Aggregate Rocks in NE Oregon

A site selection model for
United States Forest Service

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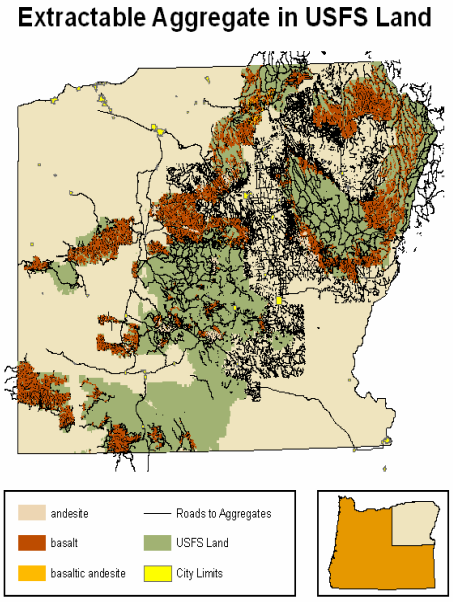
Goal

- Create a raster based model for finding aggregate rocks on US Forest Service land.
- Model should be transferable to other research areas.
- Easy to use.

Previous Study

- Final map had more than 3387 usable locations.
- Total area of aggregate rock available for extracting ~ 500,000,000 sq. Km



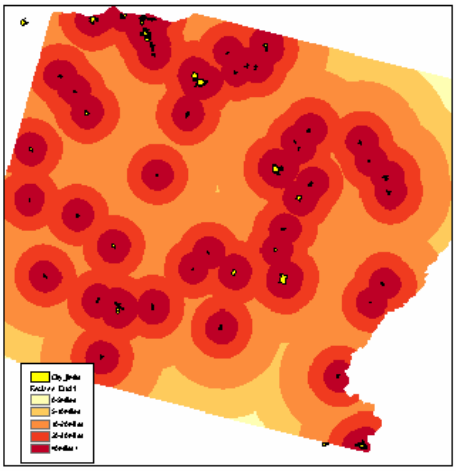
Data

- Oregon Geologic Data Compilation - Release 1.1 (Northeast Oregon) –ODGAMI
  - Geological Unit Data
  - Unit Boundary
- United States Forest Service boundary areas.
- Umatilla National Forest Roads
- Oregon Geospatial Data Clearinghouse
  - City Limits
  - Vegetation
  - Streams
  - DEM

Process-cities

- Euclidian Distance
- Reclassify-5 miles to 10mile increments

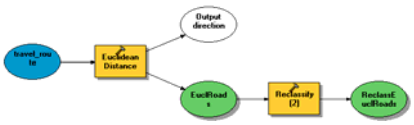
Old values	New values
0 - 8046.72	5
8046.72 - 16093.44	4
16093.44 - 32186.88	3
32186.88 - 48280.32	2
48280.32 - 64373.76	1
NoData	NoData

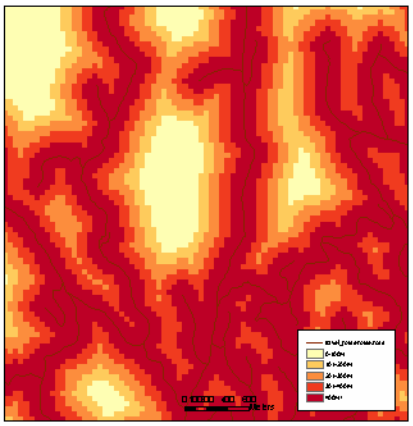


Process-roads

- Euclidian Distance
- Reclassify-100m increments

Old values	New values
0 - 100	5
100 - 200	4
200 - 300	3
300 - 400	2
400 - 97665.5625	1
NoData	NoData

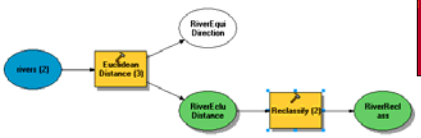


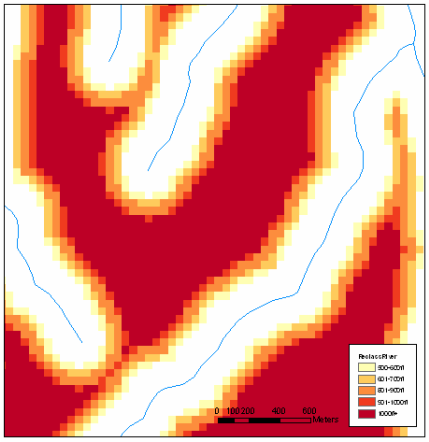


Process-streams

- Intersect river with boundary
- Euclidian Distance
- Reclassify-100ft intervals after 500ft buffer

Old values	New values
0 - 152.4	0
152.4 - 182.88	1
182.88 - 213.36	2
213.36 - 243.84	3
243.84 - 274.32	4
274.32 - 80000	5
NoData	NoData

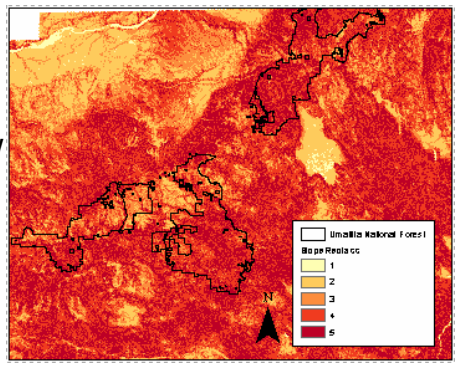




Process-Slope

- Mosaic DEM Files
- Calculate slope
- Reclassify-Elevation ranking in chart below

Old values	New values
0 - 10	1
10 - 20	3
20 - 30	4
30 - 50	5
50 - 60	4
60 - 70	3
70 - 80	2
NoData	NoData



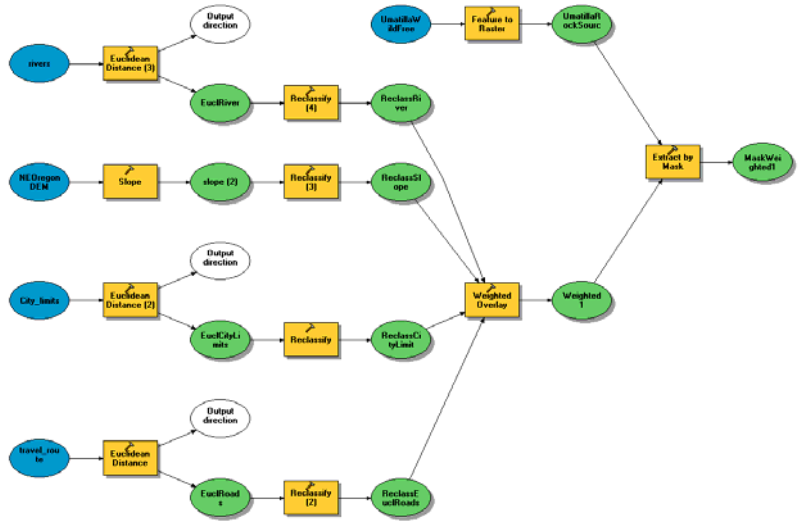
Weighted Scale

- Each raster was rated equally
  - Until further change or notice
- Each raster was reclassified to it's significant rating
  - Therefore no adjustments were needed to be made to the final weighting scale.
- A Final Mask of the rock layer was then applied to the weighted scale.

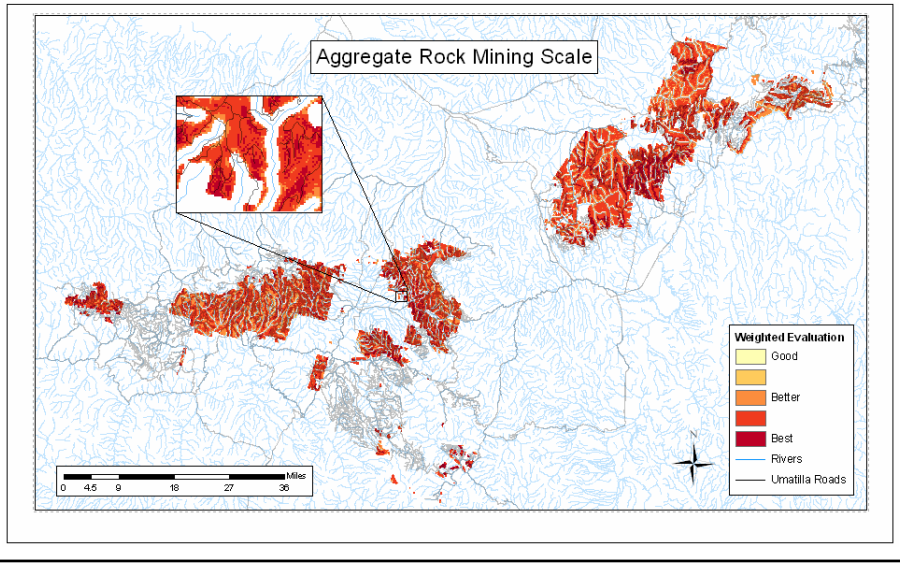
Process-wilderness free Aggregates in Umatilla

- Select by attribute Umatilla forest-export
- Dissolve
- Select by attribute basalts & andisites-Export
- Dissolve
- Select by Attribute Wilderness areas-Invert selection-Export
- Intersect

Model



Final Map



Conclusion

- Model will allow the user to make needed adjustments for changes in areas.
- Model will also allow the user to integrate different features and layers.
- Goal achieved? Better detailed areas for aggregate rock quarrying.

Additional Steps

- Vegetation type is irrelevant.
  - Forest service can sell timber if clear cutting is needed
- Consider habitat protected areas.
  - Look at endangered species
- Better defined reclassification scale and weighting.
- Match up with previous quarries.