Ecosystem Indicators

2010 MSHCP Symposium

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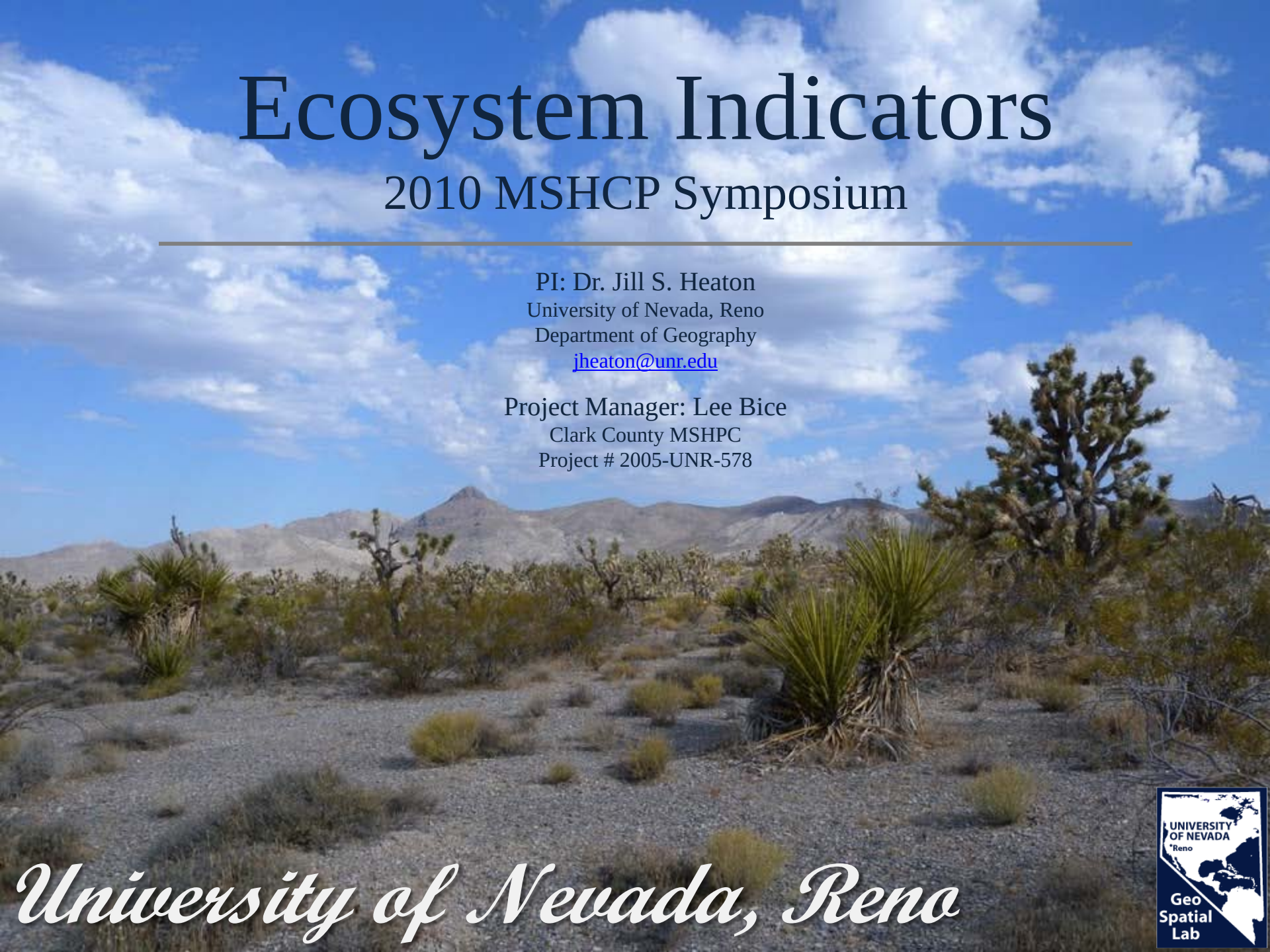
Project # 2005-UNR-578



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Project Team

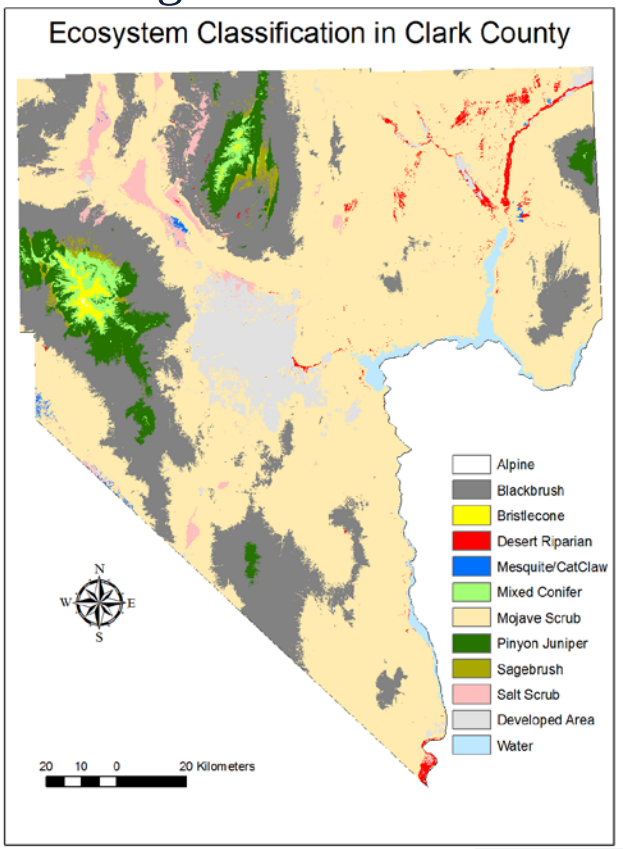
- Dr. Kyle House and Ms. Heather Green; UNR Nevada Bureau of Mines and Geology
- Drs. Pat Cashman and Jim Trexler; UNR Geologic Sciences
- Dr. Xin (Shane) Miao; Missouri State Geography
- Dr. David Charlet; CSN Biology
- Dr. Karin Hoff and Mr. Rohit Patil; UNR Geography
- Ms. Abbey Grimmer, students and staff; UNR Geo-Spatial Lab
- Mr. Lee Bice, MSHCP Project Manager

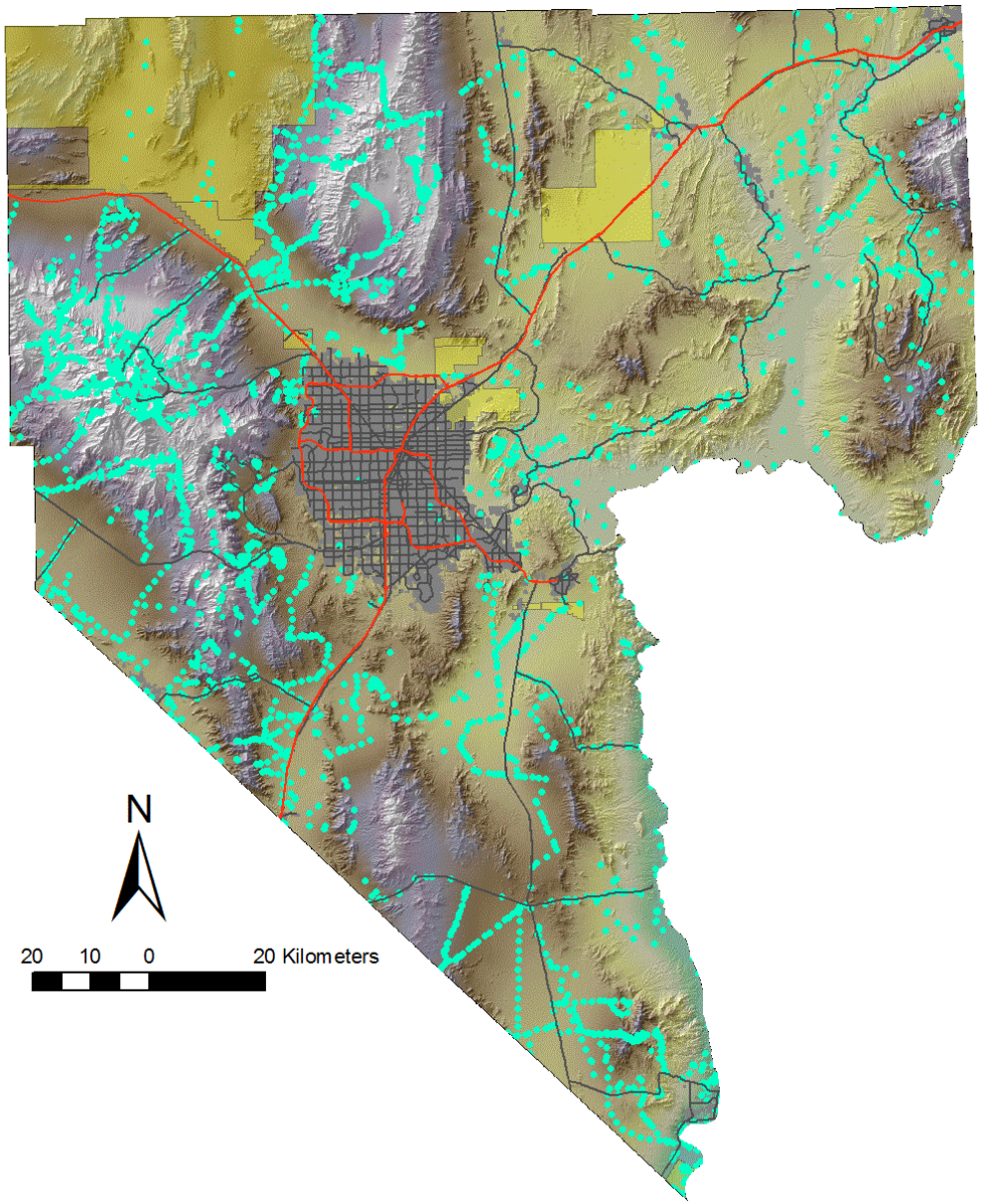
Project Deliverables

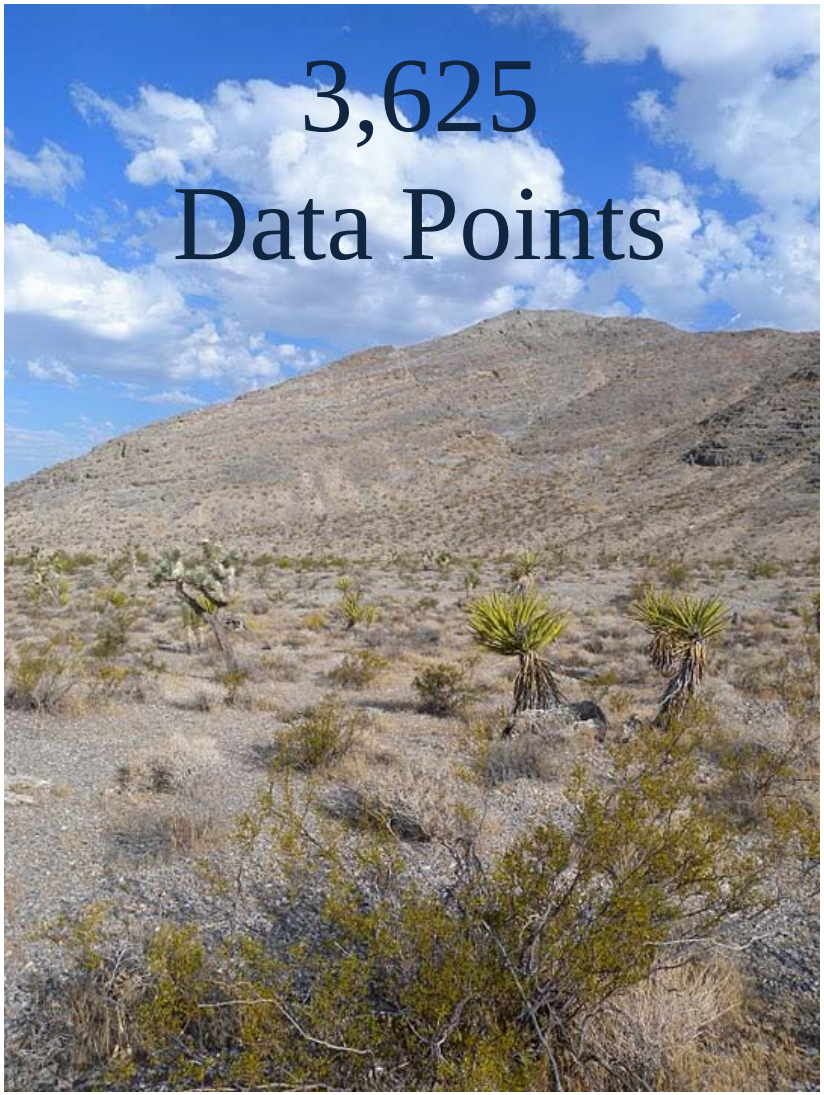
- Processed Quickbird Imagery
  - April, ’09
- Vegetation Ecosystem Model
  - Interim March ‘10
  - Final Nov ’10
- Geomorphology Model
  - Interim Dec ‘09
  - Final July‘10
- Pilot Vegetation Ecosystem Model
  - Interim Sep‘10
  - Final Nov ‘10

Ecosystem Modeling

- Evaluated 20+ different data sets, models, and remote sensing datasets
  - Original field data (1706 points)
  - Existing SWReGAP (1329 points)
  - Existing Red Rock Canyon Data (301 points)
  - Existing MSHCP Rare Plant Survey Data (289 points)
  - Original and Existing M/A mapping
  - National Hydrology Data and Original Mapping for Riparian
  - Compiled existing Springs data
- Finalized Methods
- Finalized Pilot Areas
  - Ivanpah Valley
  - Piute Valley
  - County-wide
- For more information see Interim Report submitted to Clark County







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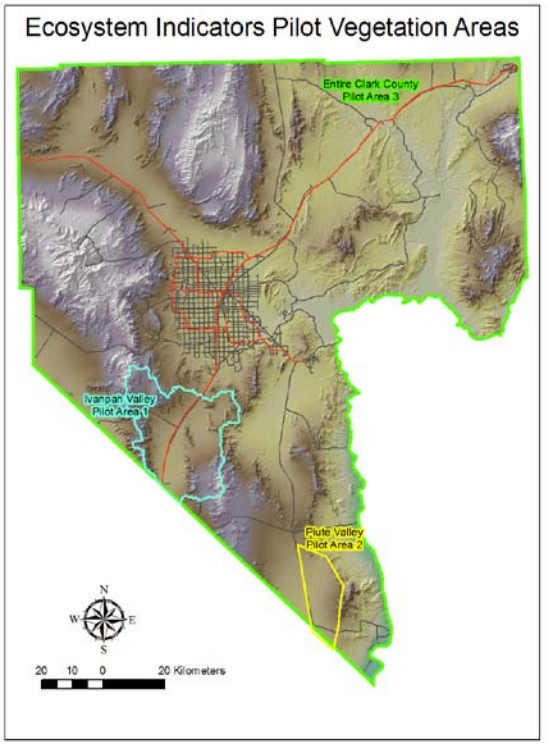
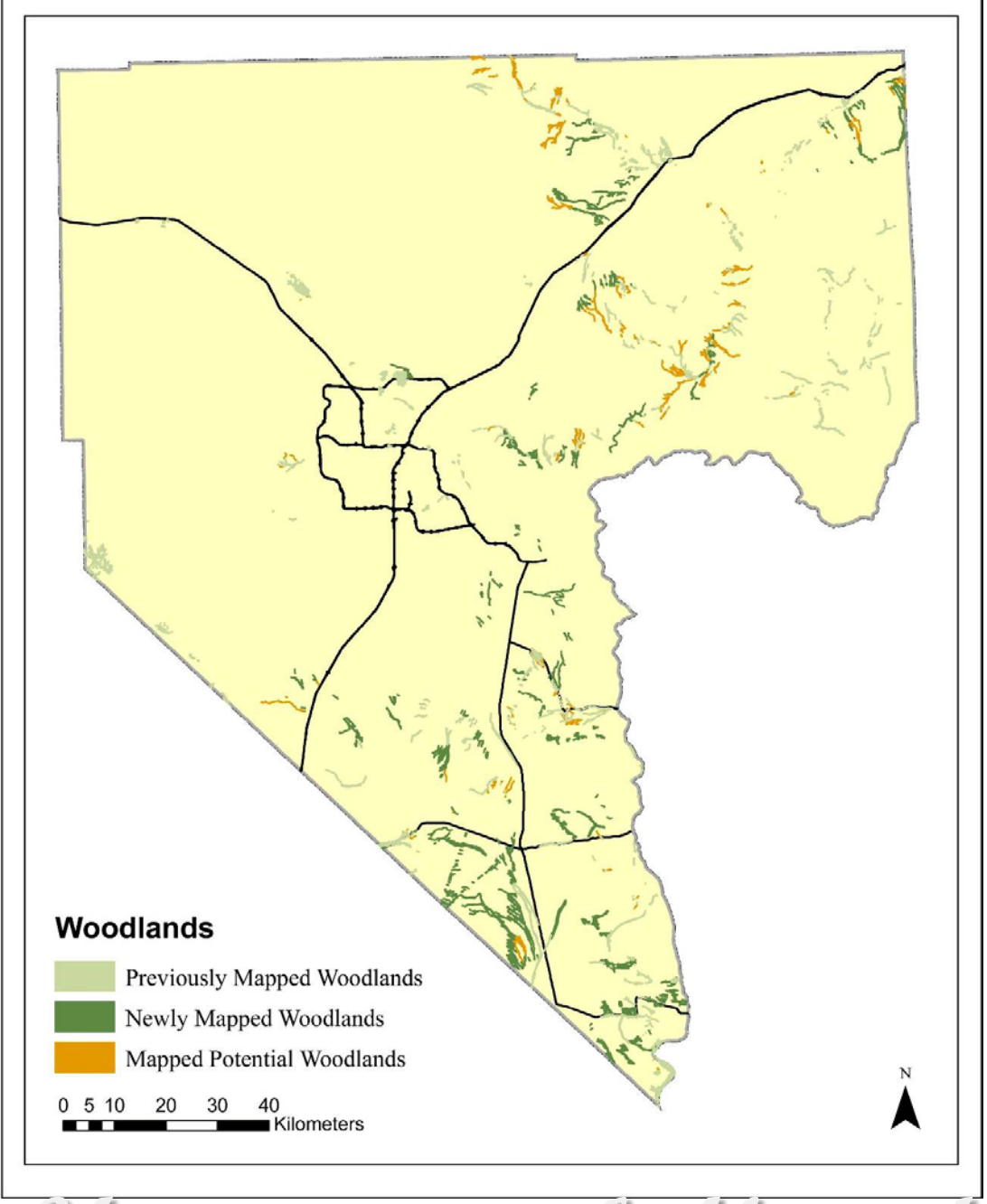
Pilot Areas



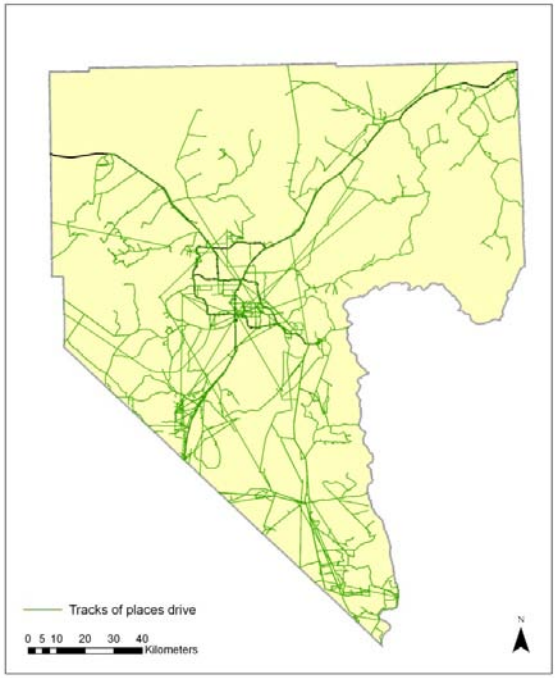
- Ivanpah Valley
  - Testing influence of geomorphology and spatial texture analysis on vegetation modeling
    - 1:24,000 and 1:150,000 geo mapping
- Piute Valley
  - Interrelationship between *Yucca sp.* distribution, elevation, fan age, and bedrock composition
- County-wide
  - Comparative assessment with and without spatial texture and 1:150,000 scale geomorphology data

Mesquite/Acacia Mapping

- A Technical Report detailing methods and results is being prepared

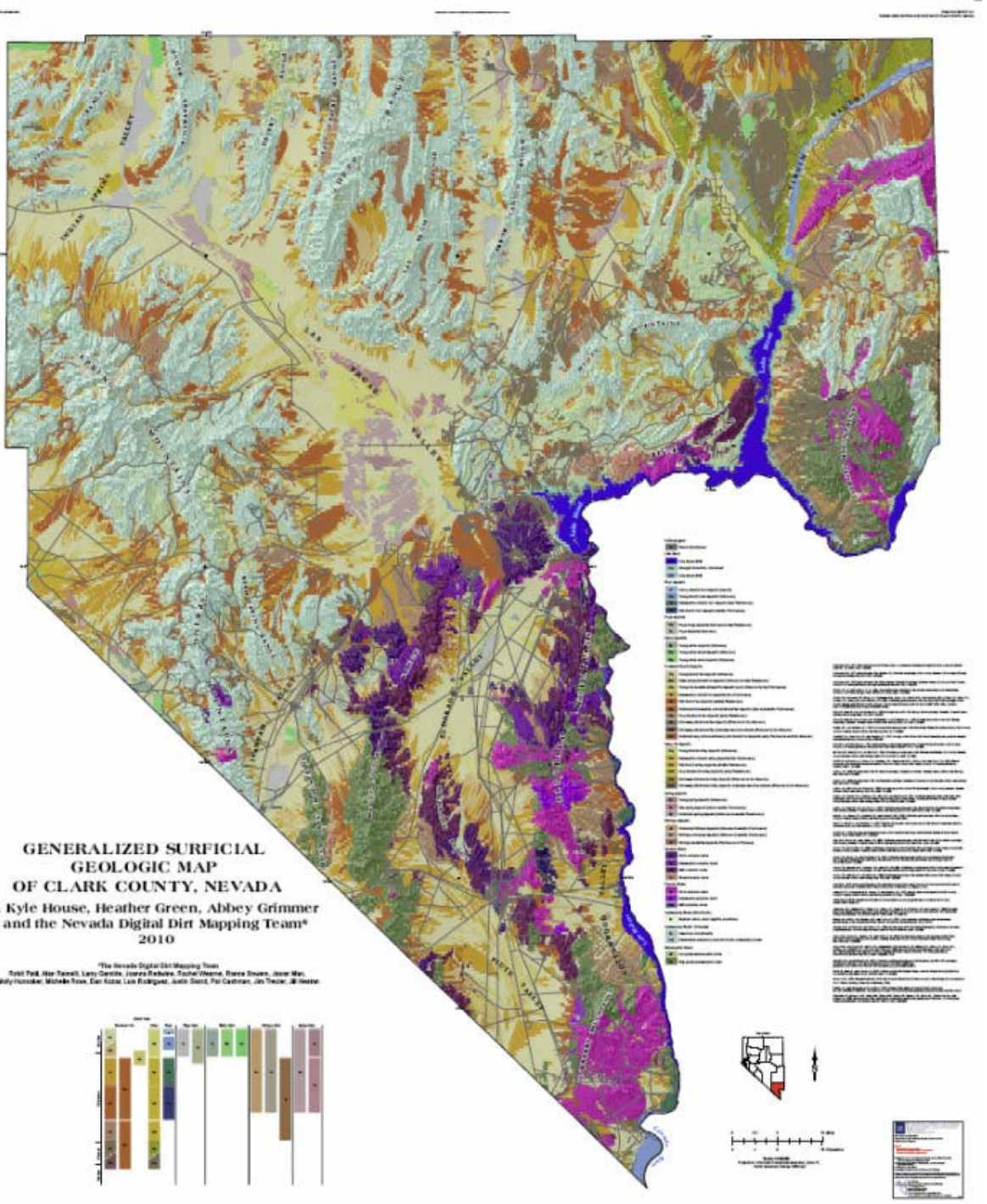


Mesquite/Acacia Mapping



Woodland Area (Ha)

Species	Previous	New	Potential	Total
Acacia	5701.2	9485.9	2284.3	17471.3
Mesquite (sum of all species listed below)	5498.4	51.4	105.6	5639.2
Honey Mesquite	*48.8*	*0.54*		*372.0*
Screwbean Mesquite	*147.9*			*518.4*
Honey Mesquite/Tamarisk	*652.3*			
Mesquite	*4549.9*			
Mesquite/Tamarisk	*83.2*			
Honey-Screwbean Mesquite		*50.9*		
Mesquite/Acacia Mixed	16.3	628.33		644.7
Grand Total	**11183.2**	**10165.6**	**2389.9**	**23755.1**



Surficial Geology

- Scale 1:150,000
- MMU 10 ha
- 47 Mapped Units
- Contains Generalized Bedrock Geology
- Only such map available we believe at any scale?
- Consistent representation of surficial geology
- Baseline dataset for integration with other environmental data and models
- For more information see Final Report submitted to Clark County

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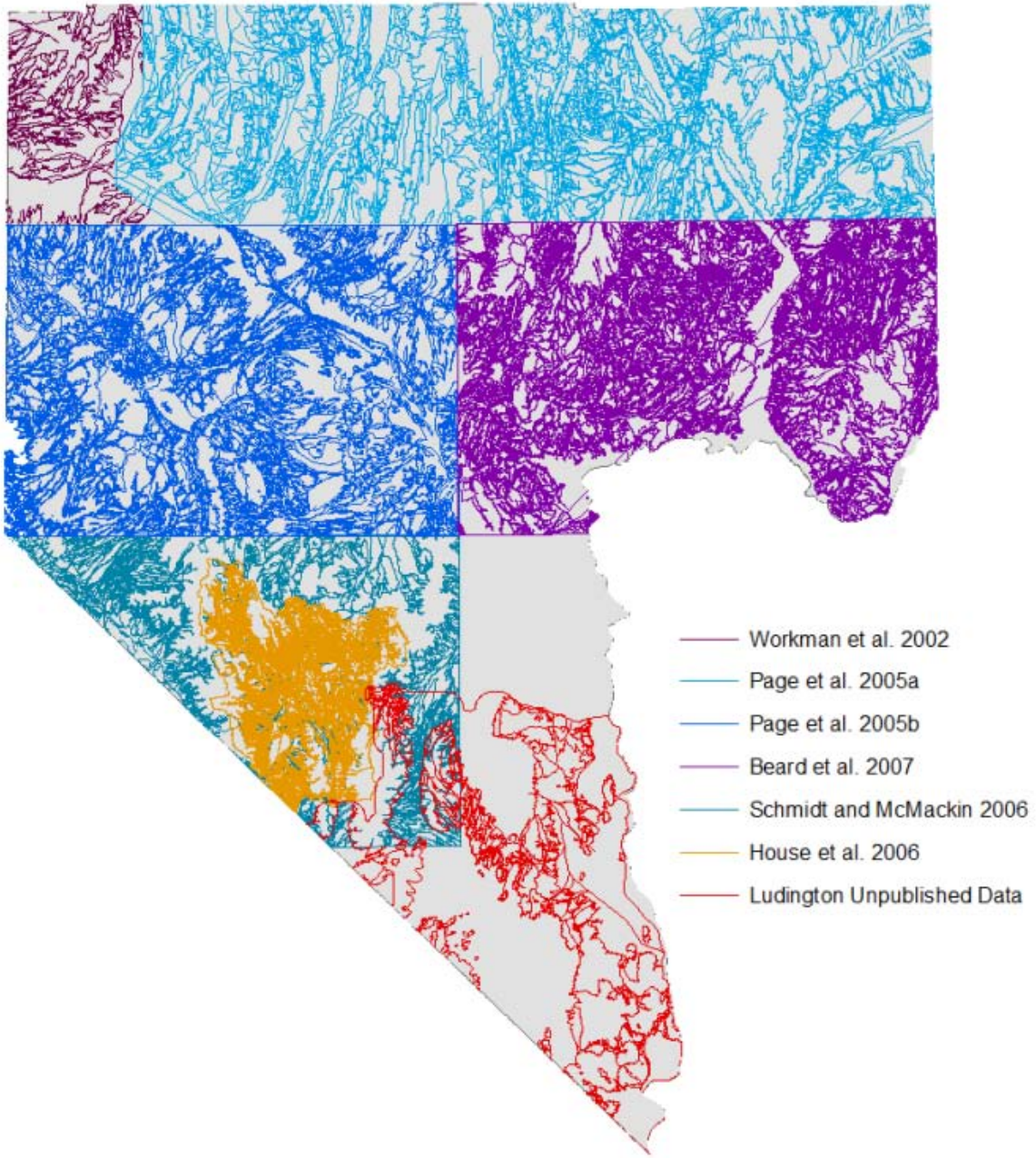
Mapping Workflow

- **Compilation**: Data acquisition and crude edge-matching
- **Harmonization**: Standardization of compiled data
- **Evaluation**: Check compiled data for consistency and accuracy
- **Refinement**: Improvement of best compiled data
- **Augmentation and Correction**: Reshaping compiled data
- **New Line Work**: New lines in unmapped or inadequately mapped areas

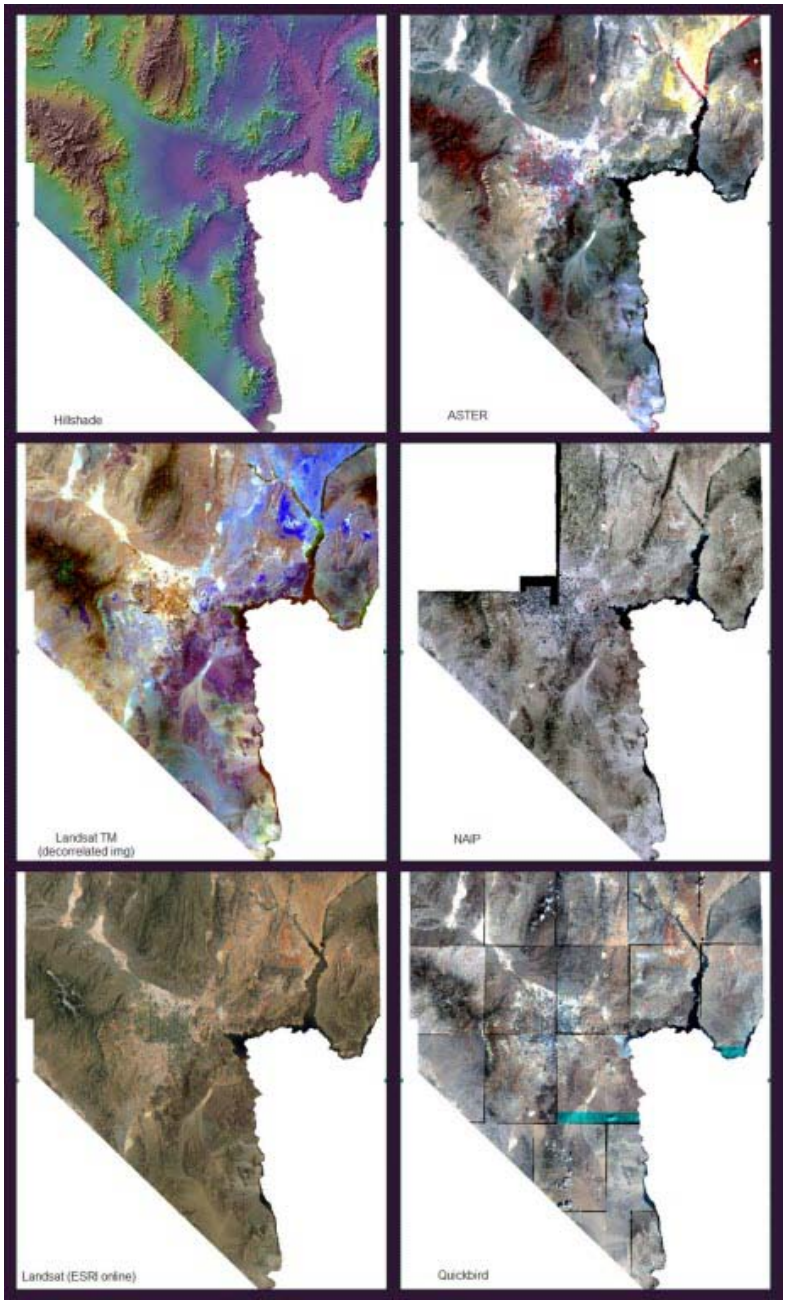
Compilation



- Generally 1:100,000 and 1:250,000 for geomorphology
- Some 1:62,500 to supplement generalized bedrock
- 1:24,000 where no other data existed and digitizing guide

Harmonization and Evaluation

- Compile existing map literature (i.e. unit descriptions, correlation diagrams, line placement)
- Convert existing nomenclature to new scheme
- Evaluate against high resolution imagery

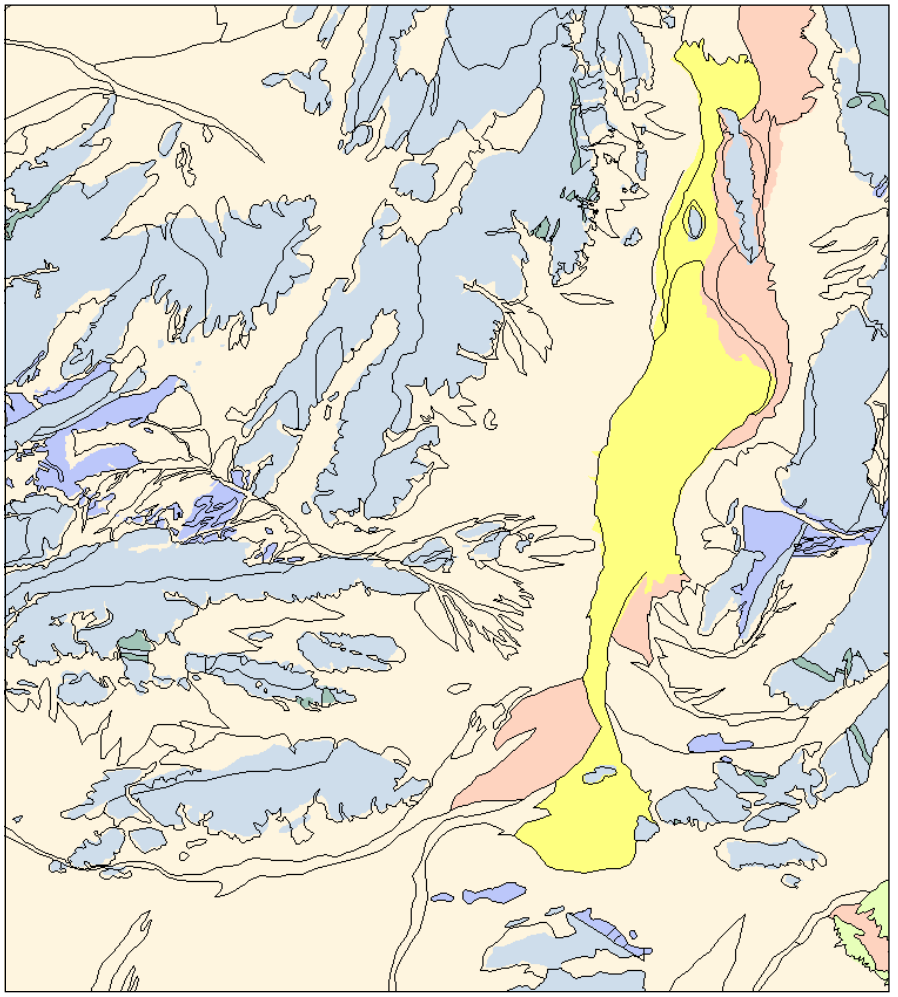


Refinement, Augment and Correct

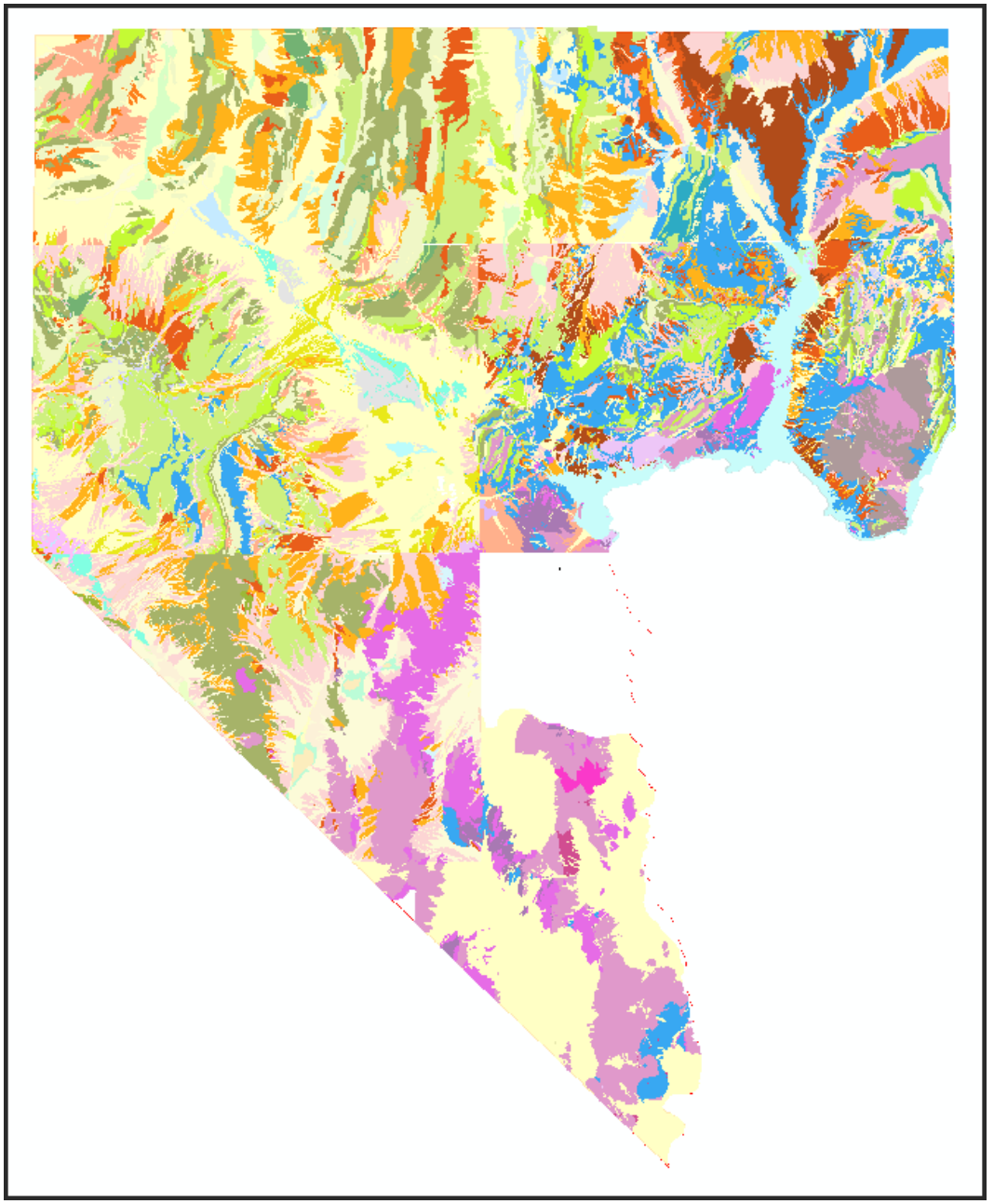
- Original mapping too general

Refine, Augment and Correct

- Colored polygons indicate original data
- Lines represent new, corrected, refined, augmented data



New Line Work



So, Where Are We Going?

- Frantically working on our Pilot Vegetation due Sept ‘10
- Final Vegetation, including Pilot, due Nov ’10
- Final GIS and Data Transfer due Mar ‘11
- Final Reports due Jun ‘11

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Questions?

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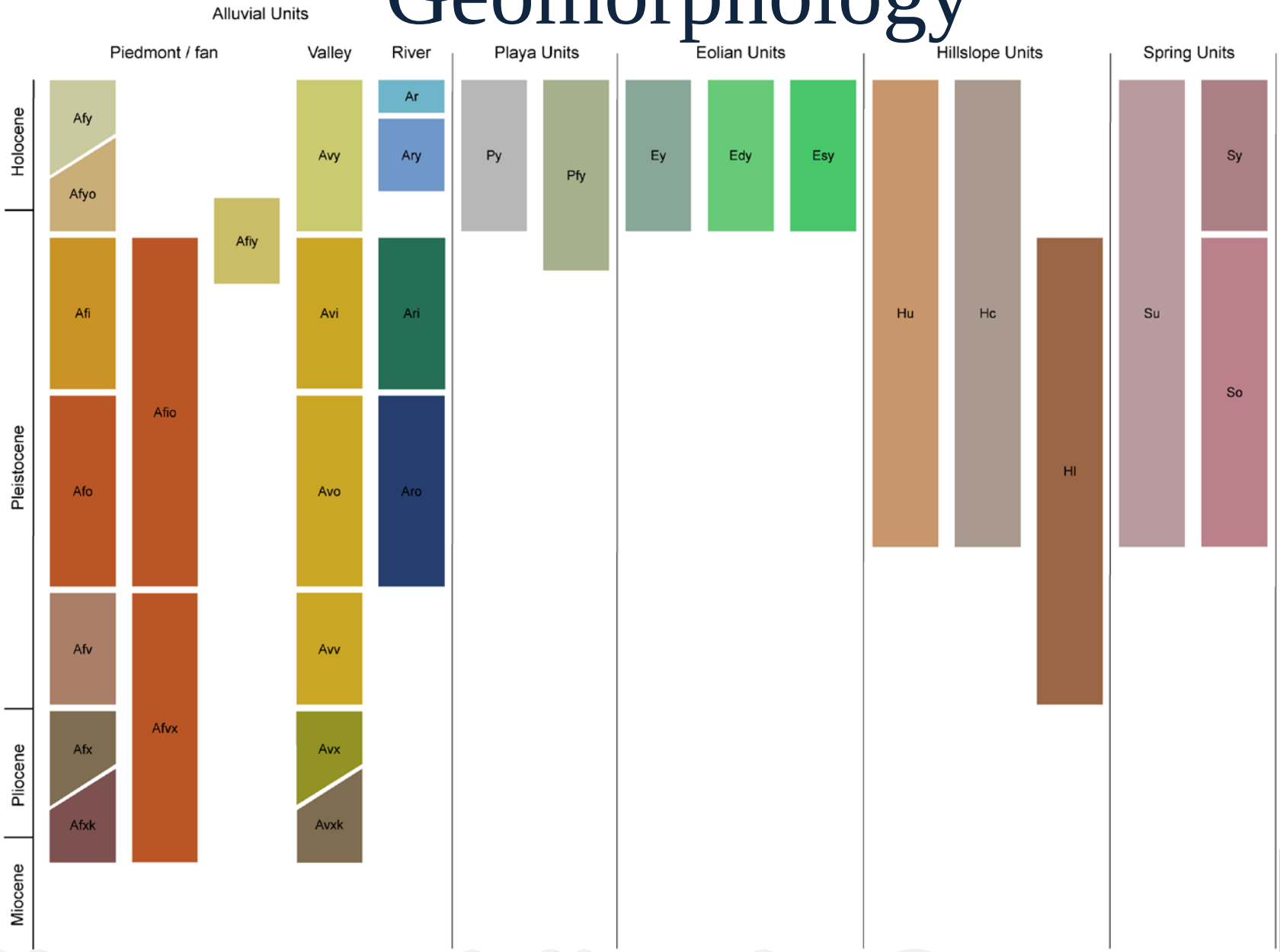
Geomorphology



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Generalized Bedrock

Attribute	Bedrock Type
Sc	Carbonates
	Limestone
	Dolomite
	Interbedded limestone and dolomite
Ss	Siliciclastic sedimentary rocks
	Mudrock and shale
	Chert and argillite
	Sandstone and coarser
	Interbedded shale and sandstone
Scs	Interbedded carbonates and siliciclastic sedimentary rocks
	Felsic igneous
Ipf	Intrusive (granite)
Ivf	Extrusive (rhyolite and tuff)
	Intermediate igneous
Ipi	Intrusive (diorite)
Ivi	Extrusive (andesite)
	Mafic igneous
Ipm	Intrusive (gabbro)
Ivm	Extrusive (basalt)
Ivx	Mixed volcanic rocks
	Metamorphic
Mh	High grade (crystalline rocks)
Ml	Low grade (phyllite, argillite, quartzite)