

# Low-Head Dam Search: Training

## Background:

The purpose of this document is to facilitate the search of low-head dams across the United States. This training document details how to use Google Earth Pro to execute the search. The data points that are found are stored in a .kmz file that can easily be shared.

Figures 1, 2 and 3 contain some examples of low-head dams. If you come across some structure during your search that you think may be a low-head dam, be sure to mark it. We'd rather have some points that are not correct than miss a low-head dam.



Figure 1: Example of a Low-Head Dam



Figure 2: Example of a Low-Head Dam



Figure 3: Example of a Low-Head Dam

To reiterate, there may be times when you are unsure if the point is an actual location. We would rather have more points than less, so, when in doubt, mark it and move on.

## Steps:

1. Change Settings in Google Earth Pro
2. Create a Places Folder
3. Search for Low-Head Dams
4. Report and Share Results

## Step 1: Change Settings in Google Earth Pro

It is important that the settings in Google Earth Pro are the same for everyone assisting in the search. Under the Layers pane (Figure 4), turn off everything except 1<sup>st</sup> and 2<sup>nd</sup> Level Administration Borders and Terrain. It is also easier to use the data points if the coordinates are recorded in decimal degrees. To

make this switch go to options under the tools ribbon as shown in Figures 5 and 6 and select decimal degrees.

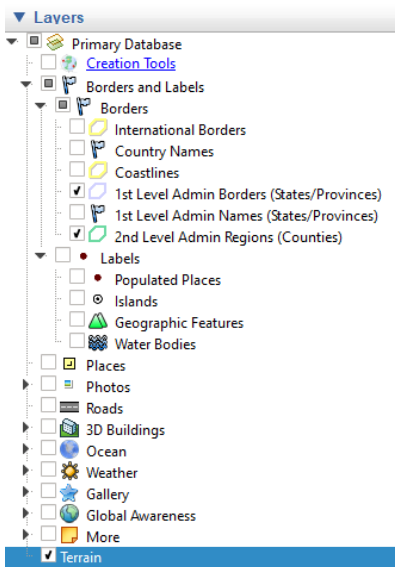


Figure 4: Google Earth Layers

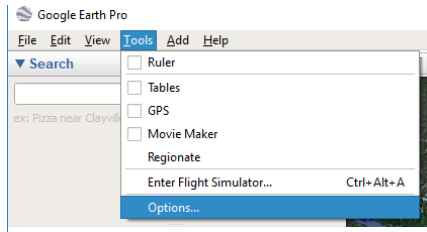


Figure 5: Google Earth Pro Tools Ribbon

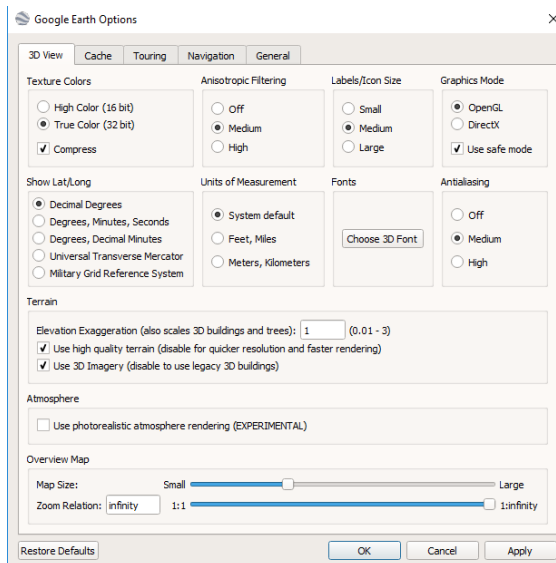


Figure 6: Google Earth Options

## Step 2: Create a Places Folder

The next step will help keep all the files and points that are found together. Right click My Place in the Places pane select Add and then folder (Figure 8).

Name the folder according to your desires. Suggestions include the state or county name that is currently being searched.

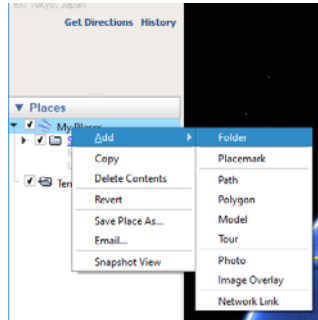


Figure 7: Add Folder to My Places

## Step 3: Search for Low-Head Dams

The search process utilizes two tools in Google Earth Pro; the pin tool and the path tool (Figures 8-9). The path tool will help keep track of which streamlines have already been searched. The pin tool will contain the coordinates and view of every location that you find.

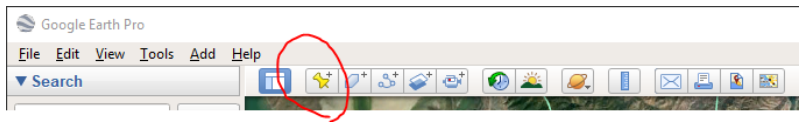


Figure 8: The Pin Tool

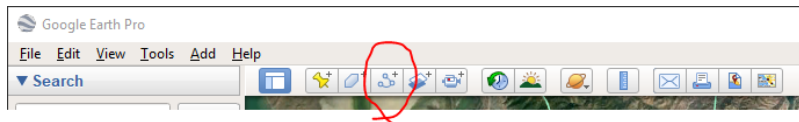


Figure 9: The Path Tool

When the path tool is being operated the mouse is ineffective to scroll through the map. Therefore, the arrow keys or the "W" "A" "S" and "D" can be used to move through the map. Be sure to zoom to an appropriate level that you can clearly see the river or stream you are searching (Figure 10).



*Figure 10: Example of Path and Point Tools at an Appropriate Zoom*

There are instances in which the current imaging used for Google Earth are not effective because of shadow or foliage restricting the view of the waterway. If this occurs, you can use the historical imagery tool to cycle through older images to try and get a clearer or better image of the area (Figure 11).

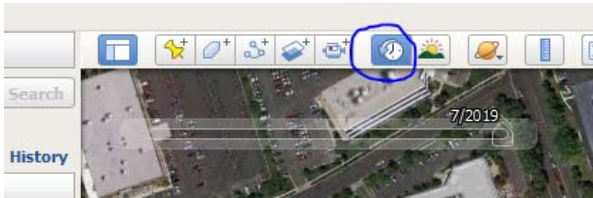


Figure 11: Historical Imagery Tool

#### Saving the File

Once you are done searching, either temporarily or permanently, save the folder by right clicking it and selecting Save Place As. Saving it as a kmz file will allow you to share your progress with other people. If you do not delete the folder from the My Places section of the Places Pane in Google Earth Pro it will remain on your computer even after you have exited the program. However, remember to save the file regularly to ensure that you do not lose any progress.

#### Step 4: Report and Share Results

Once the search has been completed, the final kmz file can be used to check each location to verify that it is a low head dam. Double clicking the pin in the Places pane of Google Earth will automatically take you to that location as well as the zoom that was used when the pin was created. This will allow for you or others to easily check the potential locations. Also, the file may be shared with any people that require or request the information.

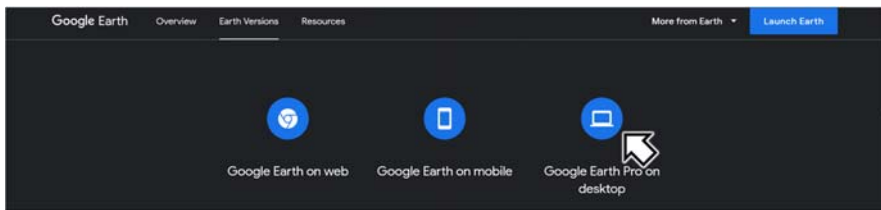
## Detailed Process

Steps 1 through 4 are described in detail below:

### Step 0: Install Google Earth Pro

0-1. Launch a web browser and visit the website: <https://www.google.com/earth/versions/>

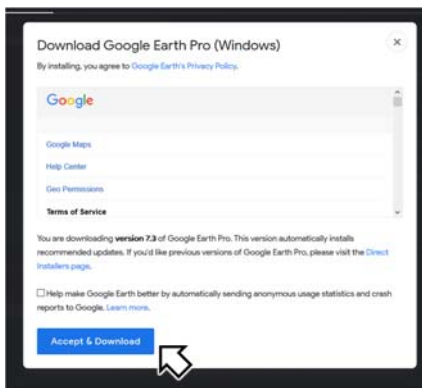
0-2. Click "Google Earth Pro on desktop"



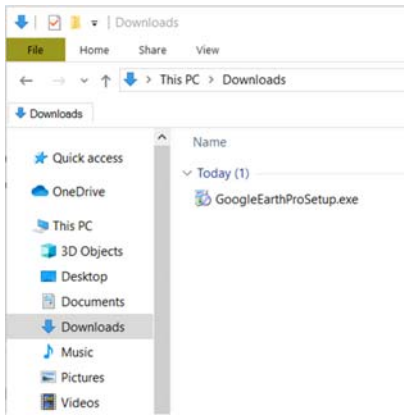
0-3. Click "Download Earth Pro on desktop"



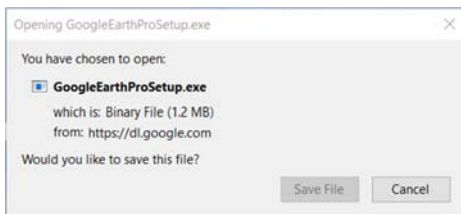
0-4. You may or may not check "Help make Google Earth better ...," then click Accept & Download"



0-5. Depending on the settings of your browser, the file may be automatically saved in the “Download” folder



Or you may specify the folder to save the file



0-6. Double-click the downloaded file “GoogleEarthProSetup.exe,” click Run, and follow the instructions to install Google Earth Pro. Once the installation is completed, you may see the window with the message “Installation complete,” and Google Earth Pro may launch automatically.

### Step 1: Change Settings in Google Earth Pro

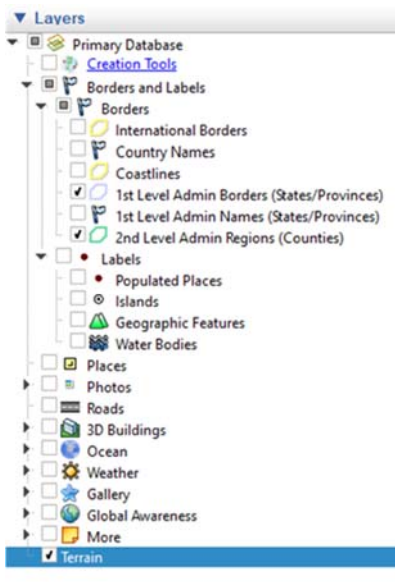
#### 1-1. Launch Google Earth Pro:

1-1a. Click the Windows Button (typically at the lower left corner of the desktop).

1-1b. Type “Google Earth Pro” to search for it.

1-1c. Click “Google Earth Pro.”

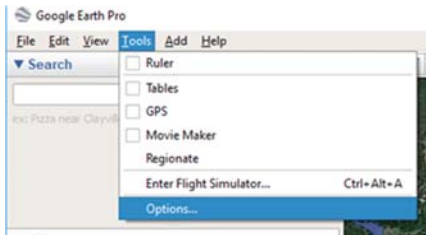
1-2. Hide most of layers: In the “Layers” pane, uncheck every item except “1st Level Admin Borders (States/Provinces)” and “2nd Level Admin Regions (Counties),” and “Terrain.”



1-3. Show decimal degrees:

1-3a. Click “Tools” in the menu bar at the top of the window.

1-3b. Click “Options,”

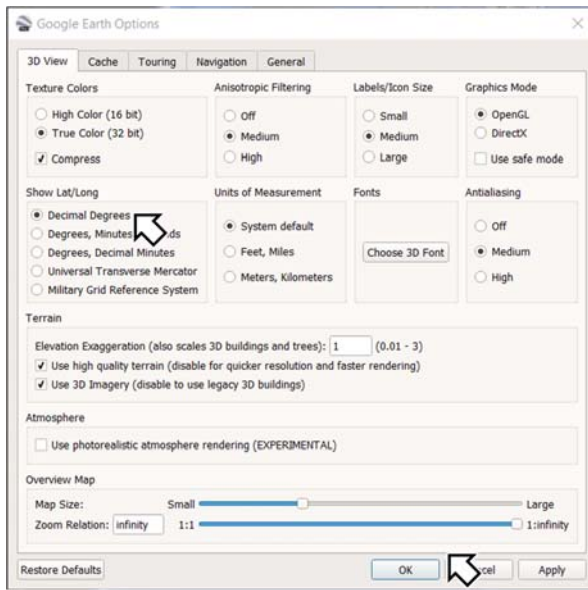


1-3c. Click “3D View” tab

1-3d. Click “Decimal Degrees” under “Show Lat/Long,”

1-3e. Click OK.





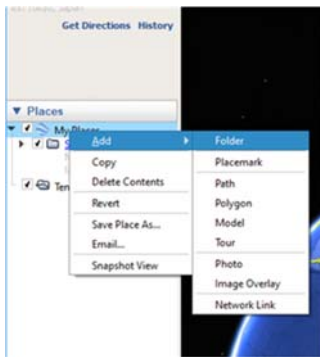
## Step 2: Create a Places Folder

### 2-1. Add a folder to My Place:

#### 2-1a. Right-click "My Places" in the "Places" pane.

#### 2-1b. Click "Add."

#### 2-1c. Click "Folder."

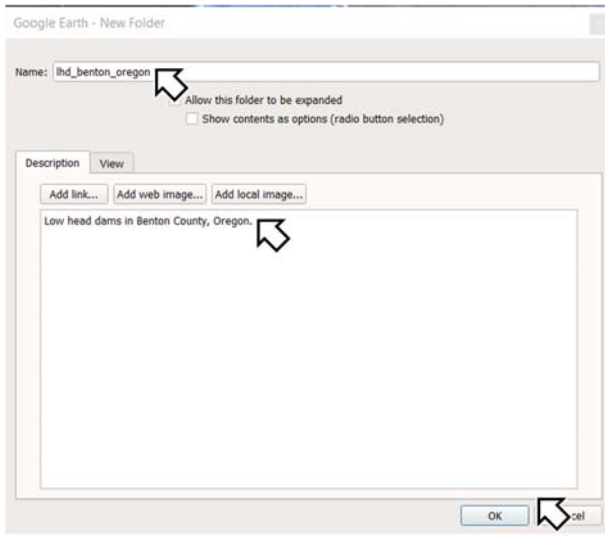


#### 2-1d. Enter the name: for example, "lhd\_benton\_oregon."

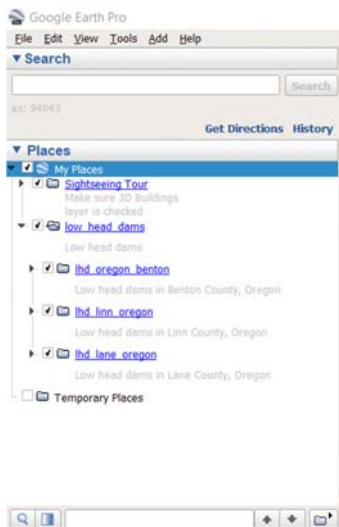
2-1e. (Optional) Click the “Description” tab

2-1f. (Optional) Enter the description: for example, “Low head dams in Benton County, Oregon.”

2-1g. Click OK.



2-2. (Optional) Organize folders in My Place: right click an existing folder to add a new folder to the existing folder; drag an existing folder and drop it in another existing folder to move 2nd existing folder inside the 1st existing folder.



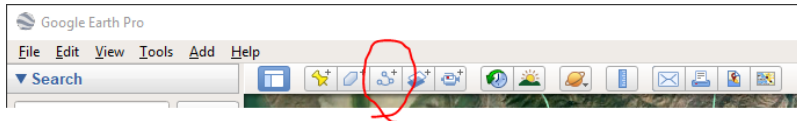
### Step 3: Search for Low-Head Dams

3-1. Navigate to the river to search: Drag the map to move on the map; click “+” or “-” (at the top right corner of the window) to zoom in or out; alternatively, you may use middle scroll of your mouse to zoom in or out. For example, start from the downstream end of the river in the county.

3-2. Add a path to the first low head dam:

3-2a. Click the folder under “My Places” in the “Places” pane.

3-2b. Click the “Add Path” button.

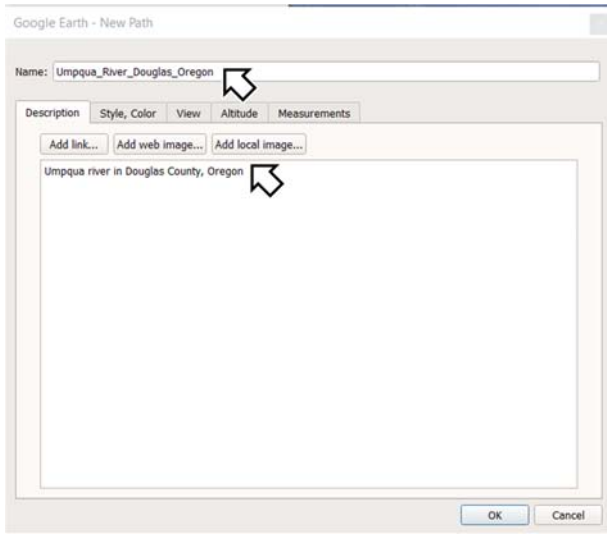


3-2c. Enter the name: for example, “Umpqua River Douglas Oregon.” The name is arbitrary. If you do not know the name of the river, you could use a generic name: for example, “River1 Douglas Oregon.”

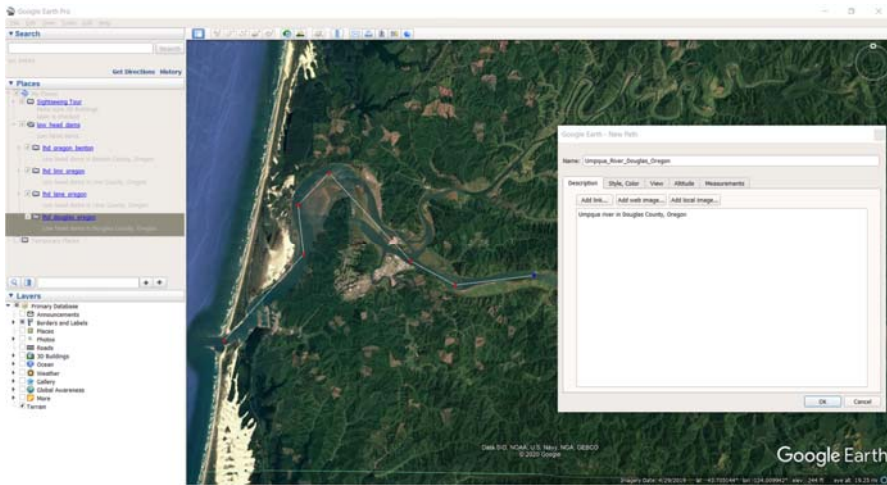
3-2d. (Optional) Enter the description: for example “Umpqua River in Douglas County, Oregon.”

3-2e. Do not click “OK” yet. If you have accidentally clicked “OK,” right-click the path in the folder in the “Places” pane, and click “Properties” to resume.

How do people know which river to search? Do they know which river has been already searched? Should we also share the paths already searched, in addition to placemarks?

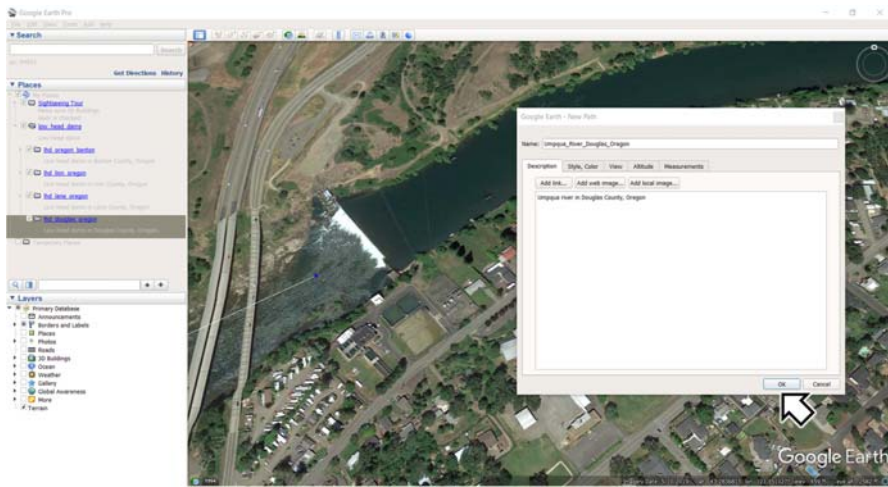


3-2f. Click on the river as you move upstream using arrow keys (or W, A, S, and D keys) until you find the first low head dam. You can still use the “+” and “-” buttons on the window or middle scroll of your mouse to zoom in and out. Right click anywhere on the map to remove the previous point if you accidentally placed a wrong point. This is just to mark the river you have already searched, so the path does not need to exactly follow the river.



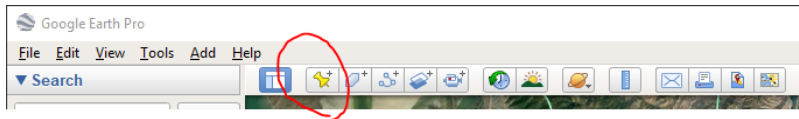
3-3. Add a placemark of the first low head dam: If you have reached the upstream end without finding any low head dam, click “OK” and go back to step 3-1 above to search a different river. If you have found the first low head dam,

3-3a. Click OK in the “New Path” window.



3-3b. Click the folder under “My Places” in the “Places” pane.

3-3c. Click the “Add Placemark” button at the top of the window.

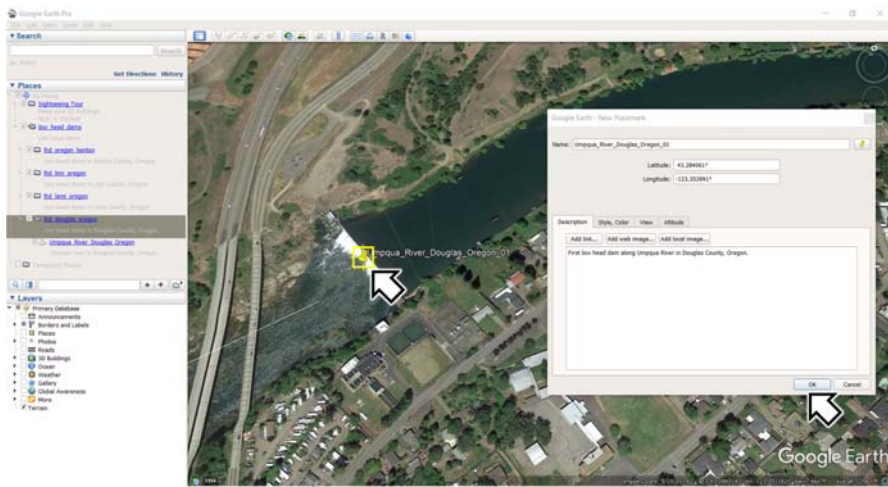


3-3d. Enter the name: for example, “Umpqua River Douglas Oregon 01.” The name is arbitrary but needs to be unique to save in a folder on your computer later.

3-3e. (Optional) Enter the description: for example, “First low head dam along Umpqua River in Douglas County, Oregon.

3-3f. Drag the placemaker (yellow pin) to the low head dam. It could be hidden behind the “New Placemark” window.

3-3g. Click “OK” in the “New Placemark” window.



3-4. Continue the path to the second low head dam:

3-4a. Right-click the path in the folder in the "Places" pane.

3-4b. Click "Properties."

3-4c. Continue the path until the second low head dam as described in step 3-3 above.

3-4d. Add the placemark for the second low head dam as described in step 3-4 above.

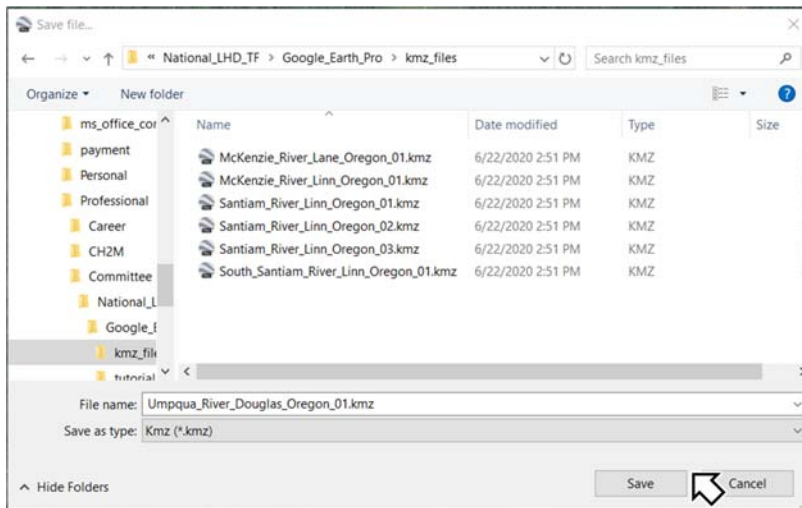
3-4e. Repeat until there is no low head dam upstream.

3-5. Save the placemarks:

3-5a. Right-click a placemark in the folder in the "Places" pane.

3-5b. Click "Save Place As."

3-5c. Click "Save."



3-6. Save the paths:

3-6a. Right-click a path in the folder in the "Places" pane.

3-6b. Click "Save Place As."

3-6c. Click "Save."

3-7. Go back to step 3-1 to search a different river.

Step 4: Report and Share Results

Attach the \*.kmz files to an email, and send the email to [X@Y.Z](mailto:X@Y.Z).

Remove them and change "3-7" to "3-6" if we do not need to share paths.

To be updated once we know the email address to use.