ARMCHAIR ARCHAEOLOGY, GETTING STARTED

HOW TO DOWNLOAD QGIS: GO TO:

- https://www.qgis.org/download/
- PICK YOUR PLATFORM
- DOWNLOAD
- INSTALL QGIS FOR YOUR PLATFORM
- OPEN QGIS

TWO WINDOWS

- LAYERS WINDOW, UPPER LEFT
  - SHOULD BE BLANK.
- BROWSER WINDOW, LOWER LEFT
- SHOULD HAVE “ORACLE” AT TOP OF LIST.
  - CLICK ON ArcGis REST Servers.
  - Click on USA Topo
  - USA Topo Maps should appear
  - Click on USA Topo Maps and drag to Layers window in upper left.
  - Map should appear.

Still in Browser Window

- Click on XYZ Tiles
  - Click on Google Satellite
  - Drag to Upper left Layers Window.
- Click on OpenStreet Map
- Drag to Upper Left Layers Window.
- You Should have Open Street Map with USA Topo Maps with Google Satellite, all with check marks.
  - Click on Google Satellite and USA Topo Maps to unselect them.
  - You should see Richmond to VA Beach.
  - Top of page should have an magnifying glass symbol. Click on it.
  - When it highlights, you can now zoom. Alternately, you can pinch and go.

Get used to moving by:

- Using the magnifying glass + and -.
- Use the pinch on a tablet, etc.
- Switch between the street map, the satview and the USGS Topo by clicking on the box to the left of the description.
- Remember the program will not change until you select the HIGHEST on the layer list on the left.
- You can move the layers up and down.

Save the project

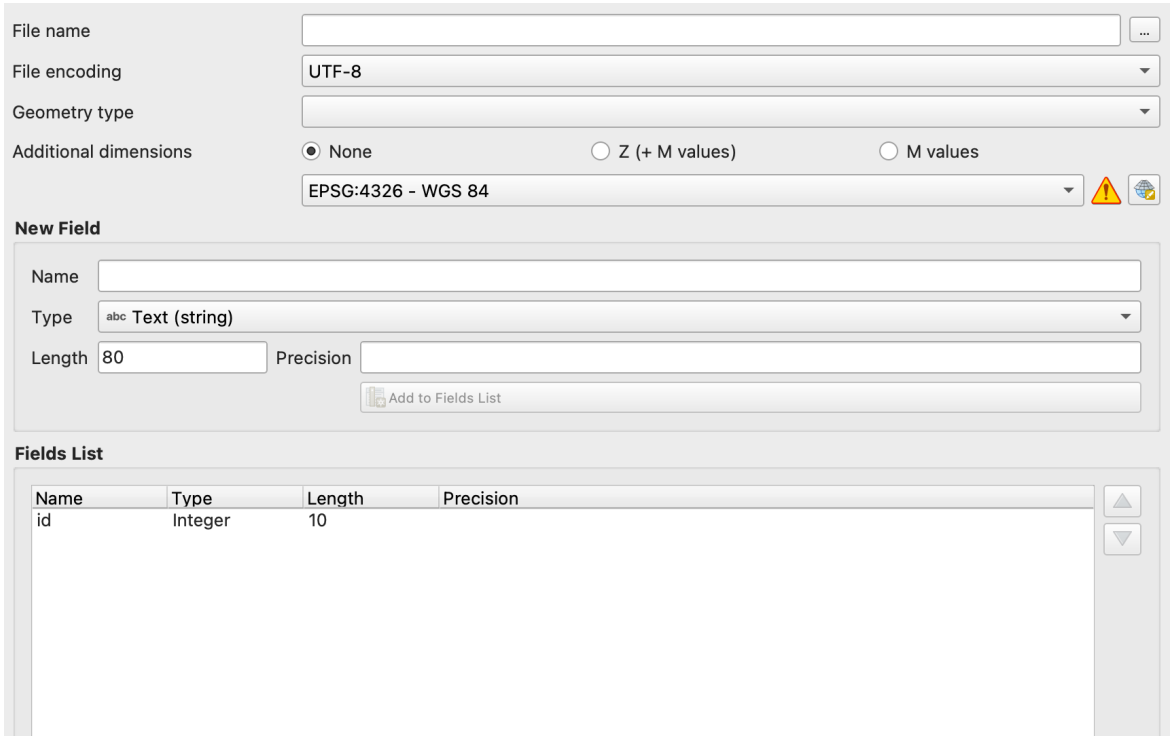
- Go to File and Save or Save As.
- That’s the baseline file for all projects.

Adding A Layer

- Top menu bar: Create Layer:
- New Shapefile Layer

Create Shapefile: Click on Layer:Create Layer: New Shapefile Layer. This window will appear:

Click on 3 dots in upper right. Save file name in new folder.
Under Geometry, choose line string for linear, points for points, polygon for polygon. That layer can add only one of those so for linear use line string.
Add new fields as needed for names of the feature and hit add to fields list.
Hit OK, and it should appear in the Layers window at the top.



Populating a Layer

- Click on just created layer in Layers Window
- Click on yellow pencil in second menu bar line.
- Click on 2nd lit object to right of pencil (Add Line Feature).
- Click on first point to be mapped, move cursor to second point, click, repeat to end and double click. Fill out the form. Hit enter.
- Repeat.
- When finished, click on the yellow pencil and save the changes.

Recording the site with DHR/VCRIS

- Sign in to VCRIS
- Add shapefile when prompted.

- The added shapefile is exported from QGIS as a condensed file and uploaded into VCRIS.

- Finish the form and submit to DHR.

Getting Data Sources
All of those listed below can be used.

- Digital Elevation Models
- LIDAR
- Geo-tiff maps
- VGIN files
- State Agency files
- US Gov. Files

- The most useful will be DEM's and Geo-tiff maps available from the National Map website at https://apps.nationalmap.gov/downloader/#/

Navigating The National Map

- https://apps.nationalmap.gov/downloader/#/
- On the right is a map of North America. If you click on one spot, the map will zoom in one step, and multiple clicks will get you to your Area of Interest (AOI).
- On the left are two main categories. Map and Data

Retrieving Historical Topo Maps

- Click on the box for Historical Topographic Maps.
- Choose the desired map under Data Extent that appears. Note that the file format default is GeoTIFF.
- Hit the blue Search Products button above.
- The left window will show thumbnails of all of the available maps that cover the area in the window on the right.
- Pick the maps you wish to download. Hit the download link on the right side of the left window for each map desired.
- Put these into a new folder called Historic Topo Maps.

Adding GeoTIFF maps to QGIS

- Once downloaded and placed into the Historic Topo Maps folder, click on the file, drag it onto the QGIS icon on the desktop and it will appear where it should be in space.
- Select the USA Topo Maps Layer in QGIS.
- Turn off the imported map to see that it is where it should be.
- Turn the imported map back on.

- You can now select the shapefile layer you have created to input your feature. Refer to “Populating A Layer” to proceed.

Status

- At this point, you should have six layers:
- New Shapefile Layer you've named, for instance, Logging RR
- GeoTIFF image of relevant area
- Open Street Map
- Google Satellite
- USA Topo Maps

- By selecting any layer, you can then drag it up or down in the layers column for ease of use and can also click them on and off as needed.

Words of caution: File Locations

- QGIS and other variants of GIS programs are file path dependent. In other words, once imported into QGIS, the program will look for them in the location from which they were imported into the program. If moved, the program won't know where to find them. Creating a file for historic topo maps and placing downloaded maps in it will ensure you don't waste time later.
- Front-end loading the organization of the data files before you use the program is vital for fast and efficient use of your time.

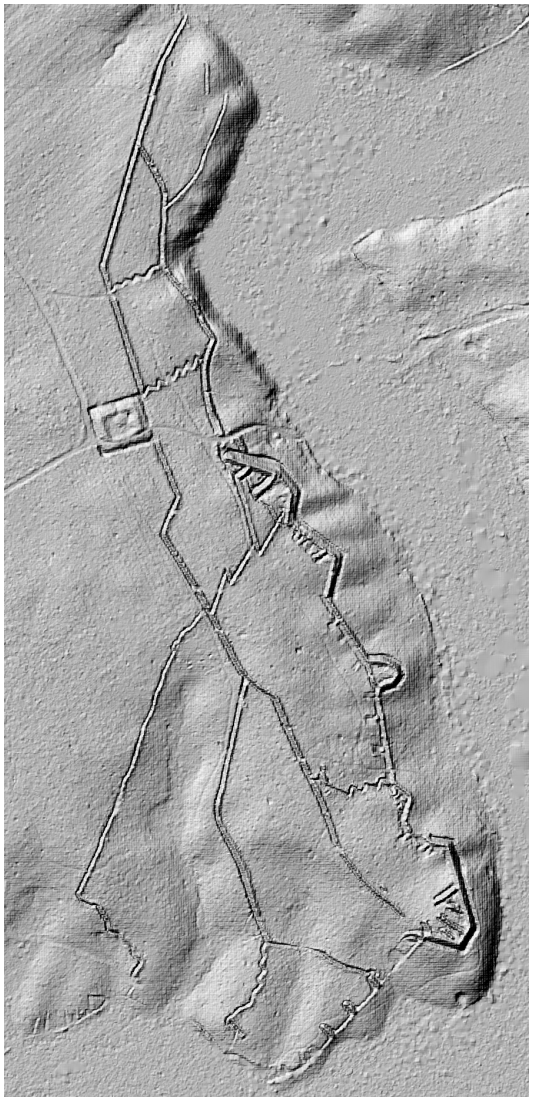
At the National Map Site: Working with a Digital Elevation Model (DEM)

- Click on the box for Elevation Products (3DEP)
- Under Subcategories, Select the box for 1 meter DEM
- De-select all of the others in Subcategories
- Click on the blue box in the upper left called Search Products
- A window will appear with thumbnails.
- Hover the cursor over a thumbnail. In the window on the right, the area of coverage will darken.
- If it covers your area, click on the download link to the right of the thumbnail.
- The file will download. Add additional files to cover your entire area.

Loading DEM's Into QGIS

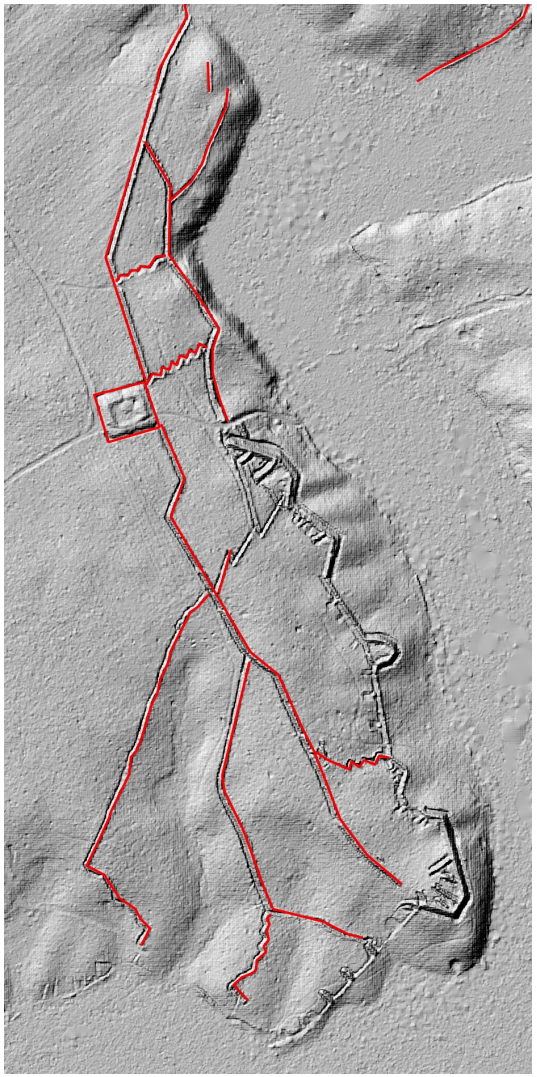
- Place the files in a folder called DEM Files or similar.
- Select all of the files that pertain to your area of interest.
- Drag and drop onto the QGIS icon.
- Each file will appear in the layers window as a separate file.
- Select one file and double tap it.
- The third symbol on the left of the resulting window is Symbology.
- The right side of that window will have "Band Rendering". Click on that and change the type to "Hillshade"; and change the Z factor to 4; then click apply at the bottom of the window.

Here's An Example.



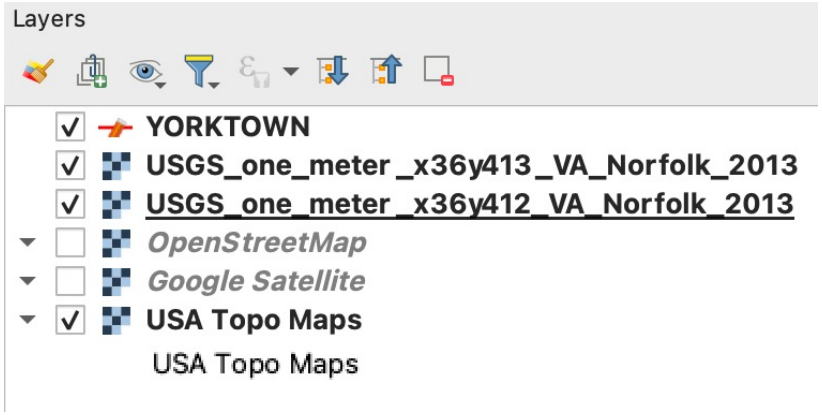
Raw Image showing linear earthworks, gun emplacements, a bastion and a fort.

Raw Image showing partial traces.



Getting To Work

- Your layers window should look like this:



= Layer that holds created tracings/shapefiles
= DEM file
= Dem file

Words of Advice

- Point 1: QGIS is daunting
- Point 2: QGIS is as dumb as a plank in that it works in a very linear process and does not look elsewhere unless instructed.
- Point 3: QGIS will do exactly what you tell it to do
- Point 4: QGIS will CONTINUE DOING THAT until you tell it otherwise.
- Point 5: Always store downloaded maps, shapefiles, DEM's, etc. in a single file for each. QGIS will look in that folder ONLY when it loads. If it can't find it, you will get a window saying it can't find files.

Areas That Need Digitizing 1

- Military earthworks. Henrico County has been digitized. Chesterfield has been partially digitized. None of the others have been. This is area begging to be done. I turned over the earthworks shapefiles for Henrico to the County to be put into their GIS system about 5 years ago. Now, each developer who uses the system knows that there are earthworks within a property and can plan ahead for them, as can the county. All of that preserves earthworks and helps DHR in its mission.
- For Civil War earthworks, consult the 1867 Michler maps from the Library of Congress. These show 99% of the earthworks where mapping took place. Use them as a guide to search DEM's for traces.
- There are 17th century, Revolutionary War, War of 1812, Civil War and WWI training earthworks extant in VA that desperately need mapping.

Areas That Need Digitizing 2

- Railroads, primarily narrow gauge. Some were built for logging and then abandoned. Some were built for mineral extraction and then abandoned.
- I have shapefiles for the standard gauge from various sources that ended up owned by the major RR companies. Some of these were later abandoned. The vast majority of the narrow gauge RR's are not mapped. Some have paper maps done by RR Historical Societies.
- We are leading the way into digitizing the past.

Areas That Need Digitizing 3

- Industrial Sites. These include iron smelting sites, coal mine sites, and milling sites of all stripes.
- Iron Sites have the stack, but the layout of the facility, roads to and from ore sources, internal roadways, building locations, etc. all need to be traced in detail.
- Coal Mine Sites have roads, tracks, tramways and railways to move the coal from the mine. The mines have large holes for the main shaft along with ventilation shafts at intervals along the coal face. All of these are visible in DEM's. VA has the oldest coal mines in the USA.
- Mills have the dam, headrace, mill seat and a tailrace to be traced. Some of the headraces can be a mile long and show well in DEM's.

Areas That Need Digitizing 4

- Civil War Maps by Gilmer, Hotchkiss, Humphries, Michler and a few others. Download detailed battlefield areas from the Library of Congress, establish a shapefile layer using LineString and trace the earthworks in detail.
- Use those same maps to create a layer for structures as a point file. Add the names where they exist.
- Use those same maps to trace roadways.
- These maps are the first to show terrain, individual structure locations, industry and so forth. They also show where invisible people lived, ie African-Americans. Maps can be used to identify households from the 1850's into the 20th century by using the US Census.