

# Locating and identifying Kenai Peninsula wetlands online

Anyone with internet access can locate and identify wetlands mapped on the Kenai Peninsula and access more information about them. Wetland maps are found using the Kenai Peninsula Borough's (KPB) "interactive parcel viewer." Wetland maps were developed at a scale of 1:24,000—that is, 1 inch on the map represents 24,000 inches (2000 ft) on the ground.

**Below are step-by-step instructions** for looking up wetlands on the Kenai Peninsula Boroughs' parcel viewer. The parcel viewer links to three sites that provide a wealth of information about mapped wetlands: (1) Kenai wetlands site, <http://www.kenaiwetlands.net/>, (2) Cook Inlet wetlands site, <http://cookinletwetlands.info/>, and (3) Homer Soil and Water's wetlands page (found under *Water* at <http://www.homerswcd.org/>). For example, photos below are from the Kenai wetlands website. Click the link under either photo to see typical descriptions found there for each mapped wetland type.



A segregated relict glacial **Drainageway** wetland (DW21) near Salamatof Lake (wetland polygon #1941). This wetland is described at <http://www.kenaiwetlands.net/MapUnitDescriptions/DW12.htm>.



A relict glacial **Lakebed** wetland (LB64) along Beaver Creek (wetland polygon #32592). This wetland type is described at <http://www.kenaiwetlands.net/mapunitdescriptions/LB46.htm>.

## Instructions for using the KPB Mapviewer to locate and identify wetlands

(See the following section for step-by-step instructions on finding additional information using "Flexviewer.")

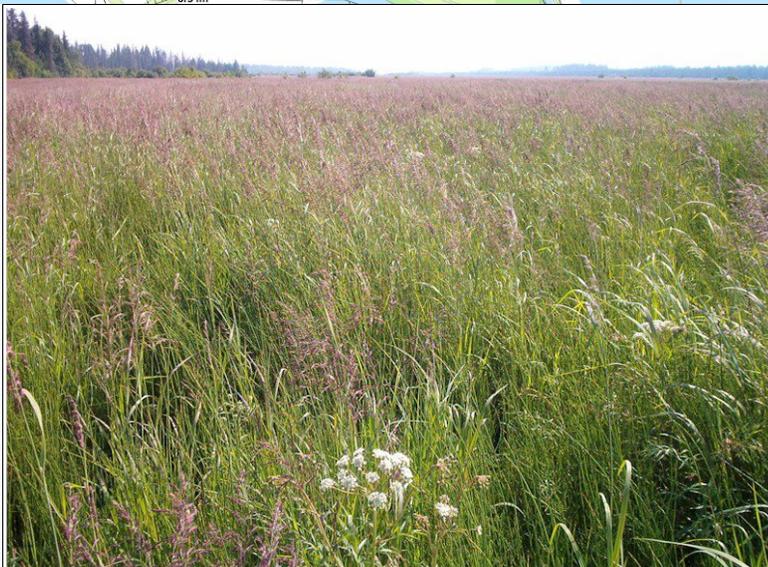
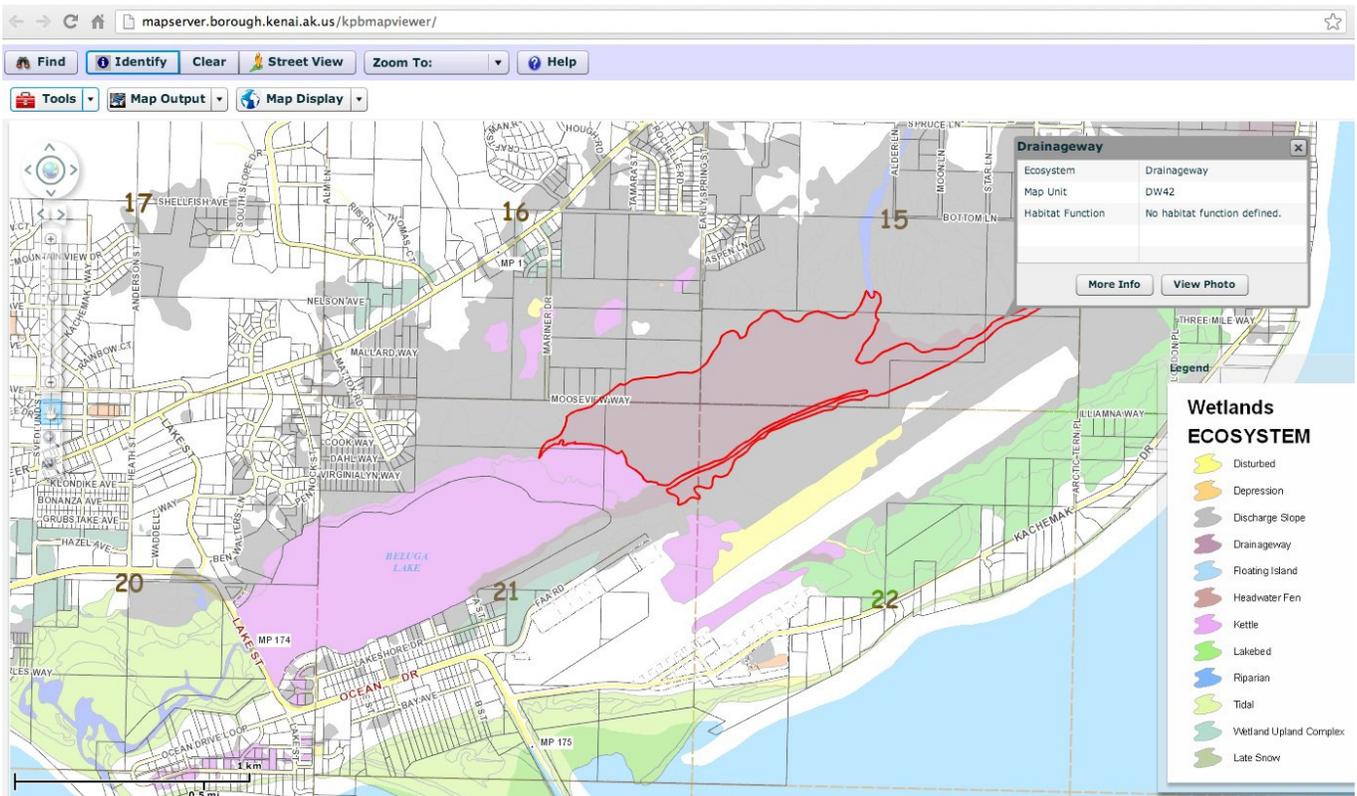
1. Open the borough's interactive Mapviewer at <http://mapserver.borough.kenai.ak.us/kpbmapviewer/> and click "Accept." The map will open.
2. There are two ways to go to a particular location from Mapviewer: the "Find" button and the "Zoom To" button, shown in the toolbar at right.



Click the "Find" button to open the dropdown menu shown at left. Use "Find" if you know the parcel ID, subdivision name, physical address, street name, owner name, or lake name for the parcel of interest. Click the "Zoom To" button to go to a more general area. We clicked the "Zoom To" button and then chose *Homer* from the dropdown menu that opened.

3. Turn on the wetlands layer by clicking the "Map Display" button and choosing *Wetlands* from the dropdown menu. Maps must be at a scale of 1:62,500 or larger for wetlands to be visible. If you need to, move the slider on the left of the screen upwards to enlarge the map scale.
4. Click on the hand below the slider. When the hand is active (highlighted in blue as shown in the screenshot below), you can pan the map by left clicking and holding down the button while moving the cursor. Pan to position the map so wetlands of interest are visible.
5. When the map is positioned where you want it, click the "Identify" button at the top of the map screen to make it active (as shown in the screenshot below).

- With the “Identify” button active, double click any wetland polygon (any colored area), it will be outlined in red—as shown in the screenshot below—and the wetland's information box will appear, as is shown for a “Drainageway” wetland east of Beluga Lake in Homer.
- If the “View Photo” button is active (not dimmed out) in the wetland's information box, click on it to see a photo of the outlined wetland. The “View Photo” button is shown as active in the screenshot below, clicking on it from the Mapviewer opened the photograph shown in the lower left corner below.
- Click on the “More Info” button in the wetland information box to access a complete description of the wetland type, or *map unit* (in this case, the wetland map unit is DW42), including additional photos, map unit soils, associated plant communities, and more. (The “More Info” button in the screenshot below takes you to <http://www.kenaiwetlands.net/mapunitdescriptions/DW24.htm>.)
- Click on “Function” in the wetland information box for a dropdown list of 16 wetland functions and values. Any function or value provided by the identified wetland will be “active.” Click on an active function/value to learn more about it.



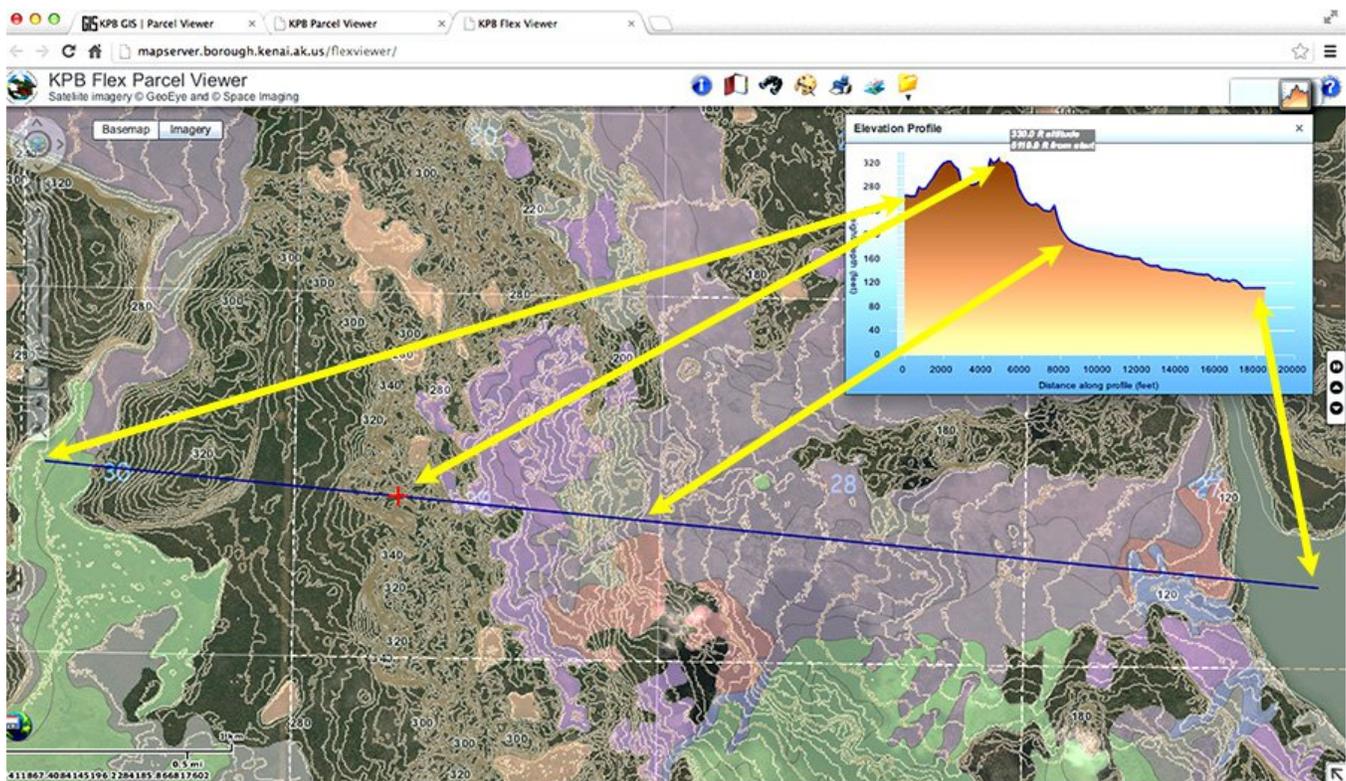
The photo at left was opened by clicking on the “View Photo” button in the information box open on the wetland map above. (The photo link that opened is <http://www.kenaiwetlands.net/images/homer/373.jpg>.) This is a photo of the actual “Drainageway” wetland outlined in red on the map above.

## An example map developed using tools available through the KPB's Flexviewer

The map below was developed using tools available through the borough's Flexviewer, which is found at <http://mapserver.borough.kenai.ak.us/flexviewer/>. Maps such as this can easily be developed by anyone with internet access. Step-by-step instructions for using some key Flexviewer tools are provided below. For a manual on Flexviewer tools, go to <http://www2.borough.kenai.ak.us/GISDept/images/Help/PrintHelp.pdf>.

The map below shows wetlands in a topographic context. The beige lines show elevation contours in 4 ft increments. The elevation profile in the upper right corner of the map corresponds to the blue line that runs from Lakebed wetlands on the west (green polygons) to Tustumena Lake on the east. Yellow arrows show corresponding locations on the map and the elevation profile. Heights on the elevation profile are shown in feet, as are distances along the profile. (Note that vertical heights and horizontal distances are shown at different scales.) The surface of Tustumena Lake—the gray area at the right end of the line—is about 110 feet in elevation.

Besides Lakebed wetlands on its west end, the blue line crosses Kettle wetlands (brightest purple) lying in a trough east of the ridge marked with a +, Drainageway wetlands (gray purple) sloping east towards Tustumena Lake, and Riparian wetlands (blue) flowing into the lake. (The salmon-colored polygon lying north of the Riparian wetland is a Wetland/Upland complex.) Once you create an elevation profile like the one below, placing your cursor at any point along the top of that profile shows a + at the corresponding location on the blue line.



## Instructions for using KPB Flexviewer tools (1) to determine which streams are in the borough's habitat protection district and (2) to look at wetlands in a topographic context

(Note: To protect salmon habitat, permits are required for certain activities within the borough's habitat protection district. This is in addition to state or federal wetland permits that may be needed.)

1. Open the borough's interactive flexviewer at <http://mapserver.borough.kenai.ak.us/flexviewer/> and click on "Agree." Once the map opens, you can choose a background layer from 
2. Click on the address book or binocular tools (shown second and third from left in the toolkit below) to go to a particular location. The binoculars work like the "Find" button discussed in Step 2 under Mapviewer above; the address book works like the "Zoom To" button. In the screenshot below, we clicked the address book and chose *Ninilchik* from the dropdown list that opened. We then zoomed in and panned the map to find the area of interest, as explained under Mapviewer.

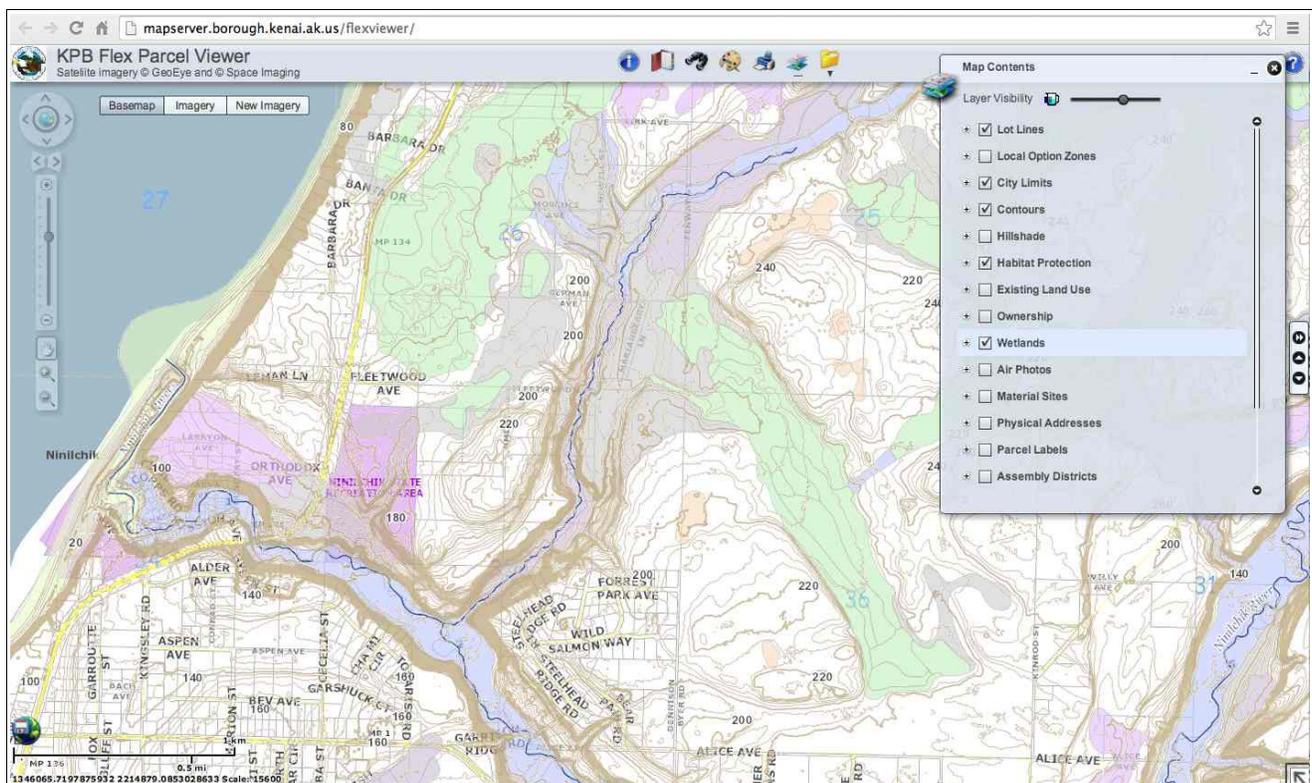


3. Click on the "Map Contents" button (second tool from right). When the Map Contents window opens—as shown in the screenshot below—check the box for each layer you want to see on your map. In the screenshot below, *Lot Lines*, *City Limits*, *Contours*, *Habitat Protection*, and *Wetlands* layers are checked in the Map Contents window. Note: Maps must be at scale of 1:15,600 or larger for contour lines to be visible. If you can't see contour lines, move the slider on screen left upwards to increase map scale.

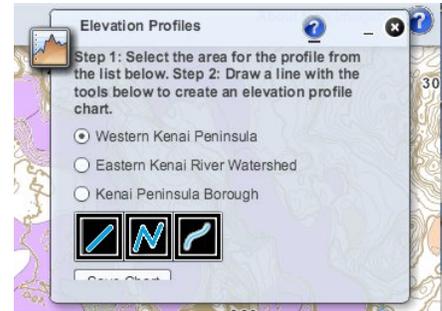
The *Habitat Protection* layer is the layer that allows you to see which anadromous (salmon-bearing) waterbodies are subject to the borough's [Anadromous Waters Habitat Protection Ordinance](#). On parcels within 50 ft of anadromous streams, rivers, and lakes, borough permits are needed for activities that could damage salmon habitats. (This is in addition to federal or state wetland permits that may be needed.)

When the *Habitat Protection* layer is open, a dark blue line marks the location of protected waters. In the screenshot below, you can see this blue line along the Ninilchik River and a tributary flowing in from the north. If you want to check whether a particular parcel is within 50 ft of this line, zoom in until you can see the detail you need.

In the screenshot below, the *Wetlands* layer is highlighted in the Map Contents window. This opens the "Layer Visibility" slider for that layer—the slider at the top of the Map Contents box. The Layer Visibility slider allows you to darken or lighten the highlighted layer by moving the slider left or right.

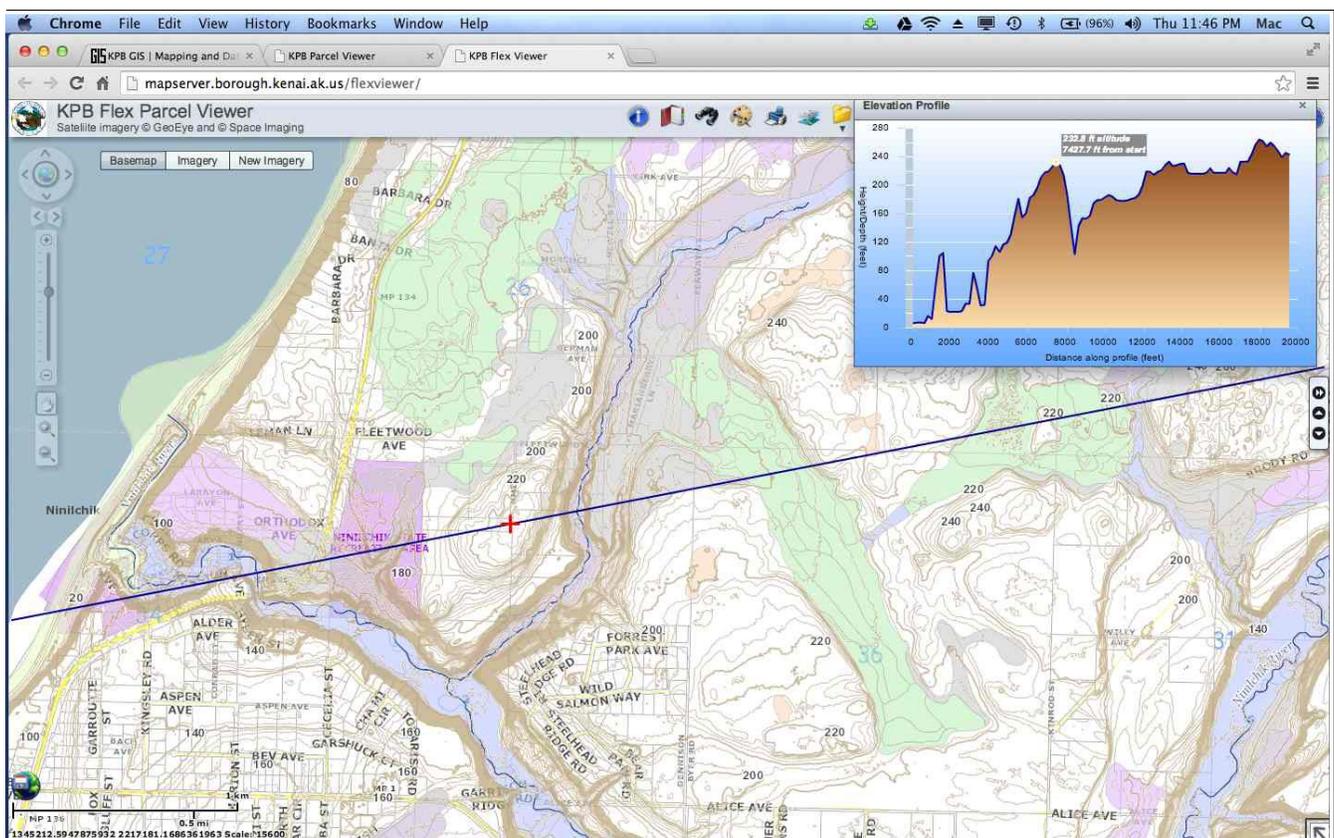


- When all desired layers are checked and visible, close or minimize the Map Contents window by clicking its close or minimize button.
- Click the “Miscellaneous Tools” button—the yellow folder:  Then click on *Elevation Profiles* in the dropdown menu that appears. The Elevations Profiles window will open, as shown at right. Make sure the “Western Kenai Peninsula” radio button is selected.
- Decide whether you want to develop an elevation profile along a straight line, a zig-zag line, or a curvy line. Then click the appropriate button in the Elevation Profiles window. We clicked on the straight line choice, which is the bottom button on the left.
- On the map, draw a line across the area whose elevation profile you want to see. Right click and hold down your mouse button to start the line and release the button where you want the line (and elevation profile) to end. Once your line is drawn, the elevation profile will be generated for the line you drew.



You can see in the screenshot below that we drew a straight line roughly west to east from Cook Inlet to a point about 3.7 miles inland (about 19,500 ft from our starting point, as shown on the elevation profile). Note from the elevation profile how steep the bluff is along the coast and along either side of the Ninilchik River—which flows entrenched in a valley. (But remember that the vertical scale on the elevation profile is exaggerated as compared to the horizontal scale.) Steepness is indicated wherever the 4-ft contour lines are so close together that they merge to form a broad brown line. You can see that the highest elevation between the channel of the Ninilchik River and of its tributary is a knoll with an elevation of about 233 ft above sea level. The Ninilchik River channel has an elevation of about 22 ft.

- By moving your cursor along the elevation profile, you will see a + appear at the corresponding location on the line you drew. Both the elevation at that point and its distance from the start of your line will be shown on the elevation profile. In the screenshot below, you can see that the + shown on the line is located at the top of the knoll mentioned in Step 7. This point is about 7,430 ft east of the line's starting point.



9. If you click the “Identify” button, a window will open giving you the choice of identifying a feature on the map in terms of a point, polyline, rectangle, or polygon. For example, to identify a wetland, choose one of these options and then click in a wetland of interest. The wetland will be identified and links to the wetland's description and its photo (if available) will appear.

You will probably find that the wetland links in Flexviewer are not as quick and easy to use as the “More Info” and “View Photo” buttons accessed with Mapviewer. Also, unlike Mapviewer, Flexviewer does not provide a legend showing what kind of wetlands are represented by different map colors. However, Flexviewer's capacity to display multiple map layers at once—and especially contour lines—can be very useful. Flexviewer's ability to generate elevation profiles is a powerful tool. Profiles can be generated even if your map is zoomed out too far to see contour lines. In fact, the contour layer does not need to be checked to generate elevation profiles.