

Habitat Classification for White-tailed Kite in the American River Riparian Corridor

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Geography 342 Final Project



Introduction:

White-tailed Kite (*Elanus leucurus*)

- Pre 1940: experienced large-scale population decline
- 1957: fully protected status in California
- Inhabits coastal & valley lowlands near agriculture & along riparian corridors
 - Undisturbed, open grasslands for foraging
 - Trees & shrubs for roosting & nesting



Introduction:

White-tailed Kite (*Elanus leucurus*)



Objectives

- Produce map that identifies important habitat features of kites
- Classify habitat along American River into five broad categories
 - Grasslands
 - Shrubs
 - Woodlands
 - Water
 - Unsuitable
- Classification can be used as model to classify other, similar areas along a riparian corridor



Methods & Results

Image

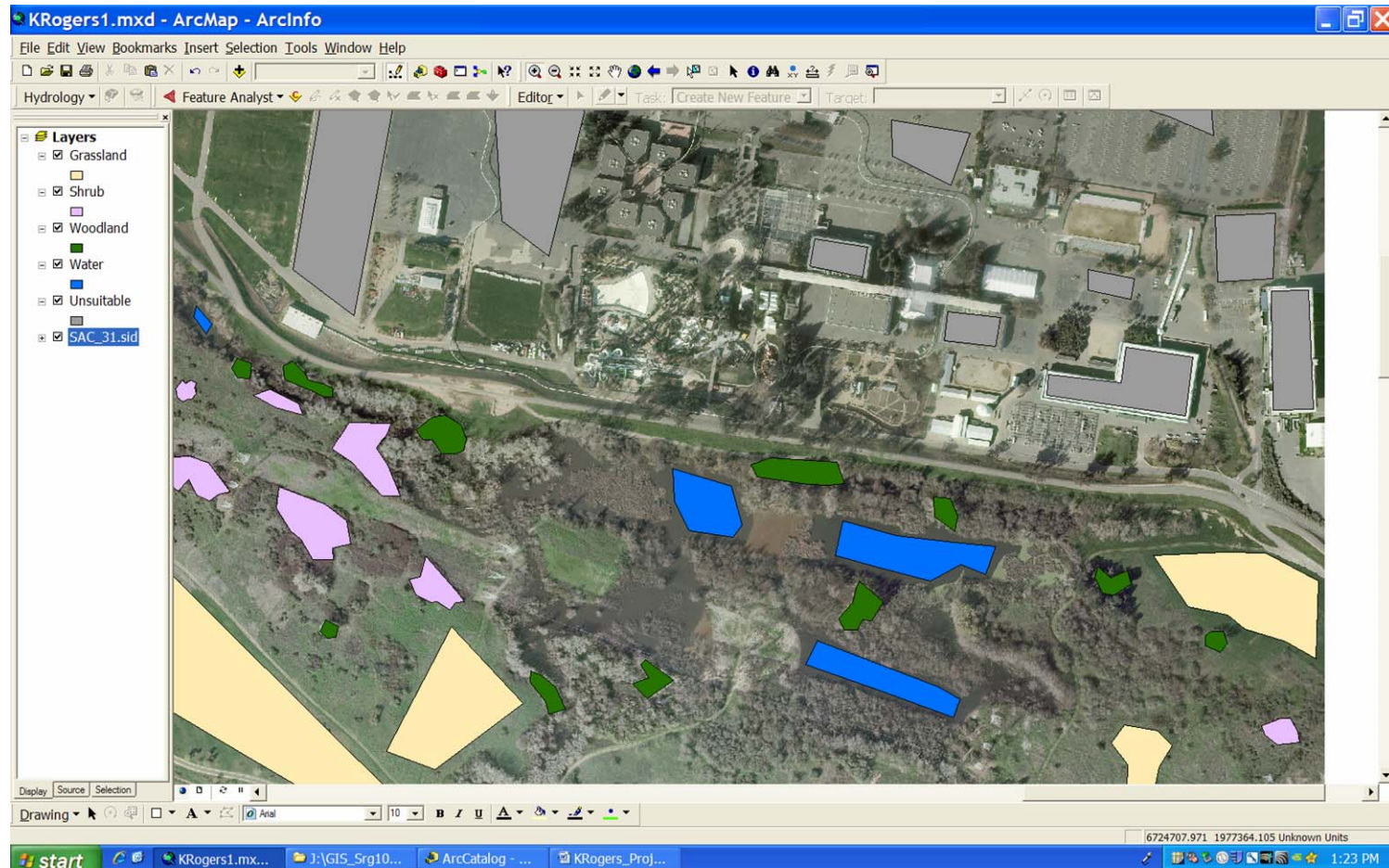




Methods & Results

Feature Analyst

- Selected training sets for each habitat class

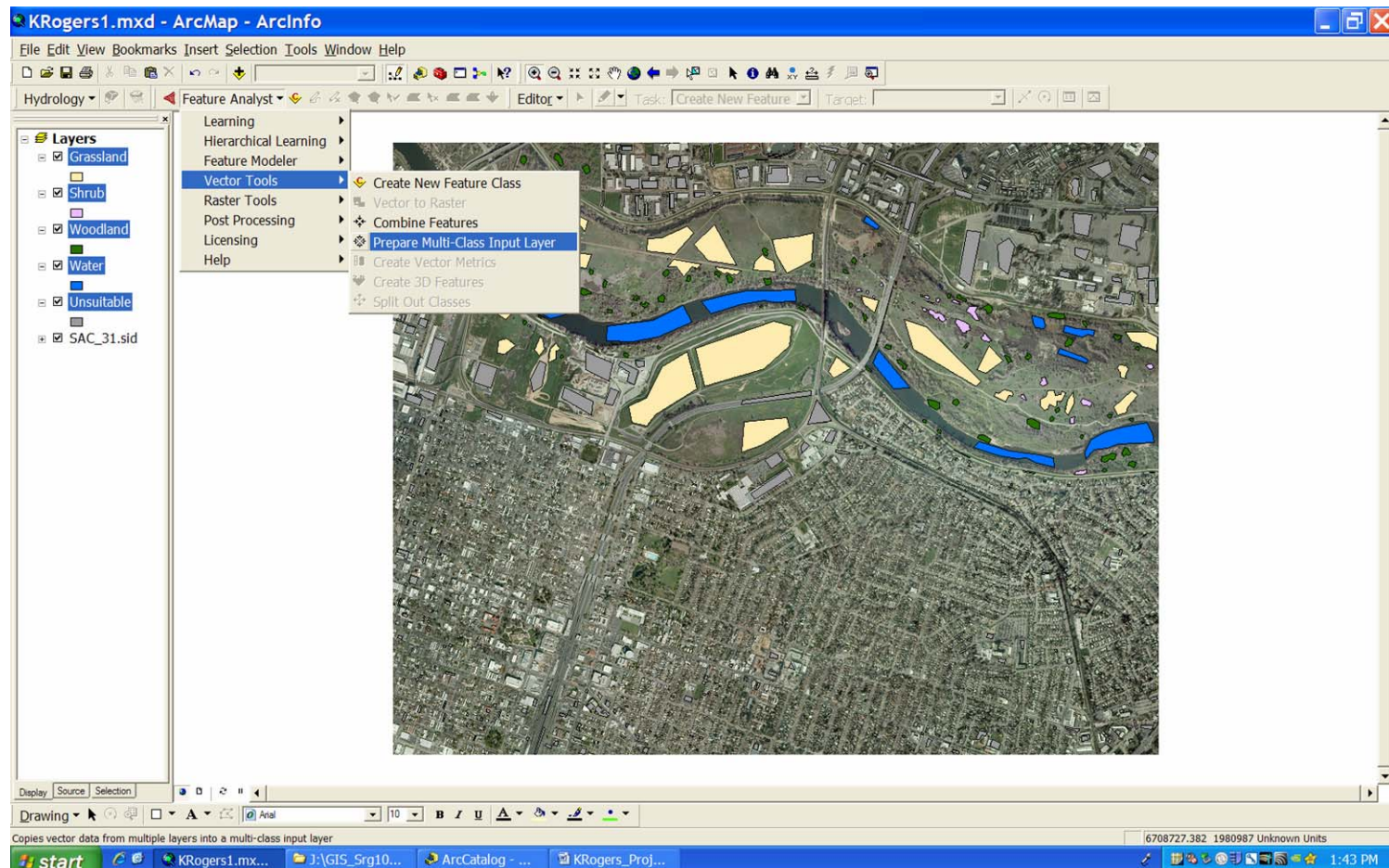




Methods & Results

Feature Analyst

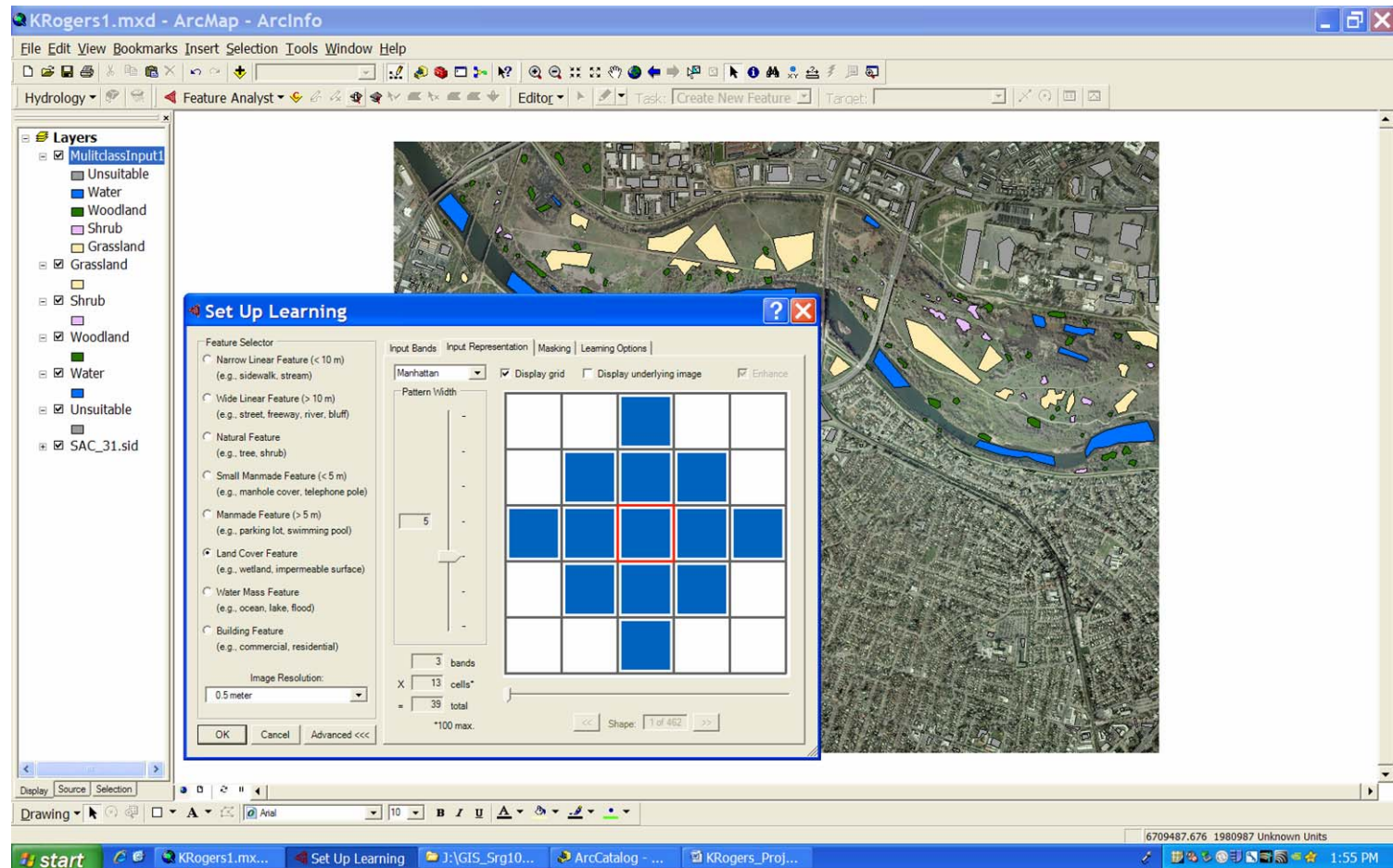
- Created Multi-class Input Layer



Methods & Results

Feature Analyst

■ Set up Learning parameters

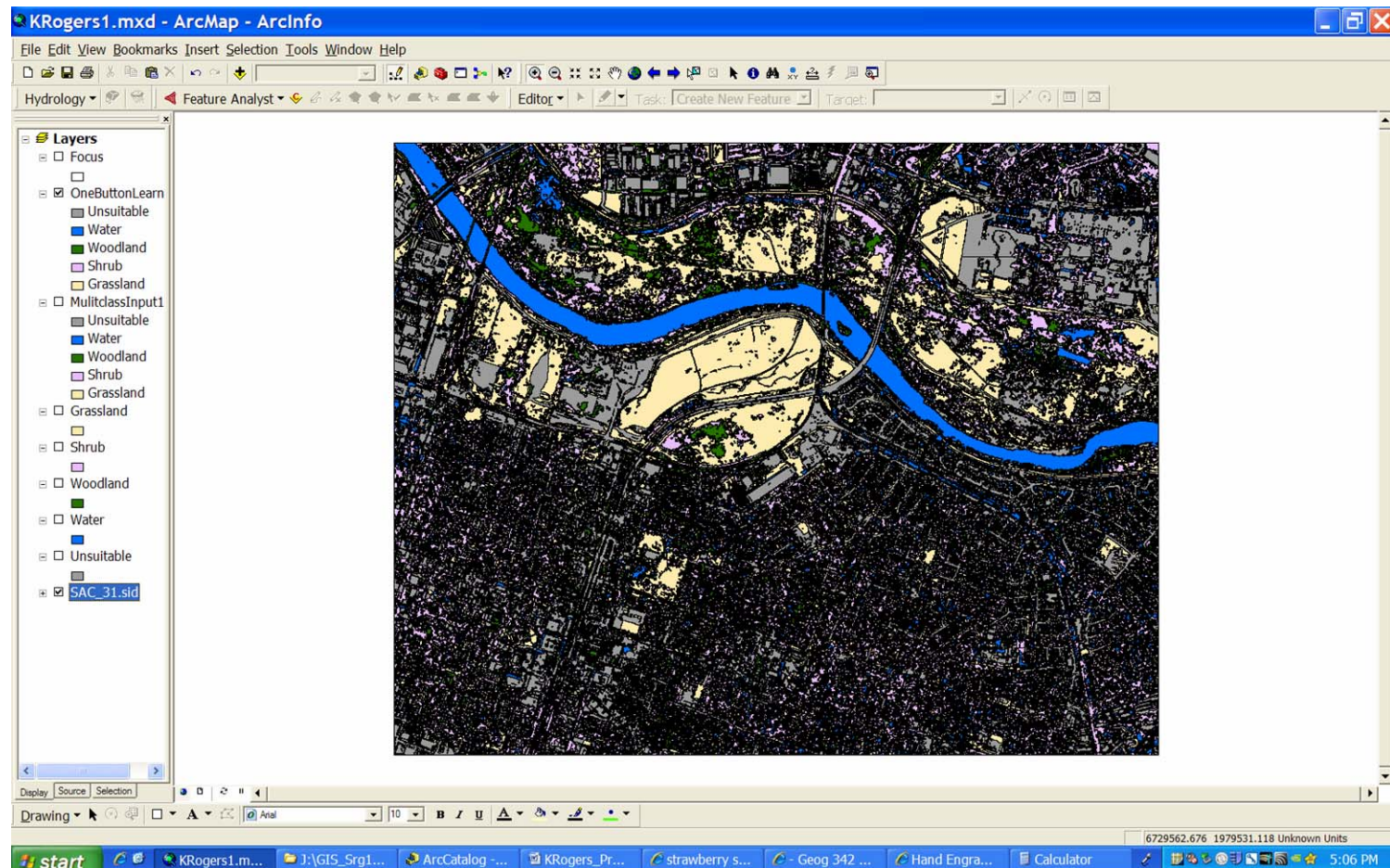




Methods & Results

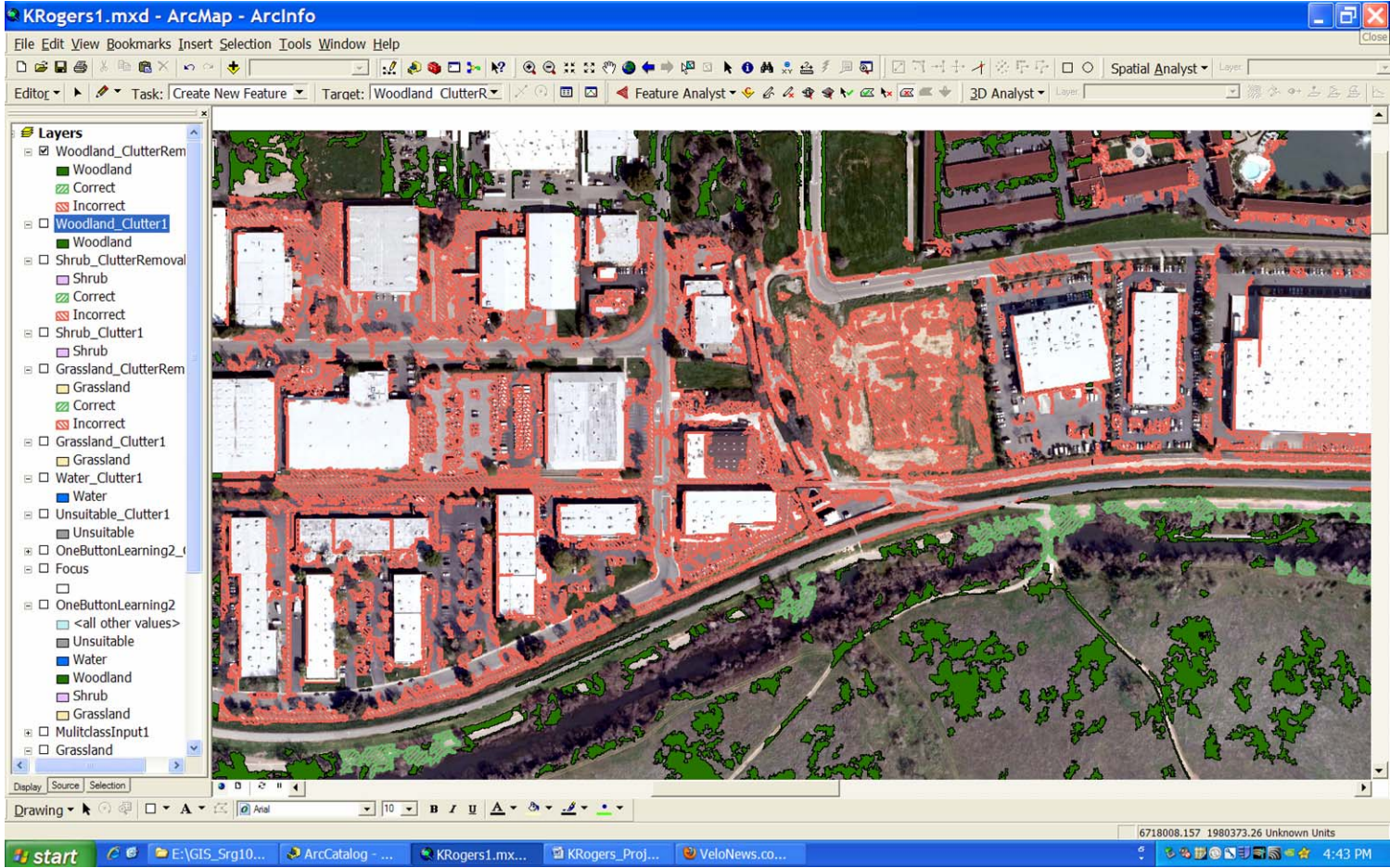
Feature Analyst

- Ran One Button Learning...2.5 hours later...



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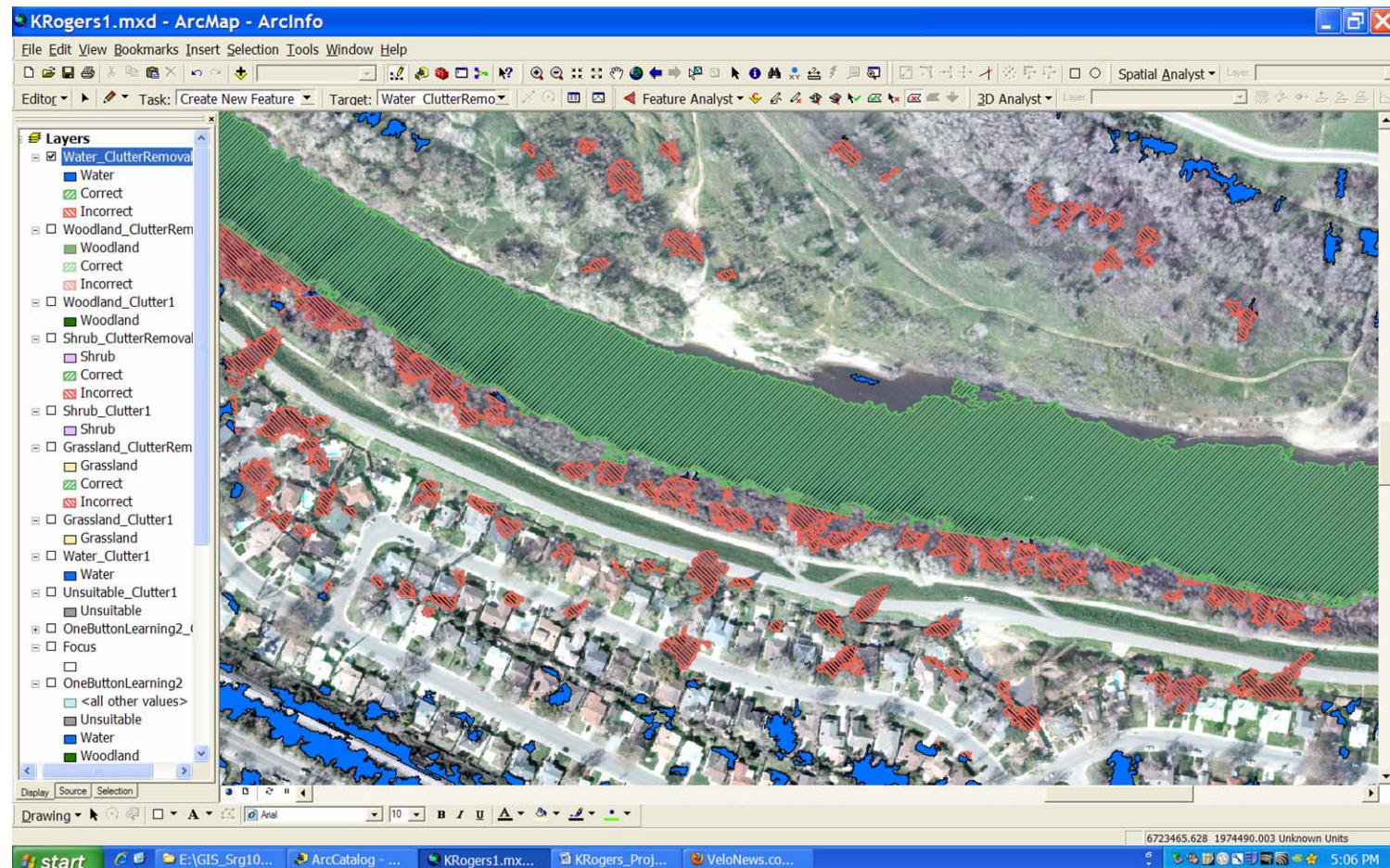




Methods & Results

Feature Analyst

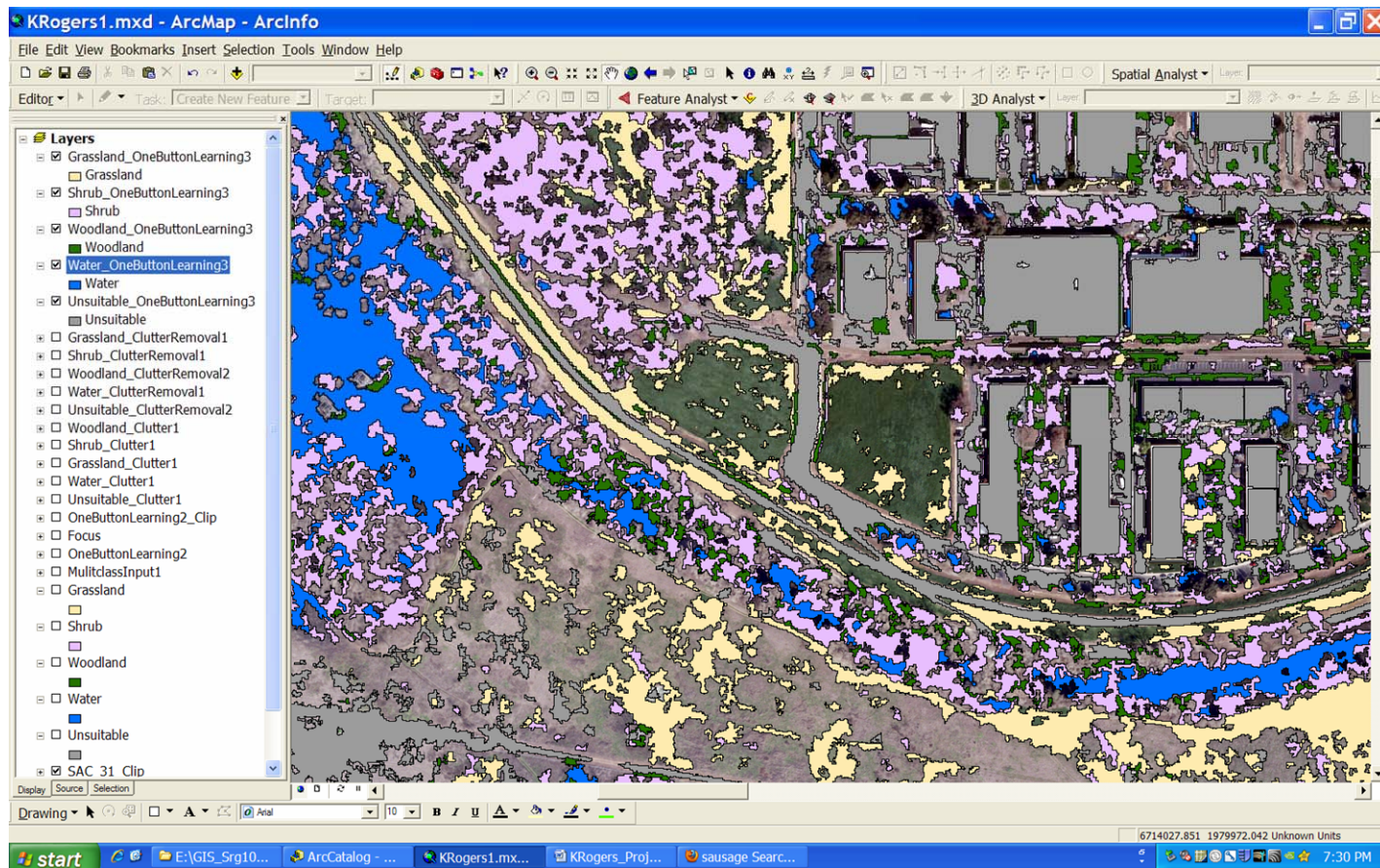
- Clutter removal for each classification



Methods & Results

Feature Analyst

- Re-ran One Button Learning classification for each habitat class

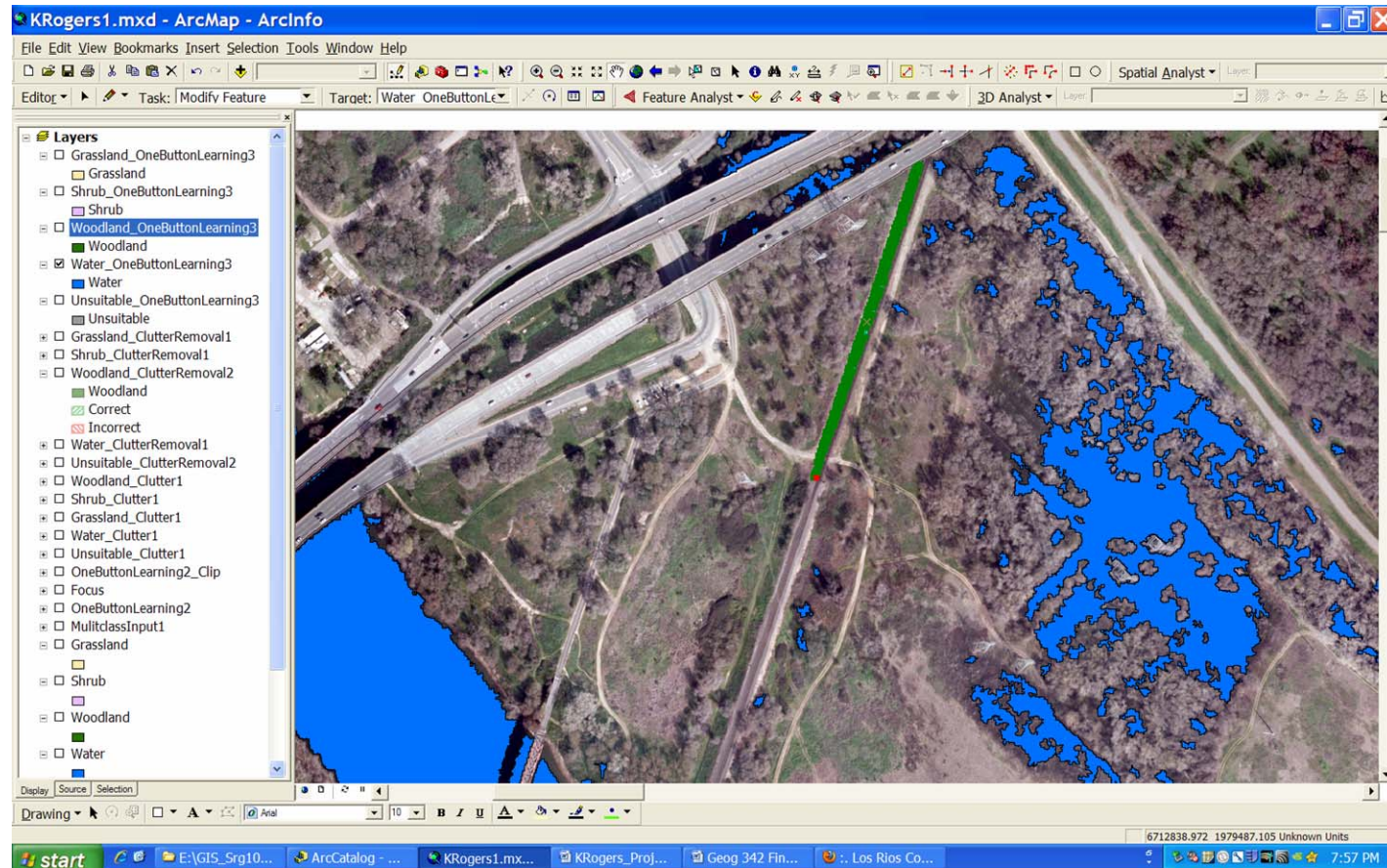




Methods & Results

Feature Analyst

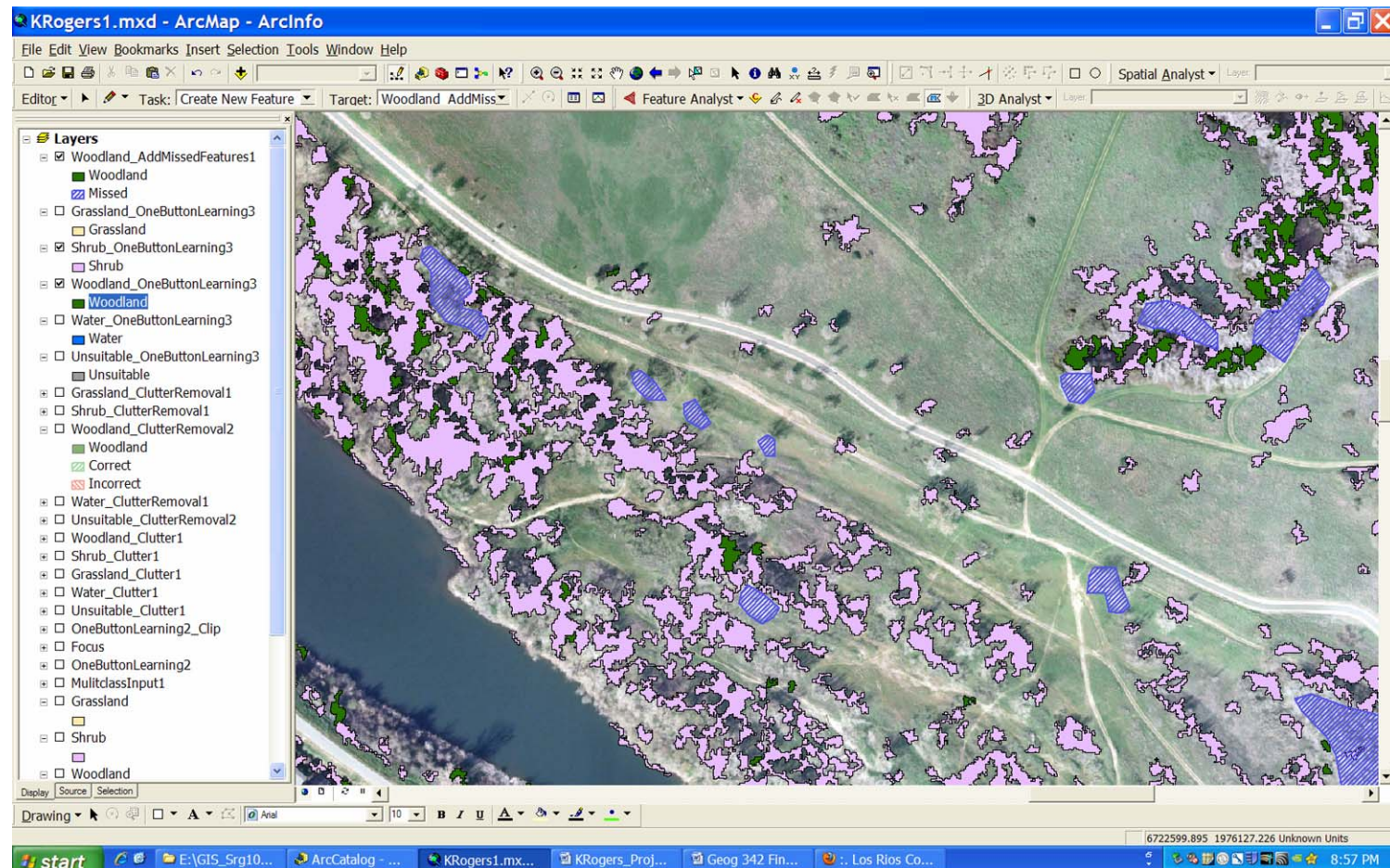
- Manually deleted misidentified features in edit session



Methods & Results

Feature Analyst

- Add Missed Features tool for Woodland class

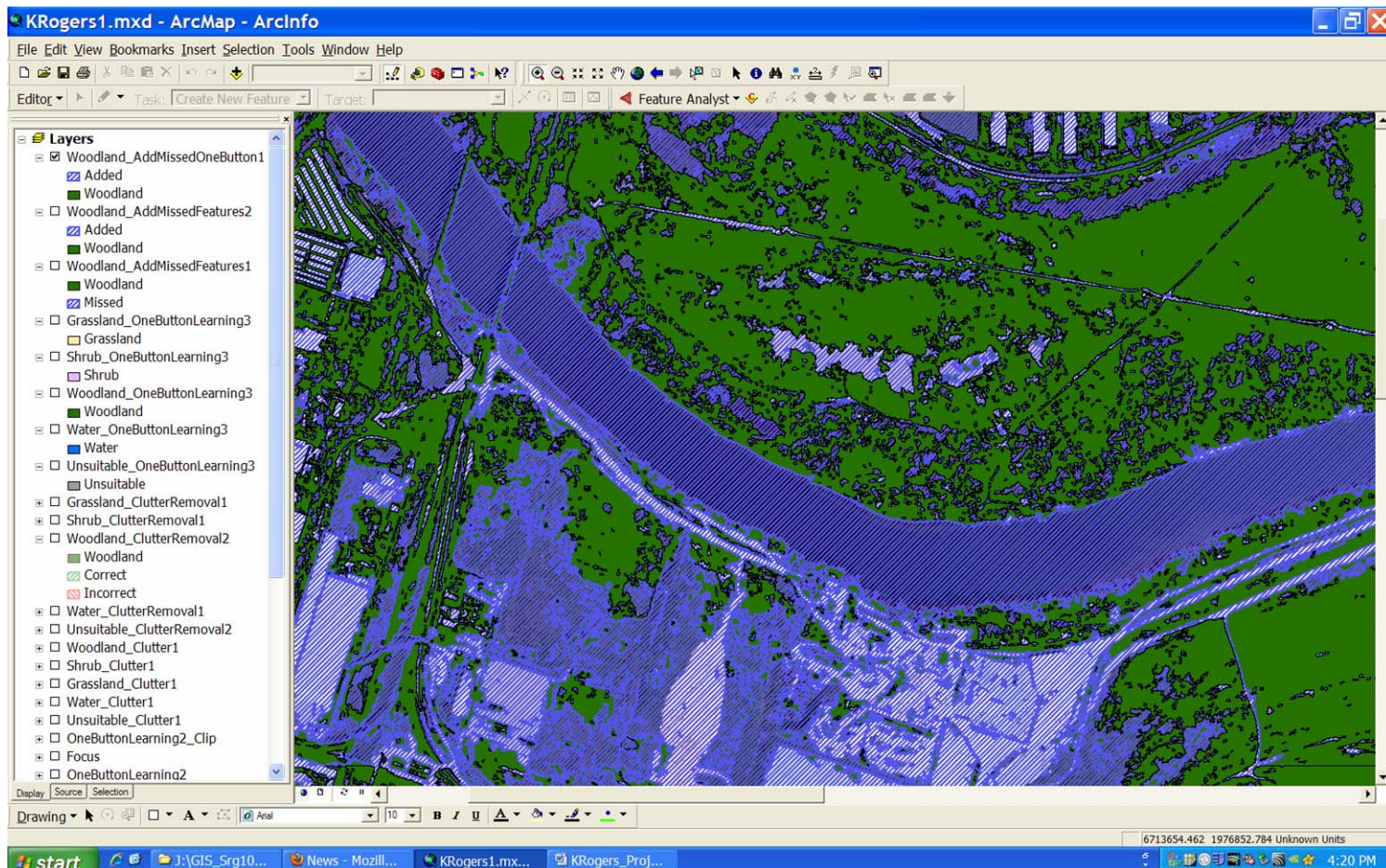




Methods & Results

Feature Analyst

- Yikes...not the results I expected!

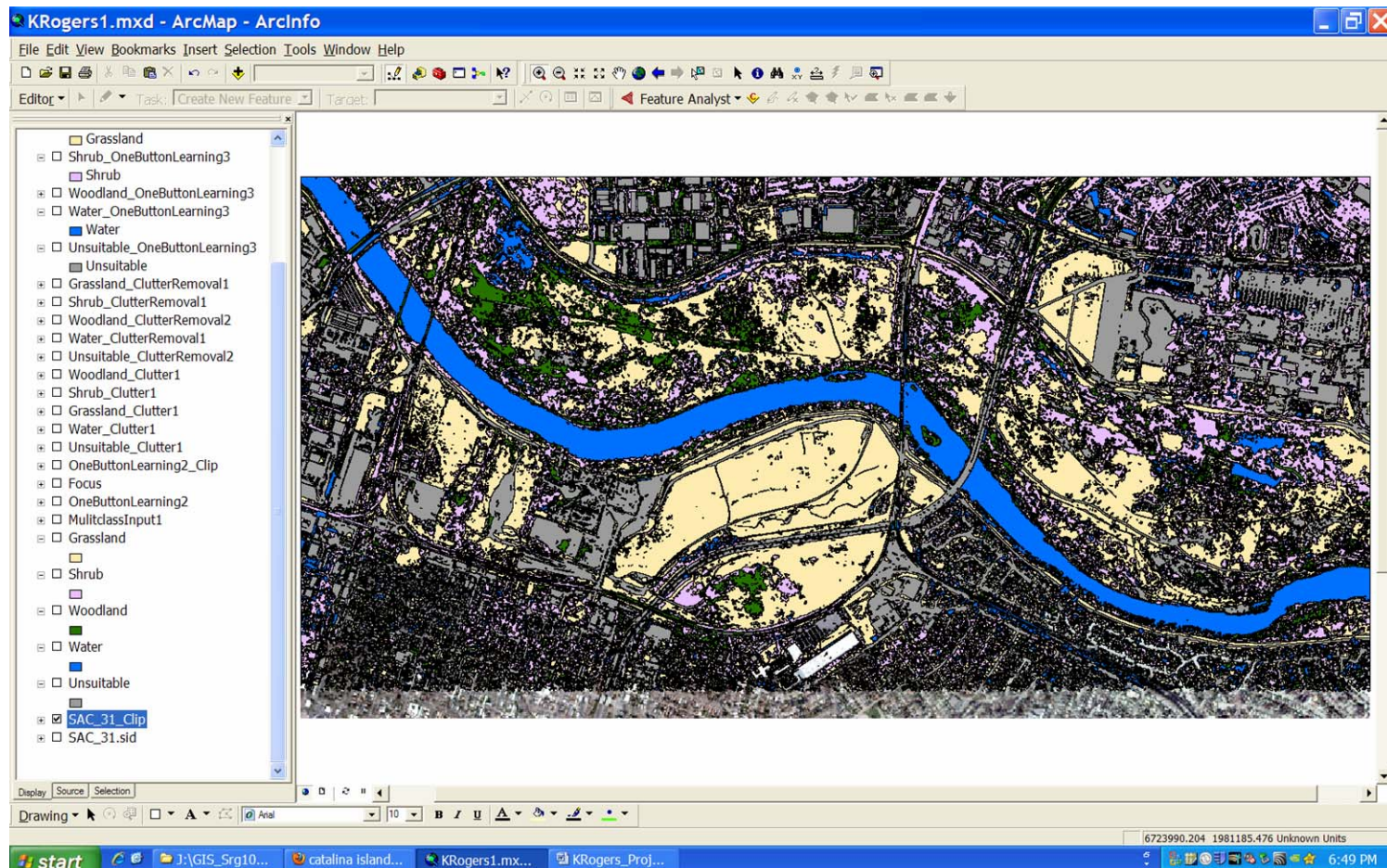




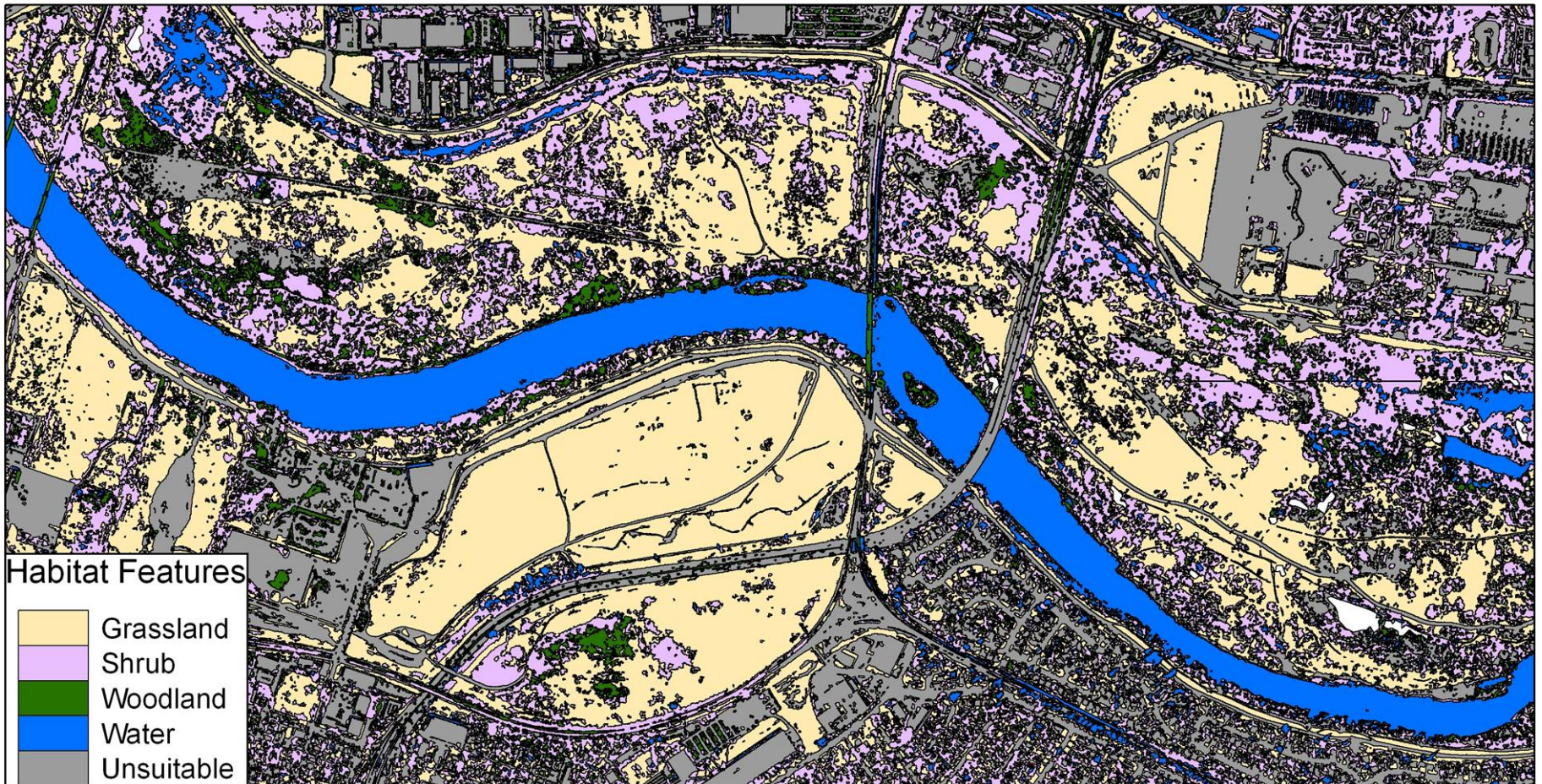
Methods & Results

Feature Analyst

- Combine Features into single layer



[Final Classification



[Conclusions]



- Start with a subset of an image, then expand
- Trial-&-error necessary to develop ideal learning parameters
- Select high quality training sets
- Use on-the-ground information for verification of training set features
- Feature Analyst is a useful tool for image classification, but it requires knowledgeable analyst to realize full benefit & time savings