find all visitor facilities that are completely within wilderness areas. However, there may be some facilities that are just outside the wilderness boundaries, but yet are still associated with the wilderness units. To ensure that you find these facilities, you can apply a buffer, or search distance around the wilderness units. Doing so will find those facilities that may be just outside the wilderness units. For this tutorial, enter a ***search distance*** of ***0.5 mile***. Finally, specify a unique name for the results of the query. The name you specify will be the name that displays in the Mapper's *Layers* and *Query Results* panels. For the ***Result layer name***, enter ***Visitor Facilities within Kenai NWR Wilderness***. Your inputs should be as follows:



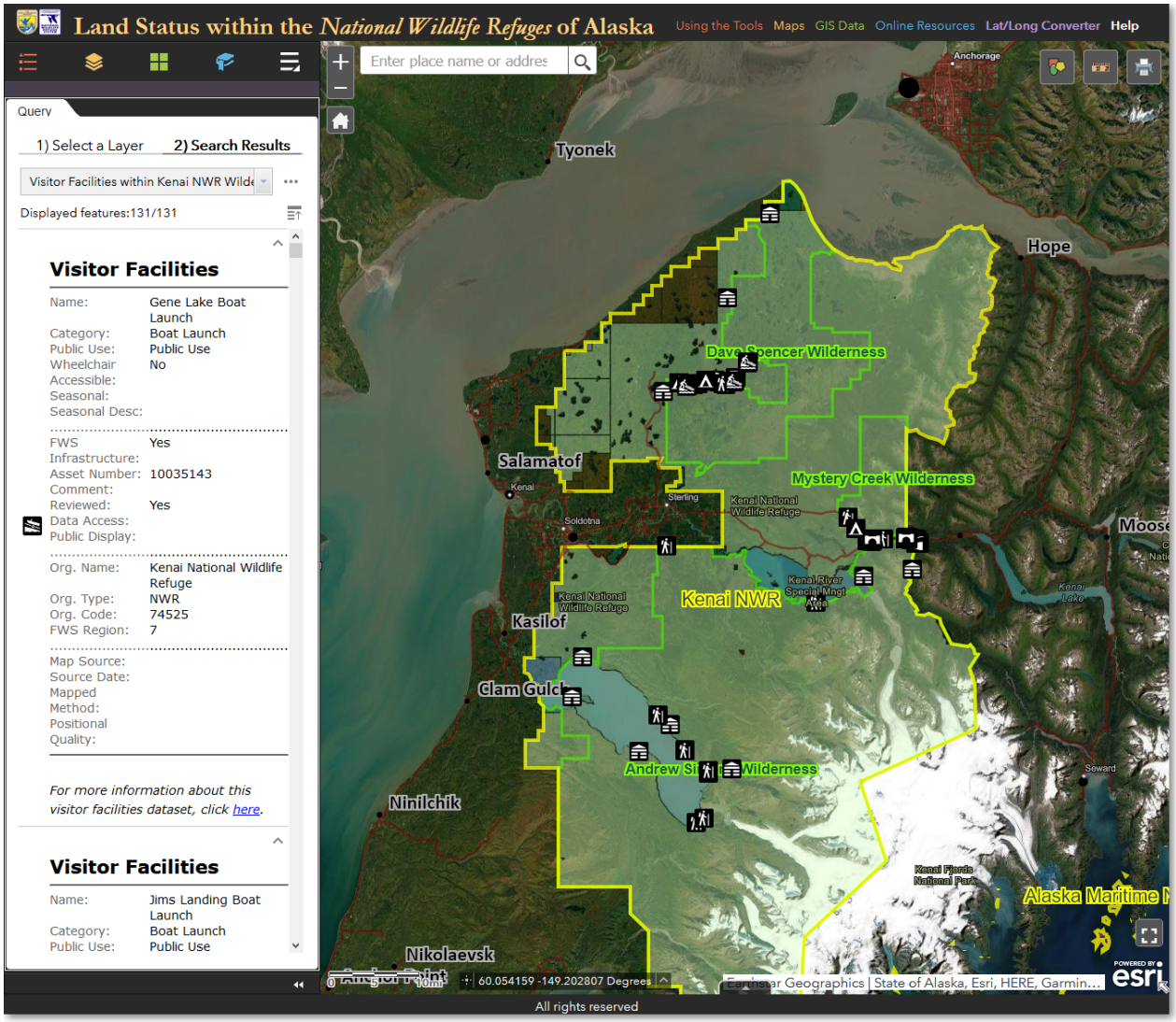
Enter additional query criteria as highlighted in red above

4) Now comes the interactive part of the spatial query. So far, the entered query criteria will query all wilderness areas within all National Wildlife Refuges in Alaska. You need to specify that you want to query only the three wilderness areas within Kenai NWR. To do this, click the ***Draw shapes to select features*** icon to the right of the ***Related layer*** pick list. Then, using the mouse, left-click within one of the Kenai NWR wilderness units and drag a box. Be sure to keep the dragged box within the boundaries of the wilderness unit that you begin with, then release the left mouse button. To select the remaining two wilderness units, click the ***Draw shapes to select features***, but this time hold down the ***Shift*** key while simultaneously left-clicking with the mouse to draw an additional box on the next wilderness area. The three selected wilderness units will be highlighted with light blue shading, as shown below.



The three wilderness units within Kenai NWR are selected (blue shading) and are ready to be applied to the spatial query

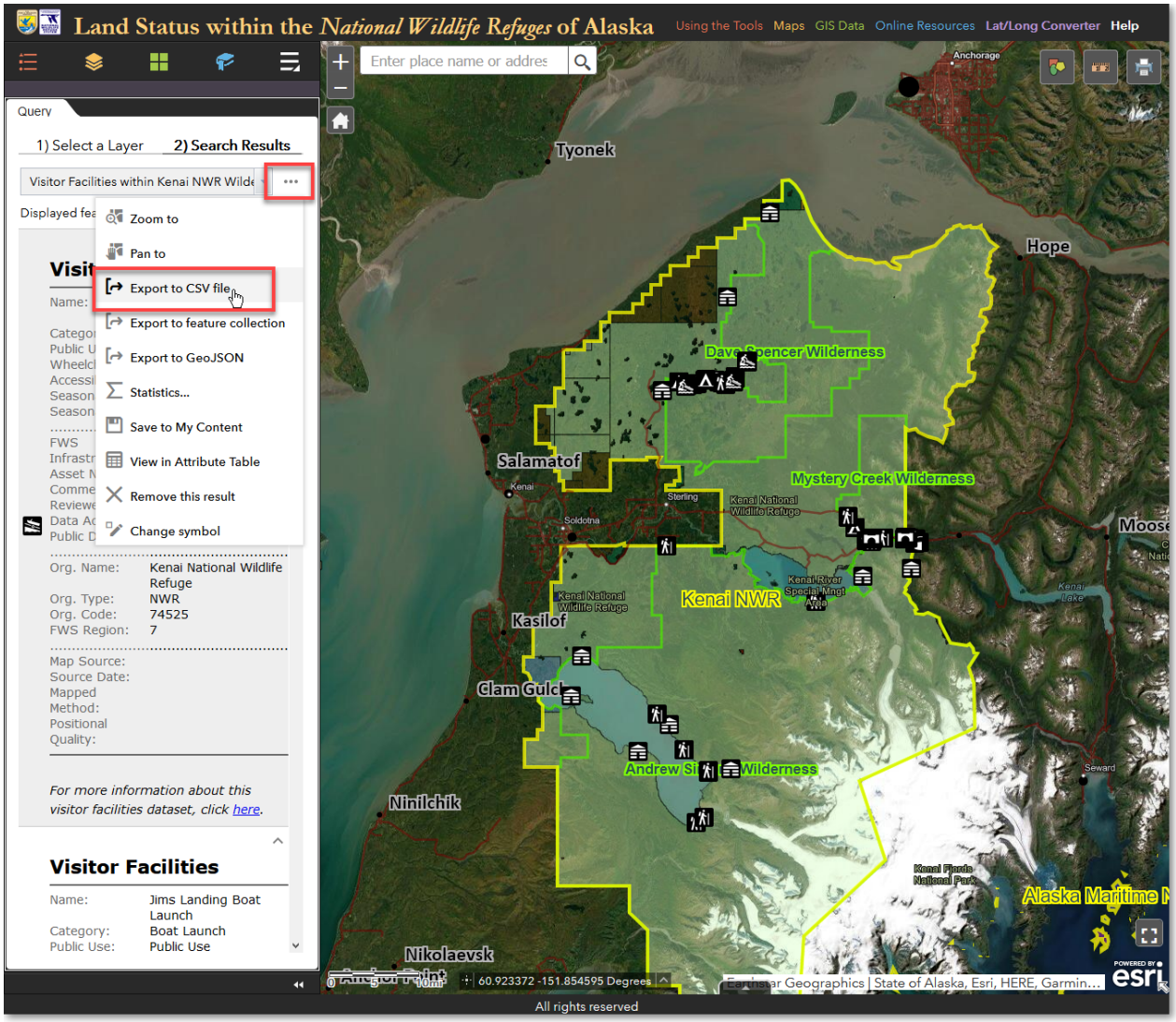
5) Click ***Apply***, and the query will run. Results show that ***131 visitor facilities*** are within the three Kenai NWR wilderness areas.



Results of the spatial query. 131 visitor facilities are within Kenai NWR wilderness areas

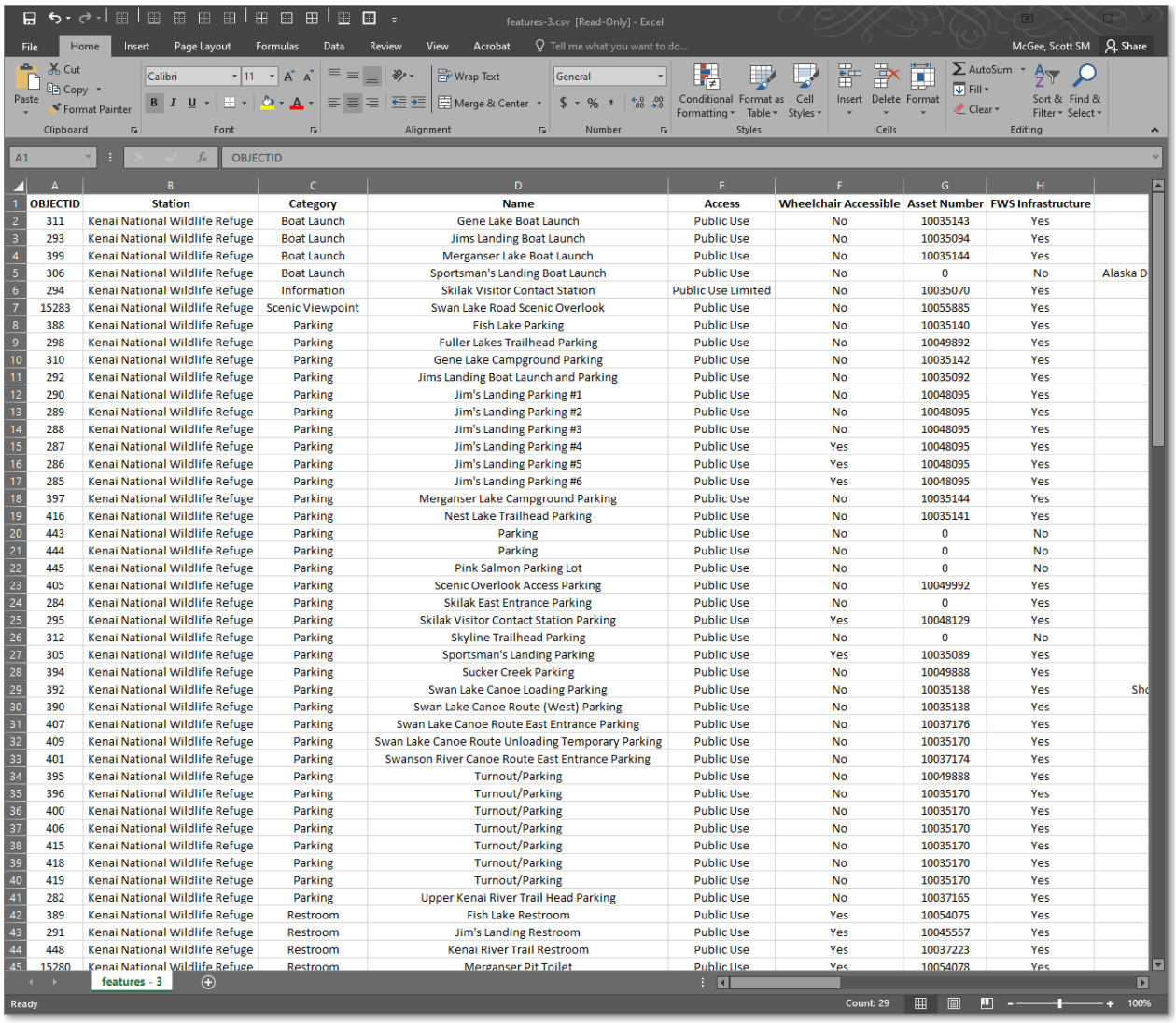
Stage 3: export visitor facility information to CSV format

6) You can now scroll the list of visitor facilities, zoom and pan the map view, click individual facilities on the map, and perform additional actions accessed via the ***Feature Actions*** icon (three horizontal dots in the upper-right corner of the ***Query*** panel). In this tutorial, your goal is to generate a list of all the visitor facilities within the Kenai NWR wilderness areas. To generate this list, click the ***Feature Actions*** icon and select ***Export to CSV file***. You can now either save the CSV file on your computer, or open it directly in an installed spreadsheet program.



Export your spatial query results to a CSV file, which can be viewed in a spreadsheet

7) You now have a list of all the visitor facilities within the three Kenai NWR wilderness areas, along with detailed information about each facility. You can do additional sorting and analysis on the list using your spreadsheet program's features.



features-3.csv [Read-Only] - Excel

OBJECTID	Station	Category	Name	Access	Wheelchair Accessible	Asset Number	FWS Infrastructure	
311	Kenai National Wildlife Refuge	Boat Launch	Gene Lake Boat Launch	Public Use	No	10035143	Yes	
293	Kenai National Wildlife Refuge	Boat Launch	Jims Landing Boat Launch	Public Use	No	10035094	Yes	
399	Kenai National Wildlife Refuge	Boat Launch	Merganser Lake Boat Launch	Public Use	No	10035144	Yes	
306	Kenai National Wildlife Refuge	Boat Launch	Sportsman's Landing Boat Launch	Public Use	No	0	No	Alaska D
294	Kenai National Wildlife Refuge	Information	Skilak Visitor Contact Station	Public Use Limited	No	10035070	Yes	
15283	Kenai National Wildlife Refuge	Scenic Viewpoint	Swan Lake Road Scenic Overlook	Public Use	No	10055885	Yes	
388	Kenai National Wildlife Refuge	Parking	Fish Lake Parking	Public Use	No	10035140	Yes	
298	Kenai National Wildlife Refuge	Parking	Fuller Lakes Trailhead Parking	Public Use	No	10049892	Yes	
310	Kenai National Wildlife Refuge	Parking	Gene Lake Campground Parking	Public Use	No	10035142	Yes	
292	Kenai National Wildlife Refuge	Parking	Jims Landing Boat Launch and Parking	Public Use	No	10035092	Yes	
290	Kenai National Wildlife Refuge	Parking	Jim's Landing Parking #1	Public Use	No	10048095	Yes	
289	Kenai National Wildlife Refuge	Parking	Jim's Landing Parking #2	Public Use	No	10048095	Yes	
288	Kenai National Wildlife Refuge	Parking	Jim's Landing Parking #3	Public Use	No	10048095	Yes	
287	Kenai National Wildlife Refuge	Parking	Jim's Landing Parking #4	Public Use	Yes	10048095	Yes	
286	Kenai National Wildlife Refuge	Parking	Jim's Landing Parking #5	Public Use	Yes	10048095	Yes	
285	Kenai National Wildlife Refuge	Parking	Jim's Landing Parking #6	Public Use	Yes	10048095	Yes	
397	Kenai National Wildlife Refuge	Parking	Merganser Lake Campground Parking	Public Use	No	10035144	Yes	
416	Kenai National Wildlife Refuge	Parking	Nest Lake Trailhead Parking	Public Use	No	10035141	Yes	
443	Kenai National Wildlife Refuge	Parking	Parking	Public Use	No	0	No	
444	Kenai National Wildlife Refuge	Parking	Parking	Public Use	No	0	No	
445	Kenai National Wildlife Refuge	Parking	Pink Salmon Parking Lot	Public Use	No	0	No	
405	Kenai National Wildlife Refuge	Parking	Scenic Overlook Access Parking	Public Use	No	10049992	Yes	
284	Kenai National Wildlife Refuge	Parking	Skilak East Entrance Parking	Public Use	No	0	Yes	
295	Kenai National Wildlife Refuge	Parking	Skilak Visitor Contact Station Parking	Public Use	Yes	10048129	Yes	
312	Kenai National Wildlife Refuge	Parking	Skyline Trailhead Parking	Public Use	No	0	No	
305	Kenai National Wildlife Refuge	Parking	Sportsman's Landing Parking	Public Use	Yes	10035089	Yes	
394	Kenai National Wildlife Refuge	Parking	Sucker Creek Parking	Public Use	No	10049888	Yes	
392	Kenai National Wildlife Refuge	Parking	Swan Lake Canoe Loading Parking	Public Use	No	10035138	Yes	Sho
390	Kenai National Wildlife Refuge	Parking	Swan Lake Canoe Route (West) Parking	Public Use	No	10035138	Yes	
407	Kenai National Wildlife Refuge	Parking	Swan Lake Canoe Route East Entrance Parking	Public Use	No	10037176	Yes	
409	Kenai National Wildlife Refuge	Parking	Swan Lake Canoe Route Unloading Temporary Parking	Public Use	No	10035170	Yes	
401	Kenai National Wildlife Refuge	Parking	Swanson River Canoe Route East Entrance Parking	Public Use	No	10037174	Yes	
395	Kenai National Wildlife Refuge	Parking	Turnout/Parking	Public Use	No	10049888	Yes	
396	Kenai National Wildlife Refuge	Parking	Turnout/Parking	Public Use	No	10035170	Yes	
400	Kenai National Wildlife Refuge	Parking	Turnout/Parking	Public Use	No	10035170	Yes	
406	Kenai National Wildlife Refuge	Parking	Turnout/Parking	Public Use	No	10035170	Yes	
415	Kenai National Wildlife Refuge	Parking	Turnout/Parking	Public Use	No	10035170	Yes	
418	Kenai National Wildlife Refuge	Parking	Turnout/Parking	Public Use	No	10035170	Yes	
419	Kenai National Wildlife Refuge	Parking	Turnout/Parking	Public Use	No	10035170	Yes	
282	Kenai National Wildlife Refuge	Parking	Upper Kenai River Trail Head Parking	Public Use	No	10037165	Yes	
389	Kenai National Wildlife Refuge	Restroom	Fish Lake Restroom	Public Use	Yes	10054075	Yes	
291	Kenai National Wildlife Refuge	Restroom	Jim's Landing Restroom	Public Use	Yes	10045557	Yes	
448	Kenai National Wildlife Refuge	Restroom	Kenai River Trail Restroom	Public Use	Yes	10037223	Yes	
15280	Kenai National Wildlife Refuge	Restroom	Merganser Pit Toilet	Public Use	Yes	10054078	Yes	

The final results of your spatial query; a detailed list of all visitor facilities within the Kenai NWR wilderness areas

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The Region 7 Land Mapper was developed, and is maintained by, the U.S. Fish & Wildlife Service, Region 7, Division of Realty. Questions, comments,and suggestions should be directed to ak_realty@fws.gov

This page was last updated: Monday, August 12, 2024

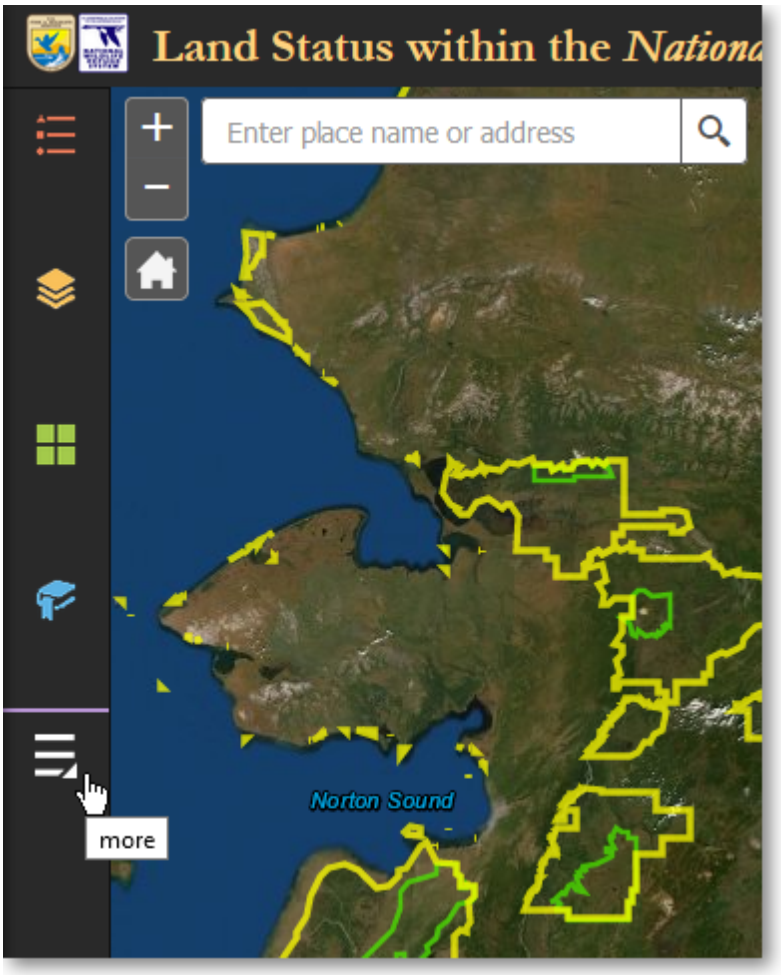
Share

There may be times when you want to use the R7 Land Mapper to collaborate with others or to provide information to the public. In some cases, you might want to focus the viewer's attention on a particular geographic area and/or on specific data layers. This can easily be done using the ***Share*** tool in the Mapper. It does this by constructing a custom URL based on the Land Mapper's current map view. You can then send the custom URL to others, and when they use it to open the Land Mapper, it will zoom in to the geographic area and display the data layers that you specified.

To Use the Share Tool

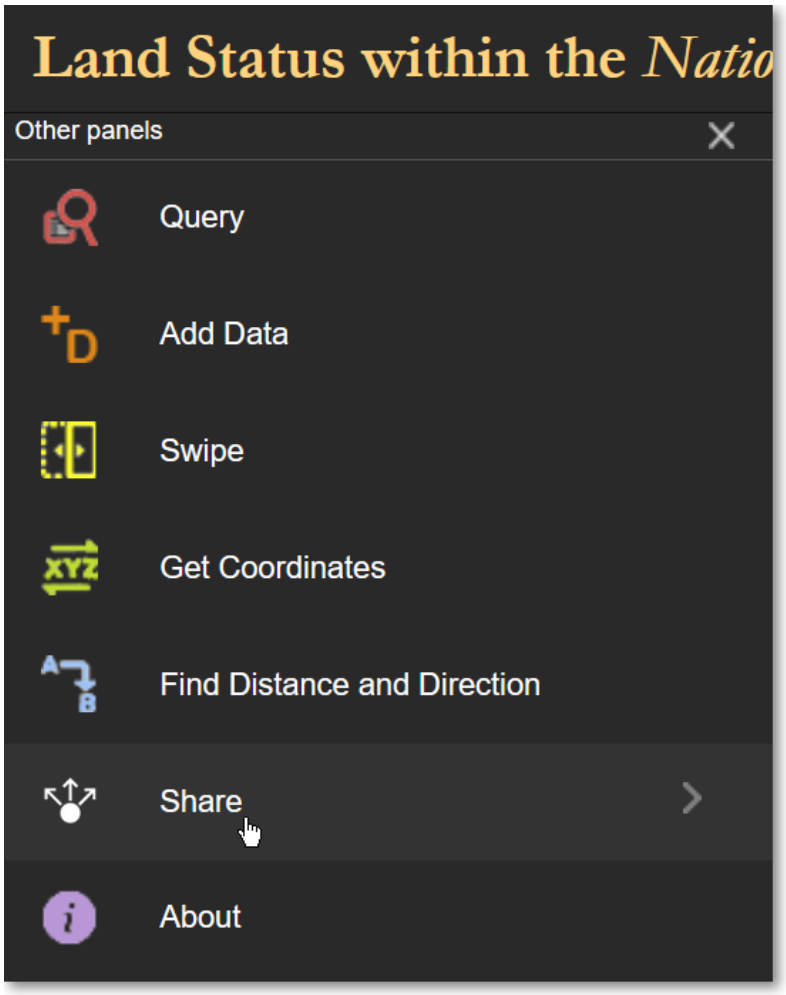
1) Configure the map view so that it shows what you want the viewer to see. For example, zoom in to a particular geographic area and/or use the ***Layers*** tool to turn layers on or off. Your configured view of the map will be what users will see when you share the custom URL with them.

2) Click the ***More...*** icon on the left-hand side of the Mapper window.



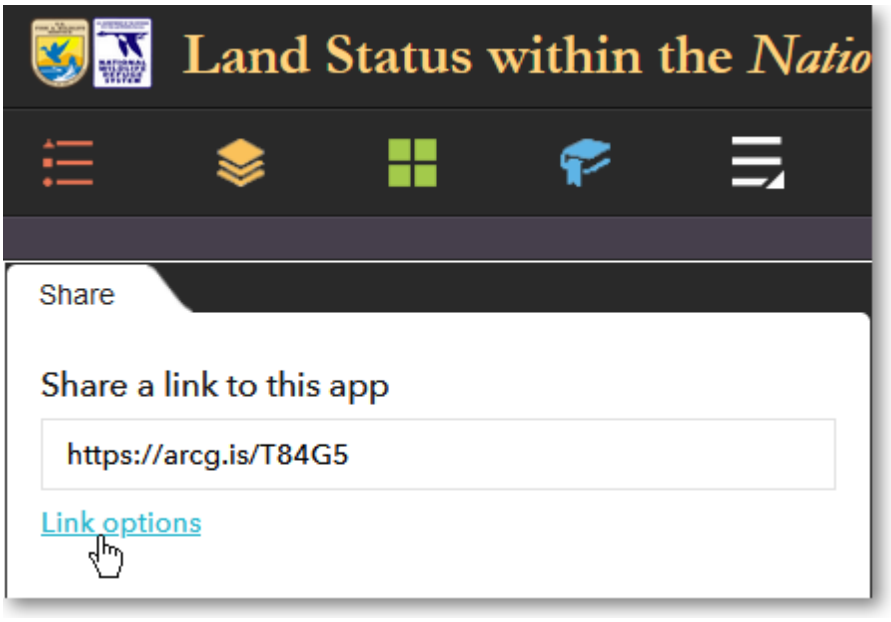
*Click **More...** to access additional tools*

3) Click the ***Share*** tool.



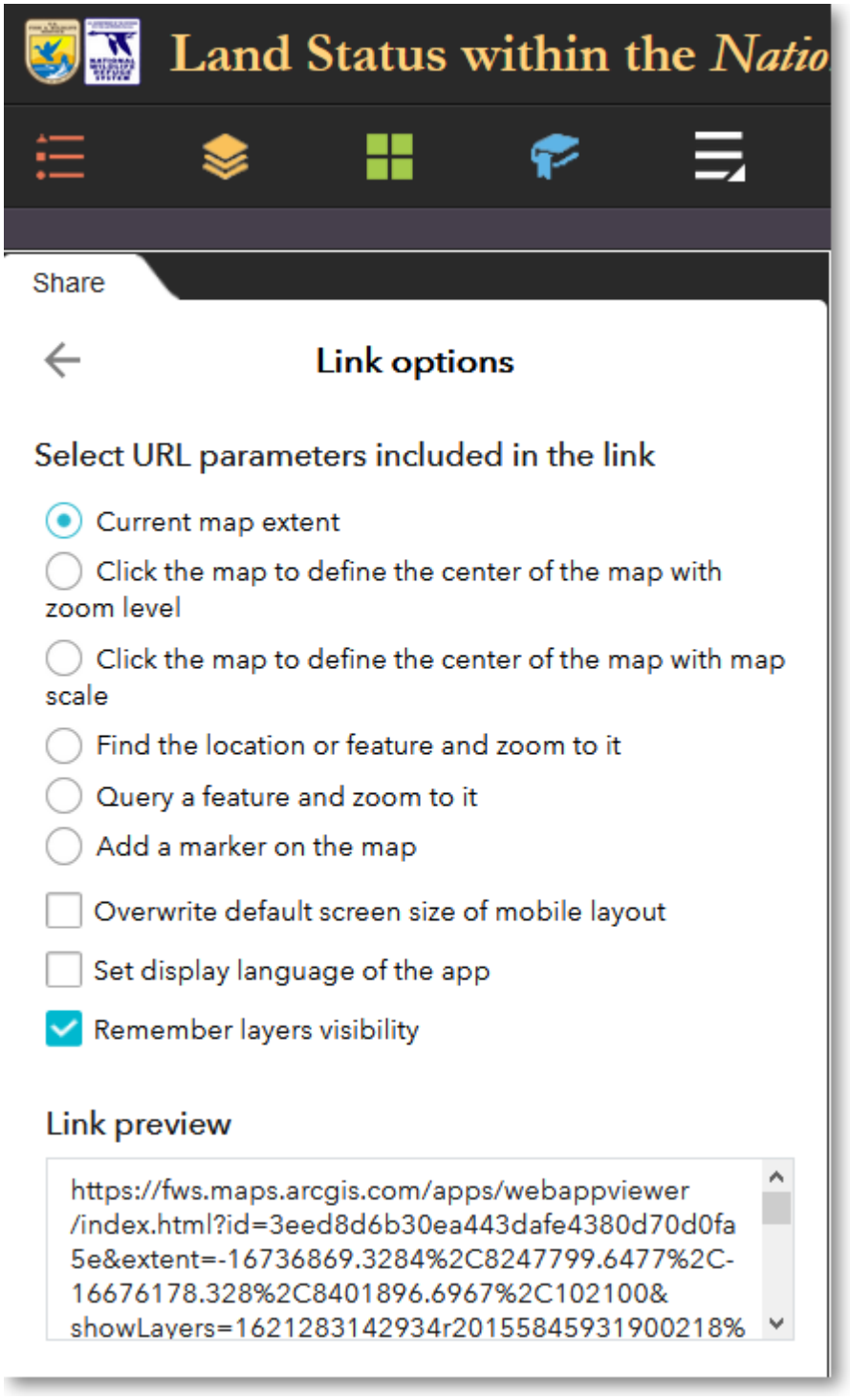
*Click the **Share** tool*

4) In the ***Share*** pane, click ***Link Options***.



*Click **Link Options** to set custom URL parameters*

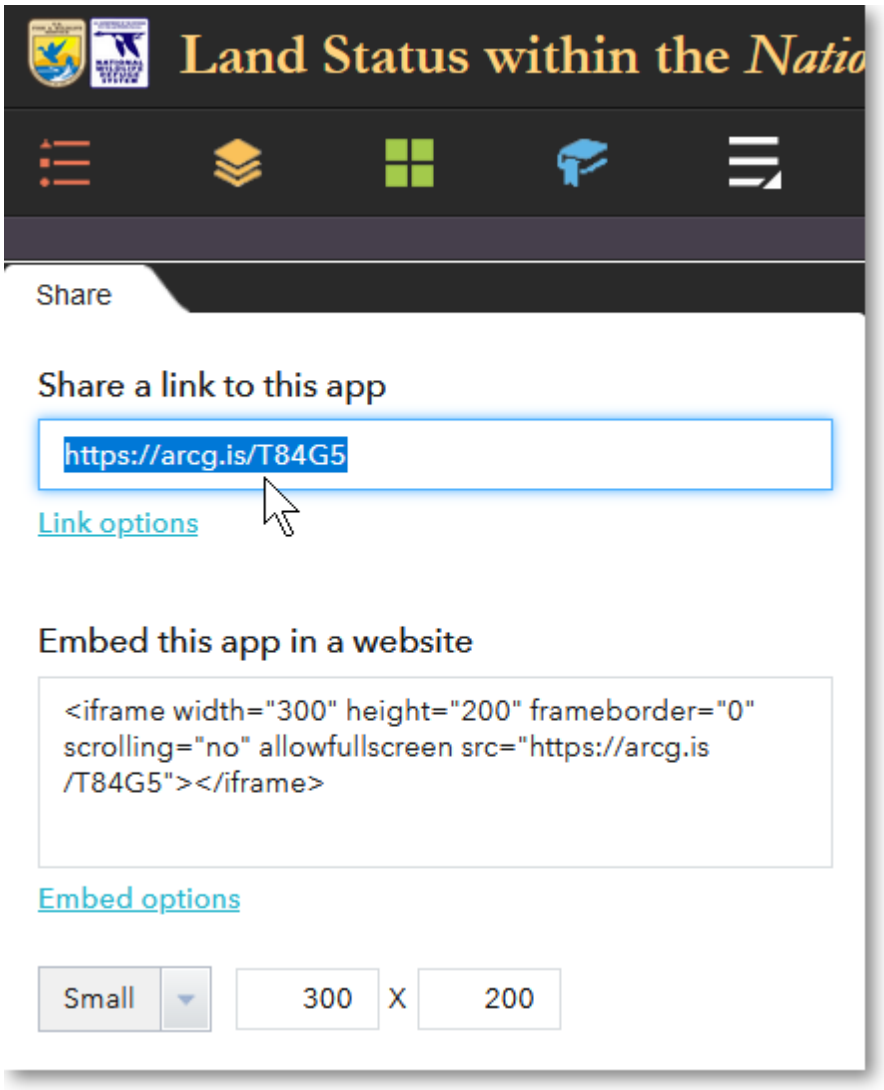
5) A list of options will be displayed. Each of these options defines a URL parameter that will be used to customize the Mapper's URL for sharing with others. In most cases, you will want to select ***Current map extent*** and ***Remember layers visibility***. The other options provide other customizations. Feel free to try them out. When you have selected the desired options, click the left-pointing arrow in the upper-left corner of the Share pane.



Select various options to include that feature in a custom Land Mapper URL

6) The ***Share*** pane now displays the customized and shortened URL. You can then send this URL to others for them to use. When they open the URL in a web browser, it will display

the Land Mapper as you have configured it.



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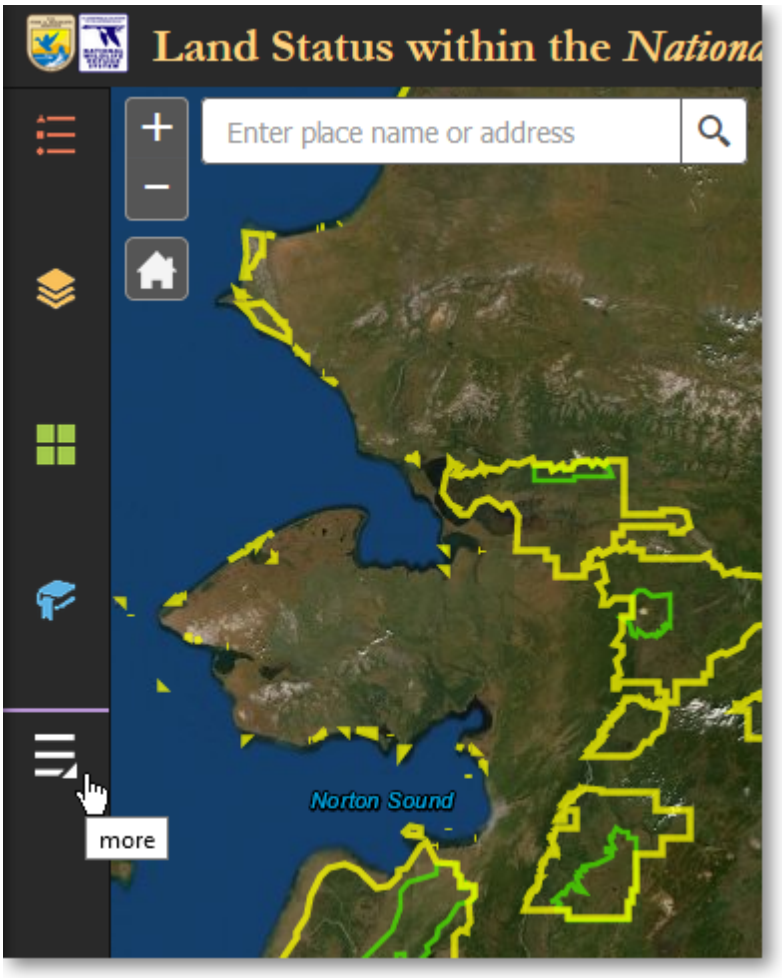
This page was last updated: Monday, August 12, 2024

Swipe

Often, you will want to have multiple layers turned on and visible on the map. However, this can sometimes lead to a cluttered display, making it difficult to see underlying layers or the basemap. In cases like this, you can use the *Swipe* tool to temporarily hide a chosen layer.

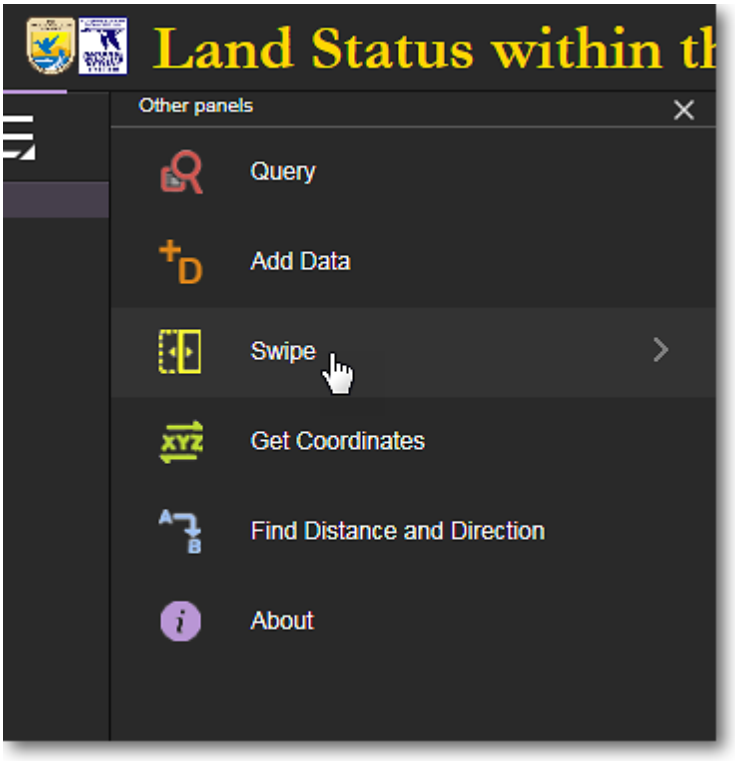
Getting Started

1) Click the ***More...*** icon on the left-hand side of the Mapper window.



*Click **More...** to access additional tools*

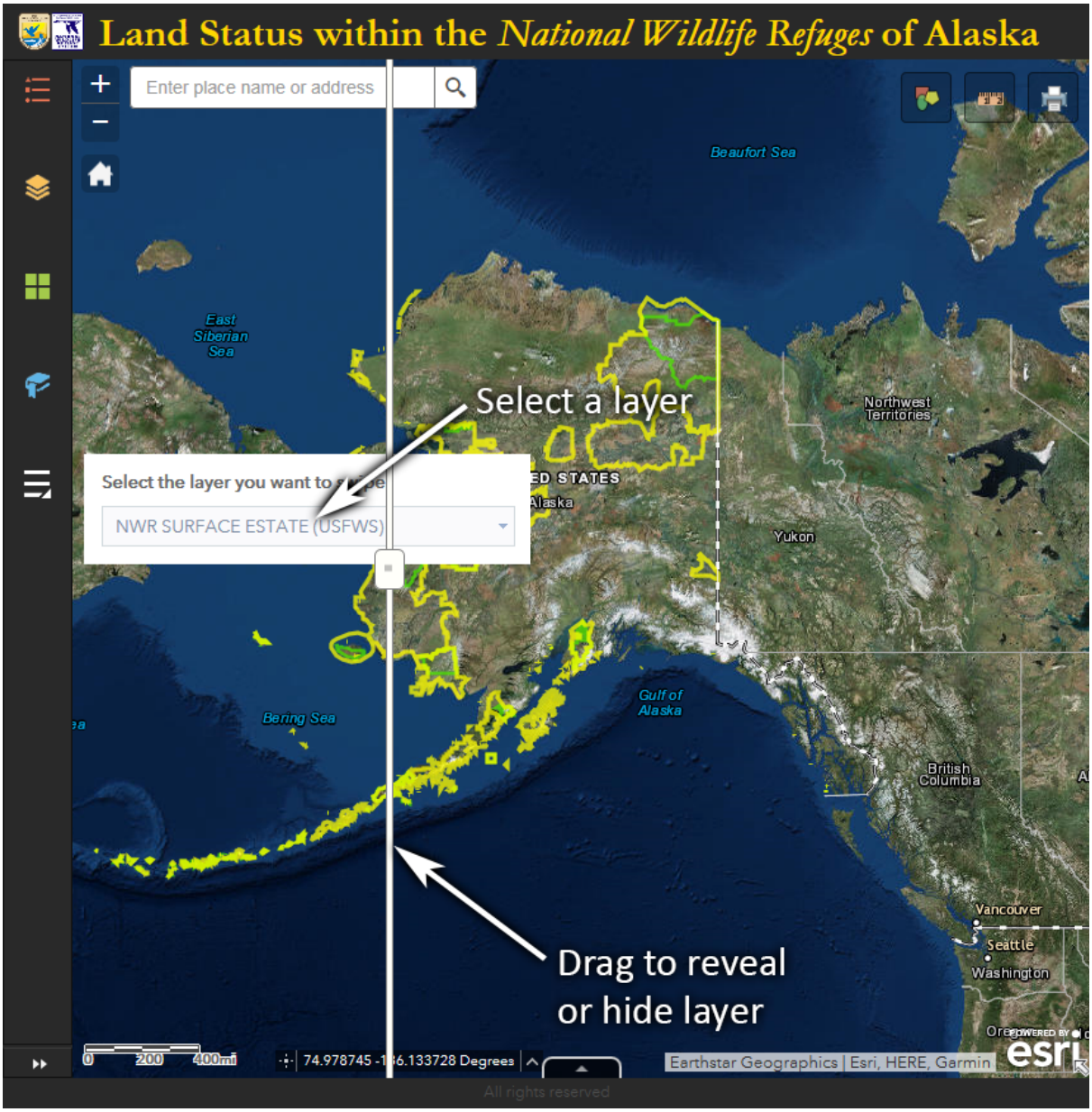
2) Click the ***Swipe*** tool.



*Click the **Swipe** tool*

Default Appearance of the Swipe Tool

By default, the *Swipe* tool appears on the map display as a vertical white line with a drag handle in the middle of it. There is also a layer selection box in which you can select which layer you want to *"swipe away"* from the map display. The basic process is to first select a layer to swipe, and then drag the vertical bar left or right on the map display to either hide or reveal the layer that you selected to work with.



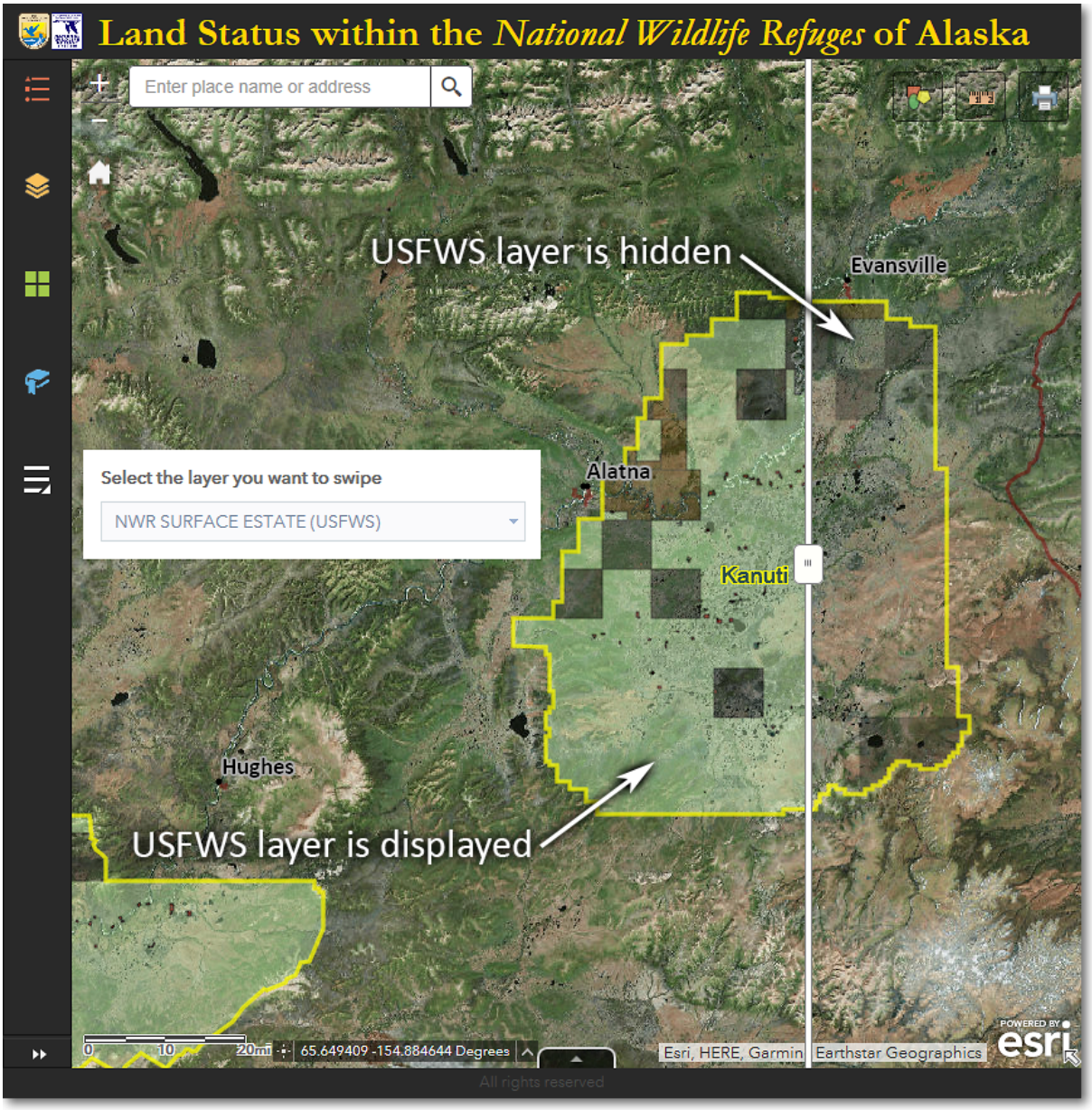
*To use the Swipe tool, first **select a layer** and then **drag the bar** left and right*

Swipe the NWR Surface Estate (USFWS) Layer

This example will use the *Swipe* tool to hide the ***NWR Surface Estate (USFWS)*** layer so that the underlying satellite image basemap can be more clearly seen.

1) Pan and zoom the the area on the map that you want to work with.

2) ***Select the layer*** that you want to swipe away. Drag the vertical bar to the ***left to hide*** the selected layer. Drag it to the ***right to reveal*** the selected layer.



The NWR Surface Estate (USFWS) layer has been "swiped away" from the eastern third of Kanuti NWR

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Browse Map Features

The primary function of the Land Mapper is to provide information about the features that are contained in the various data layers. The Mapper provides several methods for investigating the data layers and their features. These methods are briefly described below, and in more detail on the following pages in this section.

Browse Methods

Clicking on the Map
Investigate features by clicking on the map

Using the Attribute Tables
Investigate features by using the attribute tables to pan and zoom to selected features

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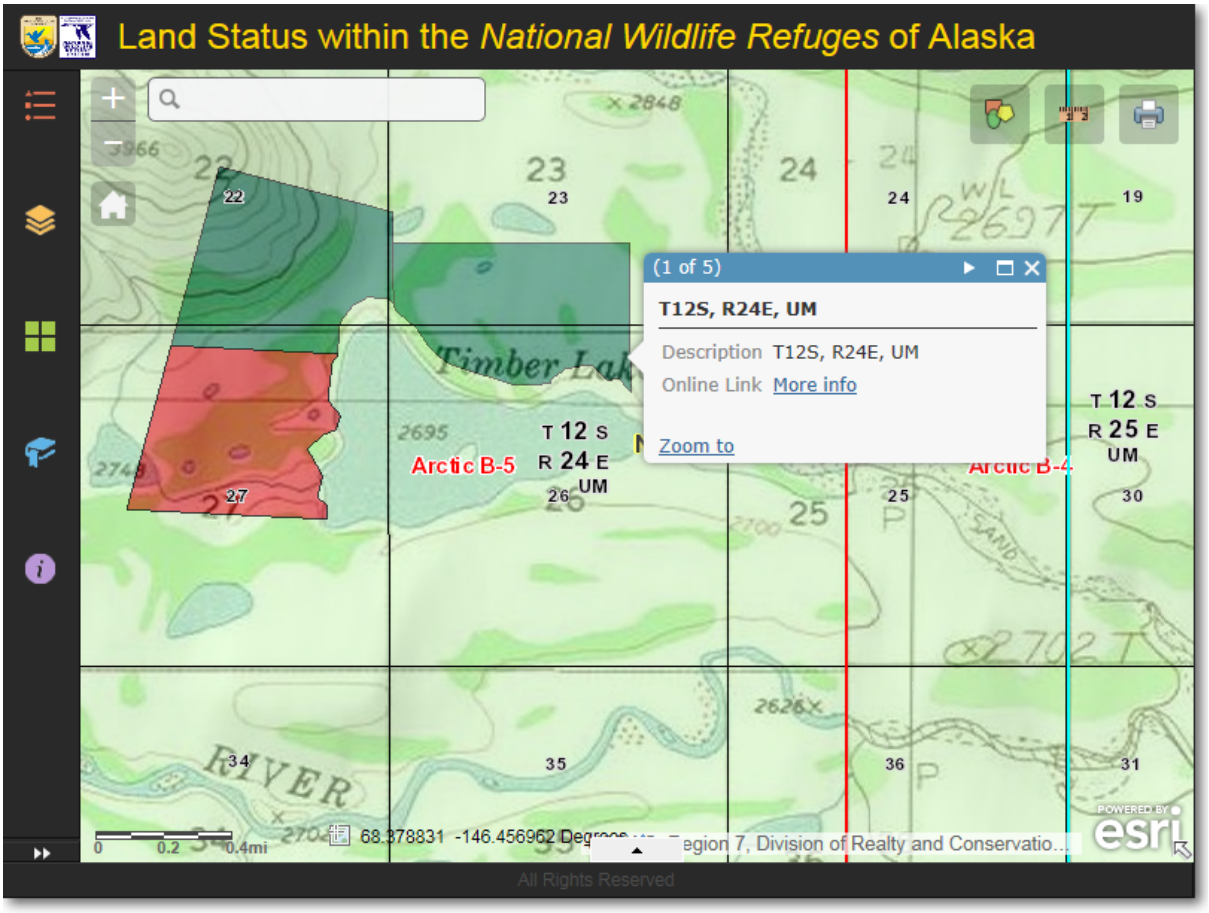
Browse by Clicking on the Map

The primary method for investigating data layer features is by simply clicking a location on the map. This displays a pop-up window showing detailed information for the features in all visible data layers at the clicked location.

To Browse by Clicking on the Map

1) First, click the ***Layers*** tool and turn data layers on or off. For example, if you want to see information for features in only the National Wildlife Refuge layer, turn that layer on and turn all the other layers off. You can have all layers turned on, or only a few layers turn on, or any combination of layers turned on or off. The important thing to note is that you can see detailed information for features in a data layer only if that layer is turned on and visible in the map.

2) Pan and/or zoom the map to the area of interest, then click on a feature. A pop-up window similar to the one shown below will appear.



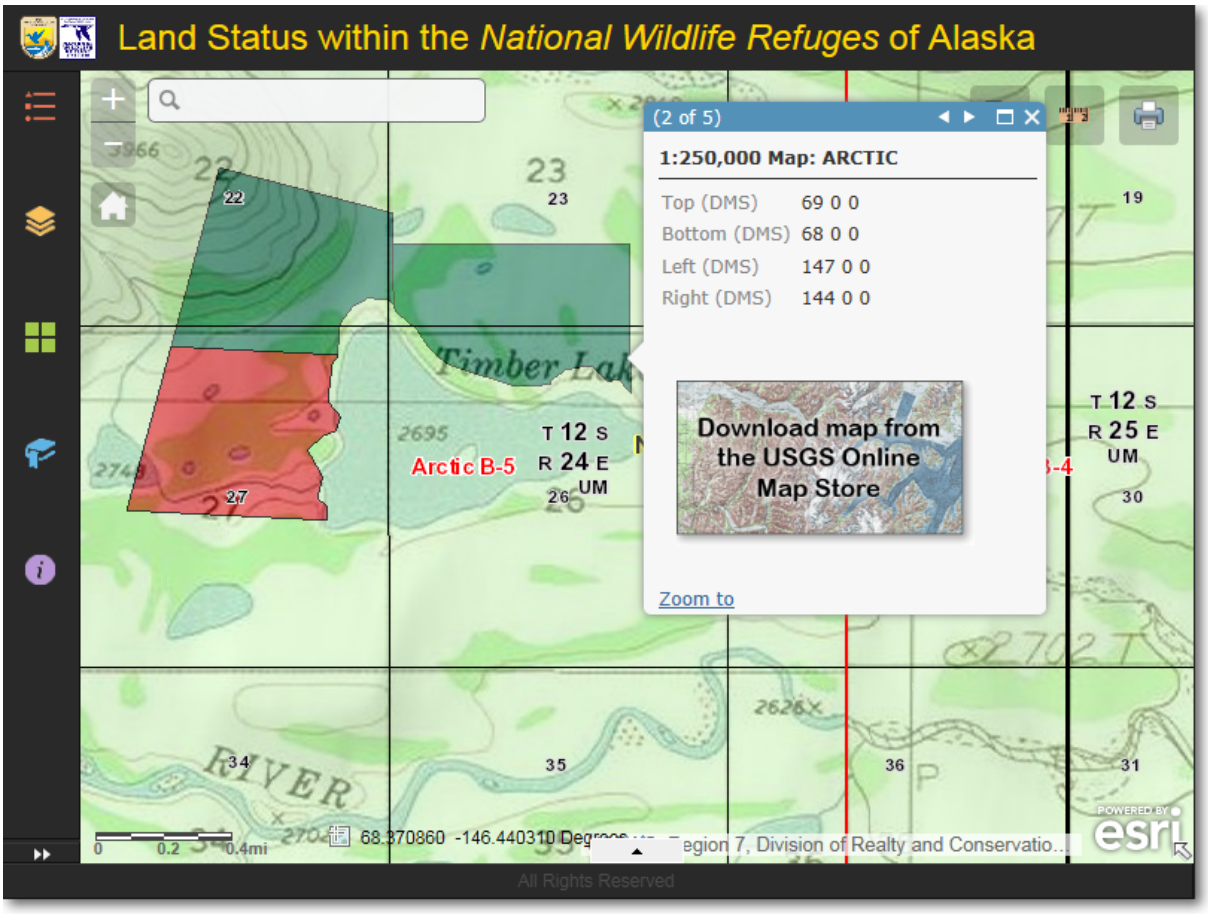
Click a feature on the map and a pop-up information window will appear. It shows information
for all data layers which have a feature at the location which was clicked

3) In the example above, the pop-up window is showing the information for the township at the location that was clicked on the map. The township is highlighted by a cyan-colored line (in this example, you can't see the entire township because the view is zoomed in to just a portion of the township). The pop-up window contains information about the township.

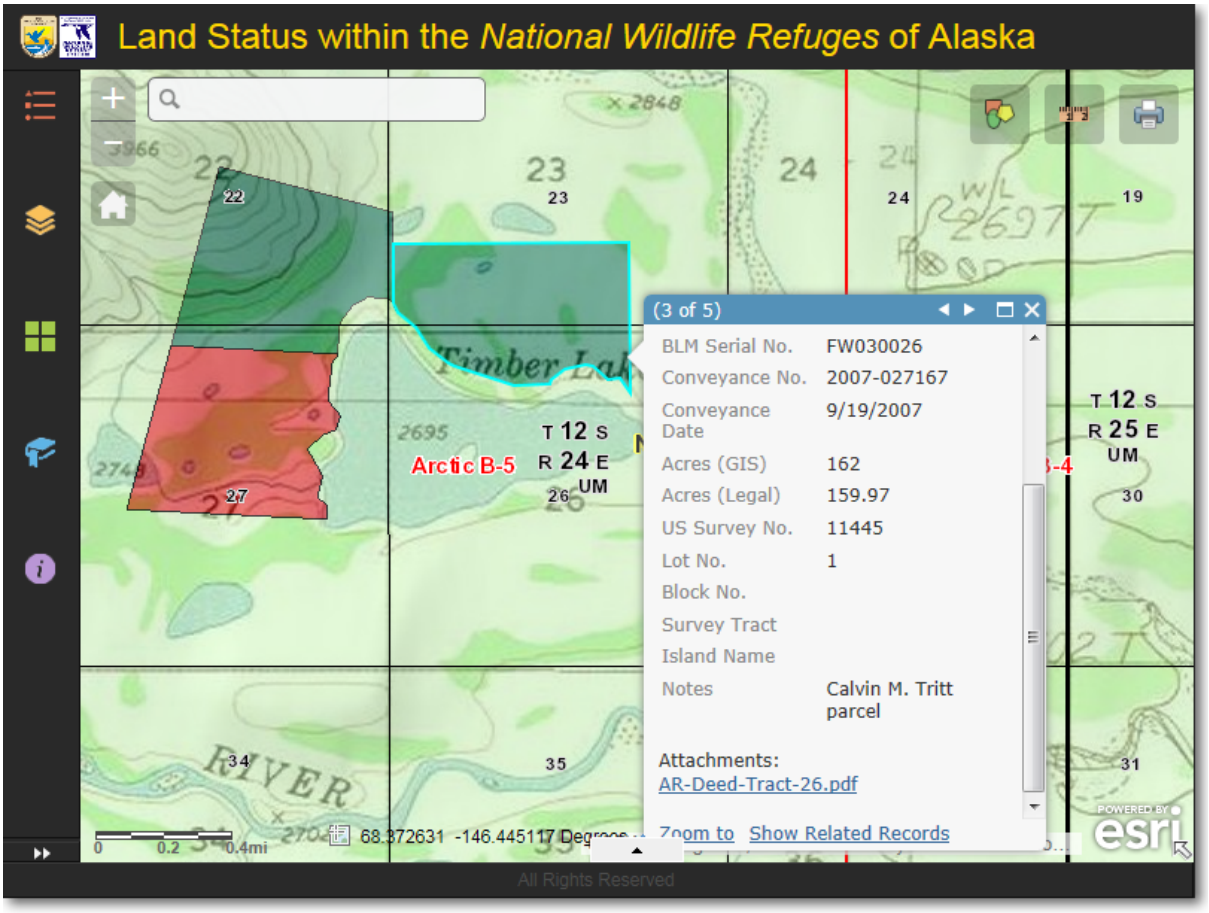
   Notice that the text ***(1 of 5)*** is shown in the in the upper-left corner of the pop-up informational window. This indicates that there are five features, from five different data layers, that are present at the location where you clicked on the map. These five features are overlain in a stack, on top of each other, similar to five playing cards stacked together. You can cycle through the stack by clicking the white-colored, right-facing triangle in the upper-right corner of the pop-up window.

   Some features in the various data layers have links to additional information. For example, in the screenshot shown above, notice the underlined***More info*** text shown to the right of ***Online Link***. This is a link to the online version of the Bureau of Land Management Mater Title Plat for Township 12 South, Range 24 East, Umiat Meridian. Click the link and the MTP will be displayed in a separate web browser window. Other features from other data layers also contain links to additional information. Whenever you see such a link, click it to see additional information related to the feature.

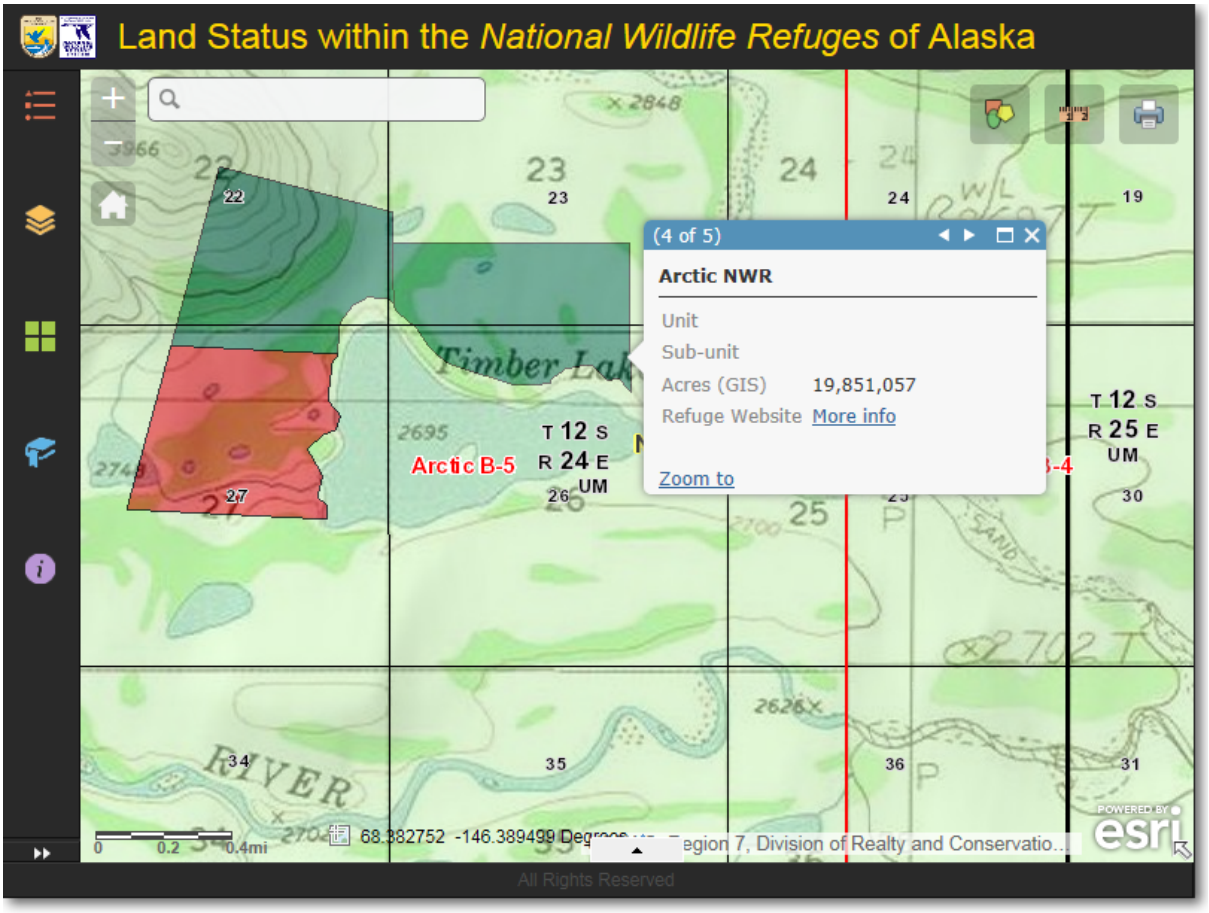
4) Below are additional screenshots showing the information for the other four features that are located at the point which was clicked on the map.



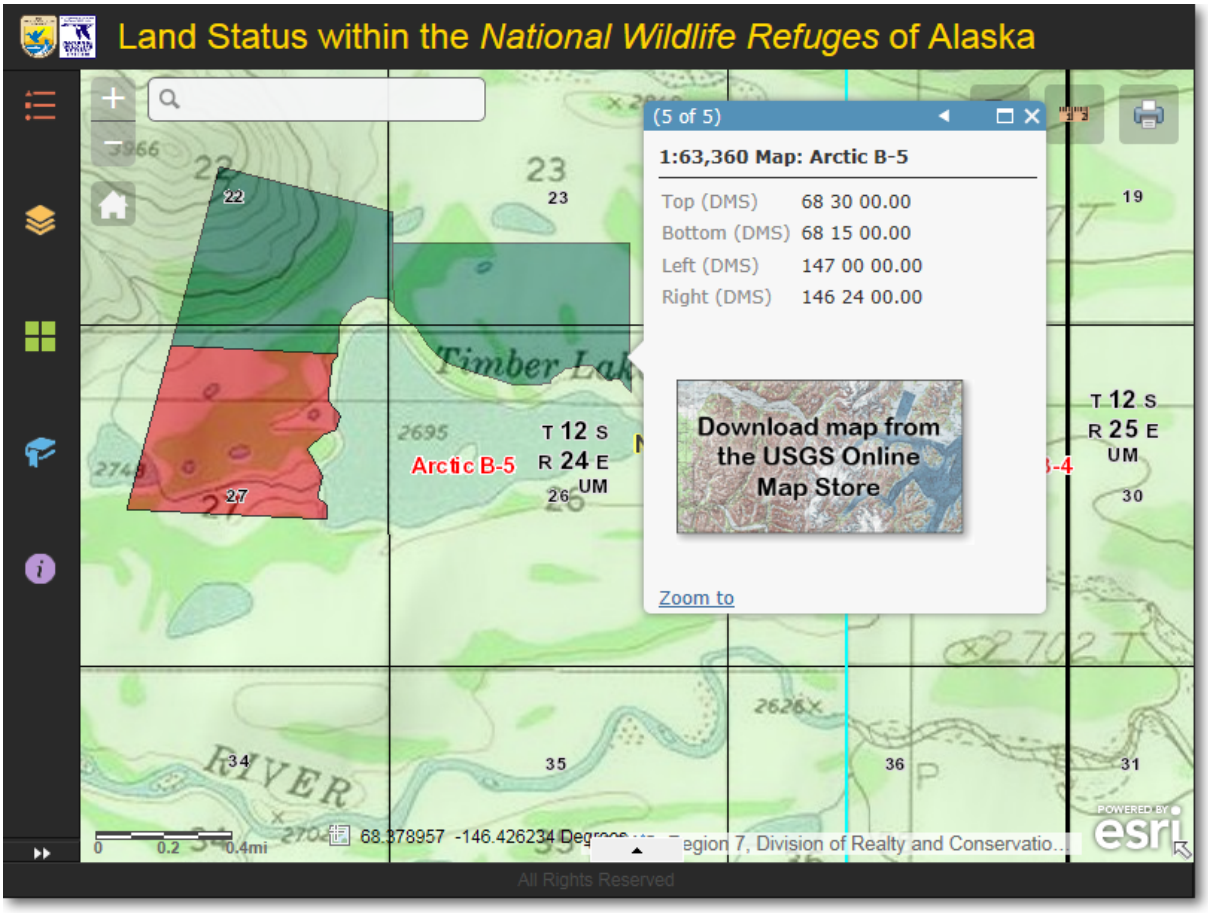
*Feature **2 of 5**, showing information for the Arctic 1:250,000 scale USGS topo map. Click the **download***
icon to go the the USGS Map Store to download a free copy of the Arctic 1:250,000 scale topo map.



*Feature **3 of 5**, showing information for a parcel of land that was purchased by the U.S. Fish & Wildlife Service.*
*Notice that there is an attachment associated with this parcel. Click the link, **AR-Deed-Tract-26.pdf**, to view*
additional information about the purchased parcel.



*Feature **4 of 5**, showing information for the Arctic National Wildlife Refuge.Here, there is a link to the Refuge's*
*website. Click the **More info** link to open the Arctic NWR web page in a separate browser window.*



*Feature **5 of 5**, showing information for the Arctic B-5 1:63,360 scale USGS topo map. Click the **download***
icon to go the the USGS Map Store to download a free copy of the Arctic B-5 1:63,360 scale topo map.

Zoom to the highlighted parcel

If you would like a more detailed view of the highlighted feature, click the ***Zoom to*** button in the lower-left corner of the pop-up window. This will zoom in to the extent of the feature.

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Browse by Using the Attribute Table

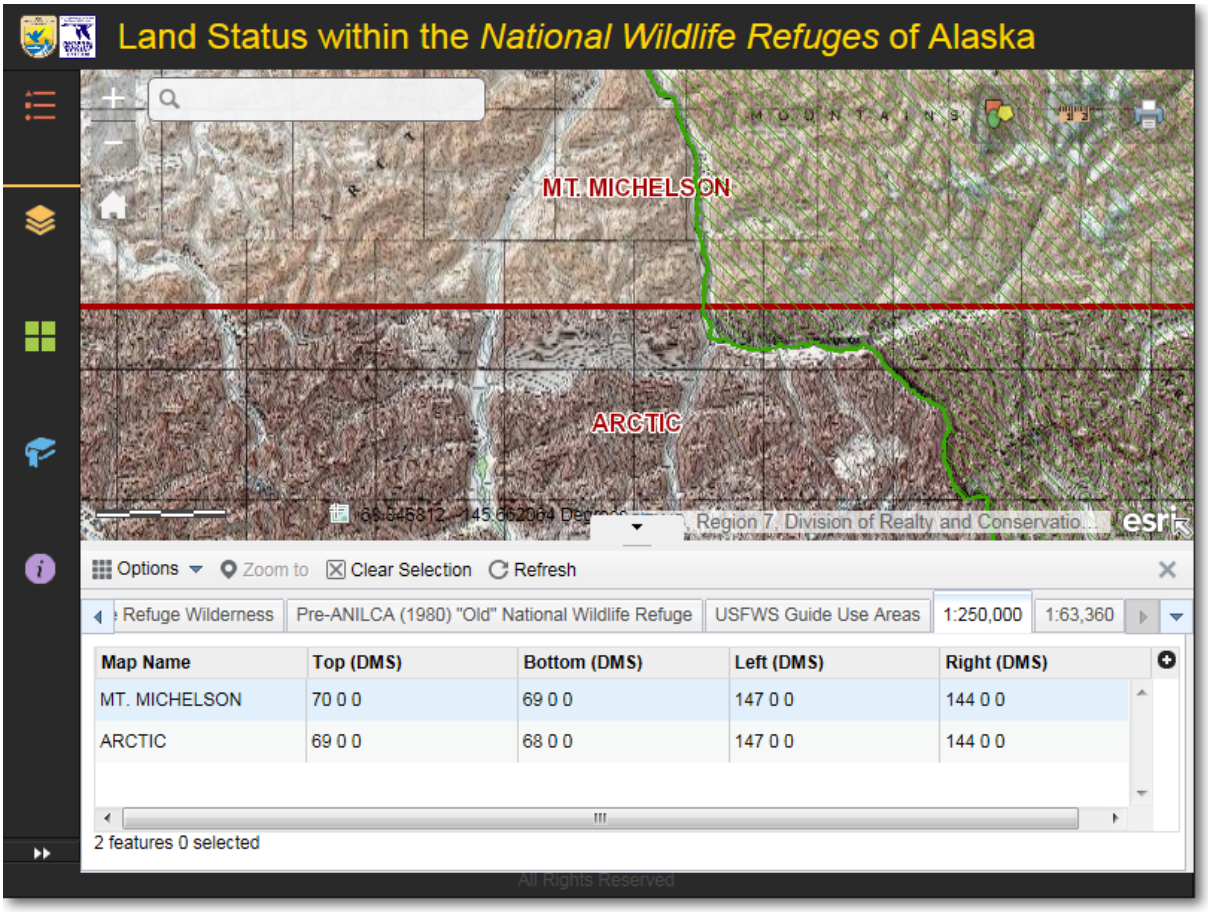
You can use the *Attribute Table* in conjunction with panning and zooming the map. As you move around in the map, the information for features that are in the current map view will be automatically displayed in the attribute tables. This is a great way to quickly view the

information for features.

To Browse by Panning and Zooming

1) Maximize the *Attribute Table* tool by clicking on the ***Up*** arrow in the bottom-center of the Mapper window.

2) The *Attribute Table* tool is a container for the attribute tables of the individual data layers. Each layer's attribute table is represented by a tab, displayed across the top of the attribute table window. Click the tab of the layer for which you'd like to view additional information.



*An example of the **1:250,000 topo map** attribute table, showing records that are dynamically displayed as you pan and zoom*
the map. In this example, information for the Mt Michelson and Arctic topo maps is displayed in the attribute table.

3) If you want to zoom in or out to show the entirely of one of the features shown in the attribute table, simply double-click on the row in the attribute table for the feature you want to see. The map will then pan and zoom to show the entire feature.

4) For more information about using the attribute table, refer to the Attribute Table topic.

All attribute tables are dynamic

Even though you can view the attribute table for only one data layer at a time, all of the tables are dynamic and update automatically as you pan and zoom around in the map. This is a great way to get an overview of the features that are visible in the map view. Simply pan and zoom to the area of interest, then click each attribute table to see the attributes of all parcels (if any) in the current map view.

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Integration with Other Online Mappers

The FWS Land Mapper is built on ESRI's ArcGIS Online (AGOL) platform. This system is widely used by thousands of Federal, State, County, and Municipal organizations. Businesses, universities, and private individuals likewise use AGOL to publish geographic data online. AGOL facilitates data sharing by providing a mechanism whereby data layers published by an organization can be incorporated into online mapping applications created by others.

All the data layers contained within the FWS Land Mapper are available to the general public, and these layers can be imported into AGOL-based online mappers created by other organizations. For example, a State or county online mapper that displays land parcels might not include the boundaries of protected areas such as National Wildlife Refuges or National Parks. In such a case, the user can potentially import the protected area boundaries from the FWS Land Mapper into the State/county mapper.

Conversely, users can import data layers from other mappers into the FWS Land Mapper. An example of this would be hunting area boundaries which are published on a State game management online mapper, but which are not present in the FWS Land Mapper. This would allow the user to view the hunting area boundaries in relation to National Wildlife Refuges, National Parks, wilderness areas, etc.

Data Formats that can be Imported into and Exported out of the FWS Land

Mapper

The following data formats can be exchanged between the FWS Land Mapper and other online ArcGIS Online-based mapping applications.

Formats that can be Imported into the FWS Land Mapper

KML (Keyhole Markup Language)

This is the standard KML format that is used by Google Earth and other programs that sup the geometry of features plus their attbitute values.

GPX (GPS Exchange)

This is a standard format that is designed to be used with various GPS units and programs format. It supports only the geometry of features (points and lines only; polygons are not s information is not supported.

GeoJSON (Geographic JavaScript Object Notation)

This is a standard format that includes the geometry of features plus their attbitute values ESRI's ArcGIS system, and any other program that supports the GeoJSON format.

Shapefile (ESRI Shapefile)

This is ESRI's standard and widely-supported format (.shp and others) that includes the ge their attribute values. Shapefiles consist of multiple related files. All of these files must be archive with the .zip file extension in order to be imported into the FWS Land Mapper.

AGOL hosted layer (ESRI ArcGIS Online hosted layer)

Feature layers that are hosed on the ArcGIS Online platform. To add layers, you can use th or directly enter a hosted feature layer's full URL. Feature geometry and feature attributes

FWS Land Mapper Formats that can be Imported into Other AGOL-based Mappers

GeoJSON (Geographic JavaScript Object Notation)

This is a standard format that includes the geometry of features plus their attbitute values. I ESRI's ArcGIS system, and any other program that supports the GeoJSON format. This format from the FWS Land Mapper via the Query tool.

AGOL hosted layer (ESRI ArcGIS Online hosted layer)

Feature layers that are hosed on the ArcGIS Online platform. Feature geometry and feature a
To add layers to another online mapper, you can use the AGOL Search function, or directly e
layer's full URL. All layers shown in the FWS Land Mapper can be imported into AGOL-based
hosted by other agencies/organizations.

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Use Layers from Other Mappers in the FWS Land Mapper

You can import data layers from other ArcGIS Online-based mappers into the FWS Land Mapper. An example of this would be hunting area boundaries which are published on a State game management online mapper, but which are not present in the FWS Land Mapper. This allows you use the FWS Land Mapper to view the hunting area boundaries in relation to National Wildlife Refuges, National Parks, wilderness areas, and other layers that are in the FWS Land Mapper.

Formats that can be Imported into the FWS Land Mapper

KML (Keyhole Markup Language)

This is the standard KML format that is used by Google Earth and other programs that support
the geometry of features plus their attbitute values.

GPX (GPS Exchange)

This is a standard format that is designed to be used with various GPS units and programs that
format. It supports only the geometry of features. Attribute information is not supported.

GeoJSON (Geographic JavaScript Object Notation)

This is a standard format that includes the geometry of features plus their attbitute values. It i
ESRI's ArcGIS system, and any other program that supports the GeoJSON format.

Shapefile (ESRI Shapefile)

This is ESRI's standard and widely-supported format that includes the geometry of features pl
values.

AGOL hosted layer (ESRI ArcGIS Online hosted layer)

Feature layers that are hosed on the ArcGIS Online platform. To add layers, you can use the A
or directly enter a hosted feature layer's full URL. Feature geometry and feature attributes are

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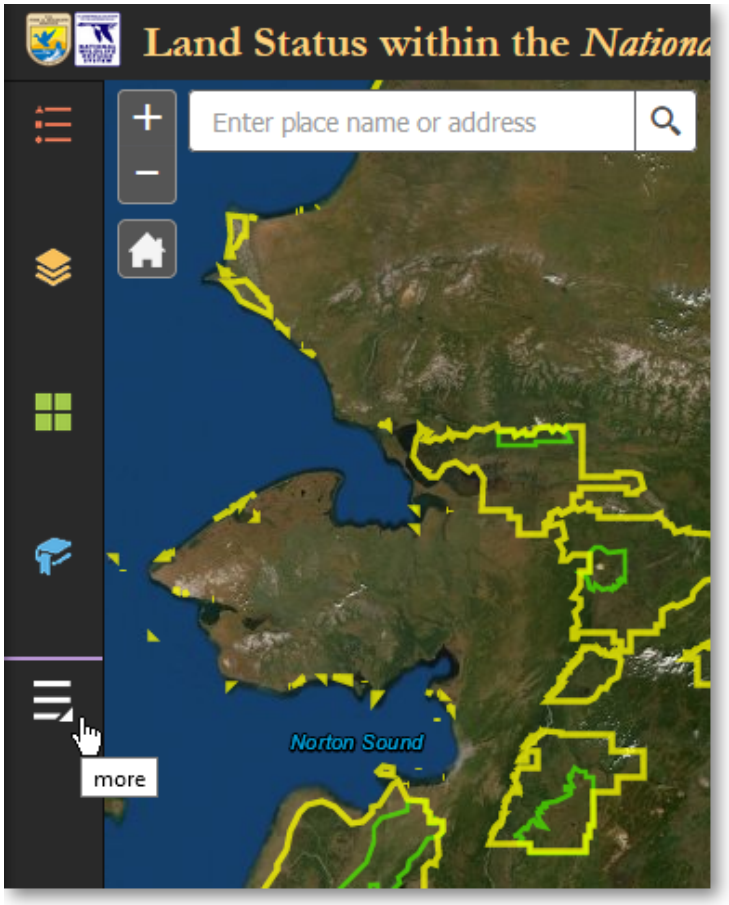
How to Import Layers from Other Mappers into the FWS Land Mapper

The primary method to import data from other sources is to use the **Add Data** tool. To import data that are in the **KML**, **GPX**, **GeoJSON**, and **shapefile** formats, follow the instructions for the Add Data tool. If you need to import a data layer from another AGOL-based mapper, you can either search for the layer, or directly enter the layer's URL.

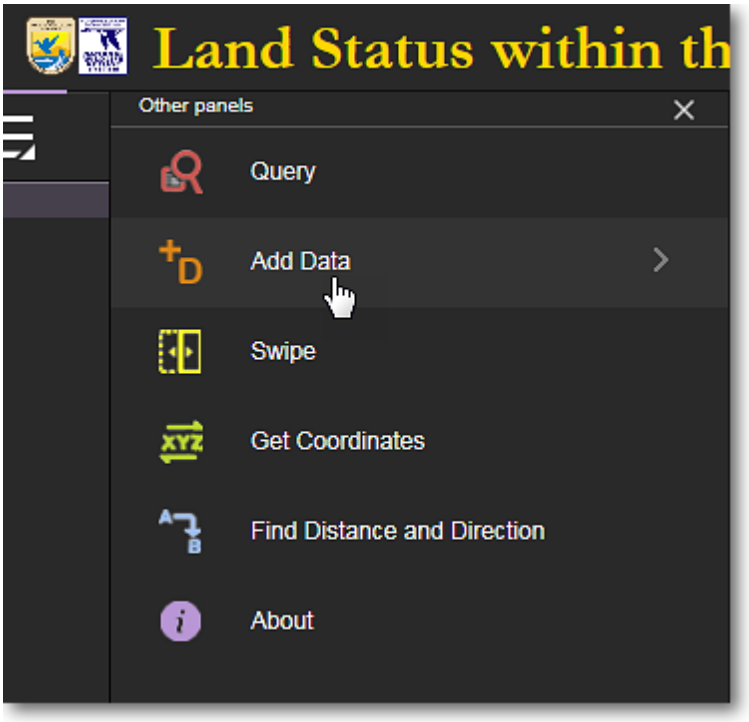
Search for a Layer

1) Click the ***More*** icon on the left-hand side of the FWS Land Mapper window.



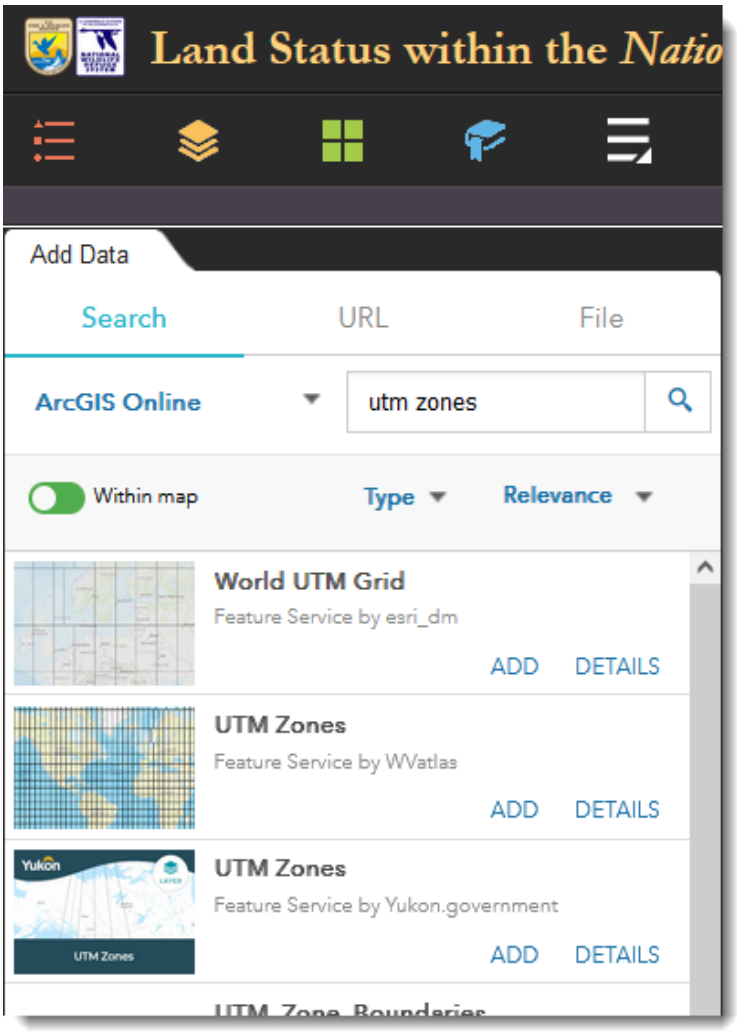
*Click the **More** icon to show the Add Data panel*

2) On the ***Other Panels*** panel, click ***Add Data***.



*Click **Add Data***

3) The ***Add Data*** panel has three tabs at the top of the panel. These tabs let you search for and add data layers that are in various formats. Click the ***Search*** tab.

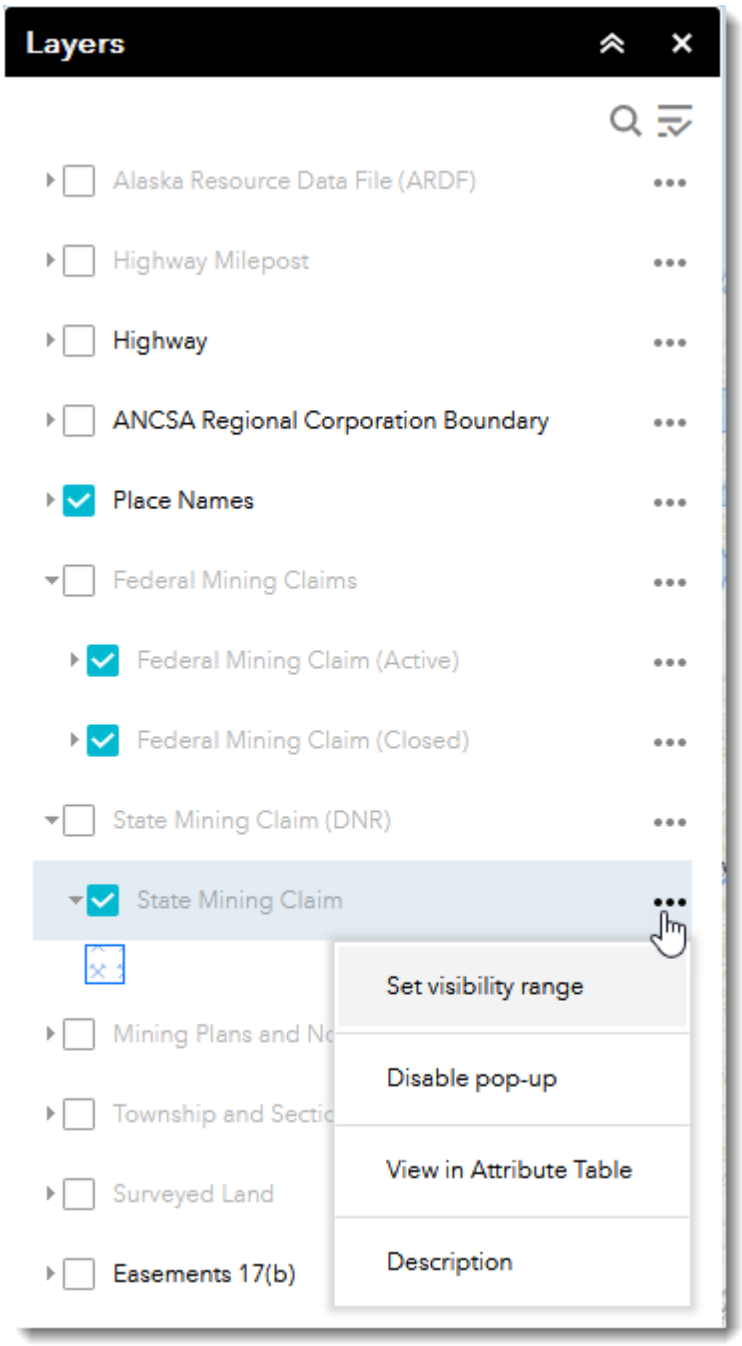


*Click the **Search** tab, enter a **search term**, and **select the desired data layer***

4) The ***Search*** tab lets you search for data layers that are available on ArcGIS Online. For example, if you want to add UTM zones to the Mapper, enter ***utm zones*** in the Search box and press ***Enter***. Select the desired layer and click ***Add***. You can also customize your search using the ***Within Map***, ***Type***, and ***Relevance*** options.

Directly Enter an ArcGIS Online Data Layer's URL

1) Using the functions within ***another ArcGIS Online mapper***, determine the layer you want to use and then obain the URL for it. For example, to obtain the URL for the***State Mining Claims*** layer in the BLM-Alaska Lands, Minerals and Realty mapper, find the ***State Mining Claims*** layer in the ***Layers*** panel, click the ***three dots*** to the right of the layer's name, then select ***Description*** from the pop-up menu.



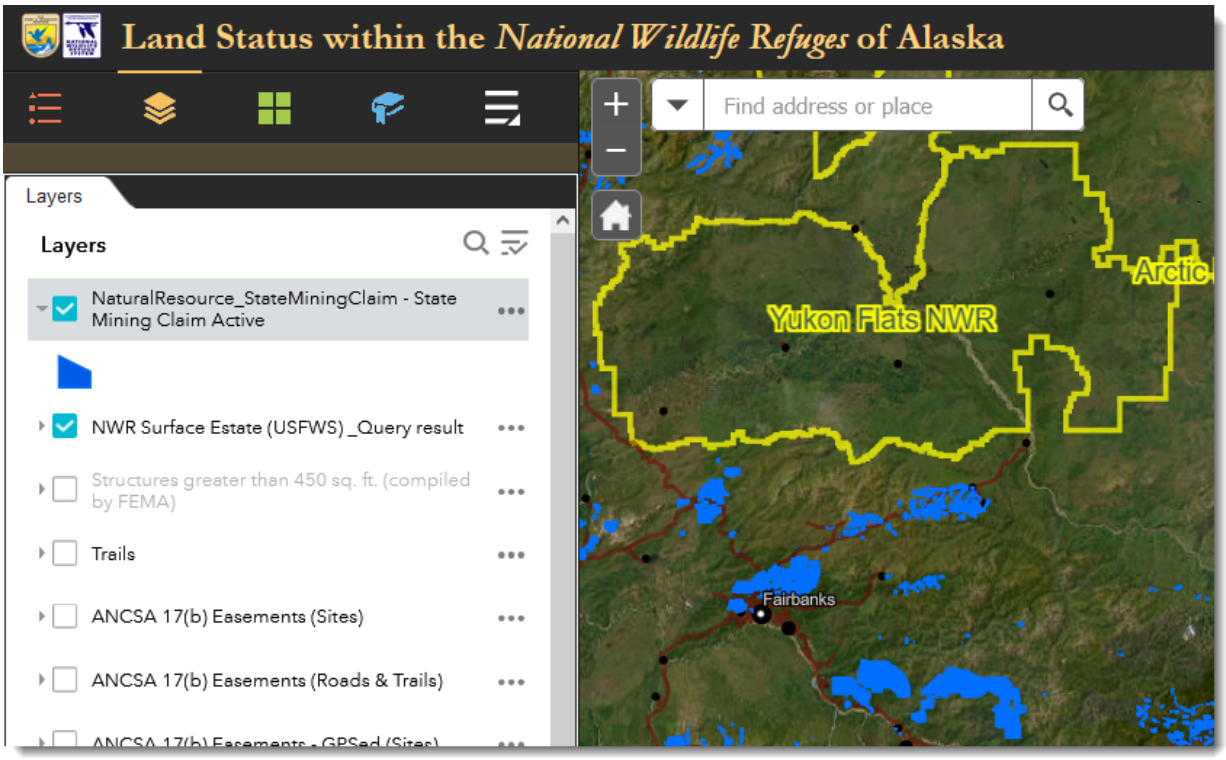
*Click the **three dots** and select **Description***

2) In the web page that pops-up, note the full URL that is displayed in the web browser's address bar. With your mouse cursor, select the ***entire URL*** and use your computer's ***Copy*** function to copy the URL to the clipboard.

*Select the **full URL** and **copy** it to your computer's clipboard*

3) In the ***FWS Land Mapper***, click the ***URL tab*** in the ***Add Data*** panel and ***paste the full URL*** that you copied in Step 2 above. Then click the ***Add*** button. The layer from the other mapper will be added to the ***map display*** of the FWS Land Mapper and listed at the top of the ***Layers*** panel.

Paste the URL *of the layer from the other mapper into the FWS Land Mapper*



The layer from the other mapper is now shown in the FWS Land Mapper

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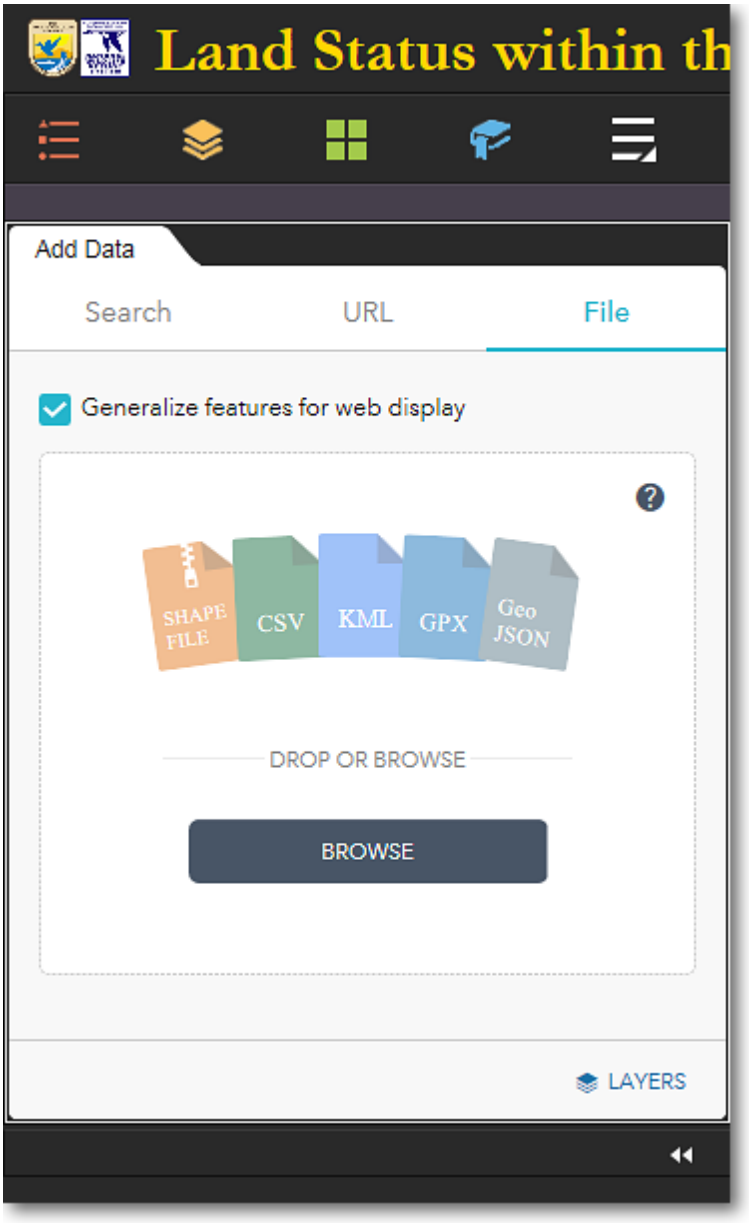
To Remove a Data Layer

1) Click ***Layers*** in the bottom-right corner of the ***Add Data*** panel.



Click ***Layers*** in the lower-right corner

2) All the layers you have added will be listed in the ***Add Data*** > ***Layers*** panel.To remove a data layer, click on the ***trash can*** (Remove Layer) icon for the layer that you want to remove from the FWS Land Mapper.

*Click the **trash can** icon to remove a layer from the Mapper*

User-added data layers are *TEMPORARY*

Data layers that you add to the FWS Land Mapper are temporary. They are removed from the Mapper when:

- You remove them manually
- You close your web browser
- Your clear your web browser's cache

User-added data layers will be retained when...

- You minimize or close the ***Add Data*** panel
- You switch to another tool panel
- You leave your web browser open or minimize the browser window

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Use Layers from the FWS Land Mapper in Other Mappers

All the data layers in the FWS Land Mapper are publicly accessible and can be used in other ArcGIS Online-based mapping applications. The only requirement is that the other online mapper must include the ***Add Data*** tool, or an equivalent function. You might need to do this if, for example, you need to see the boundaries of National Wildlife Refuges, and the other mapper does not include those layers. In this case, you can add the National Wildlife Refuge boundaries to the other mapper.

FWS Land Mapper Formats that can be Imported into Other AGOL-based Mappers

GeoJSON (Geographic JavaScript Object Notation)

This is a standard format that includes the geometry of features plus their attbitute values. It is v
ESRI's ArcGIS system, and any other program that supports the GeoJSON format.

AGOL hosted layer (ESRI ArcGIS Online hosted layer)

Feature layers that are hosed on the ArcGIS Online platform. To add layers, you can use the AGO
or directly enter a hosted feature layer's full URL. Feature geometry and feature attributes are s

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How to use FWS Land Mapper Layers in Other Mappers

The primary method to use the FWS Land Mapper layers in other mappers is to use that mapper's **Add Data** tool, or equivalent function. If the other mapper does not provide a means of importing or adding data layers, you will not be able to use the FWS Land Mapper's layers. Additionally, the other mapper may, or may not, support one or both of the data formats described above. The U.S. Fish & Wildlife Service has no control over, or input on the function of online mapping applications that are developed and maintained by other organizations.

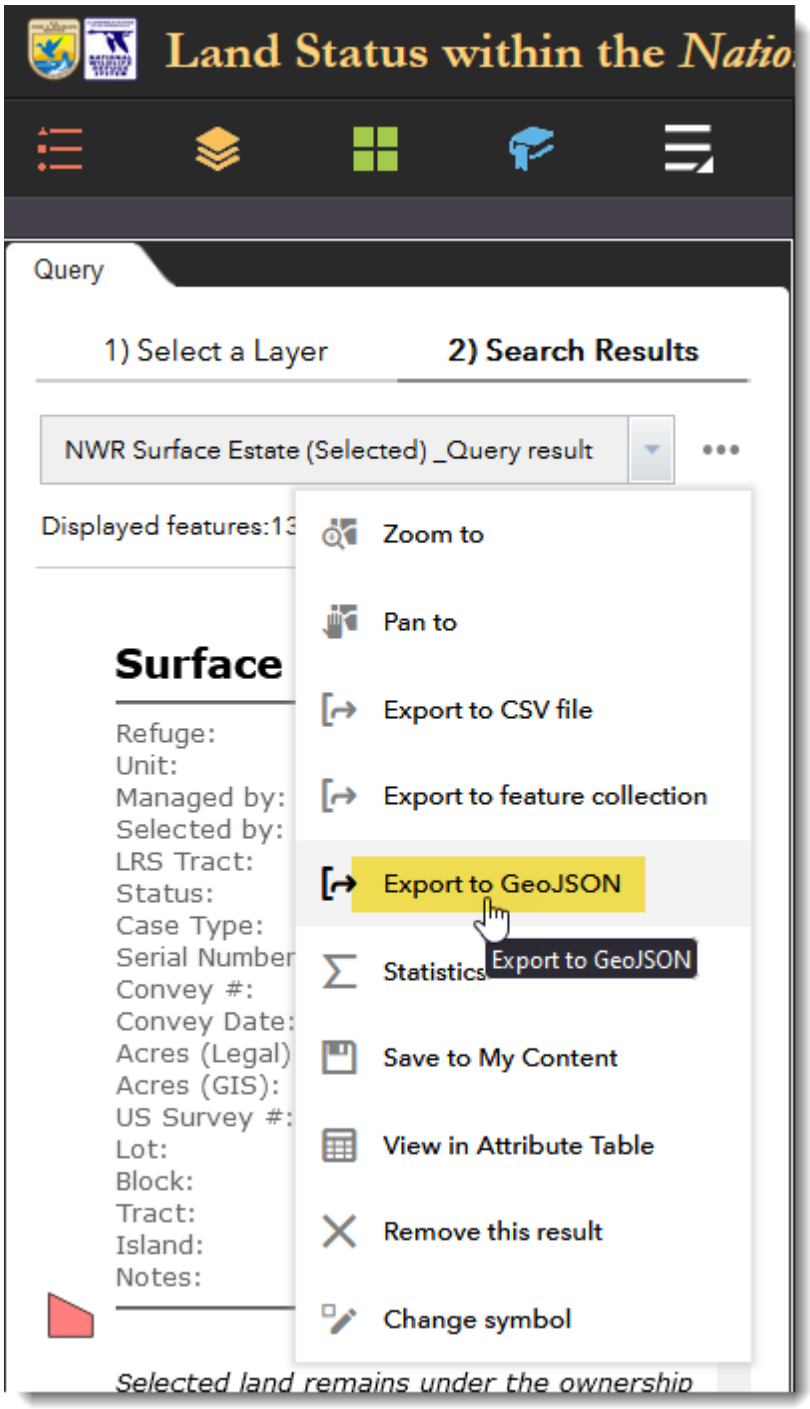
To add FWS Land Mapper data in the **GeoJSON** format to another online mapper, you must first use the FWS Land Mapper's ***Query*** tool to select the desired features from a data layer, and then export the selected features to a GeoJSON file. The GeoJSON file can then be imported into the other mapper, if the other mapper supports the import of GeoJSON files.

Alternatively, if you want to add everything within an FWS Land Mapper data layer to another mapper, you can simply copy and paste the FWS Land Mapper layer's URL into the other mapper's ***Add Data*** tool, or equivalent function.

Export and Import a GeoJSON File

1) Use the FWS Land Mapper's ***Query*** tool to select the desired features from one of the FWS Land Mapper's layers. To use the Query tool, follow these steps. Note: for this purpose, you don't have to do Stage 2 of the Query tool instructions.

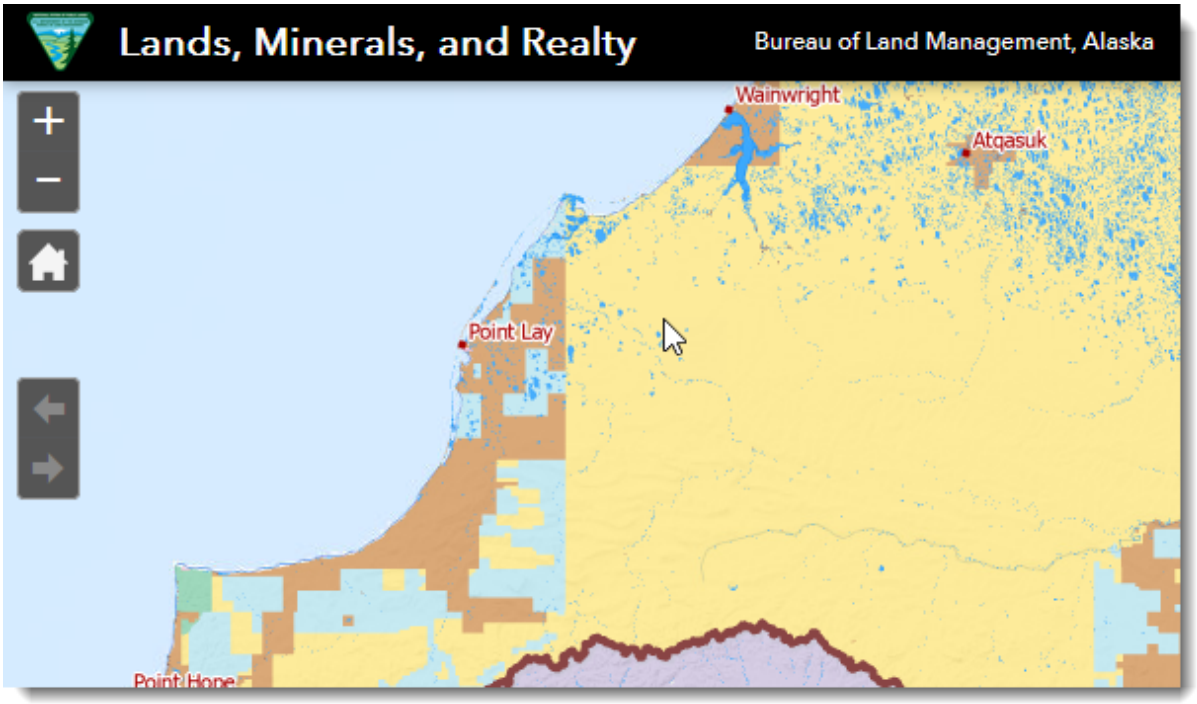
2) In Stage 3, Step 7 of the Query tool instructions, don't choose the CSV option. Instead, select ***Export to GeoJSON***.



*Select **Export to GeoJSON***

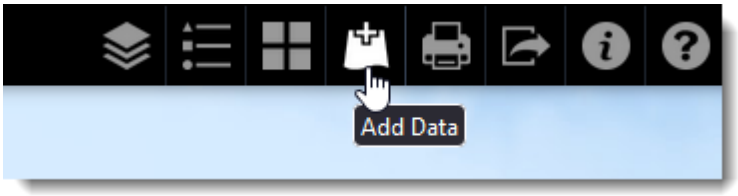
3) Select a location on your computer to store the file, and give the file a name.

4) Open the other online mapper to which you want to import your new GeoJSON file. This example uses the [BLM-Alaska Lands, Minerals and Realty] mapper.



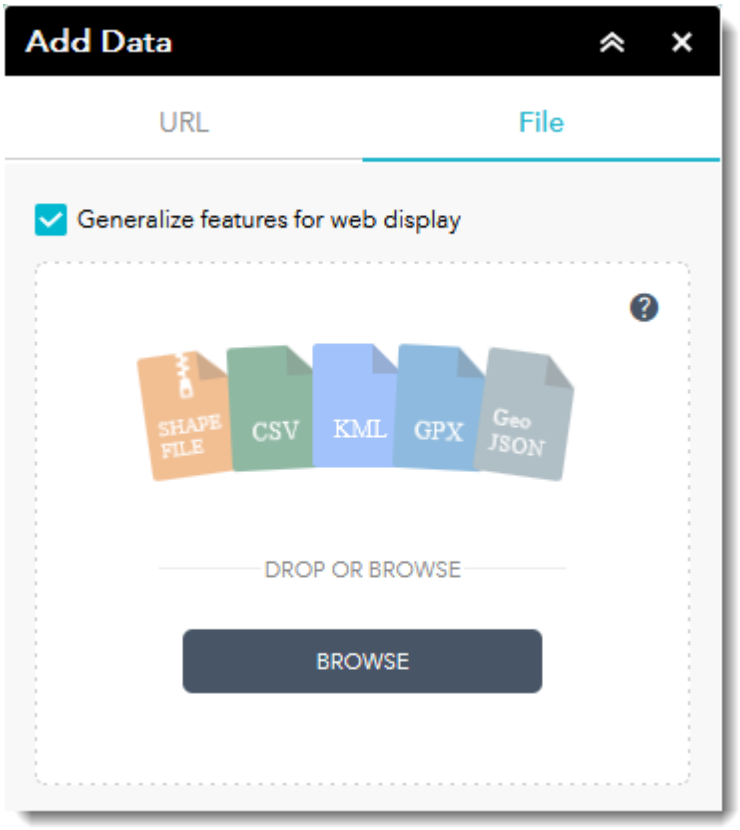
This is the [BLM-Alaska Lands, Minerals and Realty](#) mapper

5) In the BLM-Alaska mapper, select the ***Add Data*** tool in the upper-right corner of the mapper.



*Click **Add Data***

6) In the ***Add Data*** panel, click the ***File*** tab and either browse for the GeoJSON file that you saved in Step 3 above, or drag the file from your Windows Explorer into the ***Add Data*** panel.

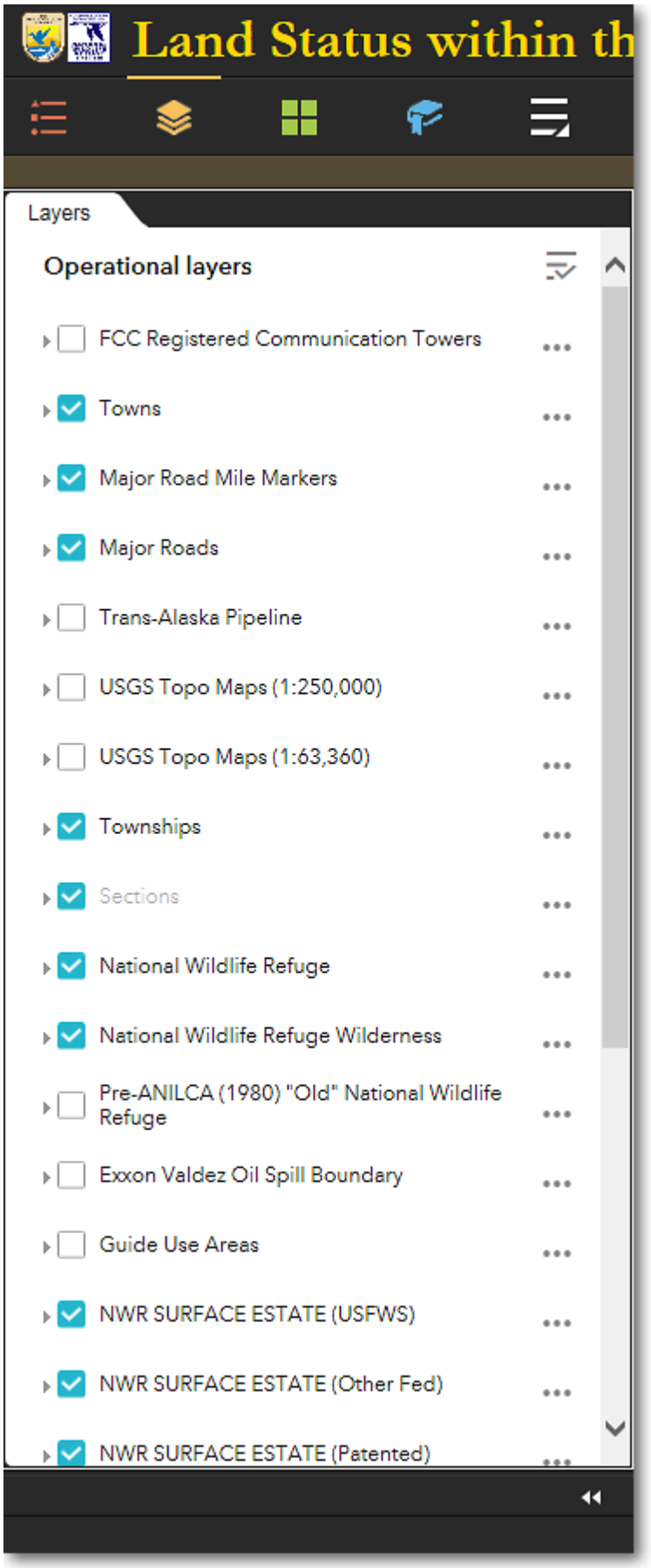


*Add your GeoJSON file to the **File** tab of the **Add Data** panel*

7) Depending on the layers that are displayed in the BLM-Alaska mapper, you may have to turn some of them off and/or change the basemap to make your newly imported GeoJSON features visible.

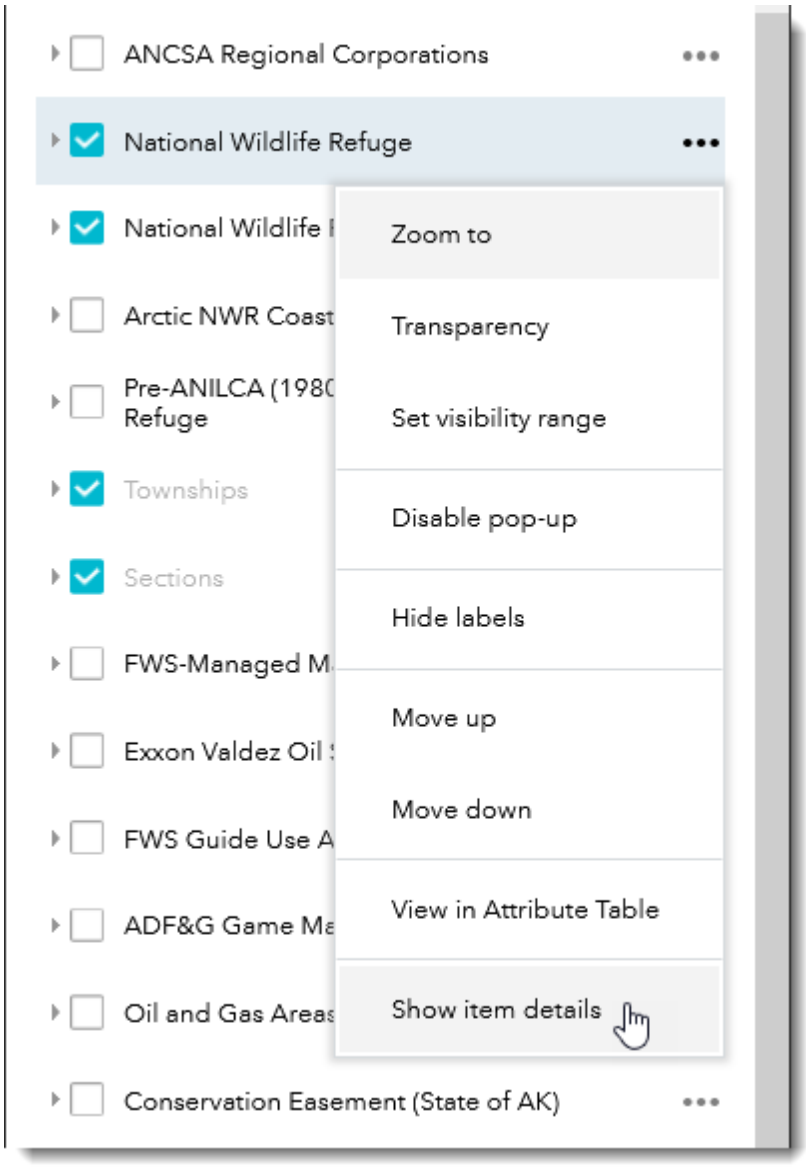
Copy and Paste an FWS Land Mapper Layer's URL into Other Mapper

1) Open the ***FWS Land Mapper***, then click on the ***Layers icon*** to open the ***Layers panel***.



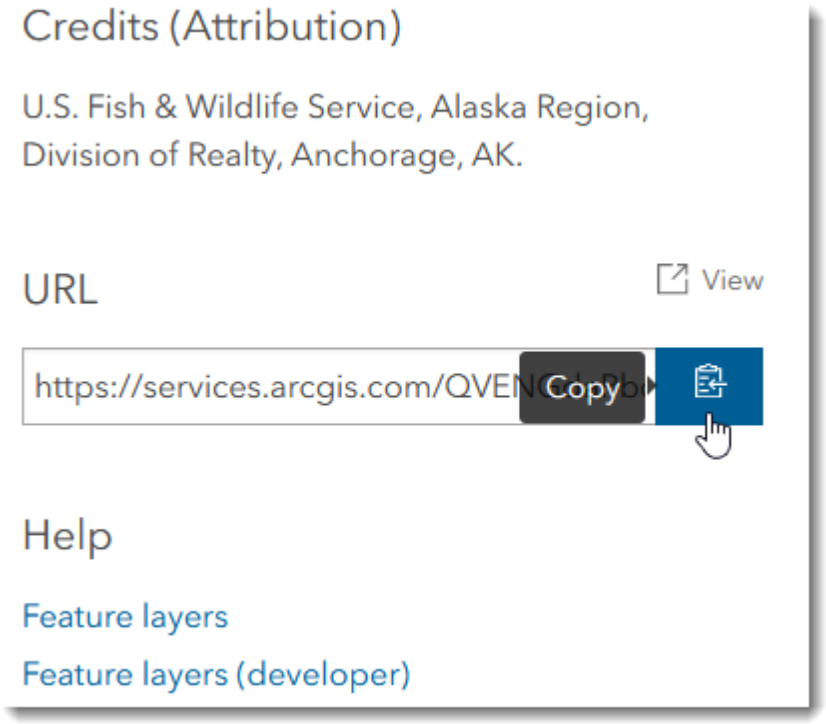
*The FWS Land Mapper's **Layers** panel*

2) Find the layer that you want to add to the other online mapper, and click the***three dots*** to the right of the layer's name. Then from the pop-up menu, select***Show item details***.



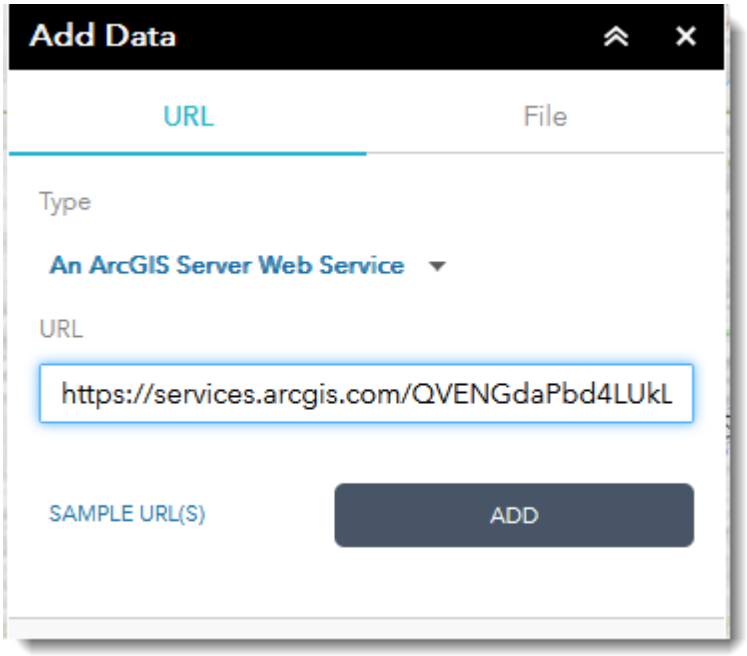
Select ***Show item details***

3) On the web page that appears, there will be a section that shows the ***URL*** of the layer that you chose (you may have to scroll down the page to see the URL). Click the ***Copy*** icon that's to the right of the URL. The full URL of the FWS Land Mapper's layer will be copied to your computer's clipboard.



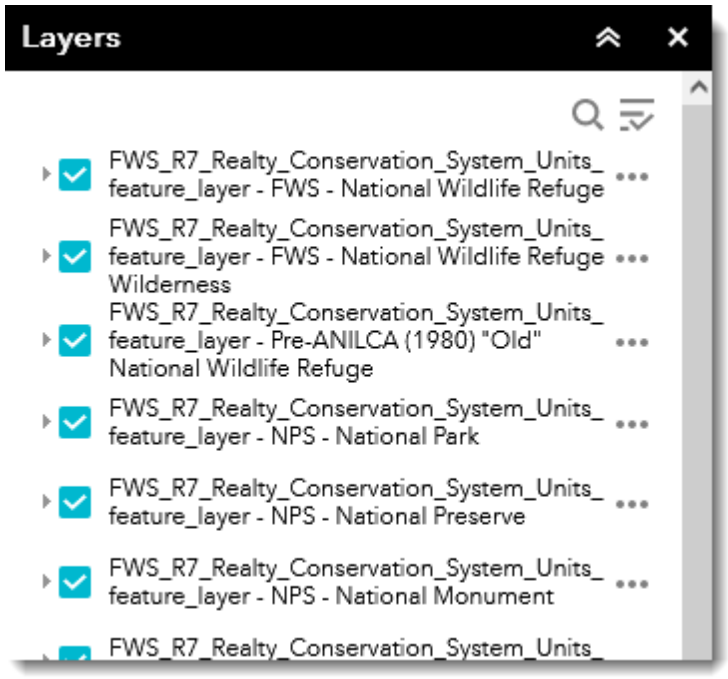
*Click the **Copy** icon to the right of the URL*

4) In the other online mapper (again, using the BLM-Alaska Lands, Minerals and Realty mapper for this example), open the ***Add Data*** tool, click the ***URL tab***, and paste the copied URL into the ***URL field***. Then click ***Add***.



*Paste the FWS Land Mapper layer's URL into the **URL field** and click **Add***

5) The FWS Land Mapper layer is now added to the BLM-Alaska Lands, Minerals and Realty mapper. Open its ***Layers*** panel. The newly added FWS Land Mapper layer will be listed at the top of the other mapper's Layers panel. Turn layers on or off as desired.



FWS Land Mapper layer added to the ***BLM-Alaska Lands, Minerals and Realty*** mapper

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User-added data layers are *TEMPORARY*

Data layers that you add to other online mappers are temporary. They are removed from the mapper when:

- You remove them manually
- You close your web browser
- Your clear your web browser's cache

User-added data layers will be retained when...

- You minimize or close the ***Add Data*** panel
- You switch to another tool panel
- You leave your web browser open or minimize the browser window

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Land Mapper Tutorials

One of the best ways to become familiar with the features and functions of the Land Mapper is via step-by-step tutorials, such as the one listed below. Additionally, several video tutorials are also available.

Interactive Tutorial

This is a brief summary of the Land Mapper. It also includes 5 "Try-It" exercises. Download the PDF here.

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Land Mapper Video Tutorials - Beginner Level

The videos below cover some of the basics of the Land Mapper. Although they don't cover every aspect of the Mapper, you can use these as a guide for exploring the numerous features of the program.

To view the videos, click the links below and instruct your web browser to open and play the videos directly. It may take a few seconds for your video player to open. Alternatively, first save the videos to your computer and then play them.

In order for your web browser to open and play the videos, the .WMV file extension must be associated with a default program on your computer that will play .WMV files, such as Windows Media Player. You can set your computer's file associations and default programs in the Microsoft Windows settings.

Each video below also has a link to a downloadable step-by-step instruction sheet. It's a good idea to open the Step-by-Step so that you can follow along with the video. You can also share the Step-by-Step with your colleagues, as it contains links to the Land Mapper and the tutorial video.

Coordinates Tool: How to Find Latitude and Longitude Coordinates [2m 37s] (Step-by-
Learn how to use the *Coordinates* tool to find the latitude and longitude coordinates for locat

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Land Mapper Video Tutorials - Intermediate Level

The videos below explore a few of the more advanced features of the Land Mapper. Although they don't cover every aspect of the Mapper, you can use these as a guide for exploring the numerous features of the program.

To view the videos, click the links below and instruct your web browser to open and play the videos directly. It may take a few seconds for your video player to open. Alternatively, first save the videos to your computer and then play them.

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Query Tool: Determine Native Allotment Statistics for a Refuge [9m 34s] (Step-by-Ste
Learn how to use the *Query* tool to determine the number and acreage of selected and pate within a National Wildlife Refuge.

View Alaska Refuge Land Status in 3D in ArcGIS Earth [8m 30s] (Step-by-Step)
Learn how to view the Alaska National Wildlife Refuge land status in 3D with ArcGIS Earth, e basemaps, and create a cross-section elevation profile.

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Guide Use Area Maps

The U.S. Fish & Wildlife Service - Alaska Region administers a permitting program for commercial guiding and outfitting (hunting and fishing) operations. Permits are issued for specific geographic regions, referred to as Guide Use Areas.

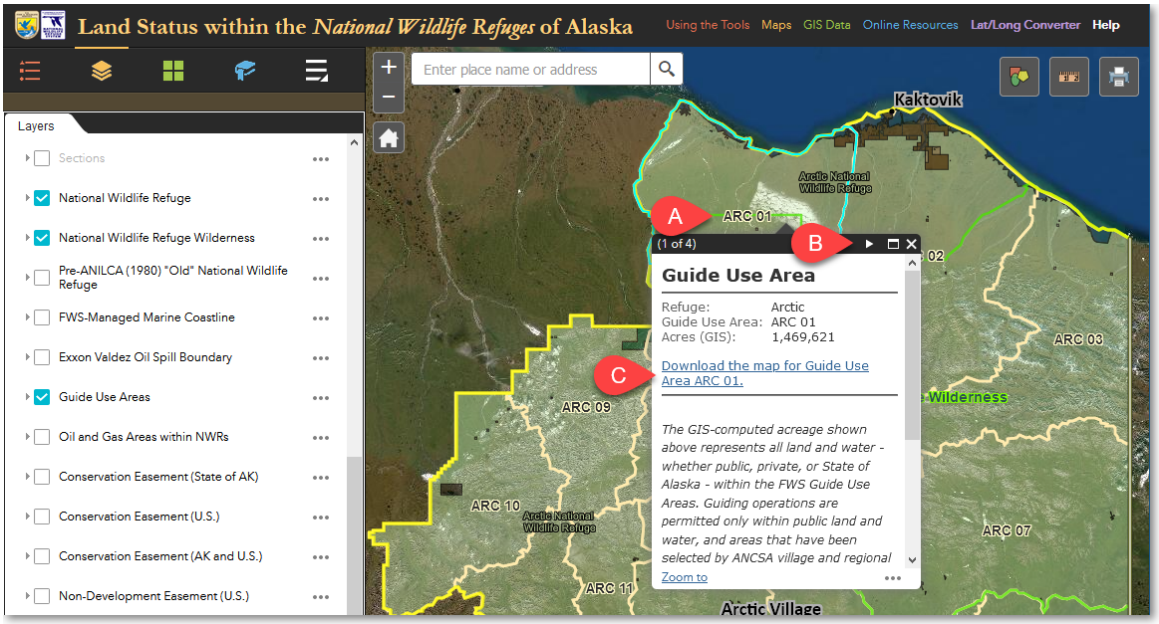
These geoPDF maps have latitude and longitude information embedded in them. You can therefore use these maps on your GPS-capable phone or tablet for field mapping and navigation. Refer to the GeoPDF Map Portal for more information about using these maps on your phone or tablet.

The primary source for obtaining Guide Use Area maps is via the **USFWS Region 7 Land Mapper**. Follow the steps below to select and download maps.

1) Open the USFWS Region 7 Land Mapper in a web browser.

2) In the **Layers** list, scroll down to **Guide Use Areas** and click to put a check mark next to it. This makes the Guide Use Areas visible on the map.

3) In the map area, click on the desired **Guide Use Area** (A). In the pop-up window, click the **right-pointing arrow** to advance to the **Guide Use Area page** (B) and then click on the **download link** (C).



Alternatively, If you prefer, you can download Guide Use Area maps for the Alaska refuges using the links below.

Alaska Maritime	Alaska Peninsula	Arctic	Becharof	Innoko	Izembek
AKM 01	AKP 01	ARC 01	BCH 01	INN 01	IZM 02
AKM 02	AKP 02	ARC 02	BCH 02	INN 02	IZM 03
AKM 03	AKP 03	ARC 03	BCH 03	INN 03	IZM 04
IZM 01	AKP 04	ARC 04	BCH 04	KOY 01	
	AKP 05	ARC 05	BCH 05		
	AKP 06	ARC 06	BCH 06		
	AKP 07	ARC 07			
	AKP 08	ARC 08			
	AKP 09	ARC 09			
	AKP 10	ARC 10			
	AKP 11	ARC 11			
	AKP 12	ARC 12			
	AKP 13	ARC 13			
	AKP 14	ARC 14			
	AKP 15	ARC 15			
	IZM 05	ARC 16			
	IZM 06				

Kodiak	Koyukuk	Nowitna	Selawik	Tetlin	Togiak
KOD 01	KOY 02	NOW 01	SEL 01	TET 01	TOG 01
KOD 02	KOY 03	NOW 02		TET 02	TOG 02
KOD 03	KOY 04	NOW 03			TOG 03
KOD 04	KOY 05				

KOD 05 KOY 06
KOD 06
KOD 07
KOD 08
KOD 09
KOD 10
KOD 11
KOD 12
KOD 13
KOD 14
KOD 15
KOD 16
KOD 17
KOD 18
KOD 19
KOD 20
KOD 21
KOD 22
KOD 23
KOD 24
KOD 25

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Land Status Maps

The **USFWS Region 7 GeoPDF Map Portal** is the primary source for free, downloadable geoPDF land status maps for the National Wildlife Refuges* within the State of Alaska. Maps are available at two scales: 1:30,000 and 1:250,000. The 1:250,000 scale maps are updated quarterly on January 1, April 1, July 1, and October 1. The 1:30,000 scale maps are updated annually, during the first half of January.

These maps have latitude and longitude information embedded in them. You can therefore use these maps on your GPS-capable phone or tablet for field mapping and navigation. Refer to the GeoPDF Map Portal for more information about using these maps on your phone or tablet.

Click the link below to go to the USFWS Region 7 GeoPDF Map Portal.

* 1:250,000 scale land status maps for Alaska Maritime NWR are not currently available online.

FWS Region 7 GeoPDF Map Portal
Short URL: http://arcg.is/2oBSIHU
Long URL: https://fws.maps.arcgis.com/apps/MapSeries/index.html?appid=eea5634ad84c4e8ca9c40fe670bfb321

The following maps are available for download from the Map Portal:
1:30,000 scale (56" x 62")
1:250,000 scale (24" x 36" to 36" x 48")

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Water Resources Inventory Maps

Listed below are the various water resources inventory maps that are available for download. Questions or comments concerning these maps should be directed to Cathy Flanagan, Region 7, Water Resources Branch (cathleen_flanagan@fws.gov, 907-786-3903).

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Guide Use Area Boundaries

Below are the boundaries of the U.S. Fish & Wildlife Service Guide Use Areas within the National Wildlife Refuges in the State of Alaska. Note that the boundaries available here

represent the outermost, external boundary of the guide use areas. Internal boundaries between refuge/wilderness and private parcels of land are not depicted in these files. For the boundaries of private parcels within the guide use areas, refer to the online USFWS Region 7 Land Mapper, or the downloadable land status file at https://www.fws.gov/GISdownloads/R7/GIS-Data/Land-Status/Generalized.

Guide Use Area boundaries are available in two formats:

ESRI Shapefile
Shapefiles can be used in ArcGIS, other GIS mapping programs that support shapefiles, and other programs, such as Google Earth Pro, which support the shapefile format.

KMZ
The KMZ format is the native format for Google Earth. This format can also be used by other programs, such as ArcGIS Earth, that support KML/KMZ files.

ArcGIS Earth is a free program, similar in function to Google Earth, however ArcGIS Earth often has higher-resolution satellite imagery and aerial photography than does Google Earth.

Guide Use Area Boundaries

Shapefile

- Alaska Maritime NWR
- Alaska Peninsula NWR
- Arctic NWR
- Becharof NWR
- Innoko NWR
- Izembek NWR
- Kanuti NWR
- Kenai NWR
- Kodiak NWR
- Koyukuk NWR
- Nowitna NWR
- Selawik NWR
- Tetlin NWR
- Togiak NWR
- Yukon Delta NWR
- Yukon Flats NWR

KMZ

- Alaska Maritime NWR
- Alaska Peninsula NWR
- Arctic NWR
- Becharof NWR
- Innoko NWR
- Izembek NWR
- Kanuti NWR
- Kenai NWR
- Kodiak NWR
- Koyukuk NWR
- Nowitna NWR
- Selawik NWR
- Tetlin NWR
- Togiak NWR
- Yukon Delta NWR
- Yukon Flats NWR

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Land Status Data

The majority of land within the external boundaries of the National Wildlife Refuges in Alaska is in the public domain and is managed by U.S. Fish & Wildlife Service. There are however, large tracts of privately-owned land, land that is managed by other Federal agencies, and land owned by the State of Alaska. The U.S. Fish & Wildlife Service, Region 7 Division of Realty has digitized all land status within the Region 7 (Alaska) external refuge boundaries.

For complete details regarding the land status contained in the downloadable files listed below, refer to Understanding the Land Status.

Land Status Available for Download

File Geodatabase Format (ESRI ArcGIS GDB version 11.2.x)

Land Status within National Wildlife Refuges (Region 7 - Alaska)

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National Wildlife Refuge and Wilderness Boundaries

The Alaska National Interest Lands Conservation Act of December 2, 1980 defined the external boundaries of 16 National Wildlife Refuges and 10 Designated Refuge Wilderness Areas within the State of Alaska. The USFWS Region 7 Division of Realty has digitized these boundaries and they can be downloaded from the links shown below.

Note that the boundaries available here represent the outermost, external boundary of the refuges and wilderness areas. Internal boundaries between refuge/wilderness and private parcels of land are not depicted in these files. For the boundaries of private parcels within the external refuge/wilderness boundaries, refer to the land status download page.

Refuge and wilderness boundaries are available in three formats:

ESRI File Geodatabase and **ESRI Shapefile**
The file geodatabase format can be used in ESRI's ArcGIS program. The shapefiles can be used in ArcGIS, other GIS mapping programs that support shapefiles, and other programs, such as Google Earth Pro, which support the shapefiles format.

GPX
The GPX format is a universal format for use with GPS units. You can load the refuge and wilderness GPX files into your GPS for use in the field.

Refuge and Wilderness Boundaries Available for Download

Shapefile Format

Current National Wildlife Refuge Boundaries (Region 7 - Alaska)

Current National Wildlife Refuge Wilderness Boundaries (Region 7 - Alaska)

Pre-ANILCA (12/2/1980) National Wildlife Refuge Boundaries (Region 7 - Alaska)

File Geodatabase Format (ESRI ArcGIS GDB version 11.2.x)

Current National Wildlife Refuge and Wilderness Boundaries (Region 7 - Alaska)
Pre-ANILCA (12/2/1980) National Wildlife Refuge Boundaries (Region 7 - Alaska)

GPX Format

Refuge Boundaries	Wilderness Boundaries
Alaska Maritime NWR	Alaska Maritime NWR
Alaska Peninsula NWR	No wilderness
Arctic NWR	Arctic NWR
Becharof NWR	Becharof NWR
Innoko NWR	Innoko NWR
Izembek NWR	Izembek NWR
Kanuti NWR	No wilderness
Kenai NWR	Kenai NWR
Kodiak NWR	No wilderness
Koyukuk NWR	Koyukuk NWR
Nowitna NWR	No wilderness
Selawik NWR	Selawik NWR

Tetlin NWR	No wilderness
Togiak NWR	Togiak NWR
Yukon Delta NWR	Yukon Delta NWR
Yukon Flats NWR	No wilderness

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Online GIS Data Services

The various data layers used in the Land Mapper are available for use as online feature services. You can use these services in your own online mapping applications by referencing the FWS-managed URLs shown below.

Additionally, you can use the Add Data tool to add other online data layers to the Mapper. This can be helpful when the Mapper does not provide the necessary data layers for your particular situation. In these cases, use the **Add Data** tool to add your data layer(s) of interest. Layers added via this method are temporary - they are removed from the Mapper when you close your browser, refresh the page, or clear your browser cache. Below are several data layers which in the past have been suggested.

Note that the U.S. Fish & Wildlife Service is not responsible for the accuracy, completeness, or currency of data layers that are developed, maintained, or hosted by other organizations, nor does FWS have any control over the maintenance of, or corrections to, non-FWS hosted data layers.

FWS-managed Online Data Layers

Land Status within National Wildlife Refuges in Alaska

This feature service includes all surface and subsurface land status within the external boundaries of the National Wildlife Refuges in Alaska. The land status served by this feature service is updated monthly by the USFWS Alaska Region Division of Realty.

https://services.arcgis.com/QVENGdaPbd4LUkLV/arcgis/rest/services/FWS_R7_Realty_NWR_Land_Status_feature_layer/FeatureServer

Conservation System Unit Boundaries within Alaska

This feature service includes the boundaries of all Conservation System Units (CSU) within Alaska. It includes the boundaries of National Wildlife Refuges, National Parks, National Forests, and Designated Wilderness. The boundaries of National Wildlife Refuges, and

Designated Wilderness within National Wildlife Refuges, are maintained by the U.S. Fish & Wildlife Service, and always depict the current boundary locations. Boundaries of CSUs managed by other agencies, such at the National Park Service and the U.S. Forest Service, are maintained and updated by those agencies. Note that these non-USFWS CSU boundaries, as depicted in the below-noted feature service, may be slightly out-of-date. Refer to the other managing agencies for details of, and access to, their most current and up-to-date digital CSU boundaries.

https://services.arcgis.com/QVENGdaPbd4LUkLV/arcgis/rest/services/FWS_R7_Realty_Conservation_System_Units_feature_layer/FeatureServer

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Online Data Layers by Other Organizations (not affiliated with USFWS)

Municipal Tideland

This data layer depicts the boundaries of tidal and submerged land that has been conveyed to municipalities in Alaska, in relation to tideland surveys and shore fishery sites. This layer was developed by, and is maintained by, the Alaska Department of Natural Resources.

https://arcgis.dnr.alaska.gov/arcgis/rest/services/OpenData/Ownership_MunicipalEntitlementandTidelands/MapServer/0

Aquatic Farms

This data layer depicts the boundaries of aquatic farm permits and leases. This layer was developed by, and is maintained by, the Alaska Department of Natural Resources.

https://arcgis.dnr.alaska.gov/arcgis/rest/services/OpenData/NaturalResource_Aquaculture/MapServer

Western Yukon Flats FM2505 (GMU 25D) Federal Moose Hunt Areas

This shapefile represents the boundary of the western Yukon Flats FM2505 (GMU 25D) federal moose hunt. Hunt dates are annually from Aug. 25 to Feb. 28.

Unit 25D west — that portion lying west of a line extending from the Unit 25D boundary on Preacher Creek; then downstream along Preacher Creek, Birch Creek and lower mouth of Birch Creek to the Yukon River; then downstream along the north bank of the Yukon River (including islands) to the confluence of the Hadweenzic River; then upstream along the west bank of the Hadweenzic River to the confluence of Forty and One-Half Mile Creek; and then upstream along Forty and OneHalf Mile Creek to Nelson Mountain on the Unit 25D boundary —1 bull by a Federal registration permit (FM2505).

Permits will be available in the following villages: Beaver (25 permits), Birch Creek (10 permits), and Stevens Village (25 permits).

For residents of 25D west who do not live in one of the three villages, permits will be available by contacting the Yukon Flats National Wildlife Refuge Office in Fairbanks or a local Refuge Information Technician. Moose hunting on Federal public lands in Unit 25D west is closed at all times except for residents of Unit 25D west hunting under these regulations. The moose season will be closed by the National Wildlife Refuge Manager when 60 moose have been harvested in the entirety (from Federal public lands and non-Federal public lands) of Unit 25D west.

https://www.fws.gov/r7/nwr/Realty/data/GIS/Misc-Data/FM2505-Hunt-Areas/FM2505.zip

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Other Land Status Resources

The Land Mapper provides basic land status information for the National Wildlife Refuges within Alaska. You may however, need additional details or land status information for areas outside of the Refuges. To meet these needs, the following other sources of information are provided.

When working with the land status in the Mapper, it may be possible that you will need to gather additional information about a particular parcel, or parcels. For example, you may need to know what rights, if any, have been reserved to the U.S. and which rights were transferred to the owner. Some of this information is contained in the Land Mapper, but you may need more details than the Mapper can provide. In situations such as this, you can use the resources available on the websites of the Bureau of Land Management Alaska Office and the State of Alaska Department of Natural Resources. The following resources are available:

- Interim Conveyance documents
- Tentative Approval documents
- Patent documents
- BLM Case Reports and Abstracts
- BLM Master Title Plats
- United States Survey Plats
- Alaska DNR State Status Plats
- Alaska DNR Case Reports
- Current land title information
- FWS GIS data (National and Region 7)
- National Wetlands Inventory information

- Critical habitat information

These resources are available at the links shown below.

U.S. Fish & Wildlife Service

GIS Data
National FWS Land Mapper
Critical Habitat Mapper
National Wetlands Mapper

U.S. Bureau of Land Management

ANCSA 17(b) Easement Maps
Conveyance Documents
Land Status Search
Master Title Plats
Survey Plats

State of Alaska Department of Natural Resources

DNR Land Status Mapper
DNR State Status Plats
DNR Recorder's Office

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