GIS Soils Refuge Project

Purpose:
Write a brief description of why this project is happening below. Why is this project happening? What are the goals?

- The goal of this project is to provide soil data for each refuge's approved and interested boundary (13 refuge) that my supervisors are managing:
    - Ankeny NWR- zone 10
    - Baskett Slough NWR- zone 10
    - Billy Frank Jr. Nisqually NWR- zone 10
    - Conboy Lake NWR- zone 10
    - Grays Harbor NWR- zone 10
    - Hakalau Forest Kona Unit NWR (Big Island)- NAD 83 zone 5
    - Hakalau Forest Unit NWR (Big Island)- NAD 83 zone 5
    - James Campbell NWR (O'ahu)- zone 4
    - Julia Butler Hansen Refuge- zone 10
    - Lewis and Clark NWR- zone 10
    - Toppenish NWR- zone 10
    - Willapa NWR- zone 10
    - William Finley NWR- zone 10
- In total there are 66 layers. Each refuge has an approved boundary, approved soil data boundary layer, interested boundary, interested soil data boundary layer, and soil data downloaded from the USDA Web Soil Survey website.

Scope / Major Project Activities:
What are the major parts of this project? List out the high-level steps, activities, or stages of the project, and give a brief description for each.

Activity	Description
Finding and downloading soil data for each refuge from the United States Departmnet of Agriculture (USDA) Natural Resources Conservation Service website: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx Maximum of 100,000	For the 13 refuges, I located the specific address that each refuge is located to then put into the USDA website to pinpoint the location of the refuge on their map. I made sure to align maps from the interested and approved boundaries with the USDA website to define the area of interest within a 100,000 acre rectangle. If refuges were greater than 100,000 acres apart I would then create multiple rectangles to download and later use the tool "merge" in Arcmap to combine the soil data. I then downloaded each refuge soil data and upload

acres for the area of interest.	the layers into Arcmap. Once the soil information was in Arcmap, I defined the projection using the "define projection" tool based on the projected coordinate system NAD 1983 and the zone that they were located in based on the World UTM grid map: https://fws.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=b294795270aa4fb3bd25286bf09edc51 I then exported the soil data layer that was of interest into a separate shapefile in the geodatabase refuge.gdb.
Seperating each refuge from the approved and interested boundaries.	I seperated each refuge using the "select by attribute". I identified the refuge that I was interested in by the column ORGNAME and created a layer from it using the selection menu using the layers from: Approved: https://fws.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=dae48a3dcd654e7ea09d386cae052eab Interested: https://fws.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=96898706f83f4df2863297dc20d477f2 I then defined the projection based on the projected coordinate system NAD 1983. I then exported the data into a new shapefile located in the geodatabase "refuge.gdb" for each refuge interested and approved boundaries. **Complications/Challenges:** ● For the Hakalau Forest approved boundaries since there was no column that separated the Kona Unit I used the editor tool to remove vertices to only have the Kona Unit and vice versa. ● For the Hakalau Forest Unit (excluding Kona

	Unit), soil data are separate for the interested and approved boundary. The approved boundary needed me to merge different soil data due to the 100,000-acre spacing. ● Grays Harbor and Willapa refuge soil data do not have soil information for most of the refuge based on the USDA website soil data. ○ Left with areas with no soil information.
Clipping the soil data to the approved and interested boundaries for each refuge	Using the tool "Clip" I added the soil layer for each refuge to the approved boundary and interested boundary for each refuge. I then exported the data onto a new shapefile in the refuge.gdb geodatabase.

This project does not include:
Specify the things that this project isn't responsible for doing (out of scope). For instance, "this project does not involve a summation of 2019 data analysis"

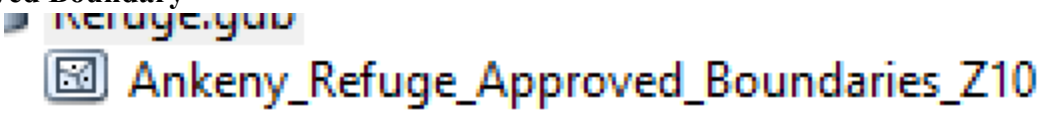
- This project does not include any other refuge.
- Only refuge in Zone 4, 5, and 10 for the projected coordinate system NAD 1983.
- Soil data was only gathered within each refuge's interested and approved boundaries.

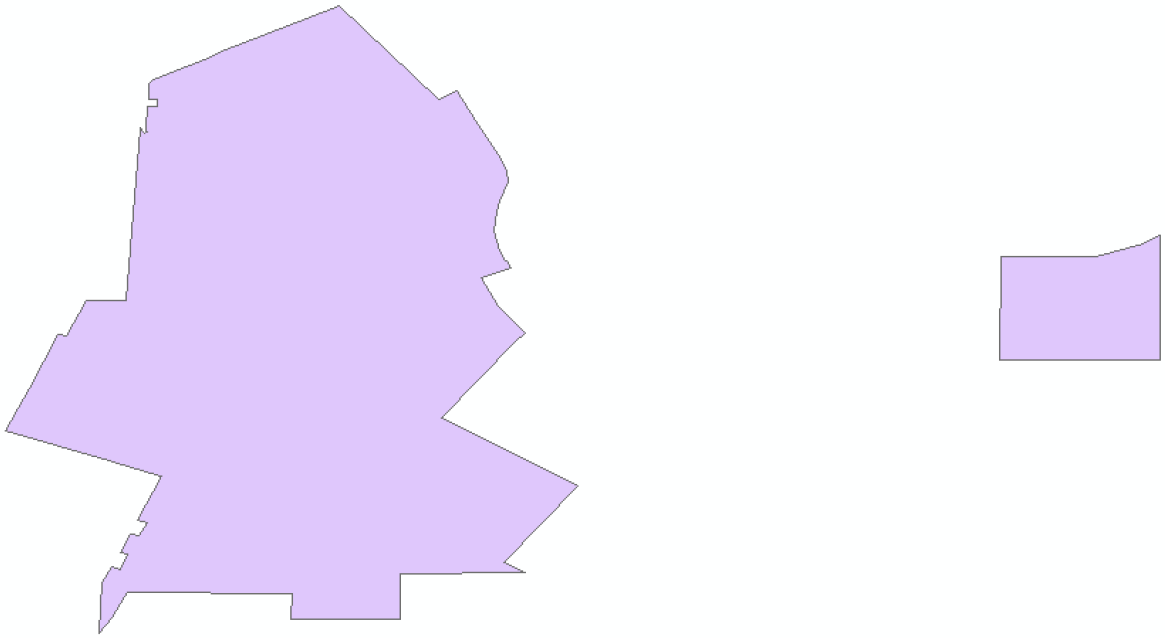
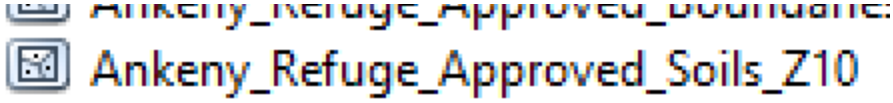
Deliverables:
A specific list of things that your project will deliver.

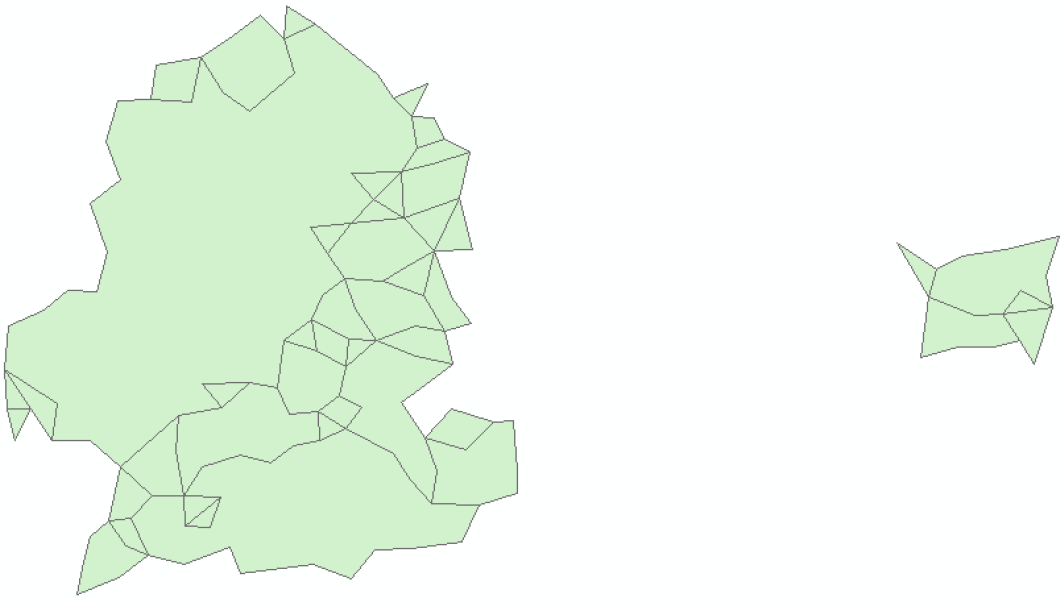
Deliverable	Description/ Details
Approved boundary layer	Approved boundary layer for each refuge.
Approved clipped soil layer	Clipped the soil data to the approved boundary layer for each refuge.
Interested boundary layer	Interested boundary layer for each refuge.
Interested clipped soil layer	Clipped the soil data to the interested boundary layer for each refuge.
Soil data layer	Soil data layer for each refuge that is overestimated to give context.

Refuge Address and Soil Layers

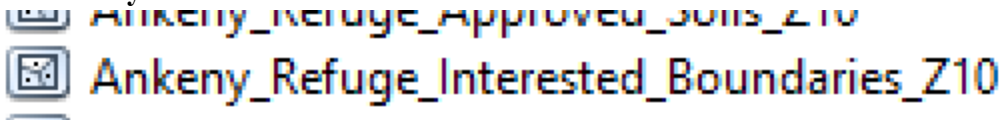
Ankeny NWR- zone 10

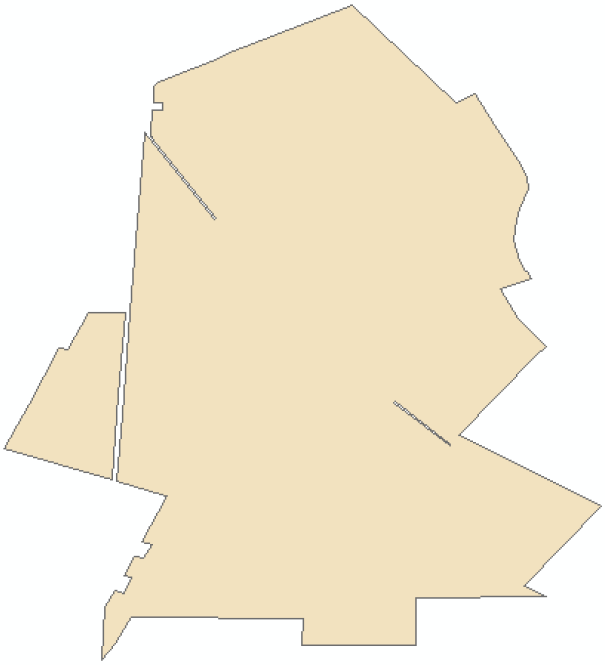
- **Address:**
  - 2301 Wintel Road Jefferson, OR 97352-9758
- **Approved Boundary**
  - 

  - 
- **Approved Soils**
  - 

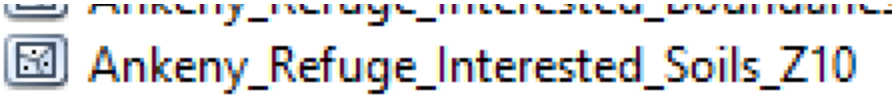


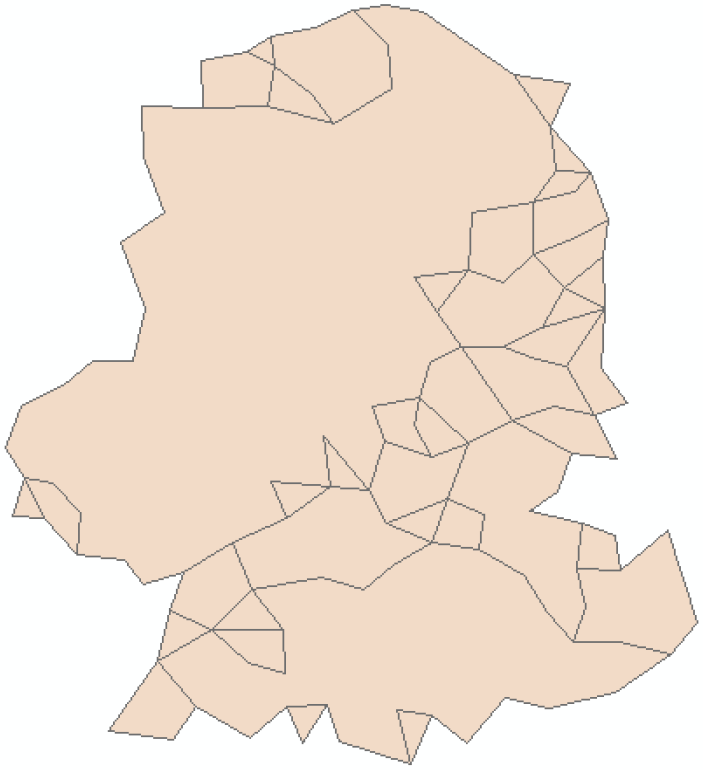
- **Interested Boundary**



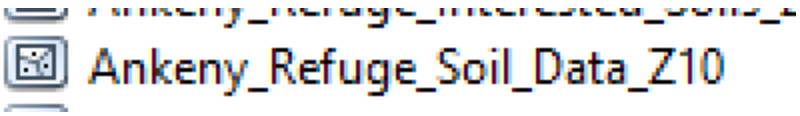


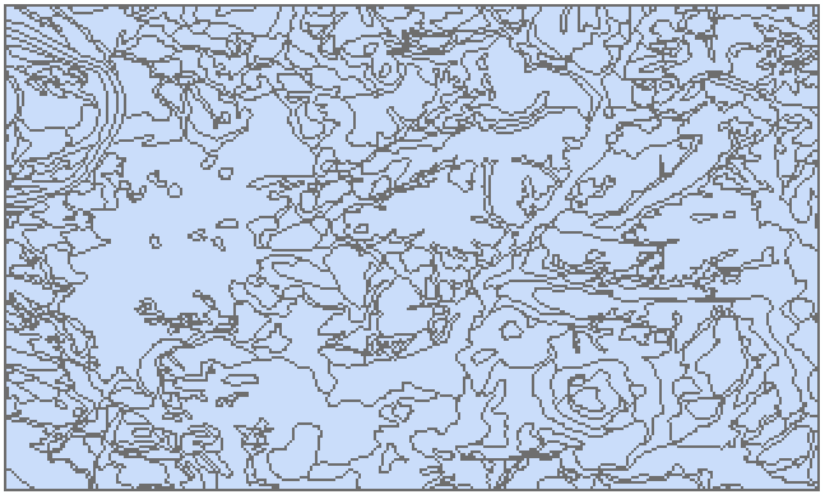
- **Interested Soils**



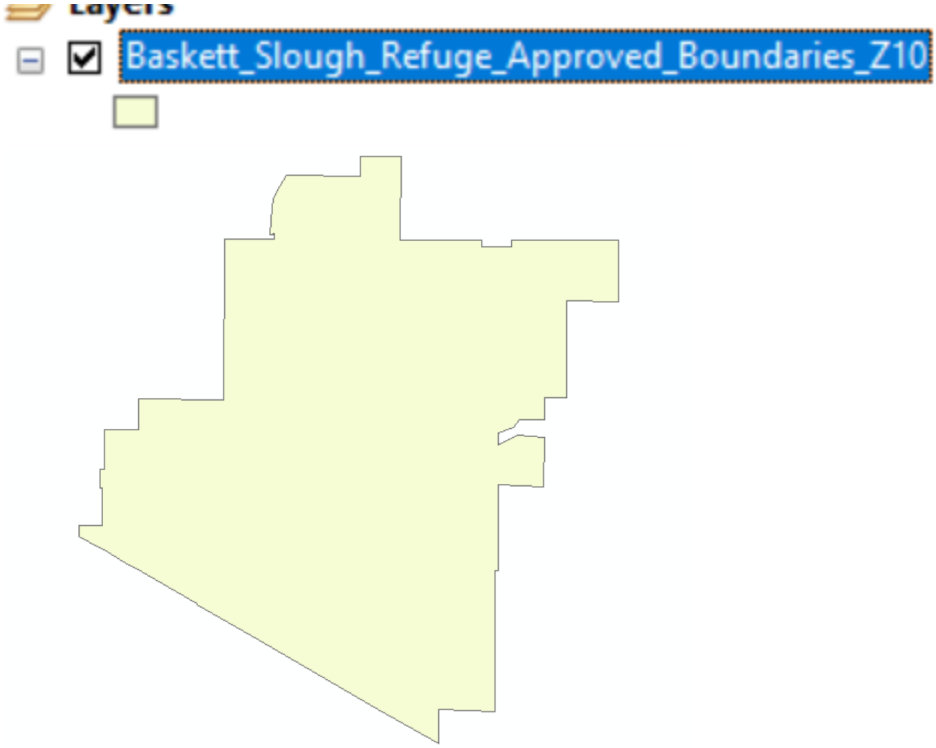


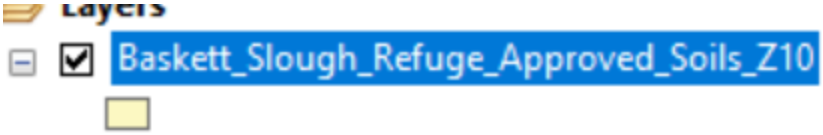
- **Soil Data**

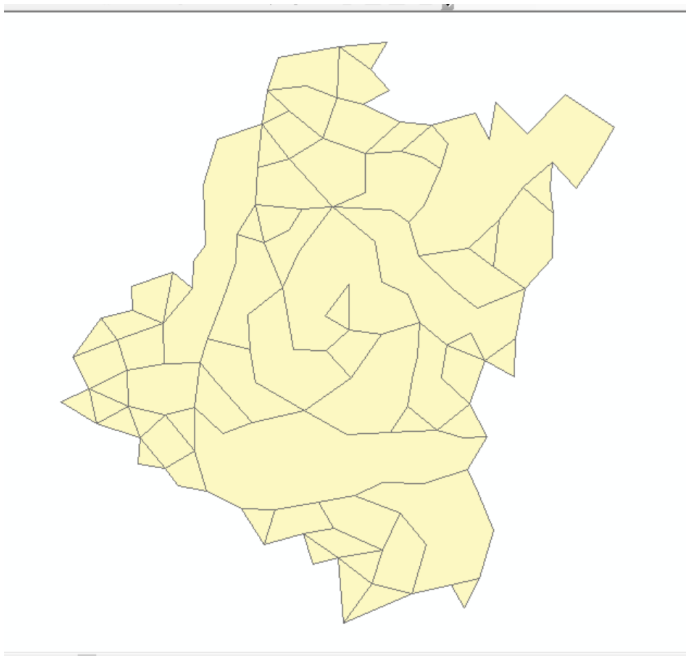


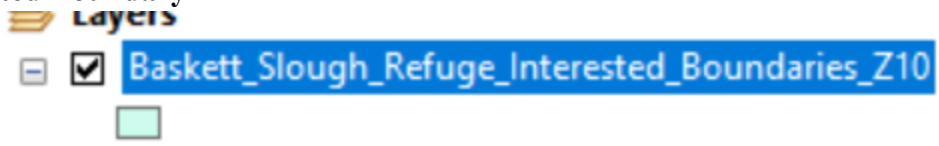


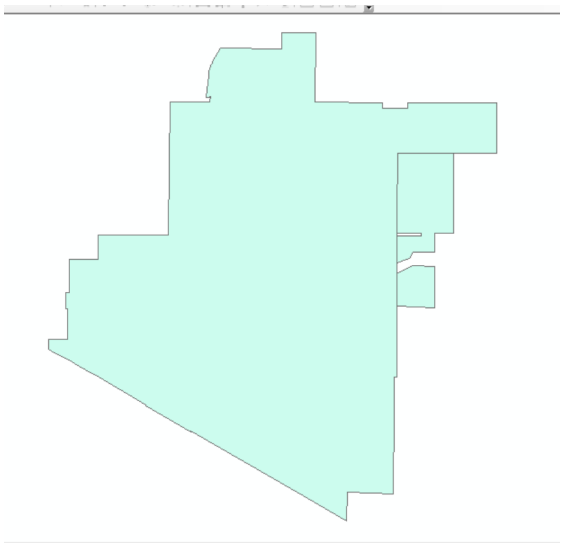
Baskett Slough NWR- zone 10

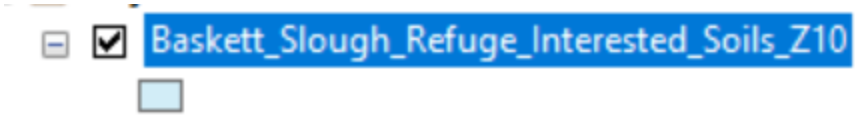
- **Address:**
  - 10995 Highway 22 Dallas, OR 97338-9343
- **Approved Boundary**
  - 

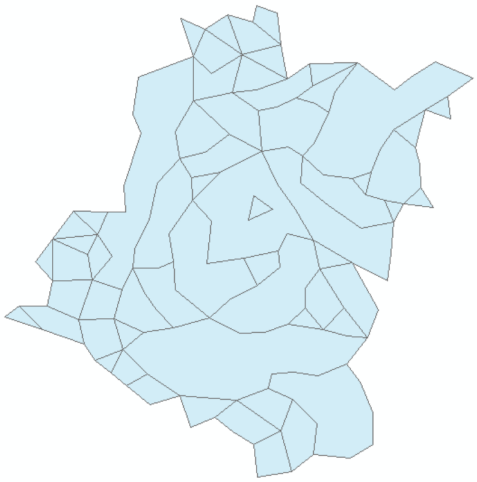
  -
- **Approved Soils**
  - 

- 

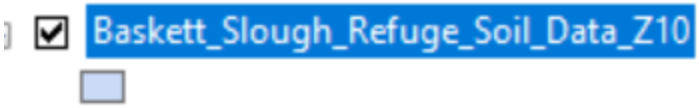
- **Interested Boundary**
  - 

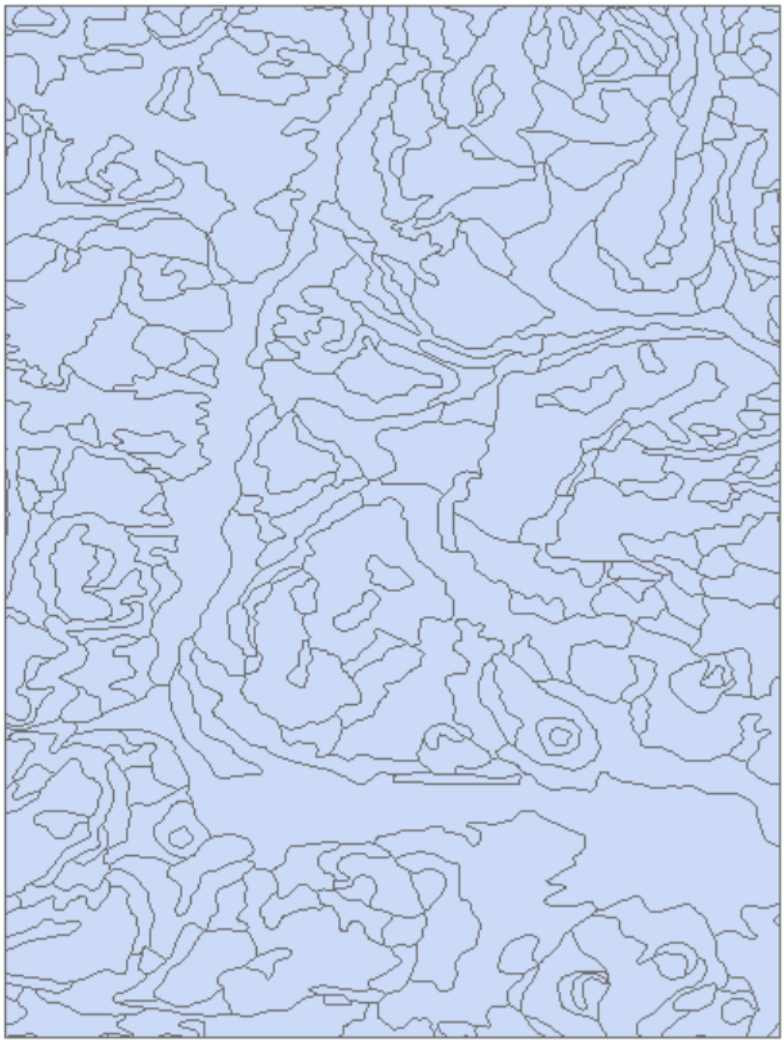
  - 

- **Interested Soils**
  - 



- **Soil Data**

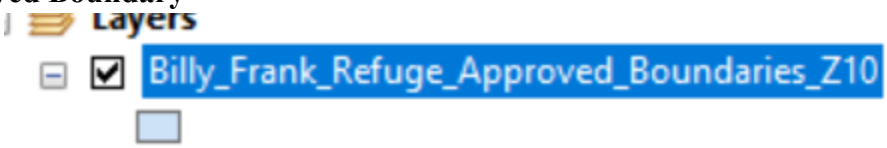




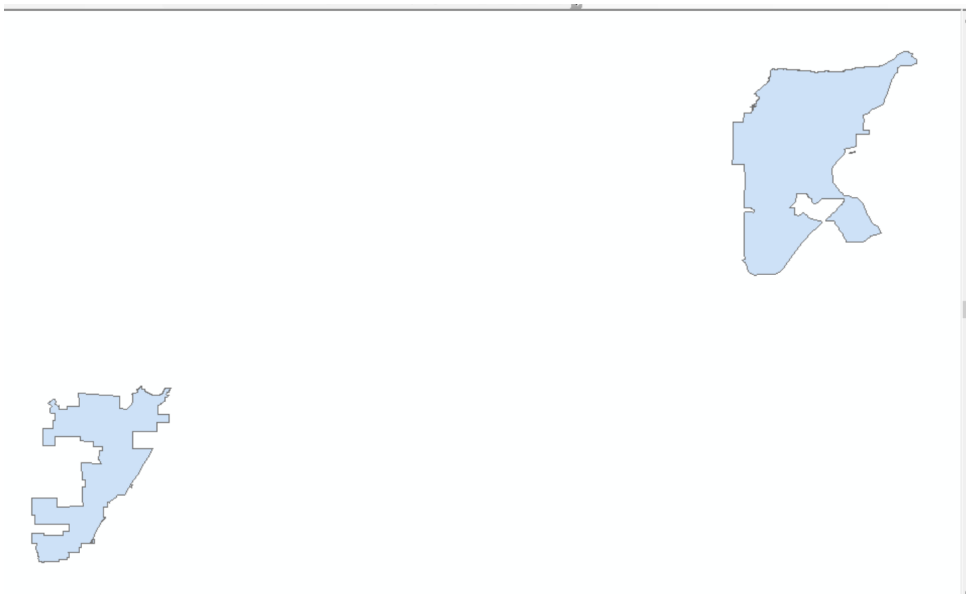
-

Billy Frank Jr. Nisqually NWR- zone 10

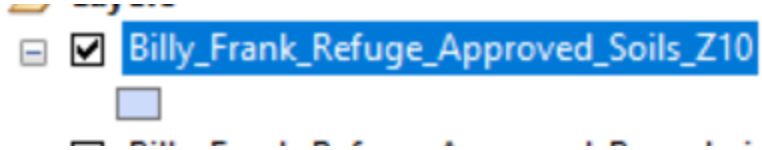
- **Address:**
  - 100 Brown Farm Road Olympia,WA 98516-2302
- **Approved Boundary**



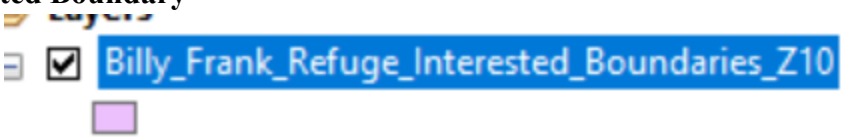
  -

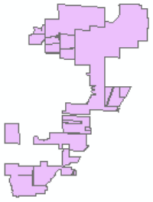


- **Approved Soils**



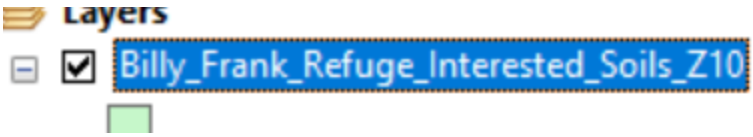
- **Interested Boundary**



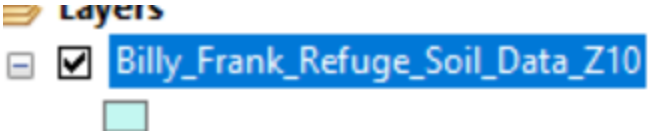


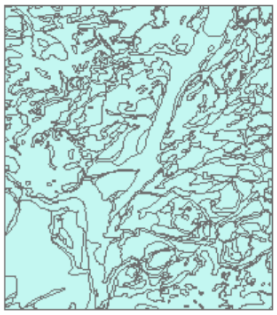
- (Multiple polygons)

- **Interested Soils**



- **Soil Data**

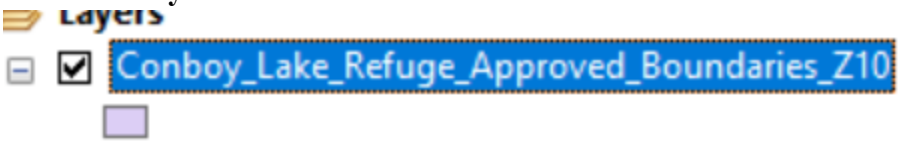


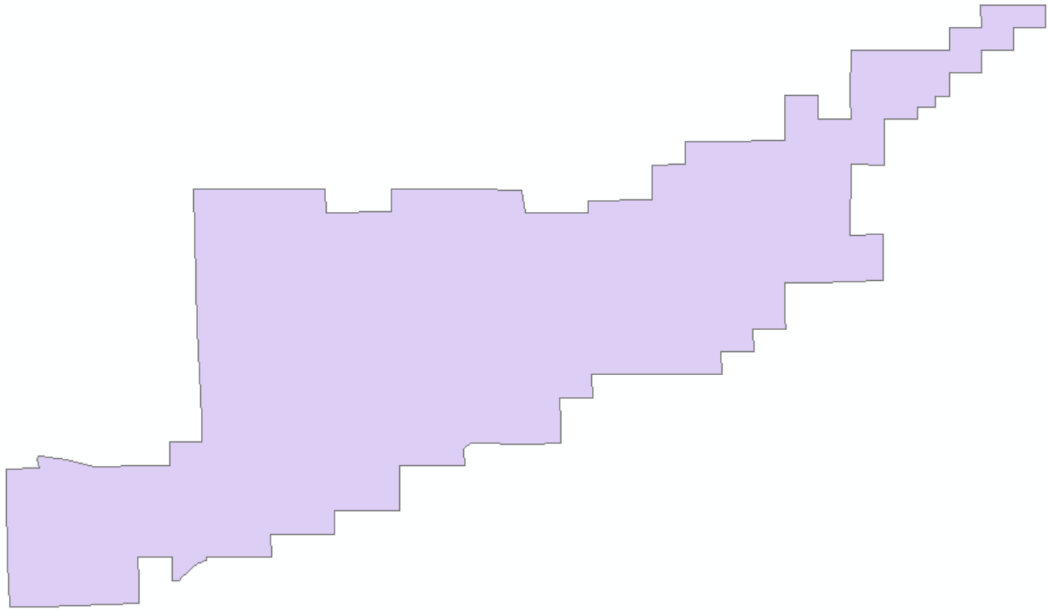


- Merge the soil data since the refuge was over 100,000 acres apart using the merge tool

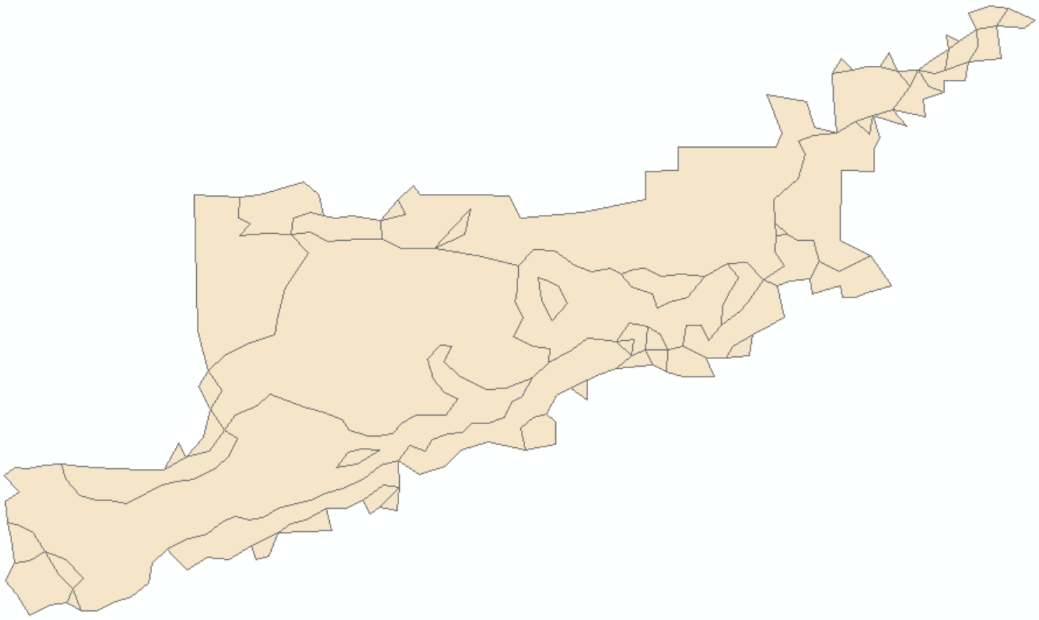
Conboy Lake NWR- zone 10

- **Address:**
  - 100 Wildlife Refuge Road Glenwood,WA 98619
- **Approved Boundary**

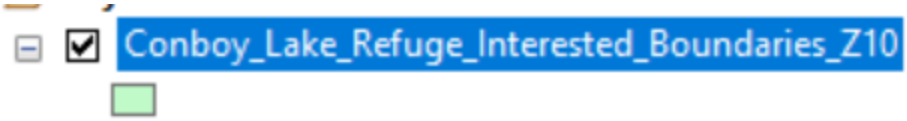


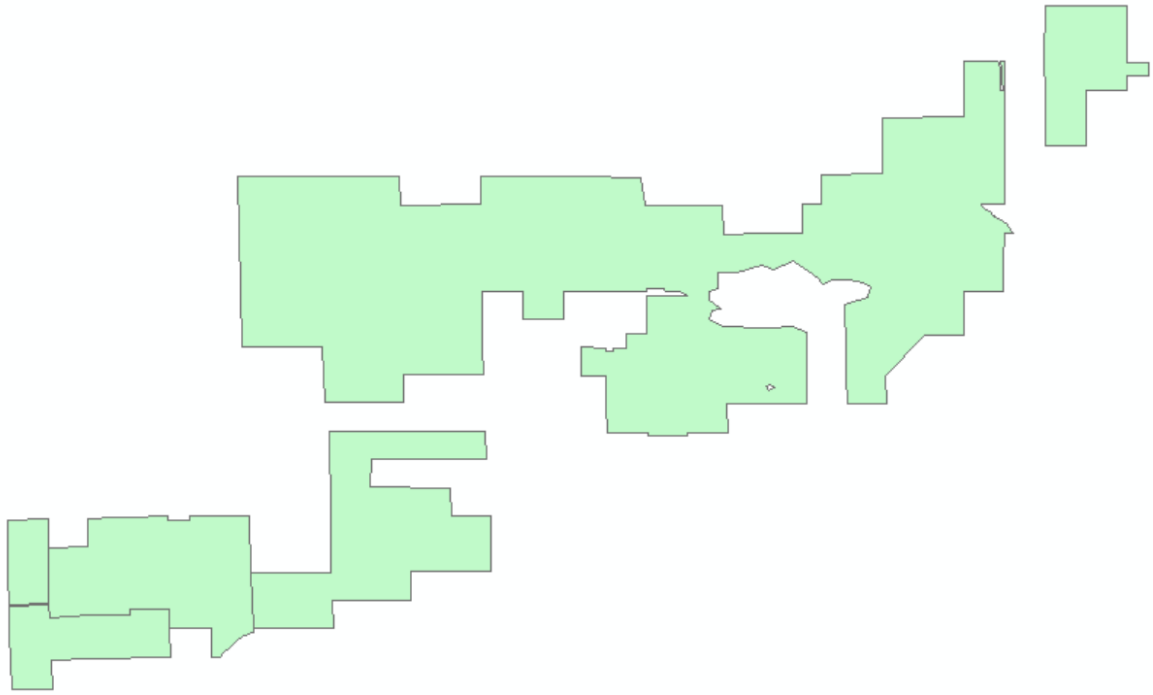


- **Approved Soils**

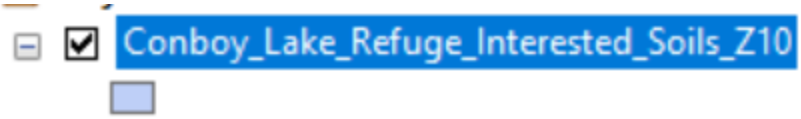


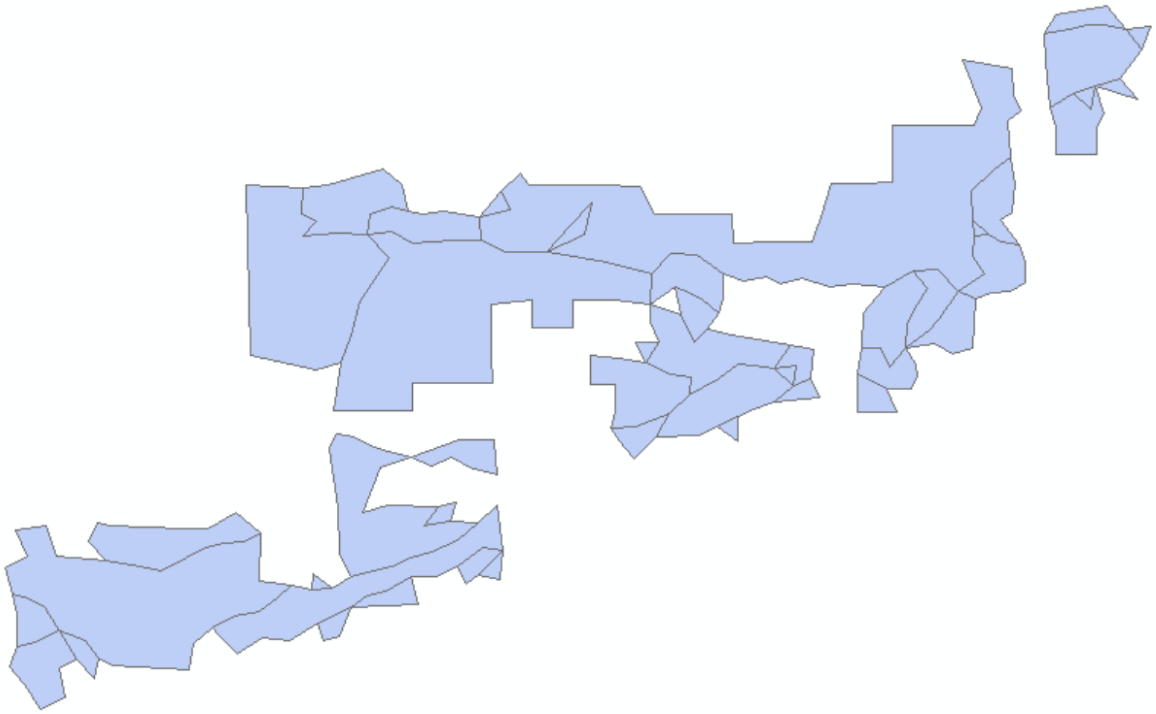
- **Interested Boundary**



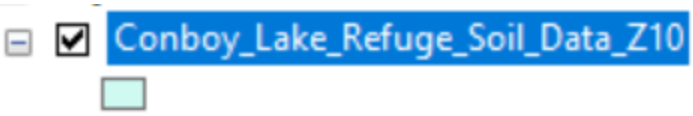


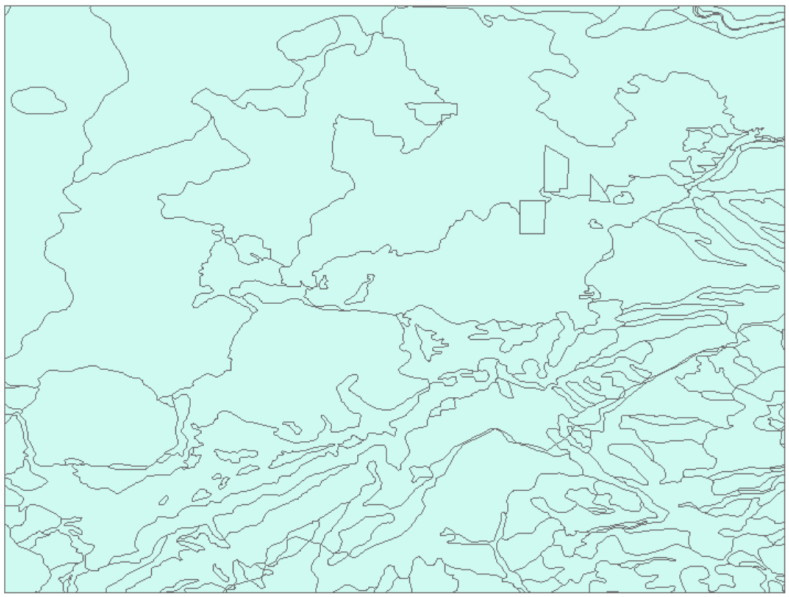
- **Interested Soils**





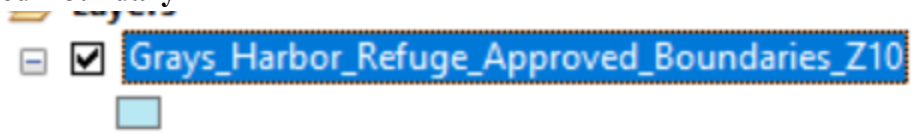
- **Soil Data**

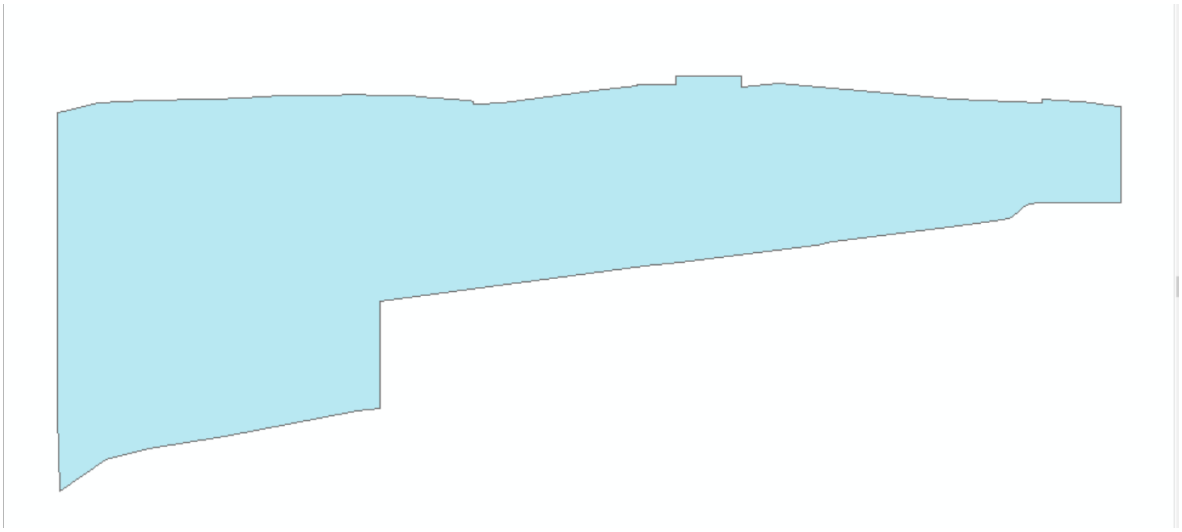
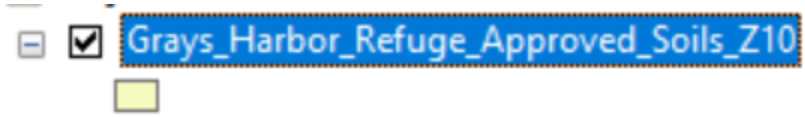


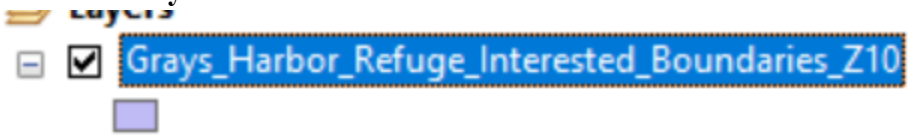


Grays Harbor NWR- zone 10

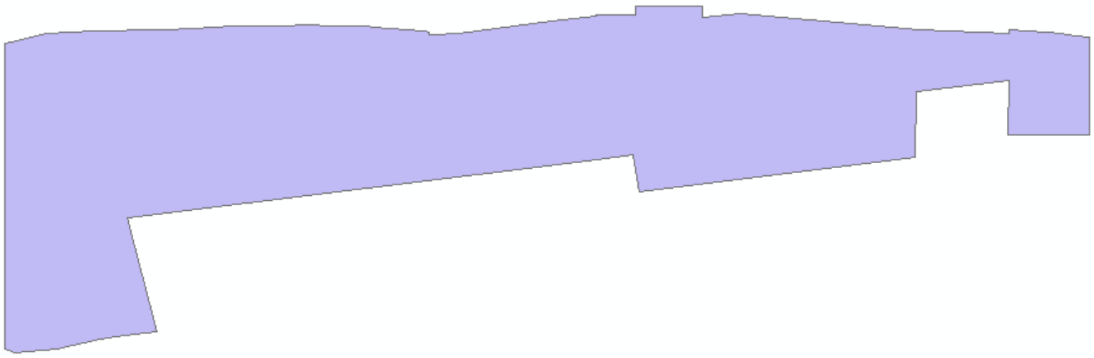
- **Address:**
  - 10995 Highway 22 Dallas, OR 97338-9343

- **Approved Boundary**
  - 

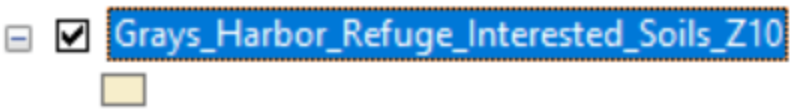
  - 
- **Approved Soils**
  - 

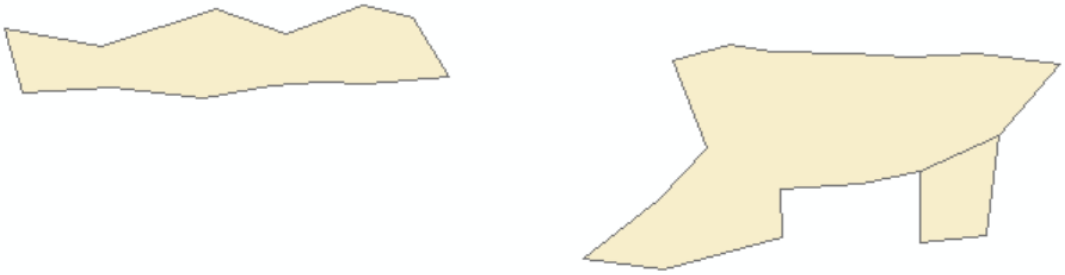
  -
  -
    - This was it. A lot of the boundary was just water.
- **Interested Boundary**
  - 

  -

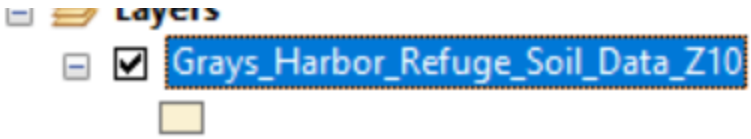


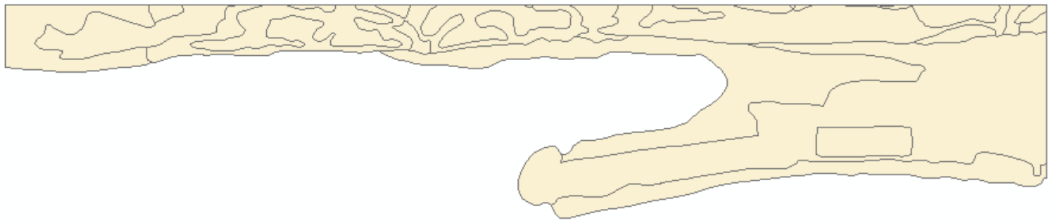
- **Interested Soils**





- **Soil Data**

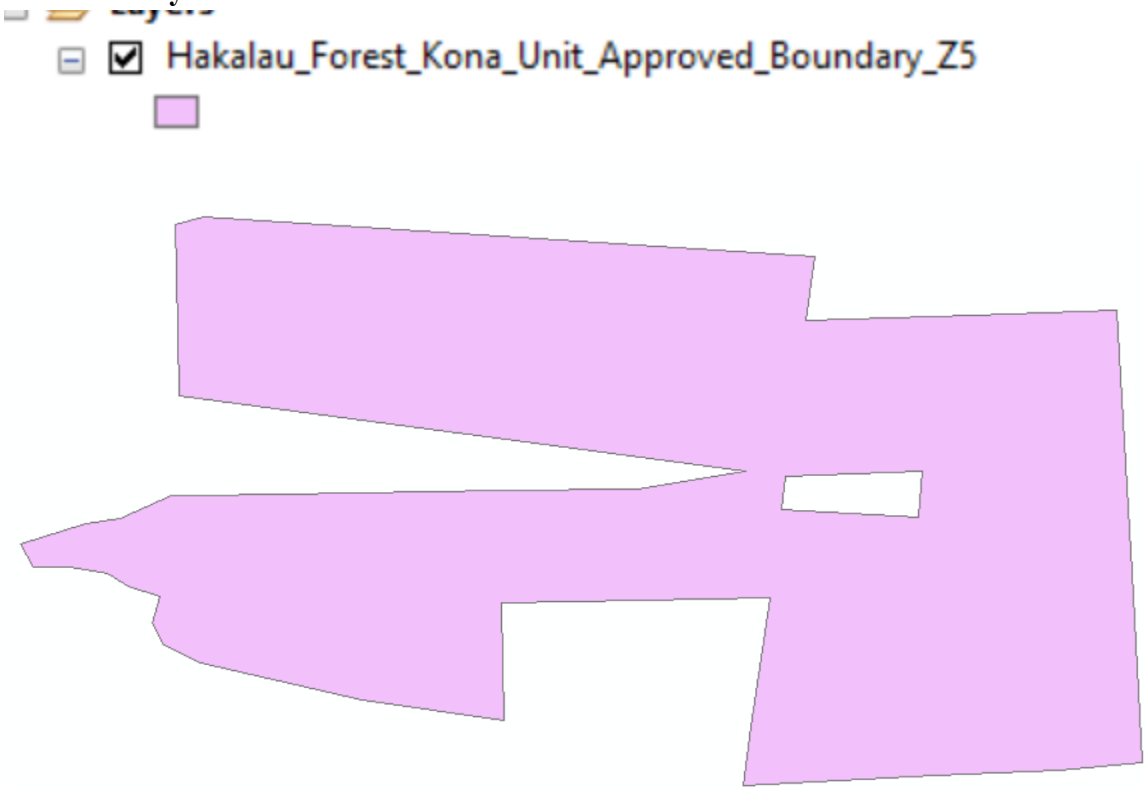


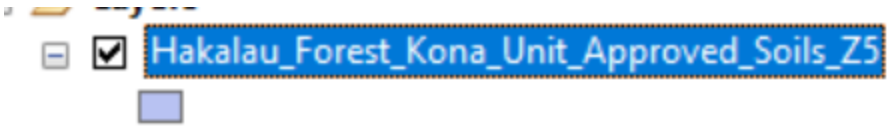


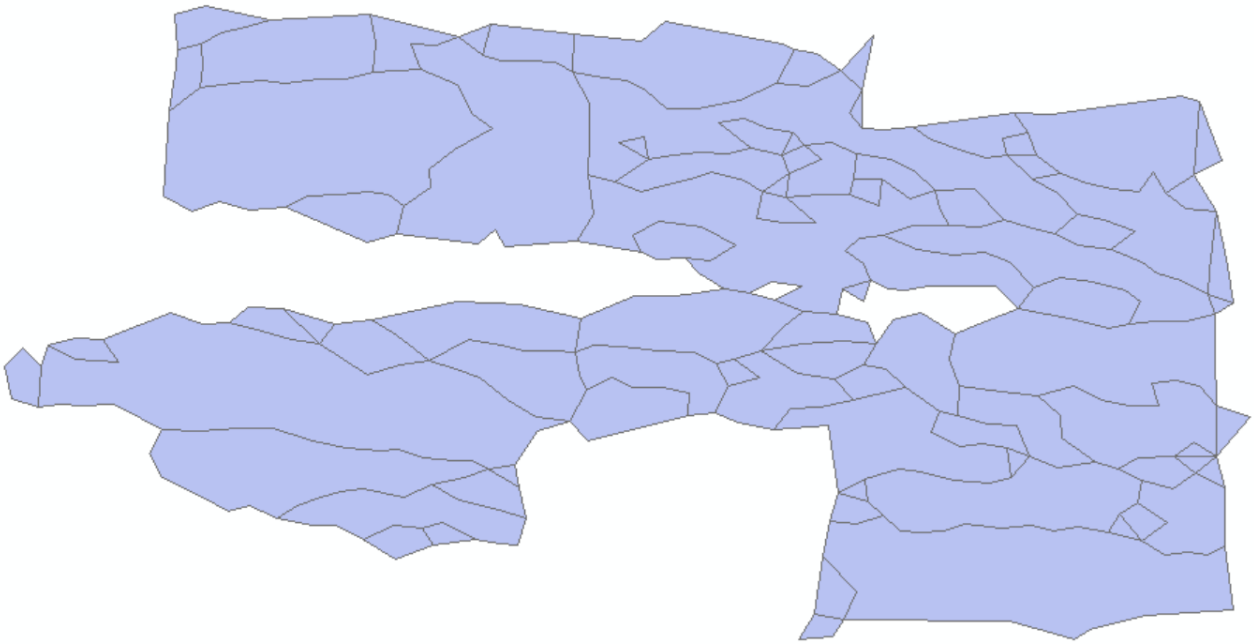
  - Irregular pattern because there was no soil data for most of the boundary

-

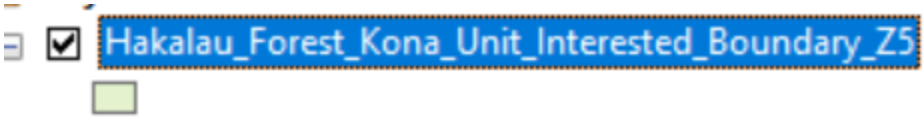
Hakalau Forest Kona Unit NWR (Big Island)- NAD 83 zone 5

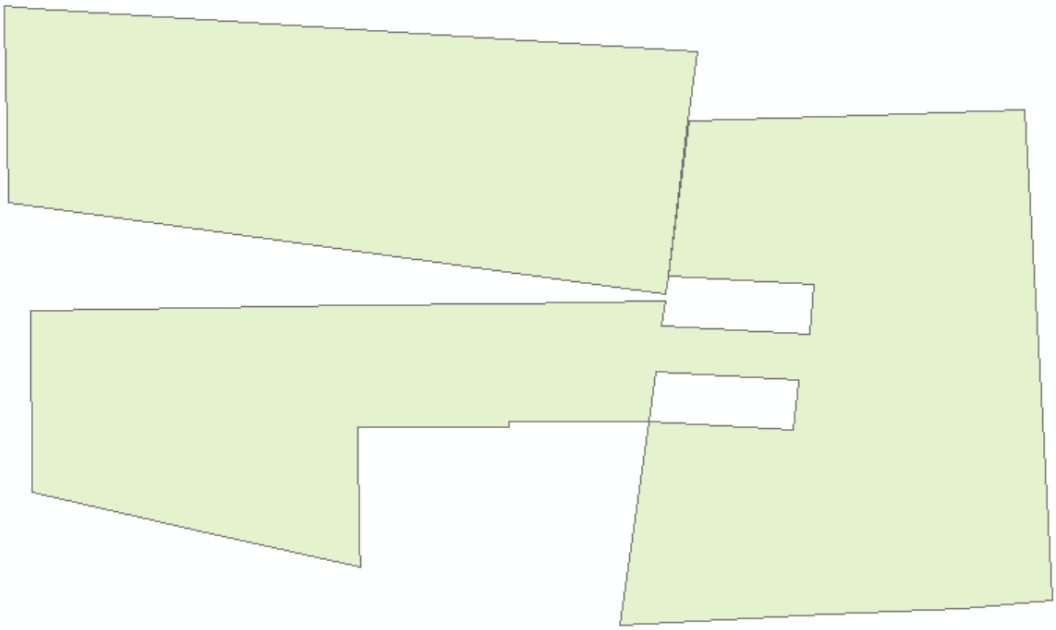
- **Address:**
  - 60 Nowelo Street, Suite 100 Hilo, HI 96720-2788
- **Approved Boundary**
  - 

- **Approved Soils**
  - 

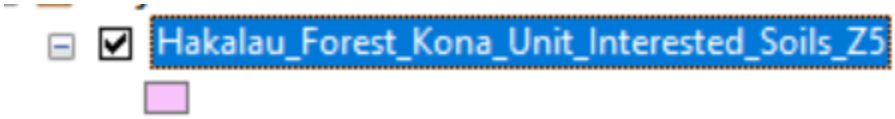


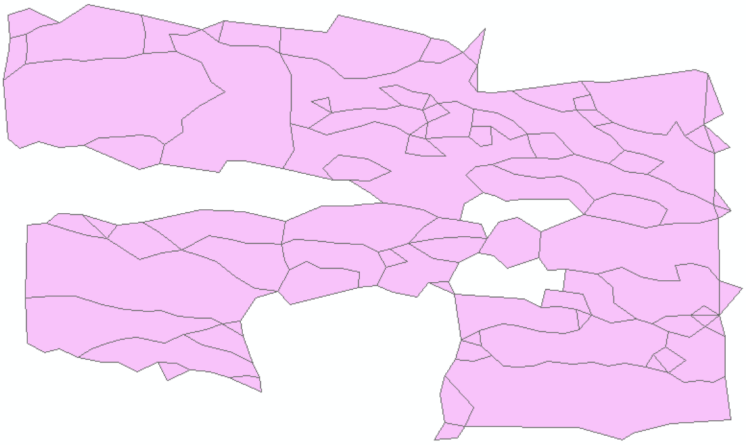
- **Interested Boundary**



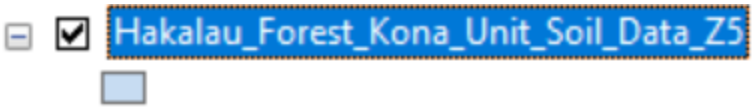


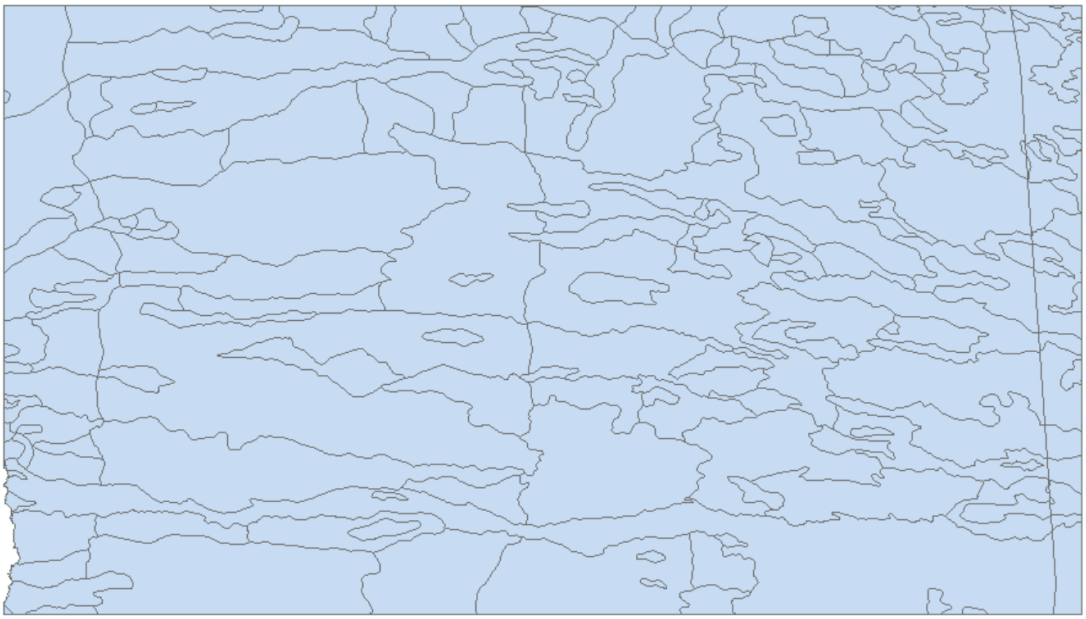
- **Interested Soils**





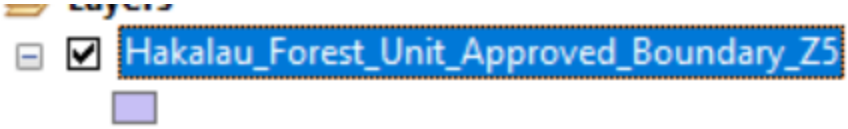
- **Soil Data**



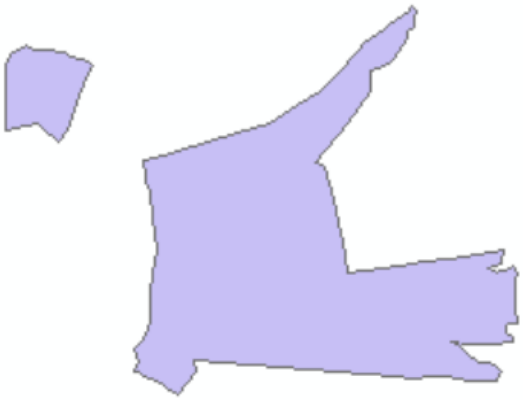


Hakalau Forest Unit NWR (Big Island)- NAD 83 zone 5

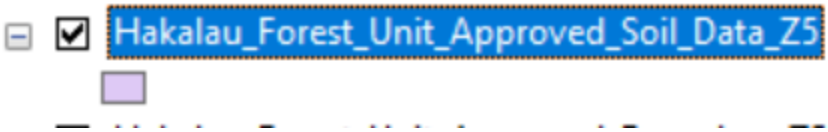
- **Address:**
  - 60 Nowelo Street, Suite 100 Hilo, HI 96720-2788
- **Approved Boundary**

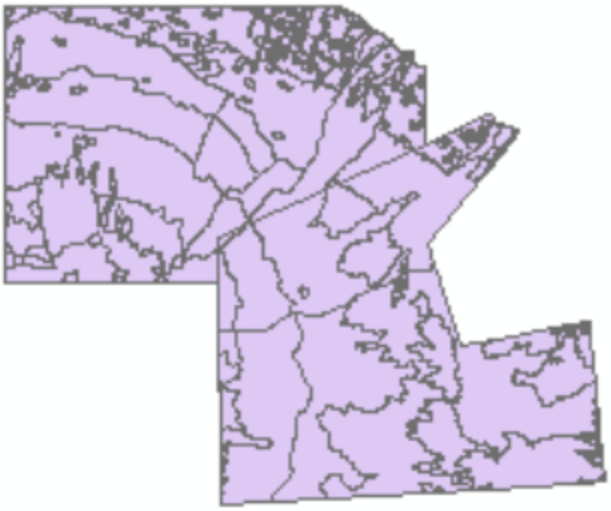


A

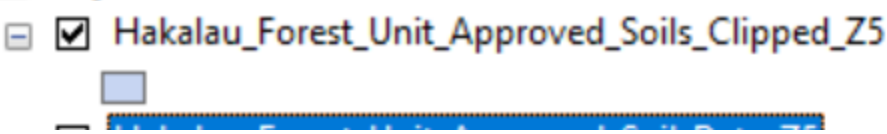


- **Approved Soil Data**

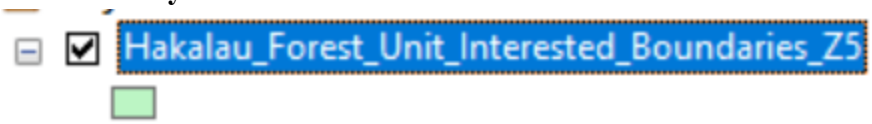




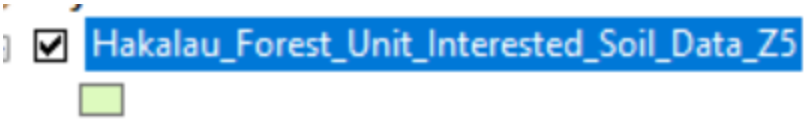
- **Approved Soils Clipped**

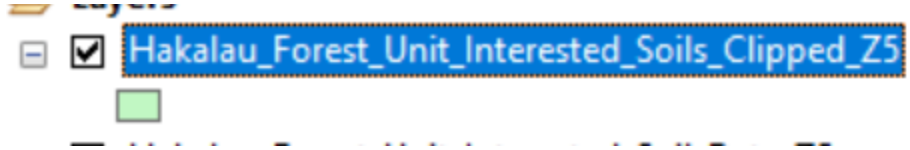


- **Interested Boundary**



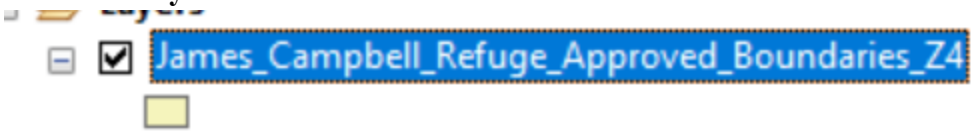
- **Interested Soil Data**



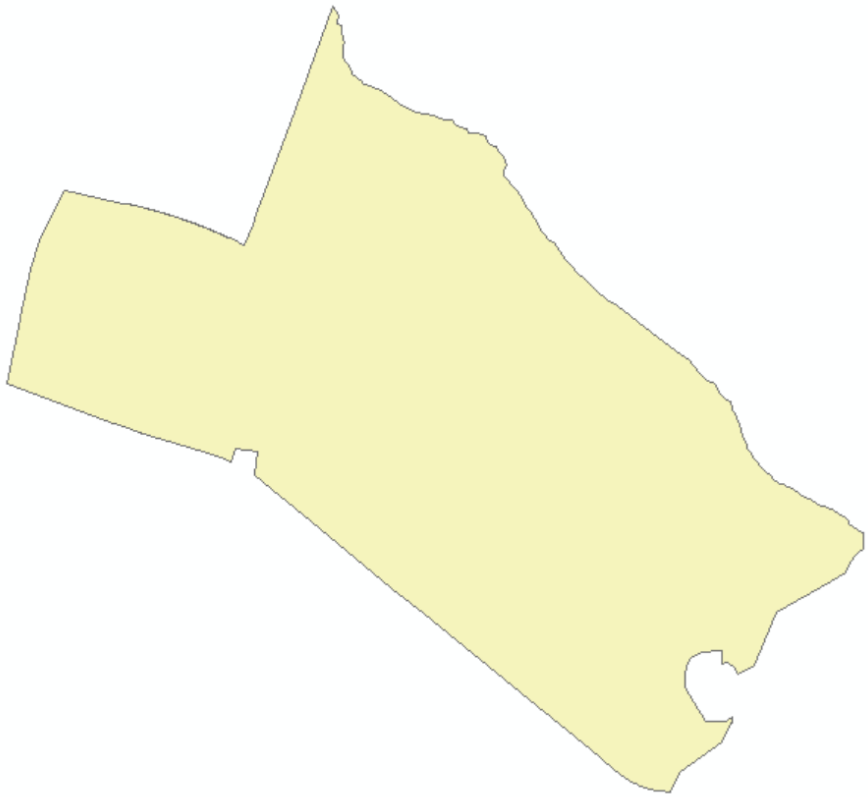
- **Interested Soils Clipped**
  - 

  -
  -

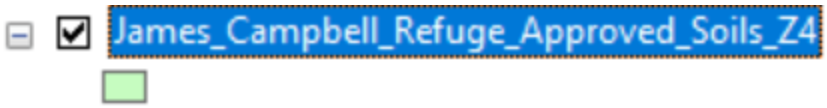
James Campbell NWR (O'ahu)- zone 4

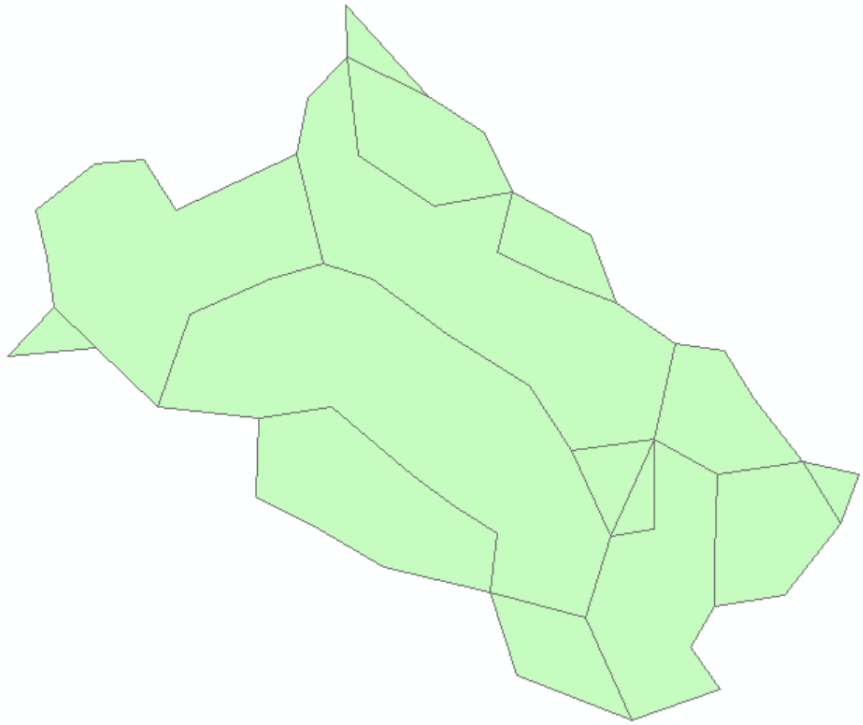
- **Address:**
  - 10995 Highway 22 Dallas, OR 97338-9343
- **Approved Boundary**
  - 

  -

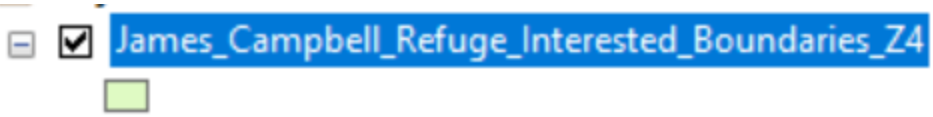


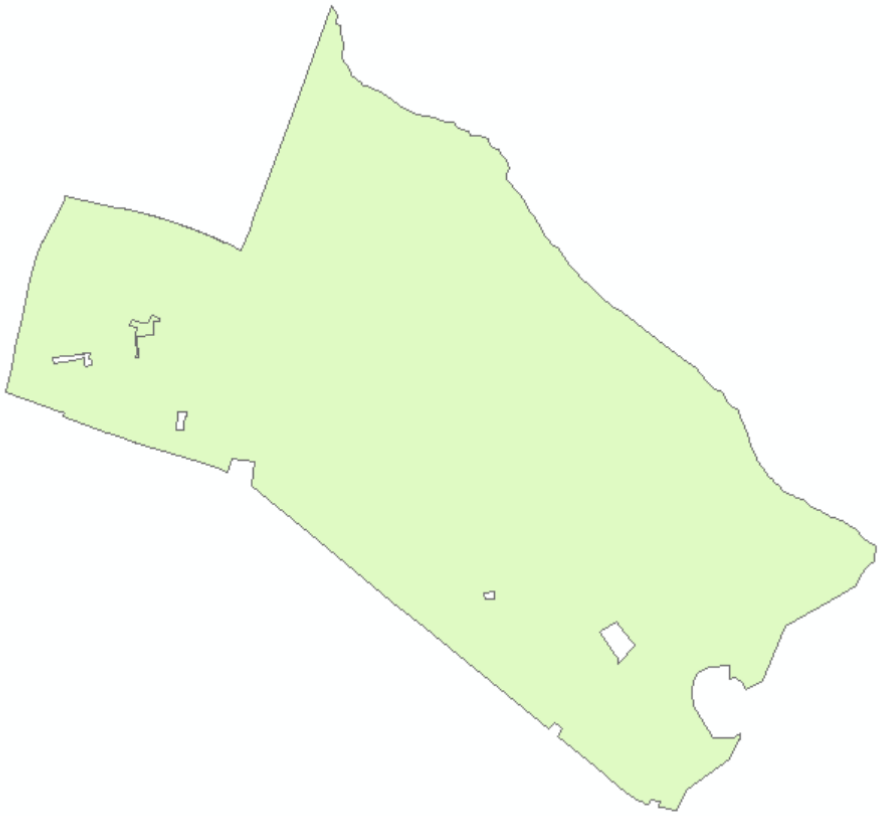
- **Approved Soils**



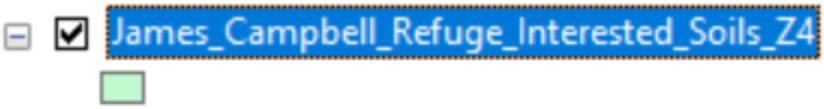


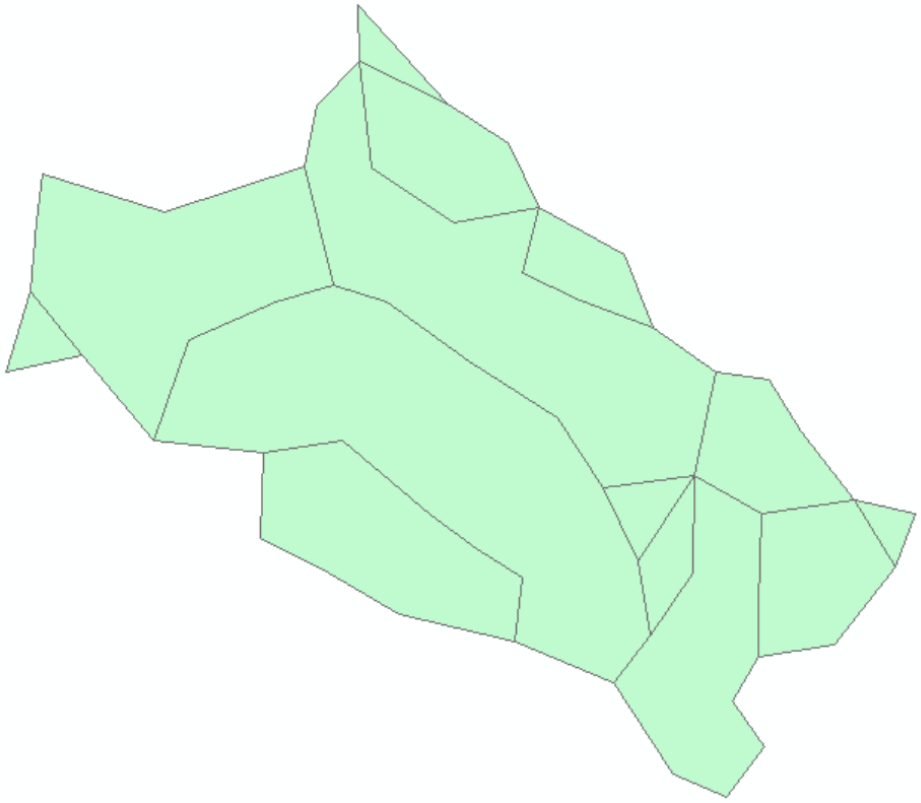
- **Interested Boundary**



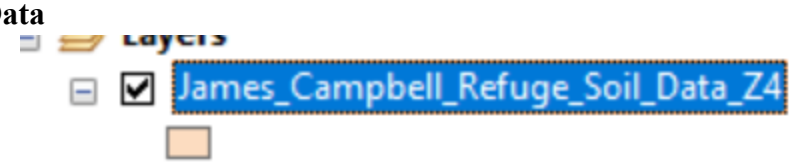


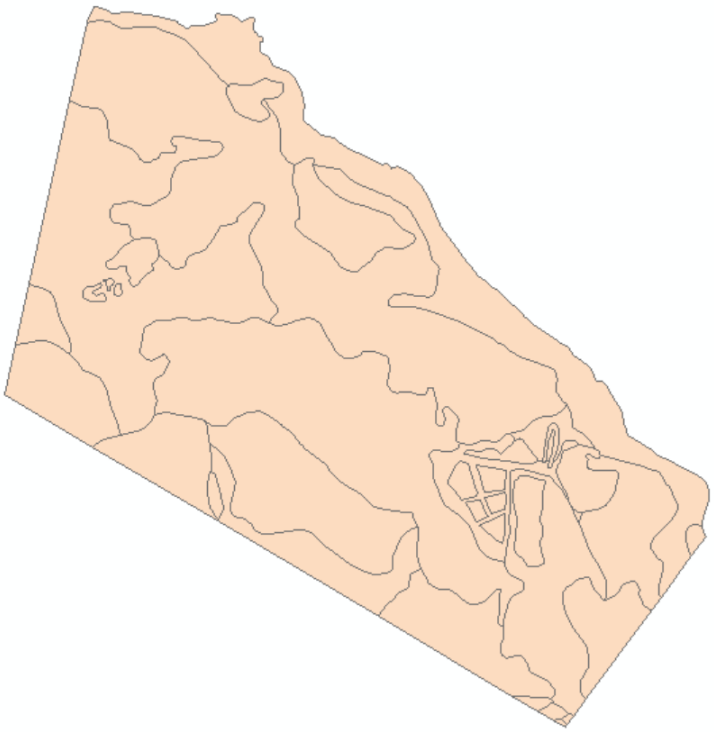
- **Interested Soils**



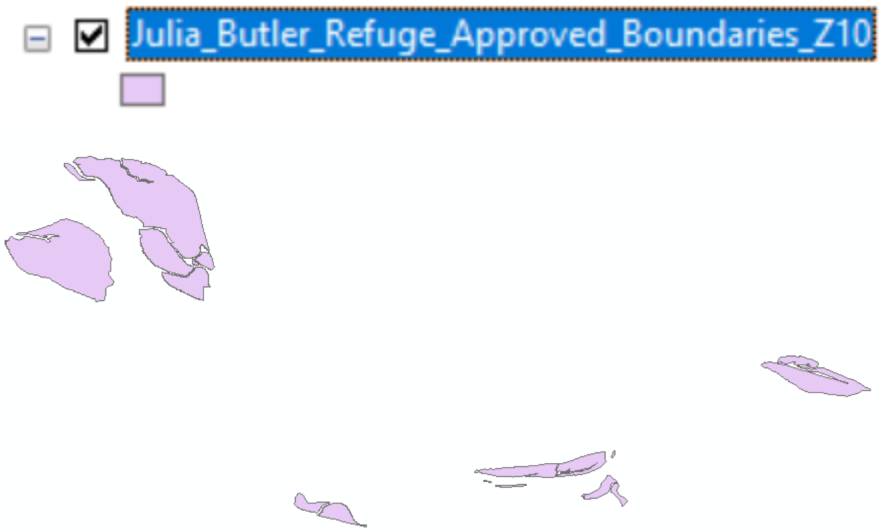


- **Soil Data**

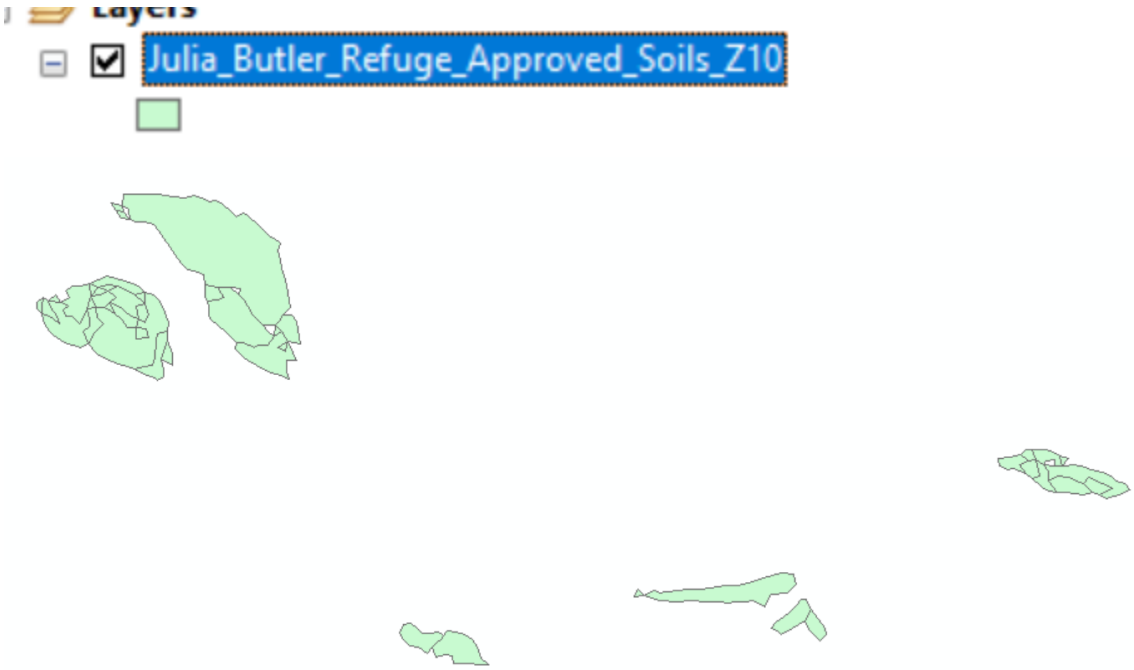


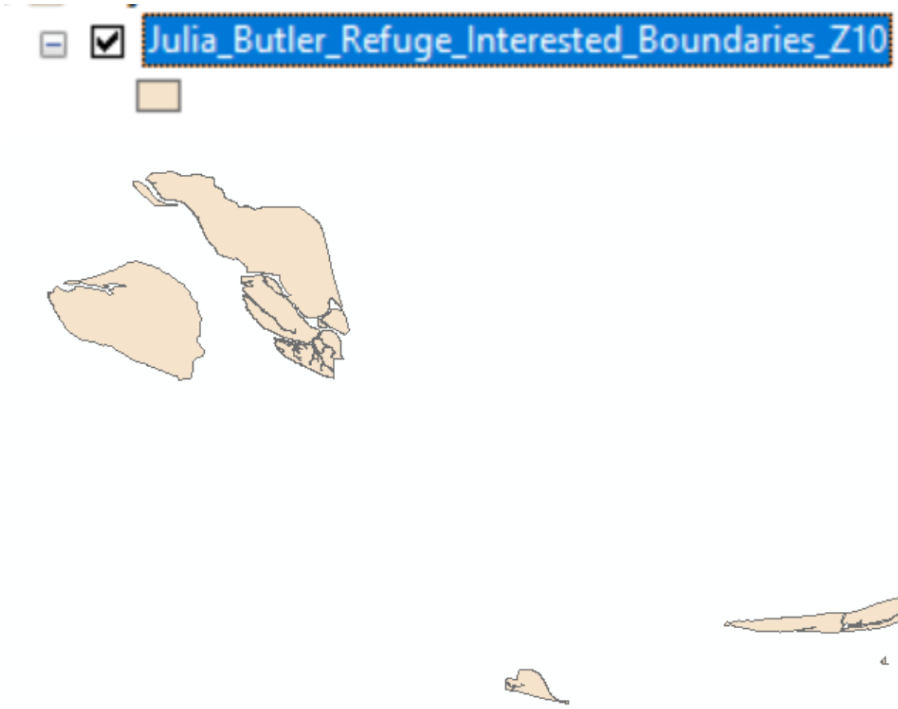
- 

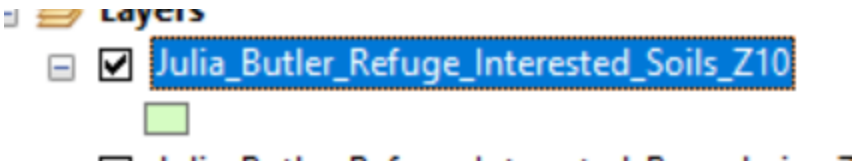
Julia Butler Hansen Refuge- zone 10

- **Address:**
  - 46 Steamboat Slough Road Cathlamet,WA 98612
- **Approved Boundary**
  - 

  -

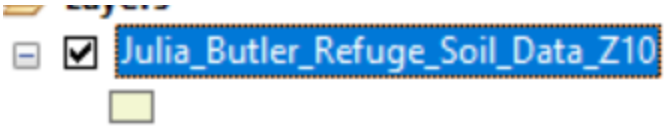
- **Approved Soils**
  - 

  -
- **Interested Boundary**
  - 

  -
- **Interested Soils**
  - 

  -

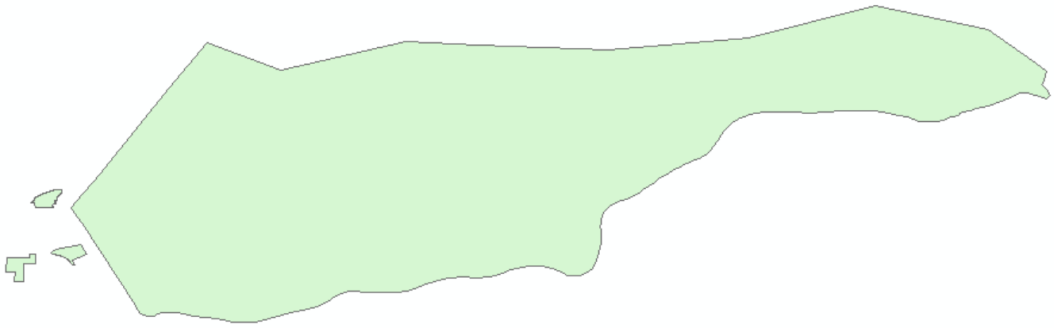
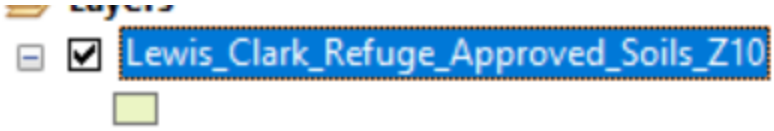
- **Soil Data**

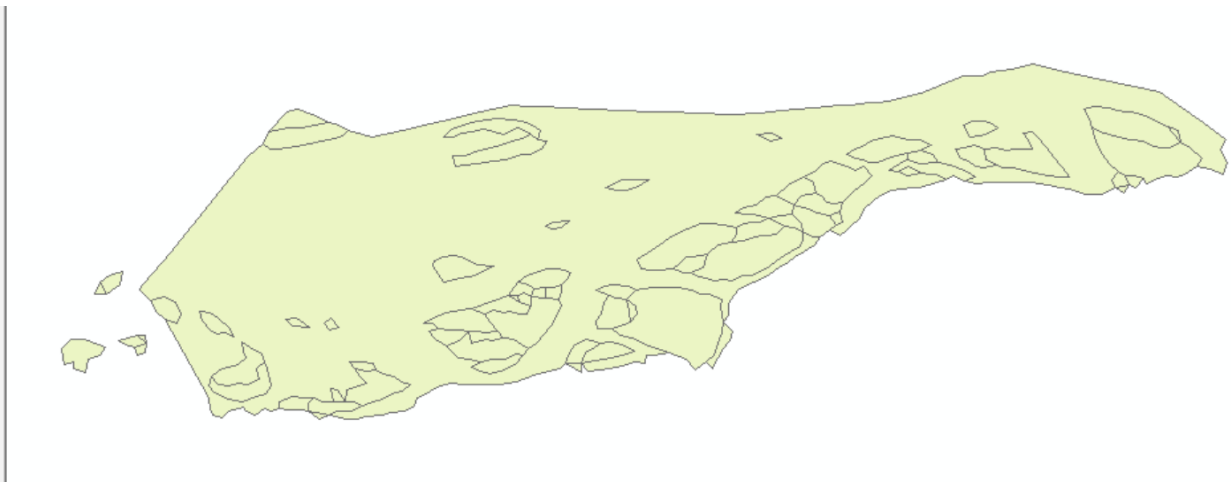
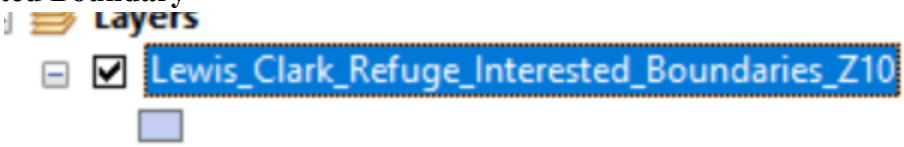


Lewis and Clark NWR- zone 10

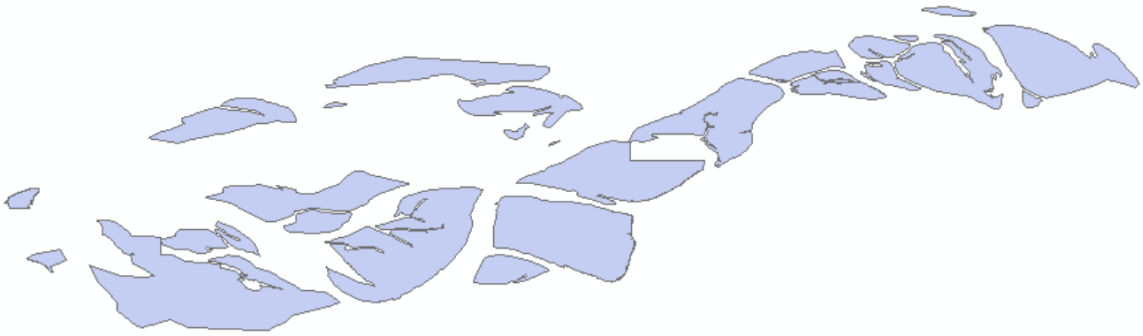
- **Address:**
  - 46 Steamboat Slough Road Cathlamet,WA 98612
    - (Same as Julia Butler)

- **Approved Boundary**
  -

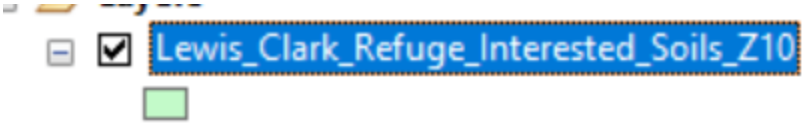
  - 
- **Approved Soils**
  - 

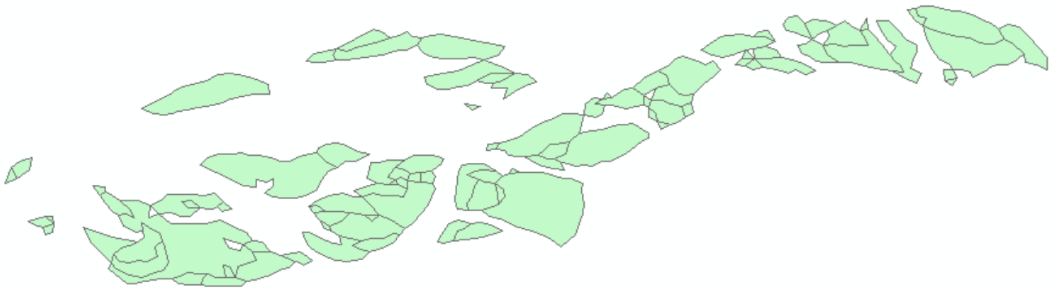
  - 
- **Interested Boundary**
  - 

  -

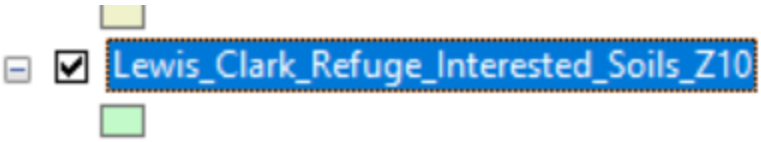


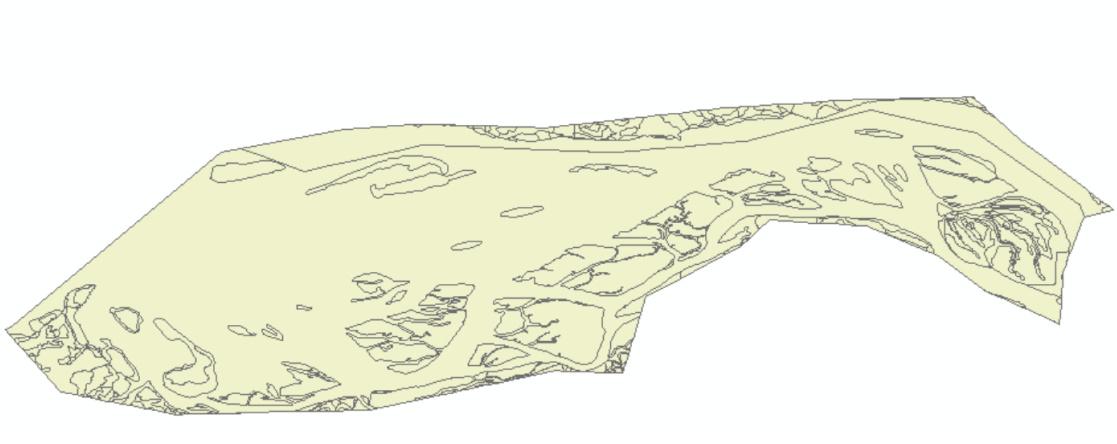
- **Interested Soils**





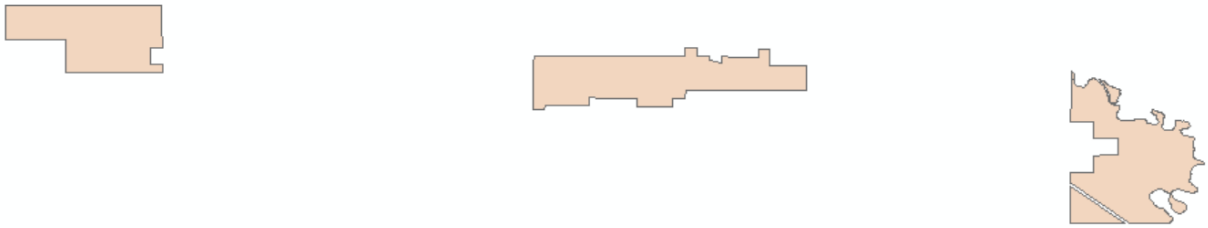
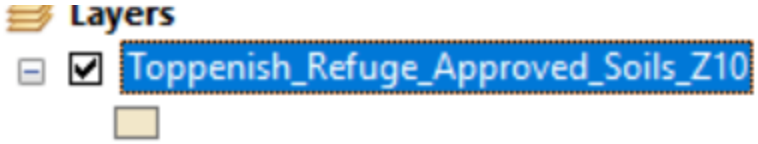
- **Soil Data**

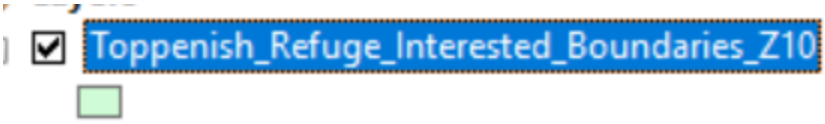




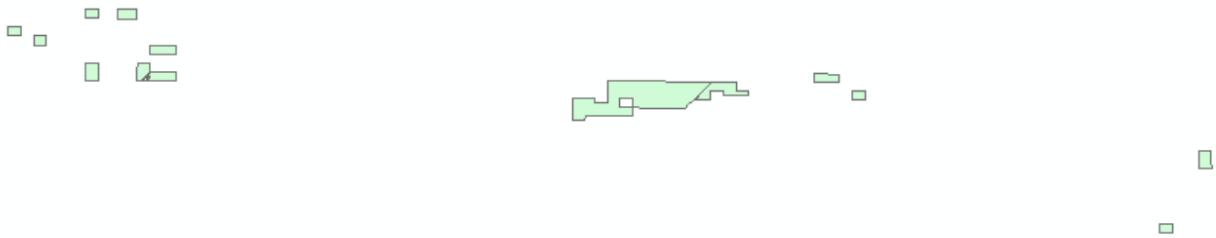
Toppenish NWR- zone 10

- **Address:**
  - 21 Pumphouse Road Toppenish,WA 98948-9791
- **Approved Boundary**
  -

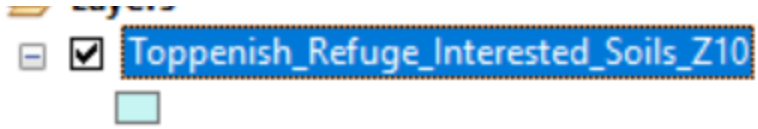
  - 
- **Approved Soils**
  - 

  -
- **Interested Boundary**
  - 

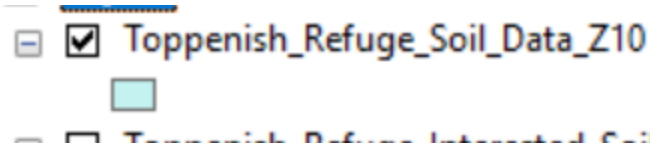
  -

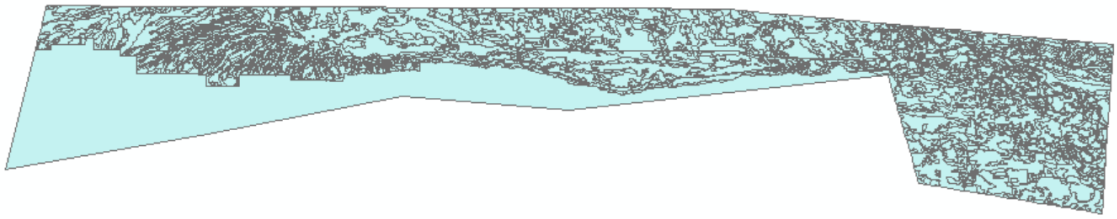


- **Interested Soils**



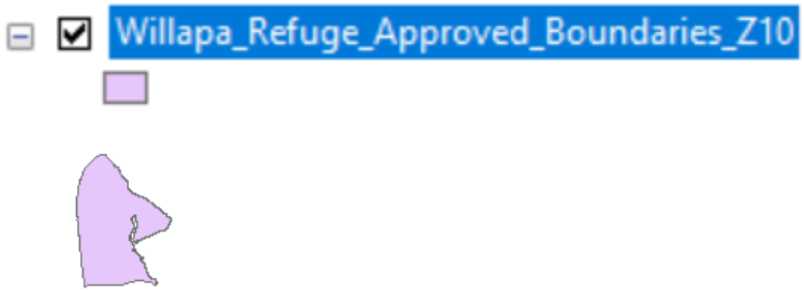
- **Soil Data**

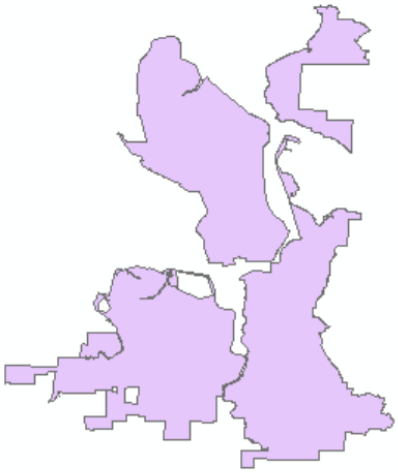
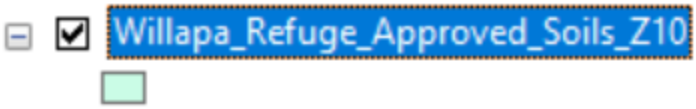


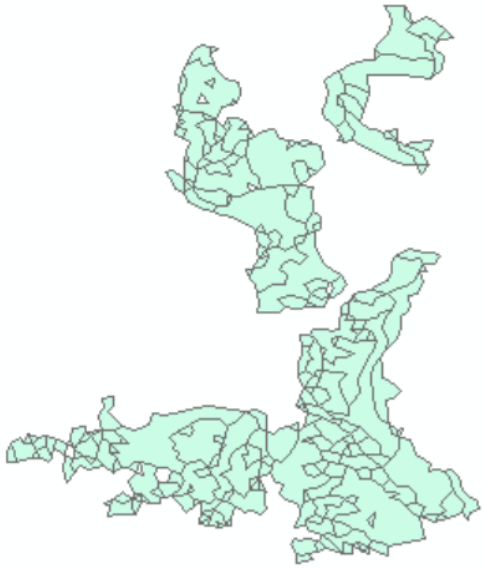


Willapa NWR- zone 10

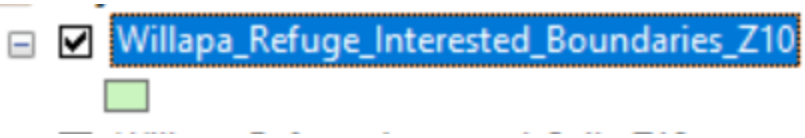
- **Address:**
  - 7112 67th Place Long Beach, WA 98631

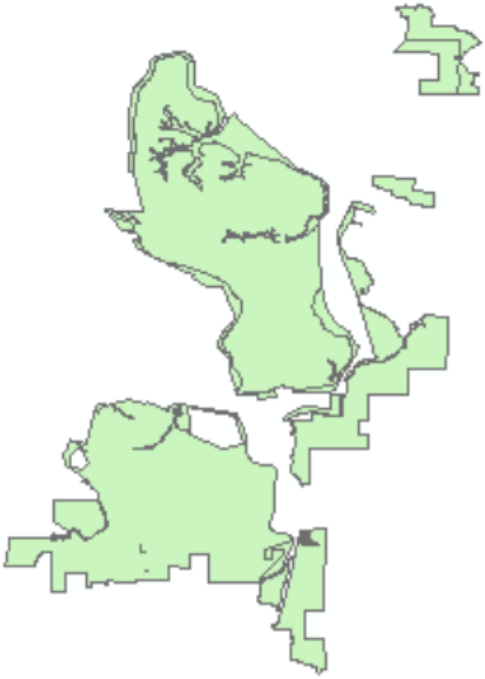
- **Approved Boundary**
  - 

  - 
- **Approved Soils**
  - 

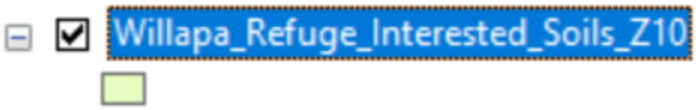


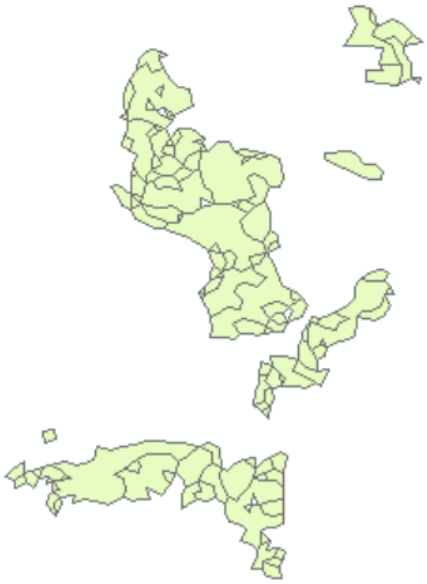
- **Interested Boundary**



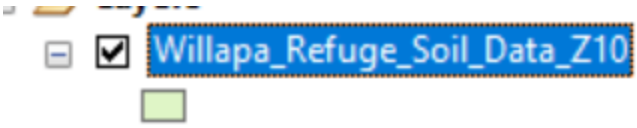


- **Interested Soils**





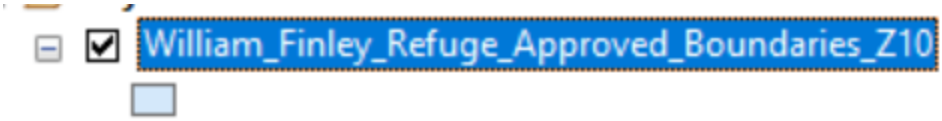
- **Soil Data**

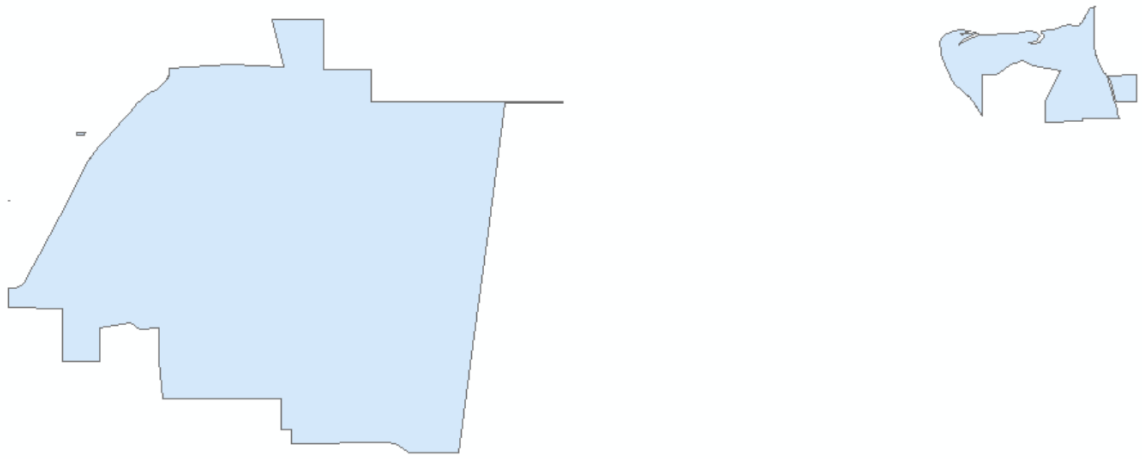


-
    - (Merged the soil data)

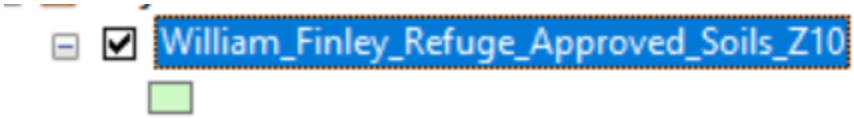
William Finley NWR- zone 10

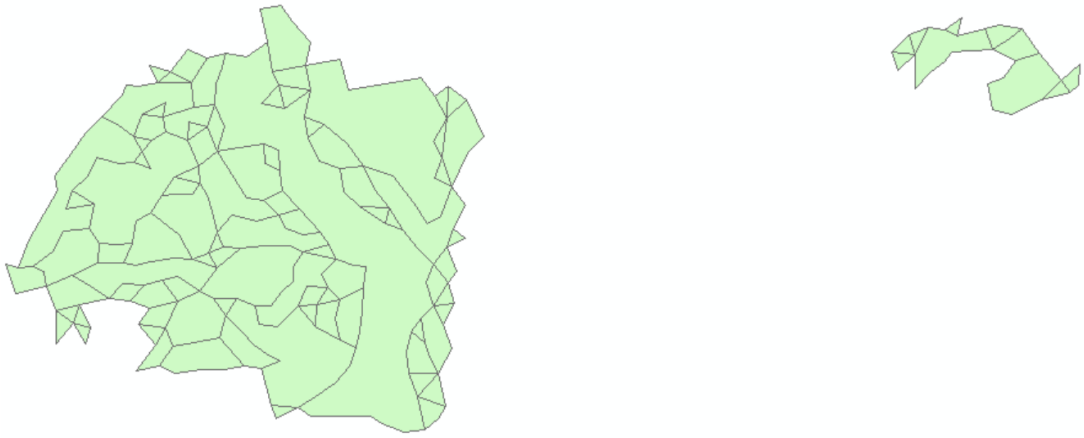
- **Address:**
    - 26208 Finley Refuge Road Corvallis, OR 97333-9533
- **Approved Boundary**



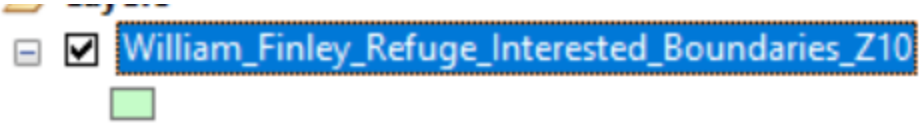


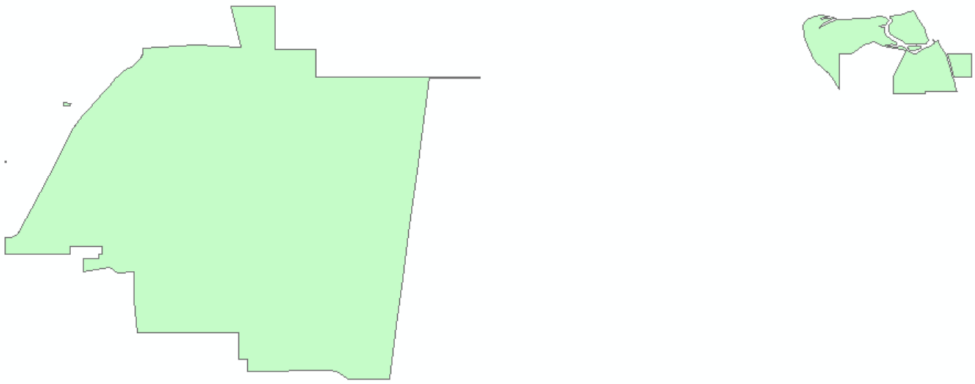
- **Approved Soils**



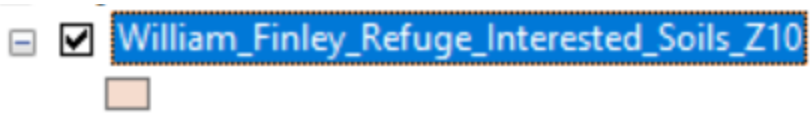


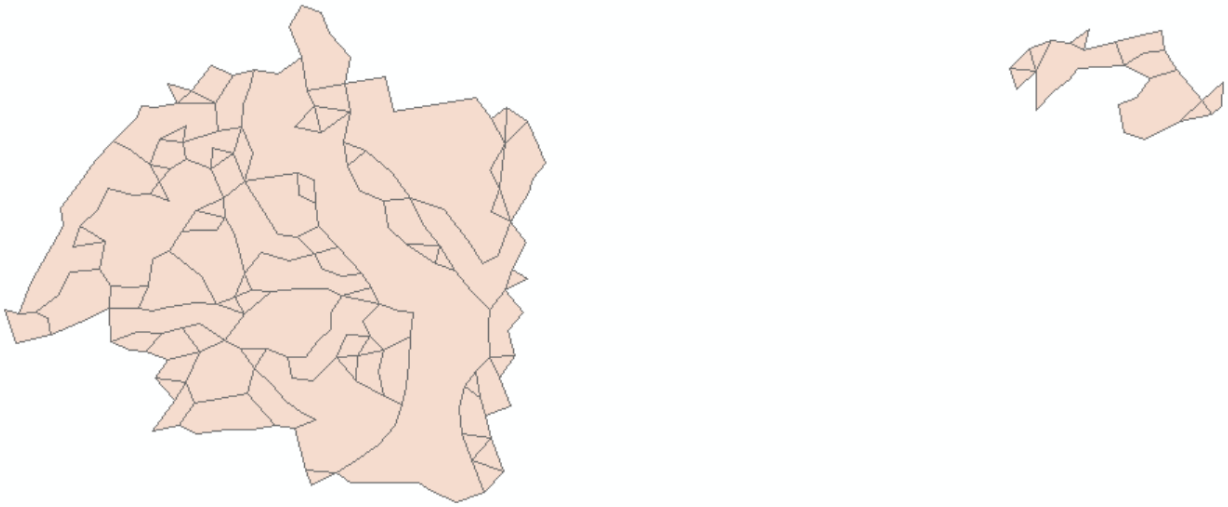
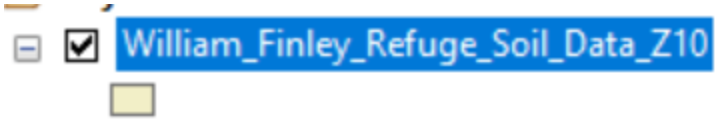
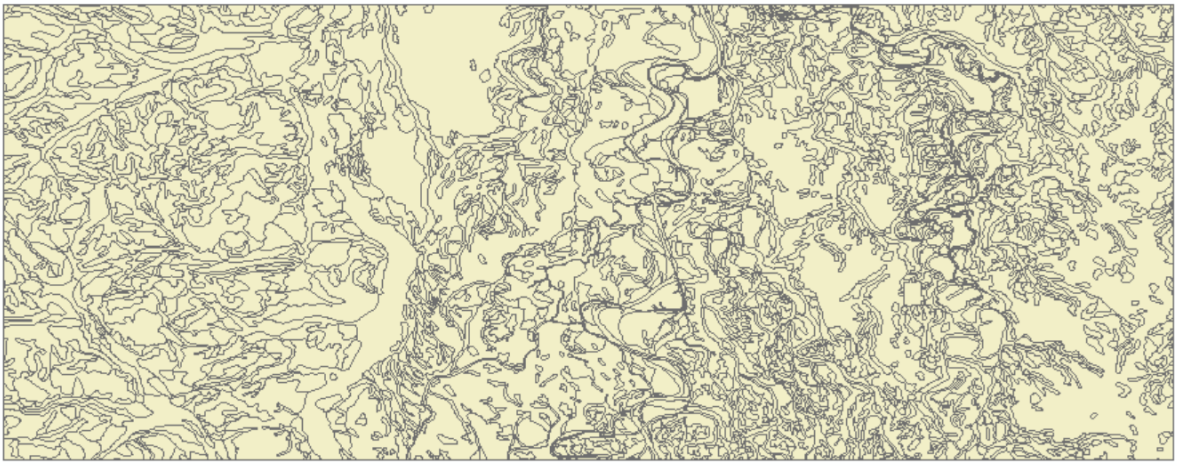
- **Interested Boundary**





- **Interested Soils**





- **Soil Data**