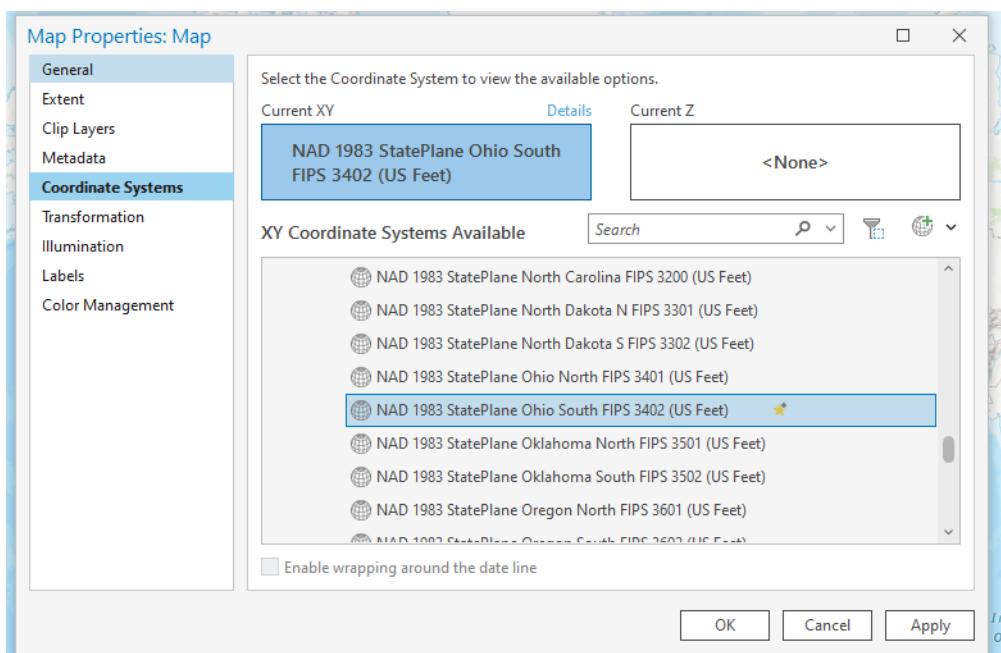
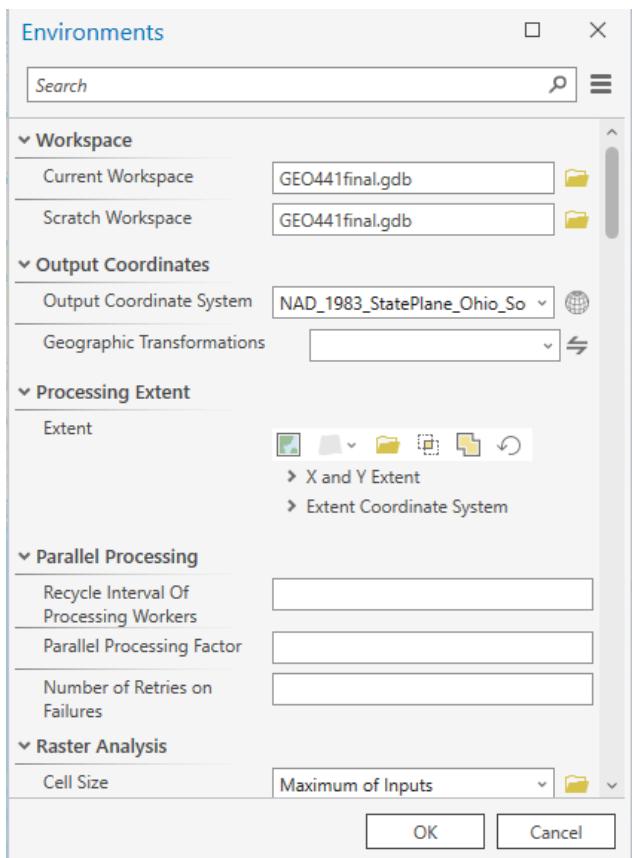
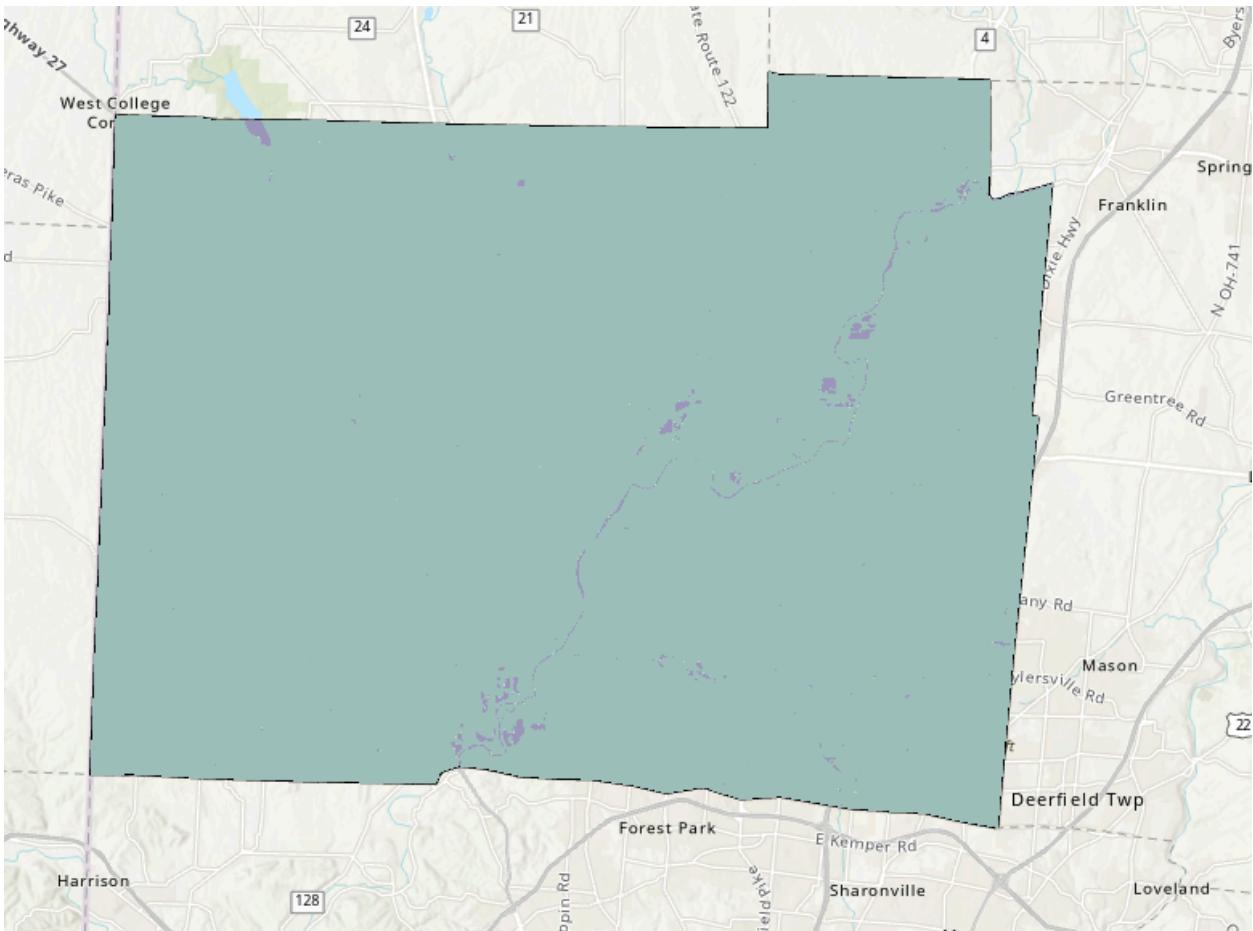


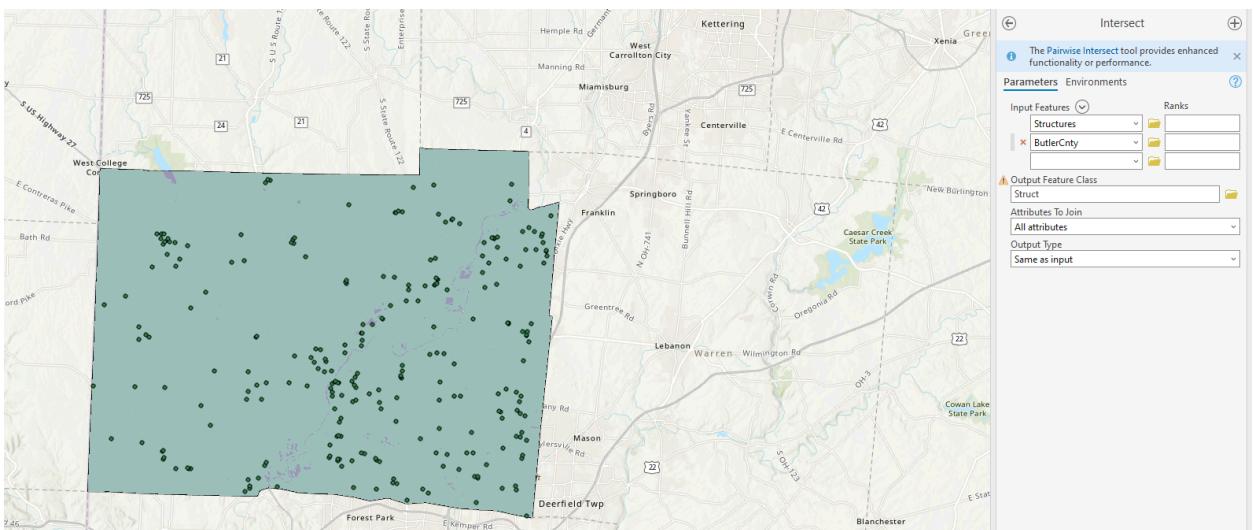
Below is my process of creating a suitability model for my introductory geographic information course. It demonstrates my ability to create suitability models both within ArcGIS Pro and the model builder.



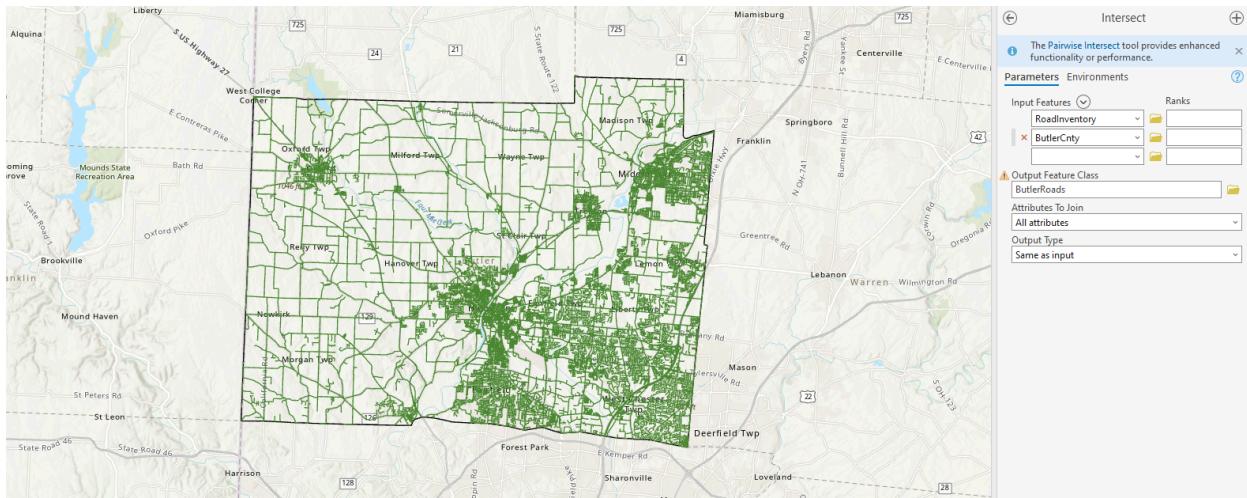
Changed to Ohio State Plane Coordinate System (Ohio South FIPS 3402)



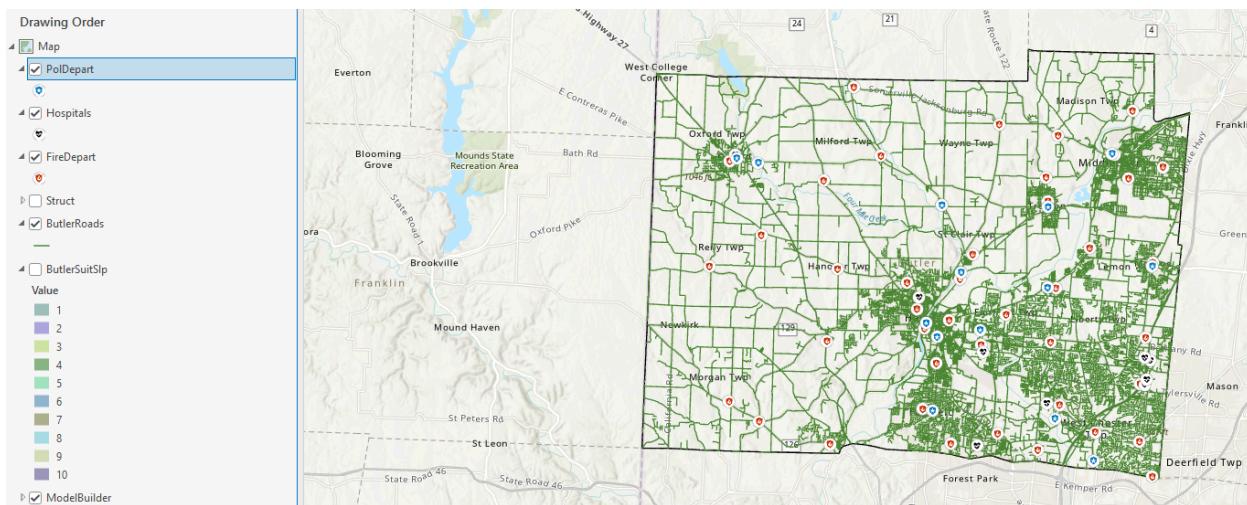
Used *extract by mask* to cut the elevation tif to only Butler County



Used Intersect to only keep structures within Butler County



Downloaded transportation data from ODT and used Intersect to cut to Butler County only



Used *Select by Attributes* and *Export Features* to separate structures into police departments, fire departments, and hospitals

Reclassify (3): Reclassify

Parameters Environments Properties

Input raster: DistHosp

Reclass field: VALUE

Reclassification:

Start	End	New
0	6040.698828	1
6040.698828	12081.397656	2
12081.397656	18122.096484	3
18122.096484	24162.795312	4
24162.795312	30203.494141	5
30203.494141	36244.192969	6
36244.192969	42284.891797	7
42284.891797	48325.590625	8
48325.590625	54366.289453	9
54366.289453	60406.988281	10
NODATA	NODATA	NODATA

Classify Unique Folder Print Copy

Output raster: Reclass_Dist1

Change missing values to NoData

OK

Reclassify (4): Reclassify

Parameters Environments Properties

Input raster: DistPol

Reclass field: VALUE

Reclassification:

Start	End	New
0	5146.759766	10
5146.759766	10293.519531	9
10293.519531	15440.279297	8
15440.279297	20587.039062	7
20587.039062	25733.798828	6
25733.798828	30880.558594	5
30880.558594	36027.318359	4
36027.318359	41174.078125	3
41174.078125	46320.837891	2
46320.837891	51467.597656	1
NODATA	NODATA	NODATA

Classify Unique Folder Print Copy

Output raster: Reclass_Dist1

Change missing values to NoData

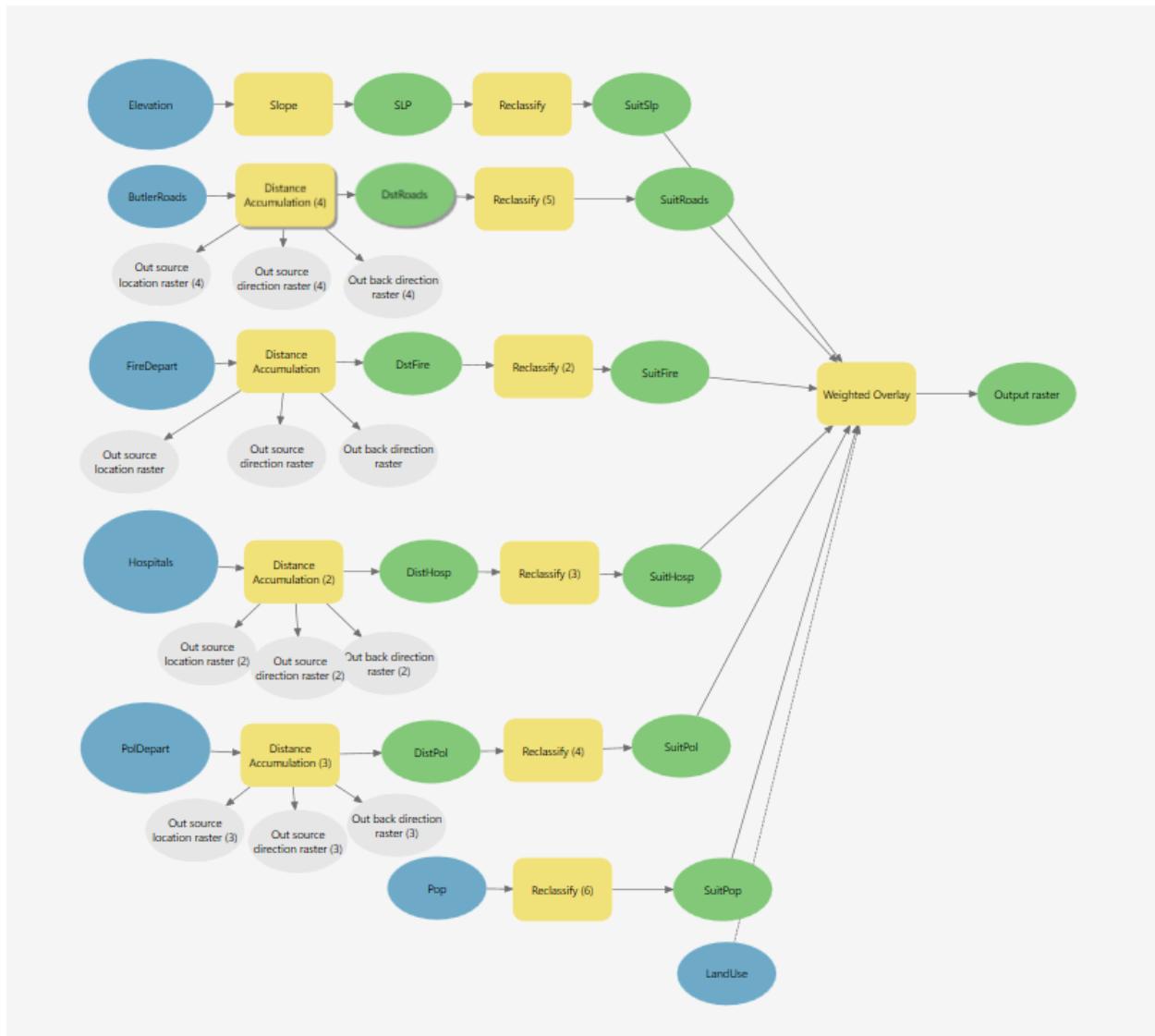
OK

(Example of how I am reclassifying. Using equal intervals and 10 intervals)

***When reclassifying elevation, roads, fire department, and police department, I reversed the values so that areas closer to these roads/structures/flat elevation would be ranked a 10. It is important to build hospitals close to police and fire departments so that they can get you to the hospital quicker, and you need a flat elevation to build on. When reclassifying hospitals, areas furthest away from existing hospitals were ranked as a 10. When reclassifying population, areas of higher population were ranked a 10.



Convert Census shapefile to a raster using *Polygon to Raster*, and valued the population 2010 data.

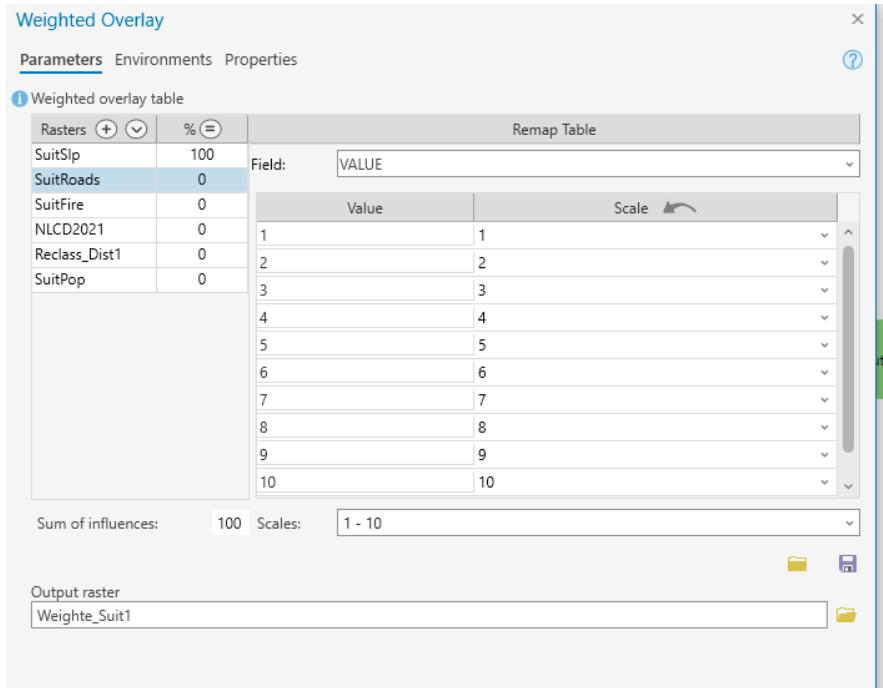


Current model after reclassifying all datasets besides Land Use, about to do the weighted overlay

Remap Table	
Field:	NLCD_Land_Cover_Class
Value	Scale ↕
Open Water	Restricted
Developed, Open Space	8
Developed, Low Intensity	7
Developed, Medium Intensity	4
Developed, High Intensity	3
Barren Land	7
Deciduous Forest	4
Evergreen Forest	6
Mixed Forest	5
Shrub/Scrub	7
Herbaceous	10
Hay/Pasture	10
Cultivated Crops	10
Woody Wetlands	Restricted
Emergent Herbaceous Wetlands	Restricted
NODATA	NODATA

Scales: 1 - 10

Reclassifying Land Cover data in the Weighted Overlay step



Fixed the scale to be 1-10 for each raster set

Weighted Overlay

Parameters Environments Properties [?](#)

Weighted overlay table

Rasters	⊕	⊖	%
SuitSlip	10		
SuitRoads	20		
SuitFire	10		
NLCD2021	15		
SuitPop	20		
SuitPol	5		
SuitHosp	20		

Remap Table

Field: **VALUE**

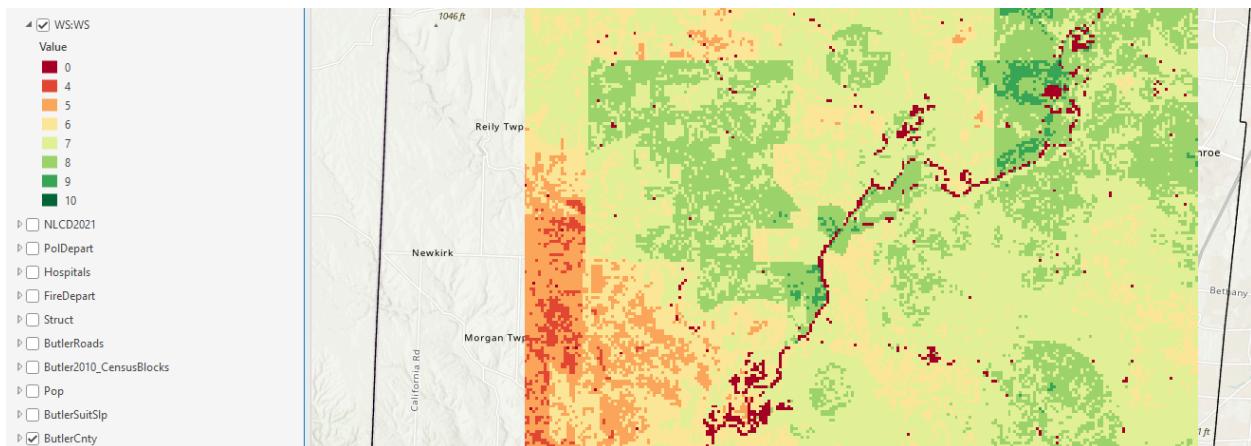
Value	Scale
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10

Sum of influences: 100 Scales: 1 - 10

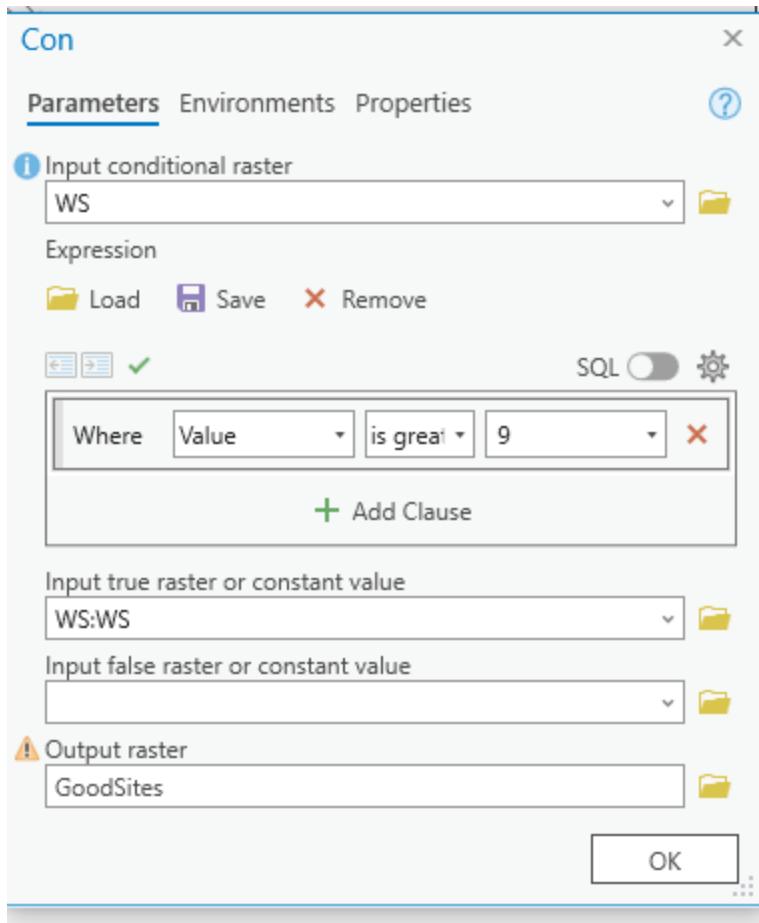
Output raster
WS

[OK](#)

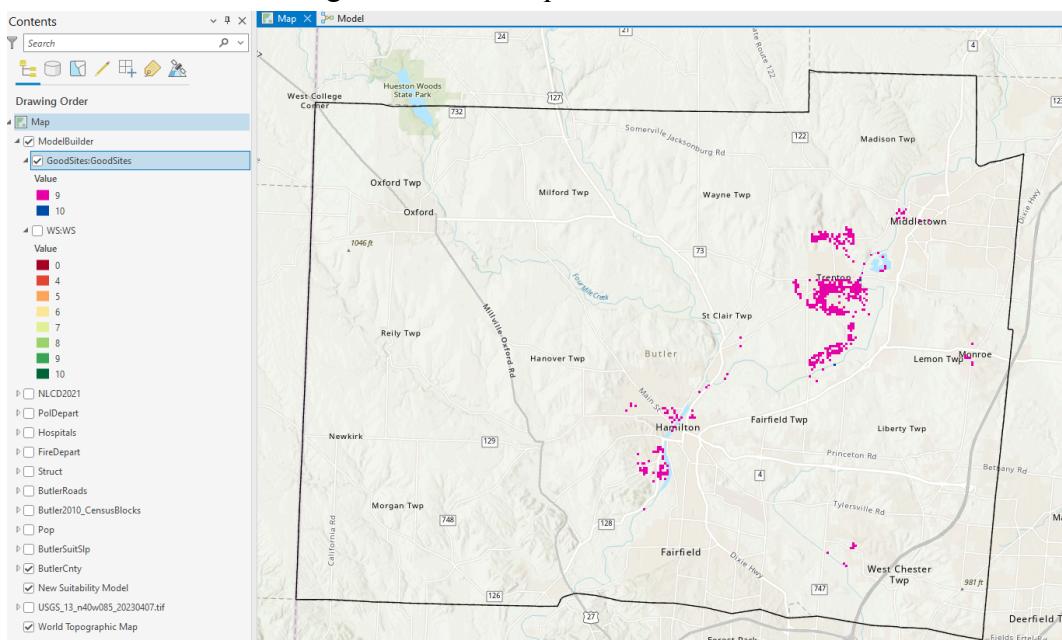
Weighted the layers



Initial weighted suitability layer values



Choose sites with values greater than or equal to 9



Good Sites chosen

Screenshot of ArcGIS Pro showing the conversion of raster data to polygons.

Contents: Shows various layers including "RasterSites" which is checked. Other layers listed include ModelBuilder, NLCD2021, PoisDepart, Hospitals, FireDepart, Struct, ButlerRoads, Butler2010_CensusBlocks, Pop, ButlerSutSp, ButlerCity, New Suitability Model, USGS_13_n40w085_20230407.tif, World Topographic Map, and World Hillshade.

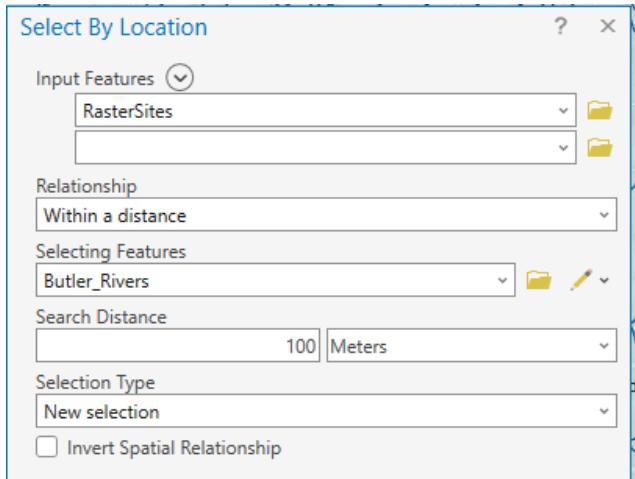
Map: Displays a map of Butler County, Pennsylvania, showing townships like Oxford, Milford, Wayne, St. Clair, Franklin, and others. Roads are labeled with route numbers such as 24, 122, 7, 129, 2046R, 741, 271, and 367R. A green polygon layer representing "RasterSites" is overlaid on the map.

Geoprocessing: A "Raster to Polygon" tool is running. Parameters set: Input raster (GoodSites:GoodSites), Field (Value), Output polygon feature (RasterSites), Simplify polygons (checked), Create multipatch features (unchecked), and Maximum vertices per polygon feature (set to 1000). The status bar indicates "Raster to Polygon completed."

RasterSites: A table view showing the converted polygons. The columns are: Field, OBJECTID*, Shape*, Id, gridcode, Shape_Length, and Shape_Area. The data is as follows:

	OBJECTID*	Shape*	Id	gridcode	Shape_Length	Shape_Area
1	1	Polygon	1	9	1660.056316	132549.686781
2	2	Polygon	2	9	2532.226276	224997.939483
3	3	Polygon	3	9	1660.056577	132549.725364
4	4	Polygon	4	9	2963.531959	404771.281108
5	5	Polygon	5	9	1660.056316	132549.686781
6	6	Polygon	6	9	1660.05672	132549.750073
7	7	Polygon	7	9	1660.05672	132549.750072
8	8	Polygon	8	9	1660.056316	132549.686781
9	9	Polygon	9	9	1660.056172	132549.662069
10	10	Polygon	10	9	2532.226673	224998.107249
11	11	Polygon	11	9	1759.999761	193599.947384
12	12	Polygon	12	9	11041.431813	4849196.385951
13	13	Polygon	13	9	2532.226032	224998.035072

Converted the filtered good sites to a vector



Map X **Model**

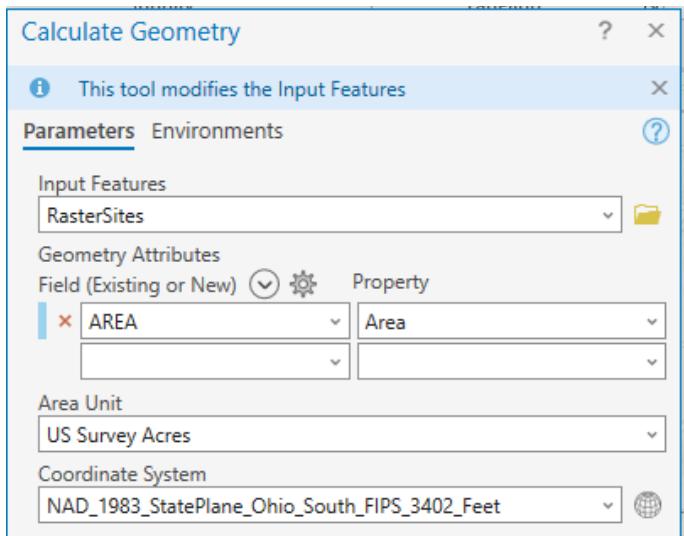
1:268,672 | | |

RasterSites

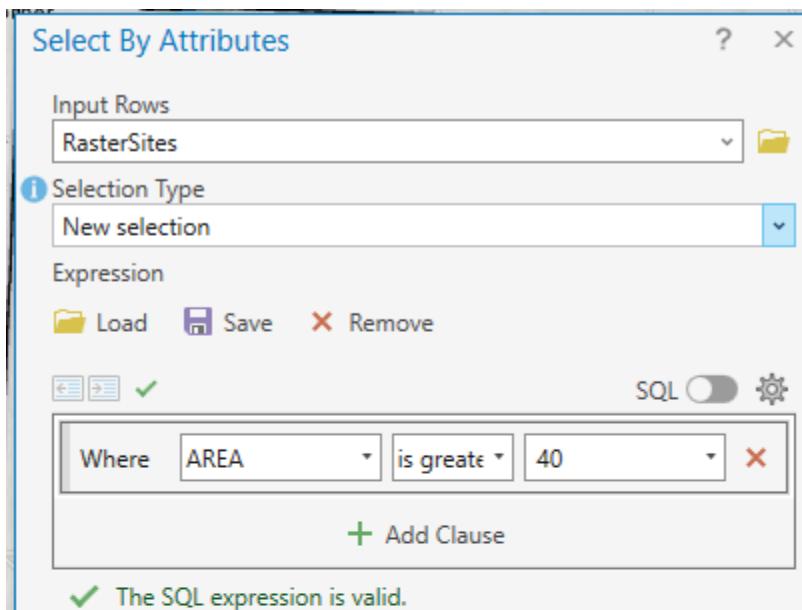
Field:	Add	Calculate	Selection: <input type="button"/> Select By Attributes	Zoom To	Switch	Clear	Delete	Copy
OBJECTID *	Shape *	Id	gridcode	Shape_Length	Shape_Area			
1 8	Polygon	8	9	1660.056316	132549.686781			
2 9	Polygon	9	9	1660.056172	132549.662069			
3 11	Polygon	11	9	1759.999761	193599.947384			
4 13	Polygon	13	9	2532.226032	224998.035072			
5 14	Polygon	14	9	1759.999761	193599.947384			
6 25	Polygon	25	9	1660.05672	132549.750073			
7 28	Polygon	28	9	2496.445766	261331.597867			
8 29	Polygon	29	9	2489.903276	264342.999588			
9 32	Polygon	32	9	1660.05629	132549.675946			
10 33	Polygon	33	9	1660.05629	132549.675946			
11 34	Polygon	34	9	1649.924799	123979.236794			
12 36	Polygon	36	9	1660.055886	132549.612655			
13 38	Polygon	38	9	1660.05629	132549.675945			

0 of 53 selected

Selected polygons within 100m of rivers, and then deleted those sites

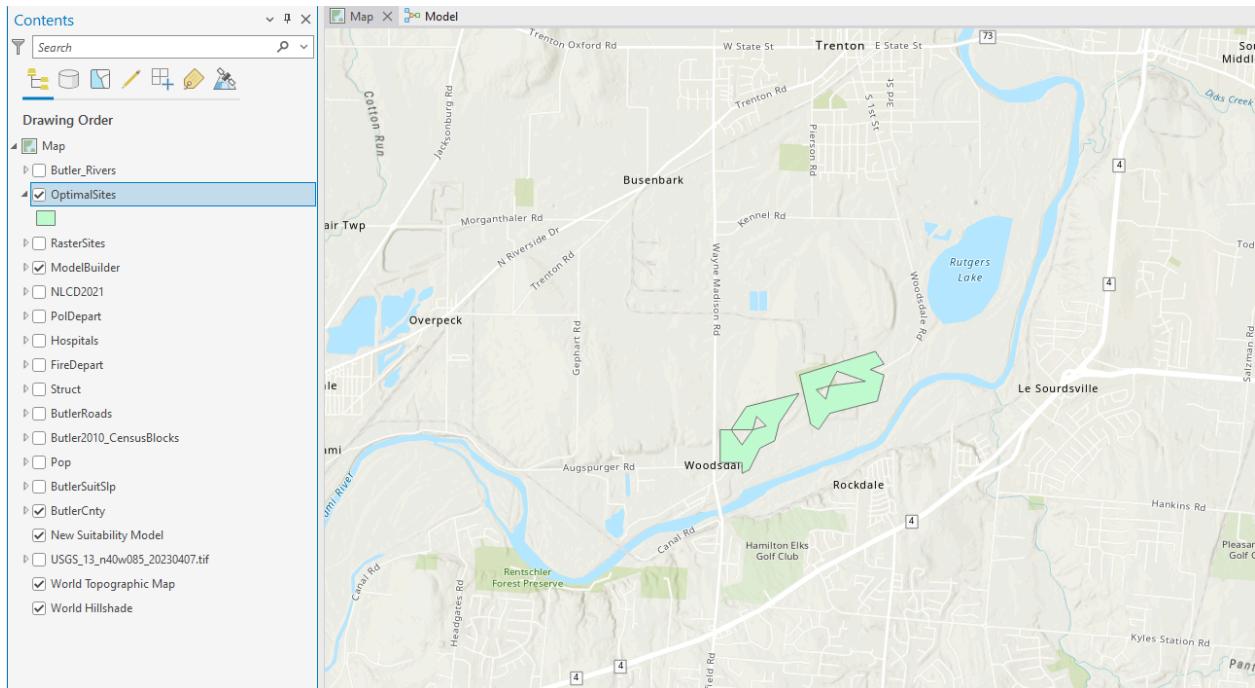


Created a new field titled “AREA” and calculated the geometry

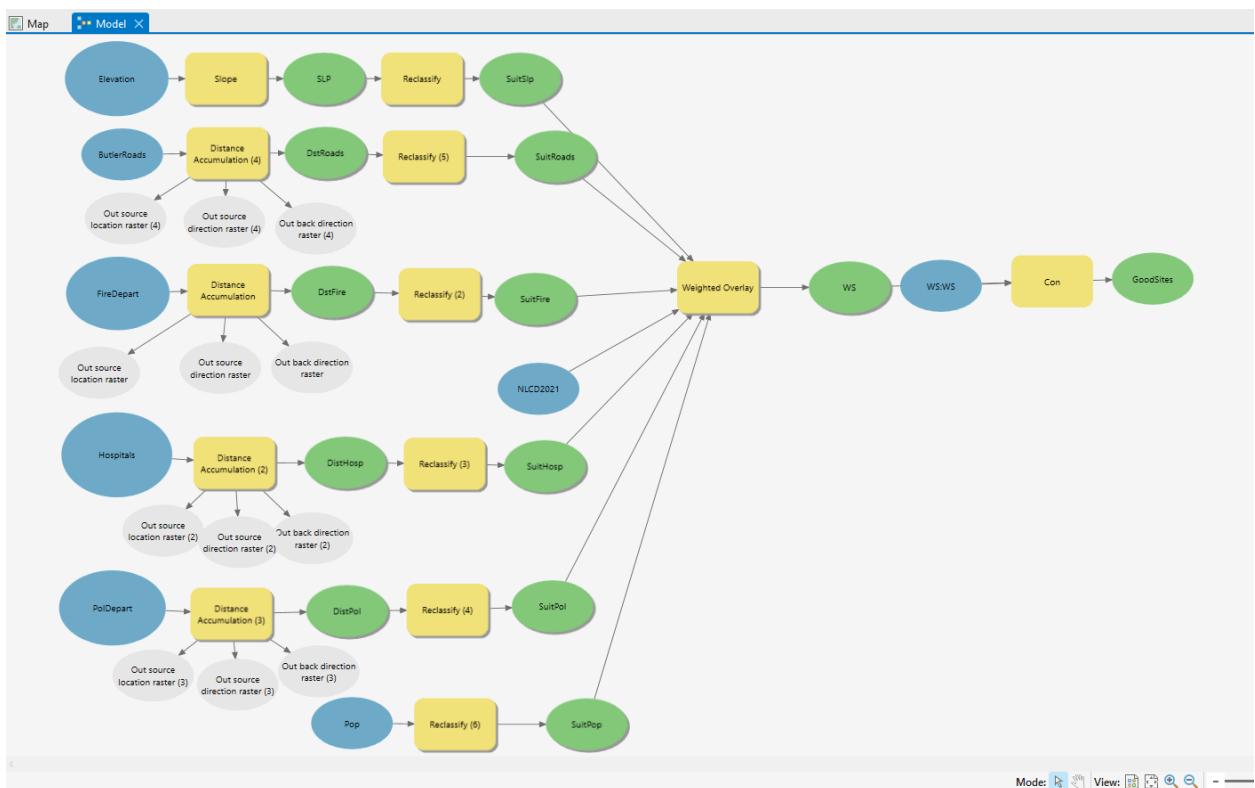


	OBJECTID *	Shape *	Id	gridcode	Shape_Length	Shape_Area	AREA
1	64	Polygon	64	9	16291.869118	5600989.817663	128.58
2	70	Polygon	70	9	14545.336583	4247595.952302	97.51

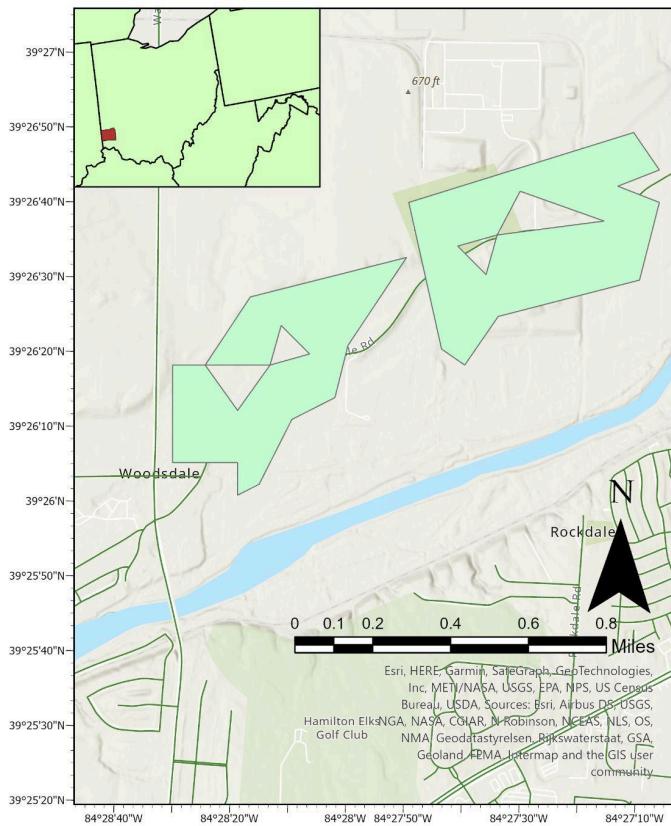
Select by attributes where area is greater than or equal to 40 acres and exported this data



Optimal Sites



Final Model



Final Map