



WEST VIRGINIA WATERSHED ASSESSMENT PILOT PROJECT

Second Expert Workshop: Gauley River Watershed
January 8-9, 2013

Gauley River Watershed

1. Watershed Overview
2. Current Condition Results: Relative & Objective
Streams, Wetlands, Uplands
3. Sample Combined Results
4. Consolidated Analysis Results (Day Two)

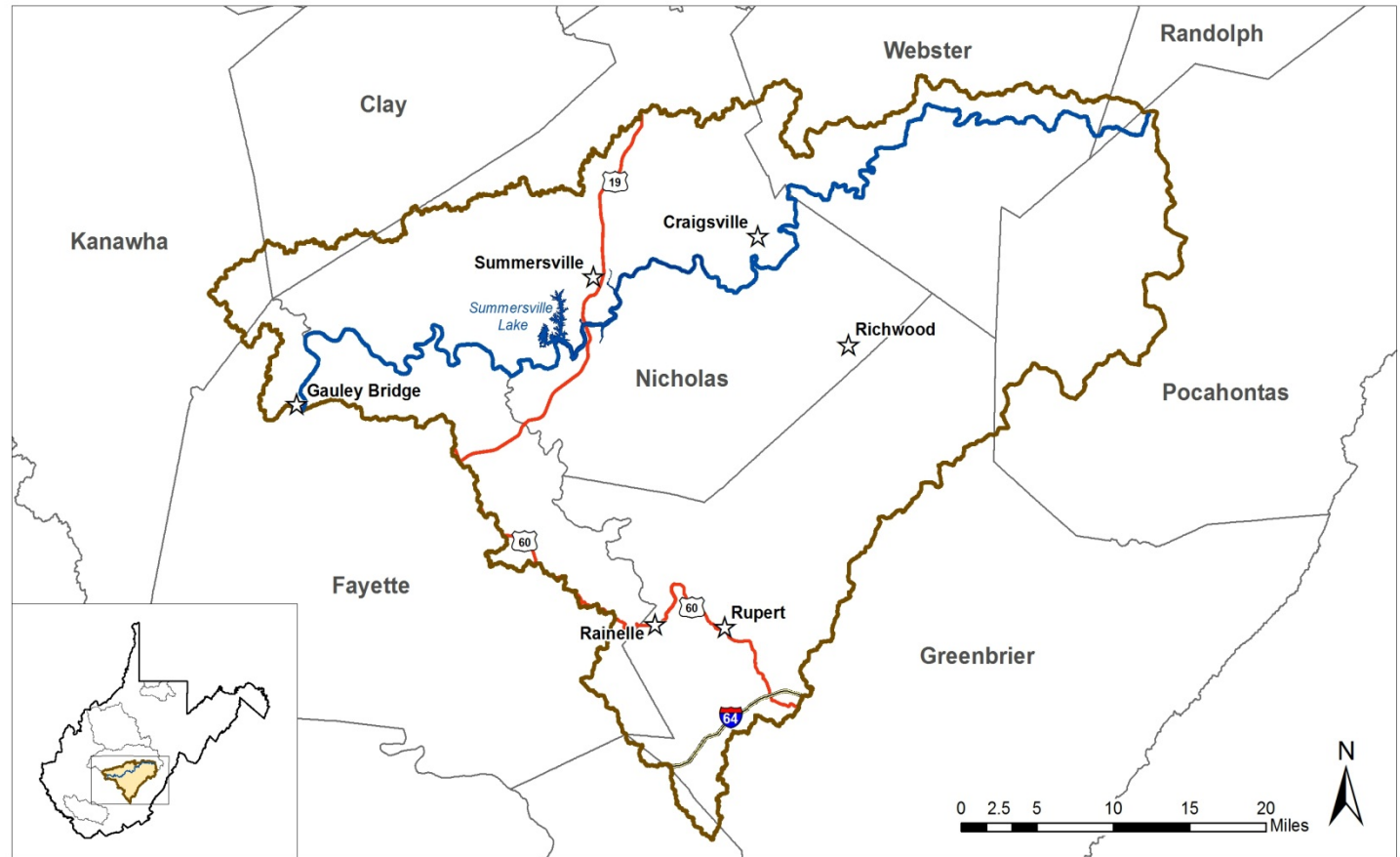
Gauley River Watershed

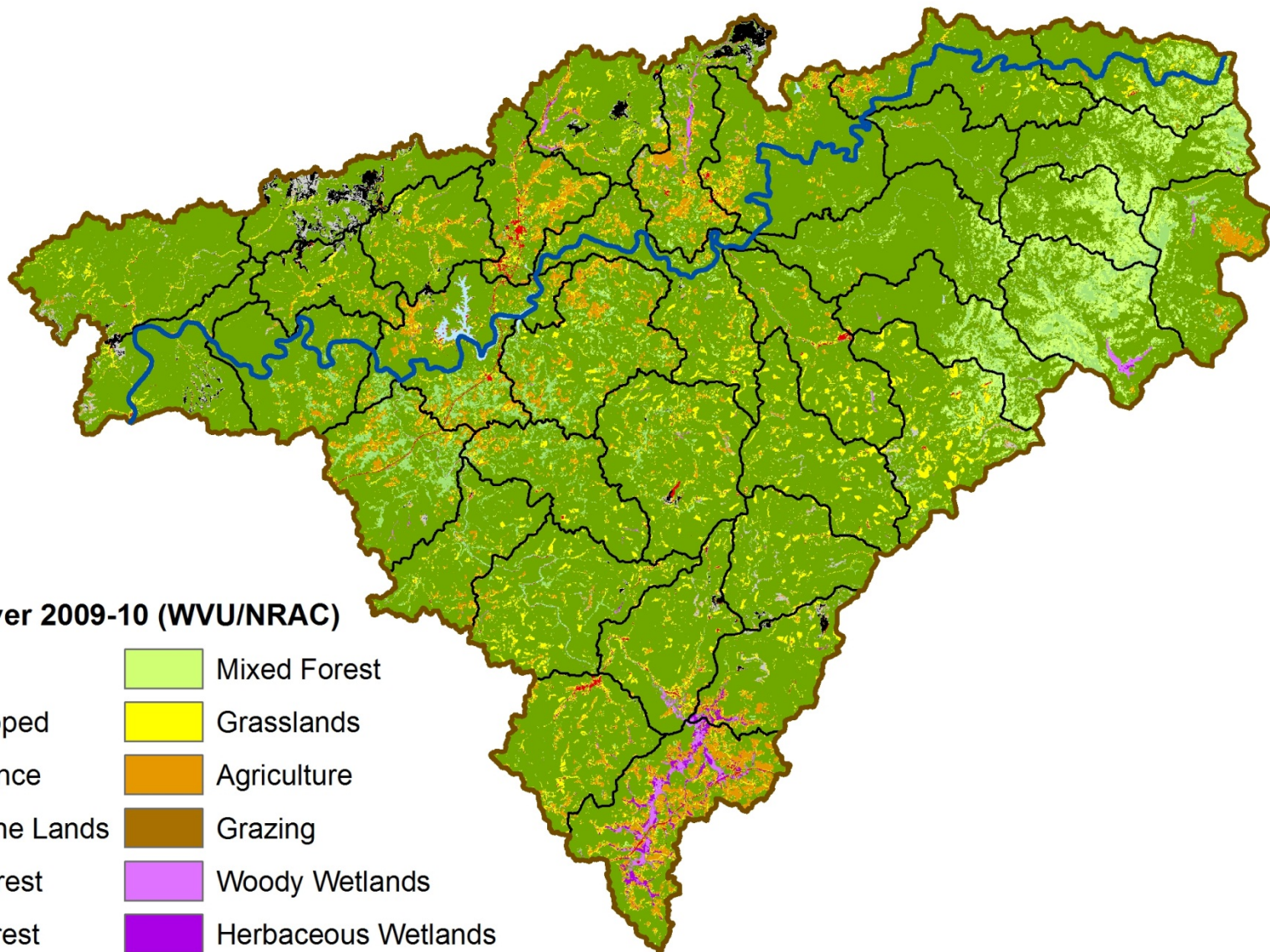
Watershed
Overview:

Counties













Cities &
Towns

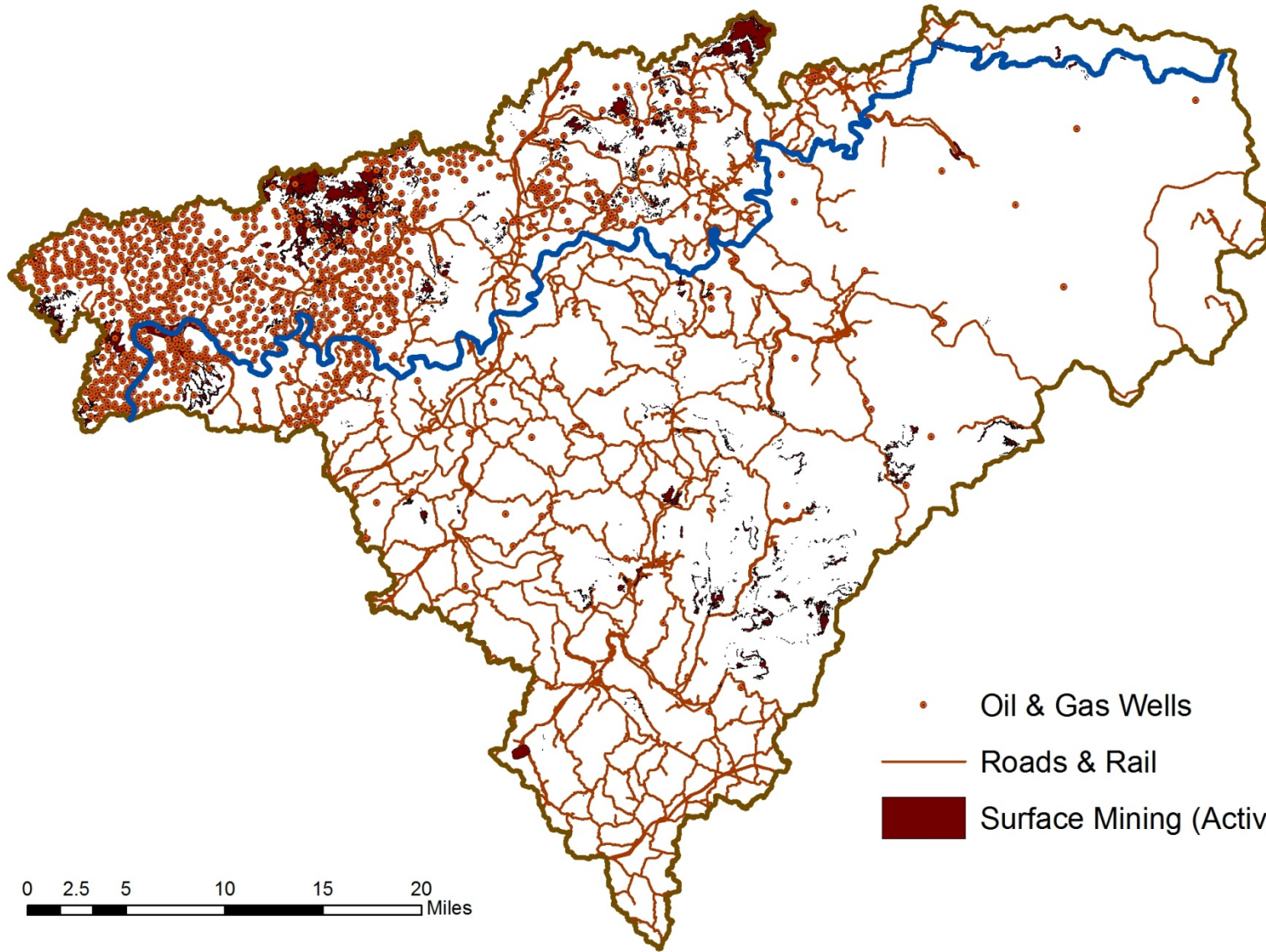
Major
Roads



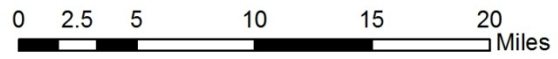


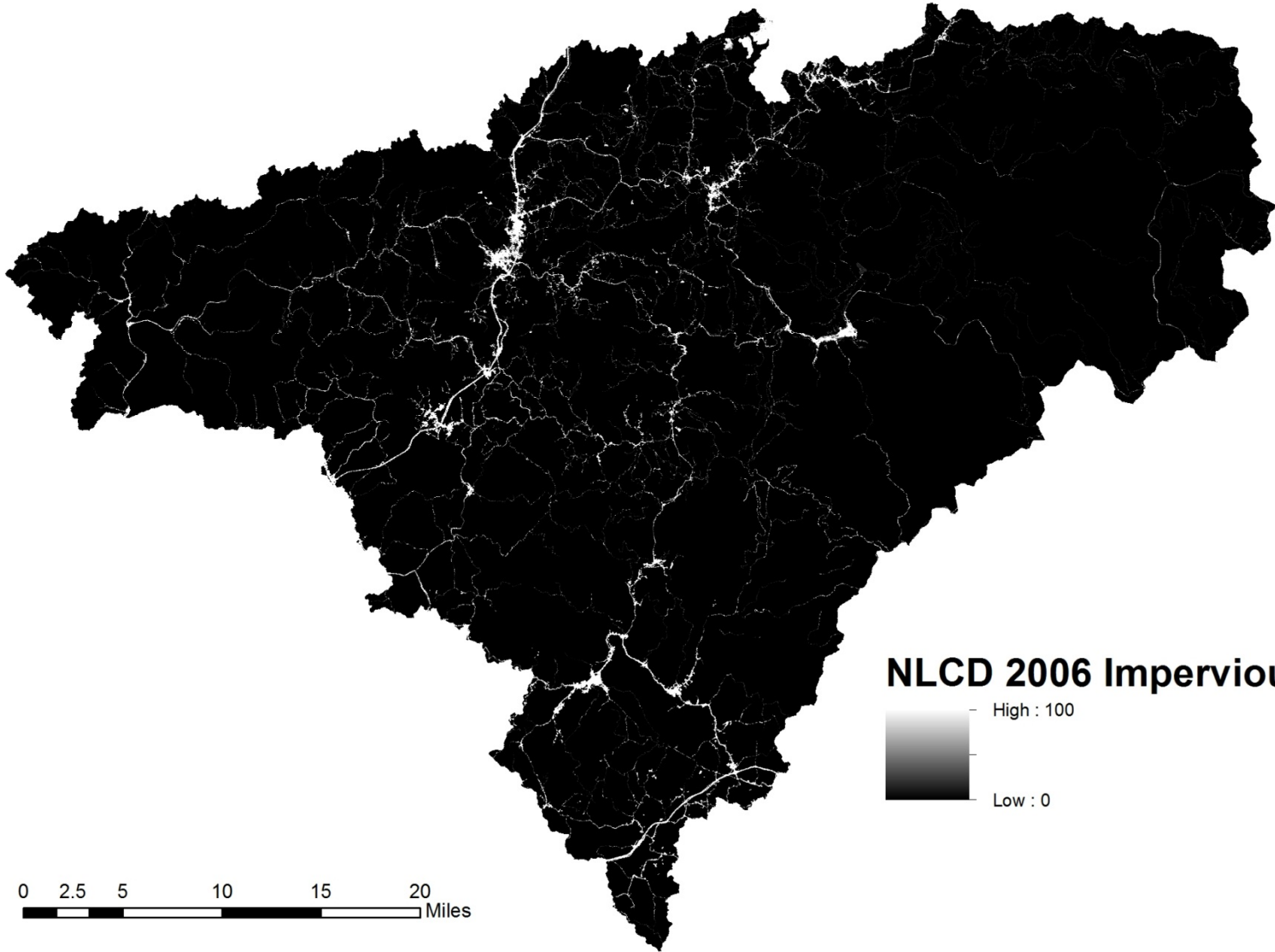
Land Use/Land Cover 2009-10 (WVU/NRAC)

- | | |
|---|---|
|  Water |  Mixed Forest |
|  Barren/Developed |  Grasslands |
|  Mine Disturbance |  Agriculture |
|  Reclaimed Mine Lands |  Grazing |
|  Deciduous Forest |  Woody Wetlands |
|  Evergreen Forest |  Herbaceous Wetlands |

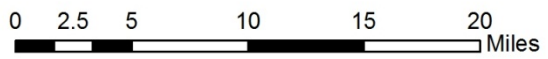
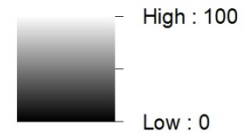


- Oil & Gas Wells
- Roads & Rail
- Surface Mining (Active & Legacy)





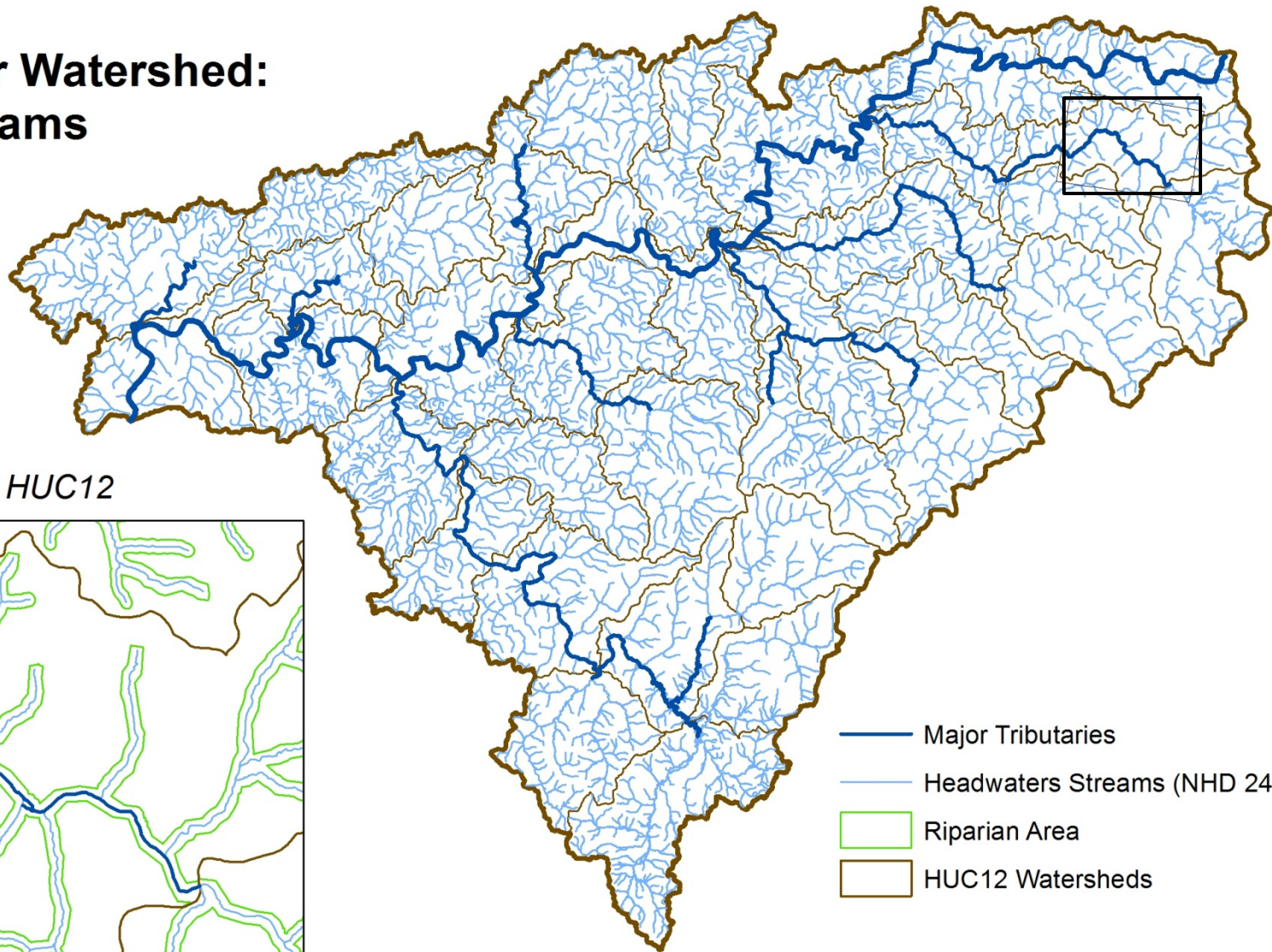
NLCD 2006 Impervious Cover



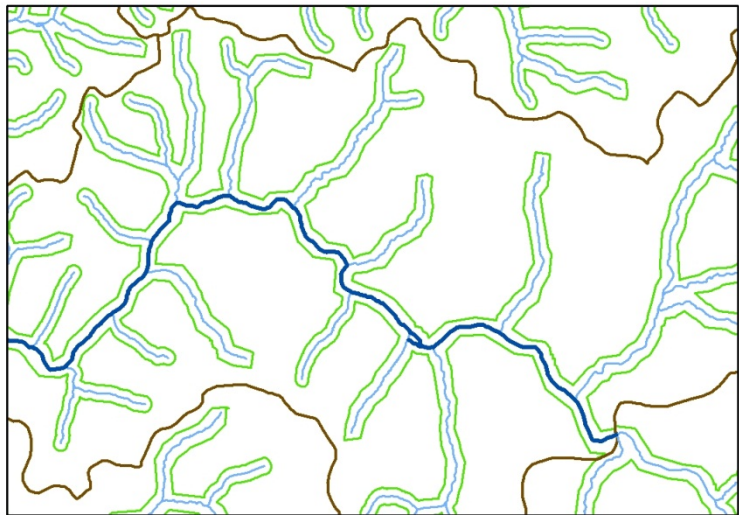
Gauley Watershed: Streams



Gauley River Watershed: Streams

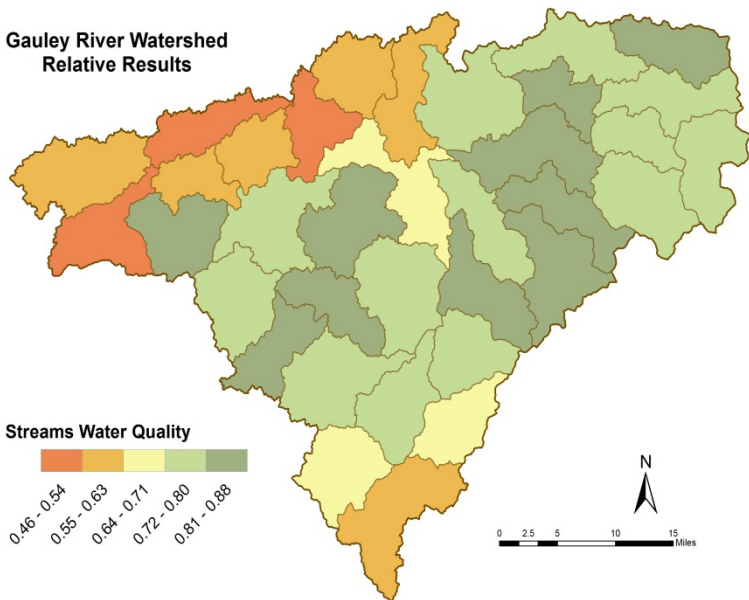


Middle Williams River HUC12

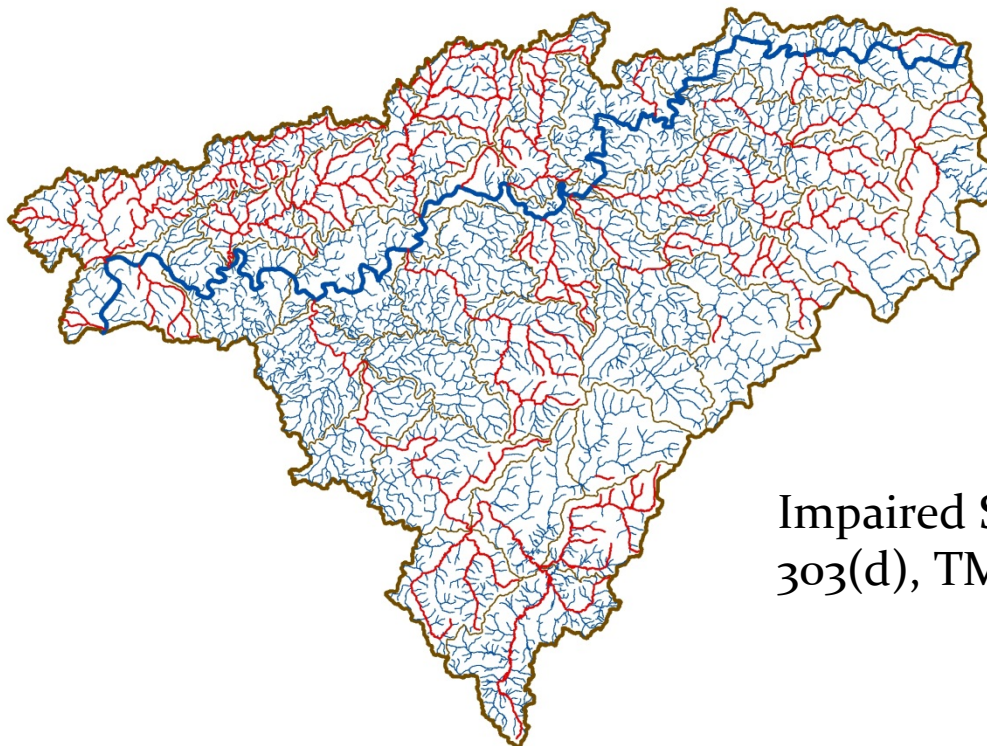
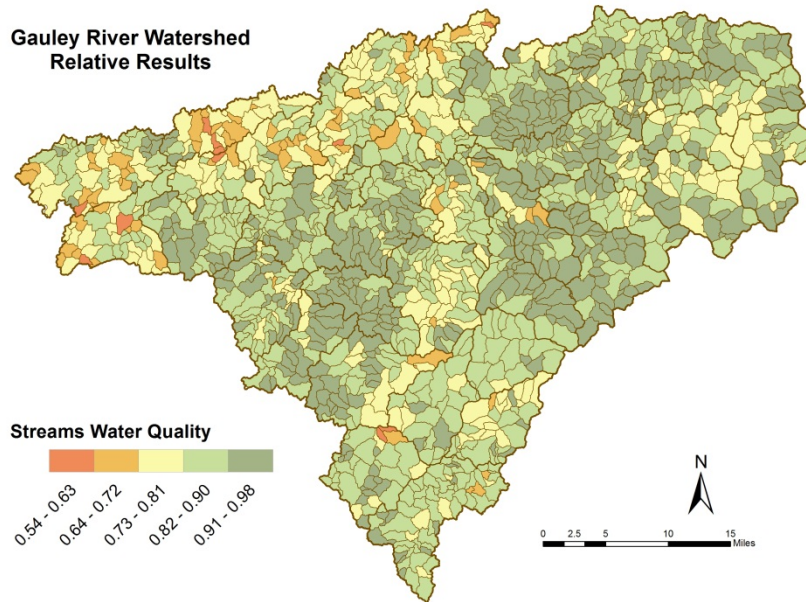


- Major Tributaries
- Headwaters Streams (NHD 24k)
- Riparian Area
- HUC12 Watersheds

Gauley River Watershed
Relative Results



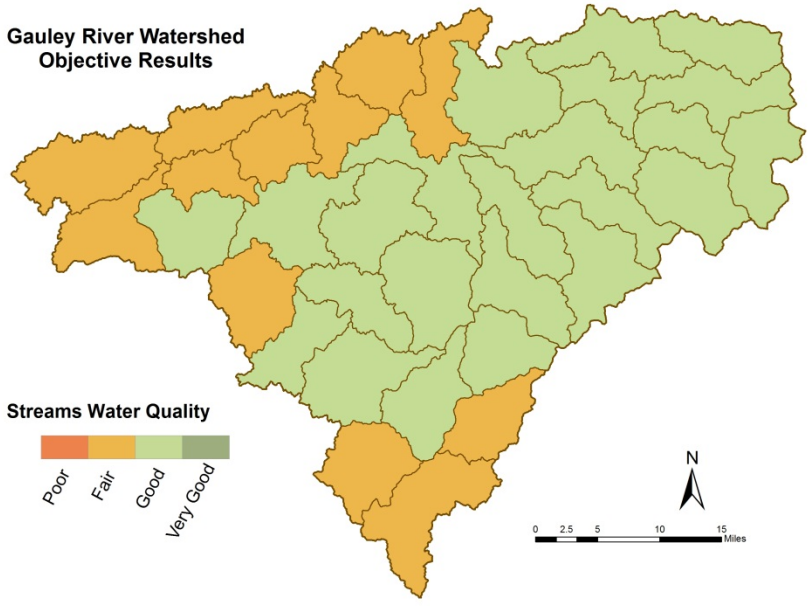
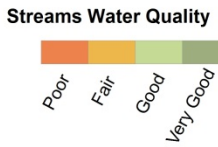
Gauley River Watershed
Relative Results



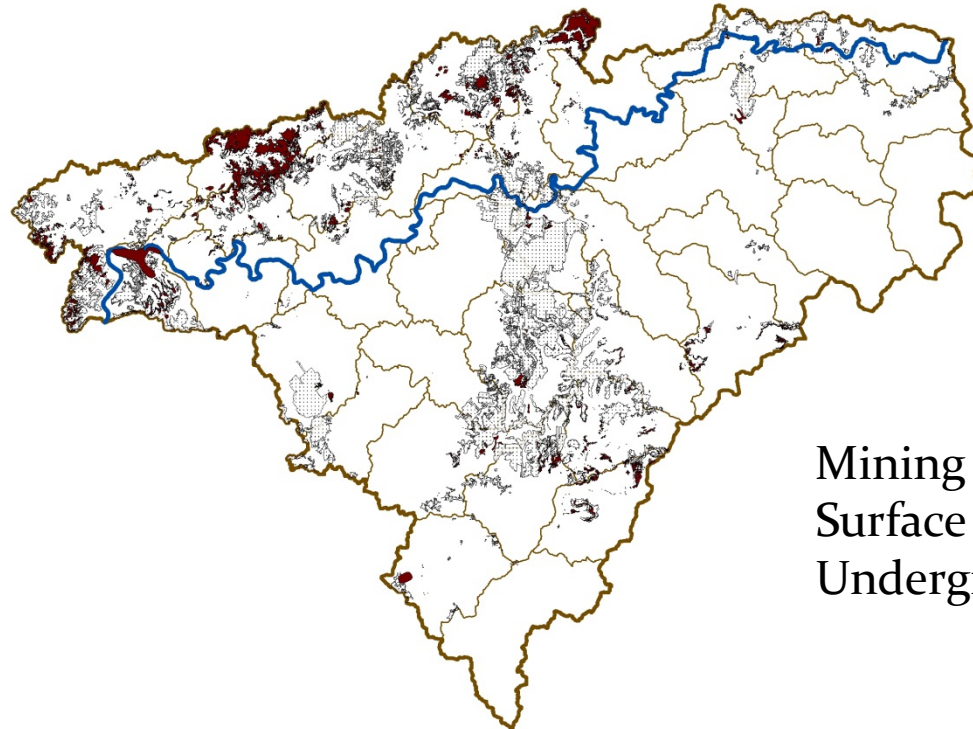
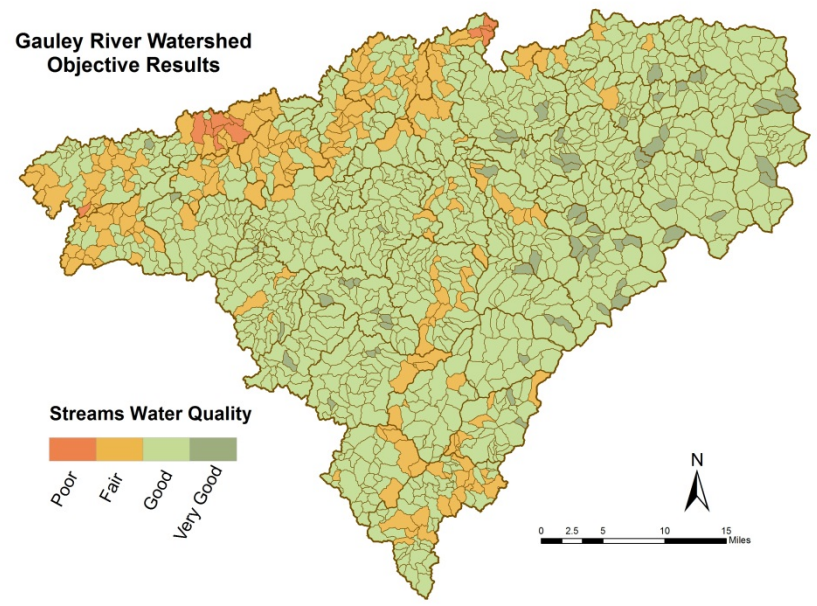
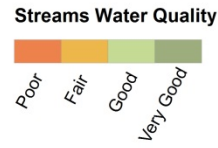
Impaired Streams:
303(d), TMDL, AMD

Streams
Water
Quality

Gauley River Watershed
Objective Results



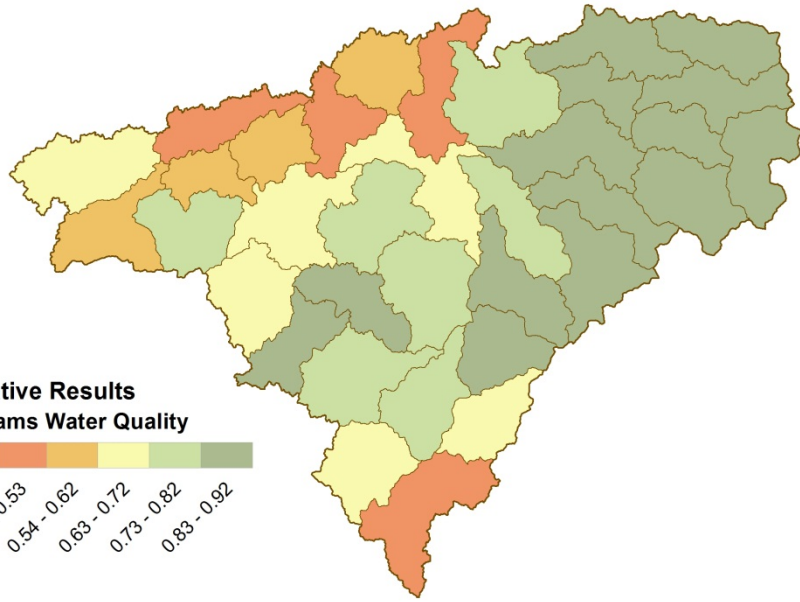
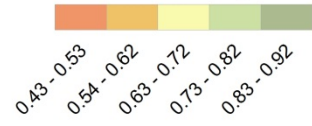
Gauley River Watershed
Objective Results



Mining Activity:
Surface (Active and Legacy)
Underground

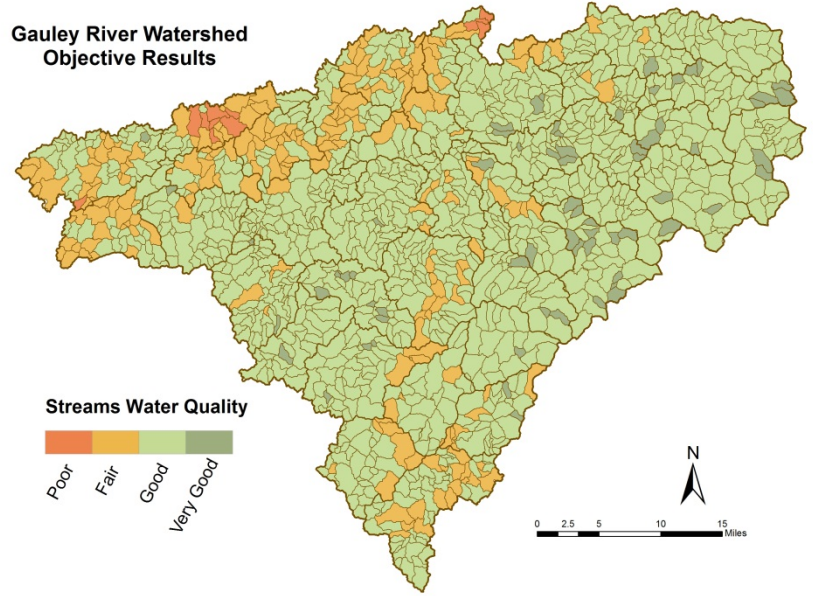
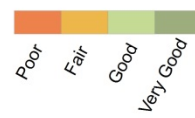
Streams
Water
Quality

**Relative Results
Streams Water Quality**



**Gauley River Watershed
Objective Results**

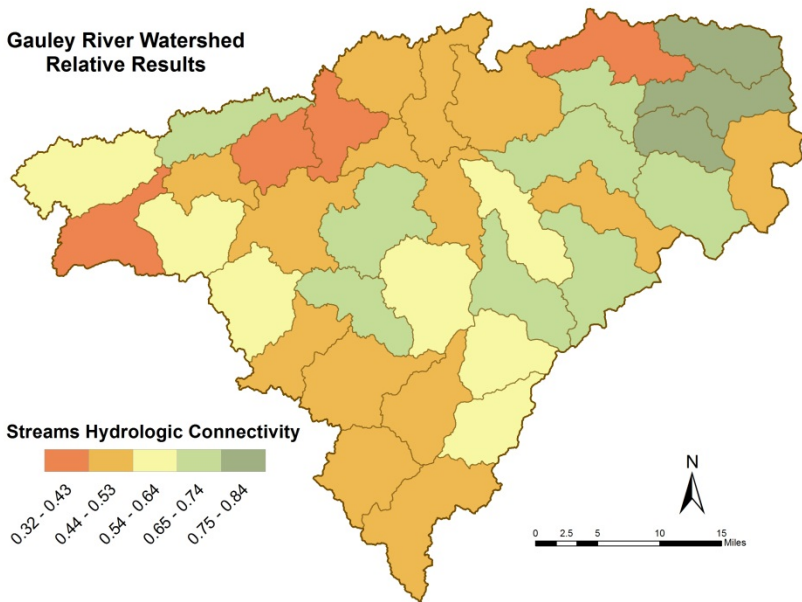
Streams Water Quality



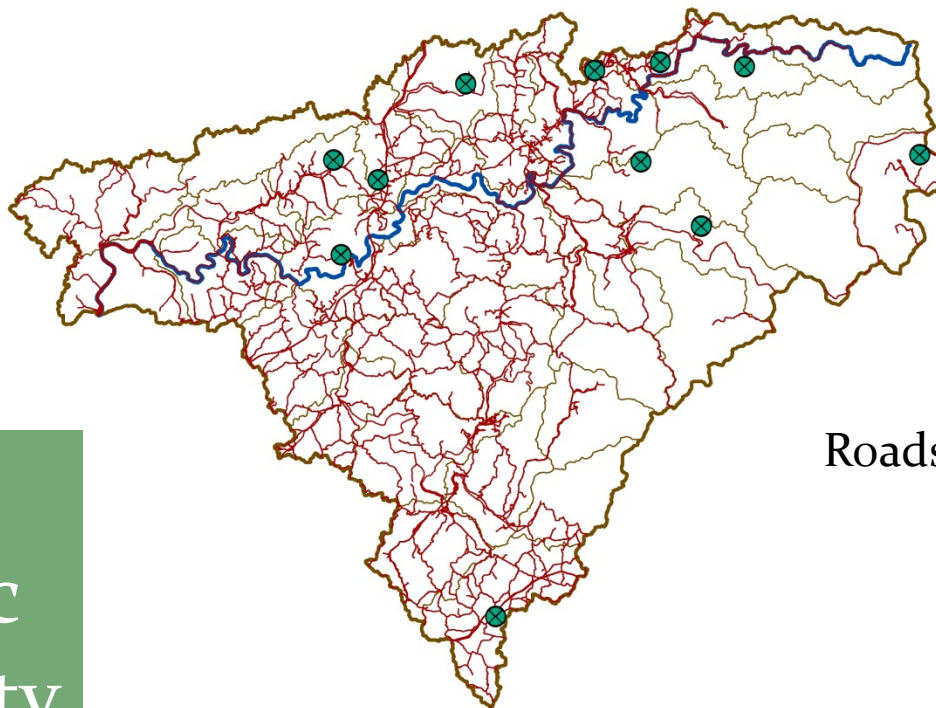
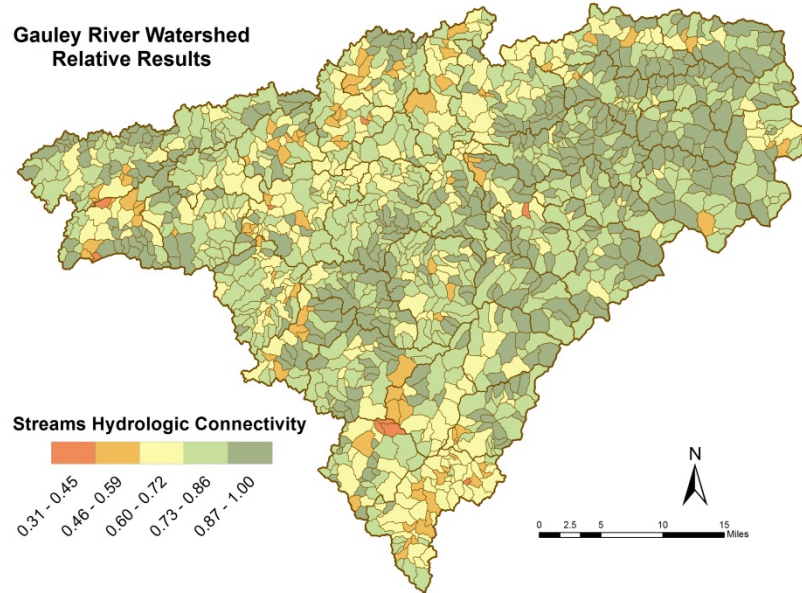
**Natural Cover:
Forest, Grasslands, Wetlands**

**Streams
Water
Quality**

Gauley River Watershed
Relative Results



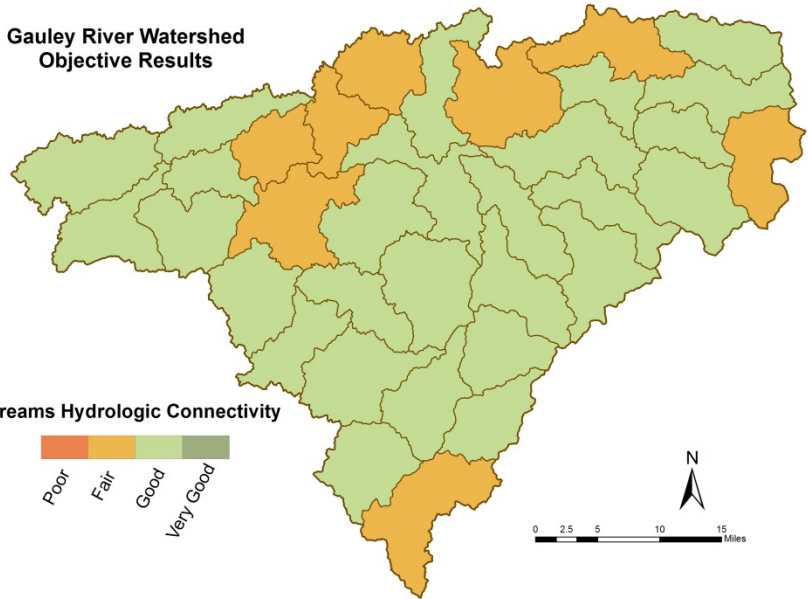
Gauley River Watershed
Relative Results



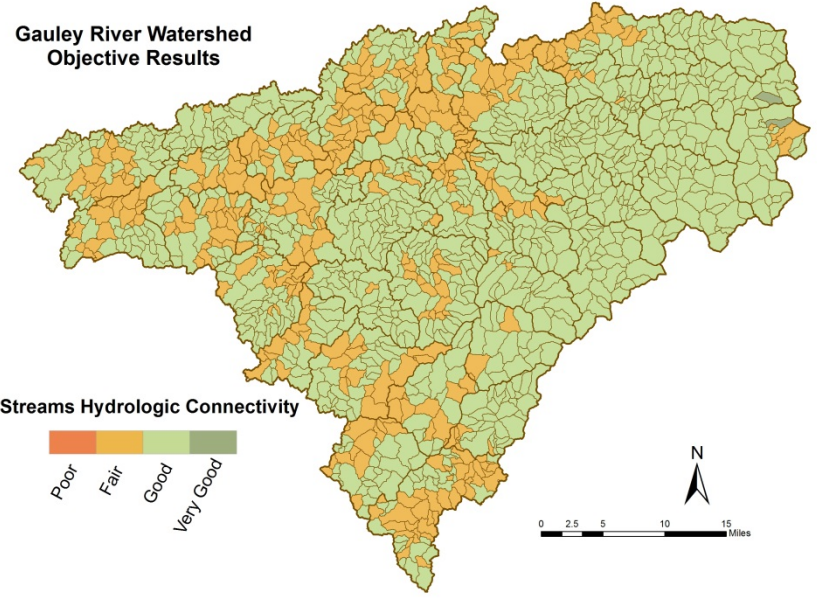
Roads & Rail, Dams

Streams
Hydrologic
Connectivity

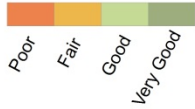
Gauley River Watershed
Objective Results



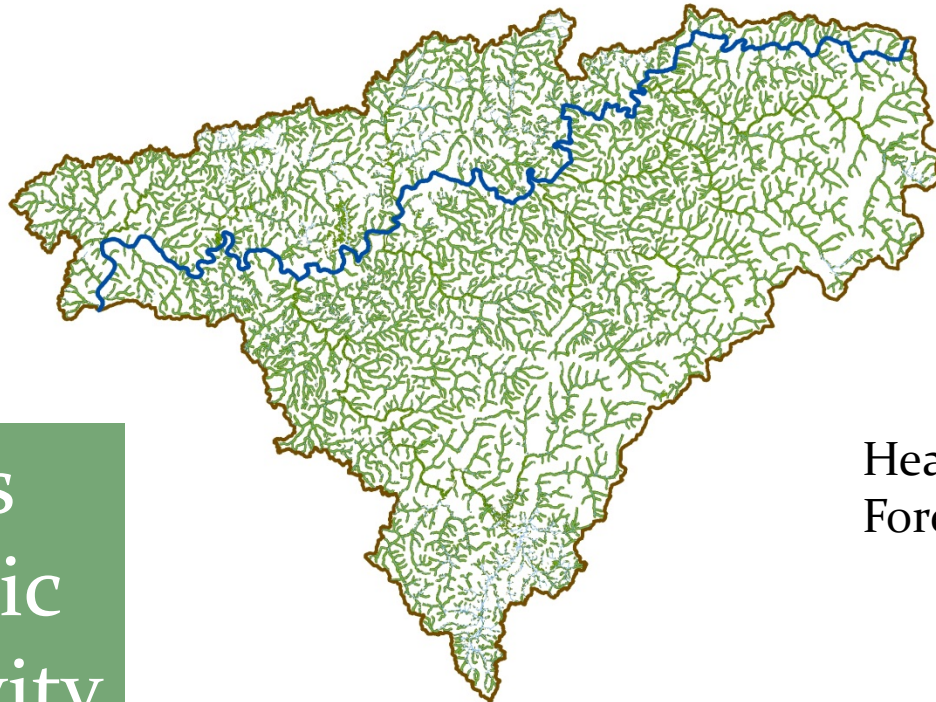
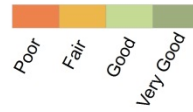
Gauley River Watershed
Objective Results



Streams Hydrologic Connectivity



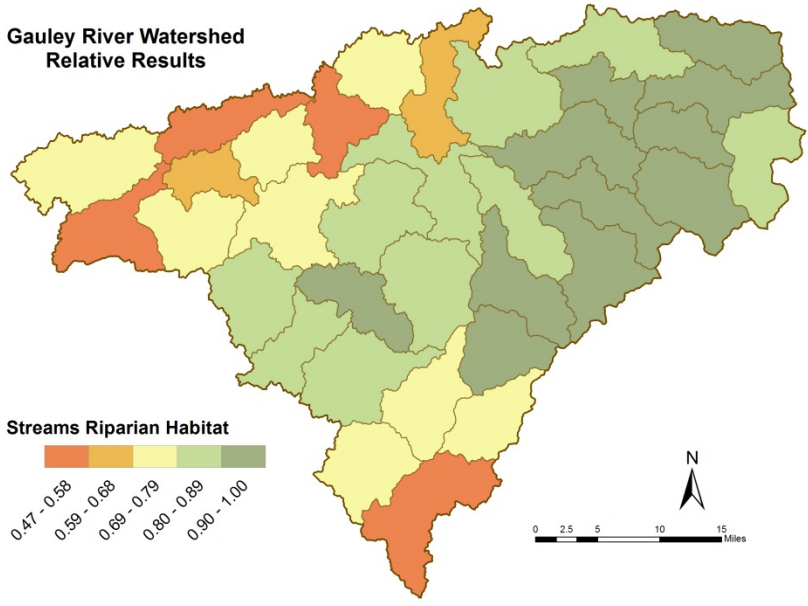
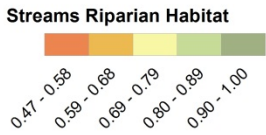
Streams Hydrologic Connectivity



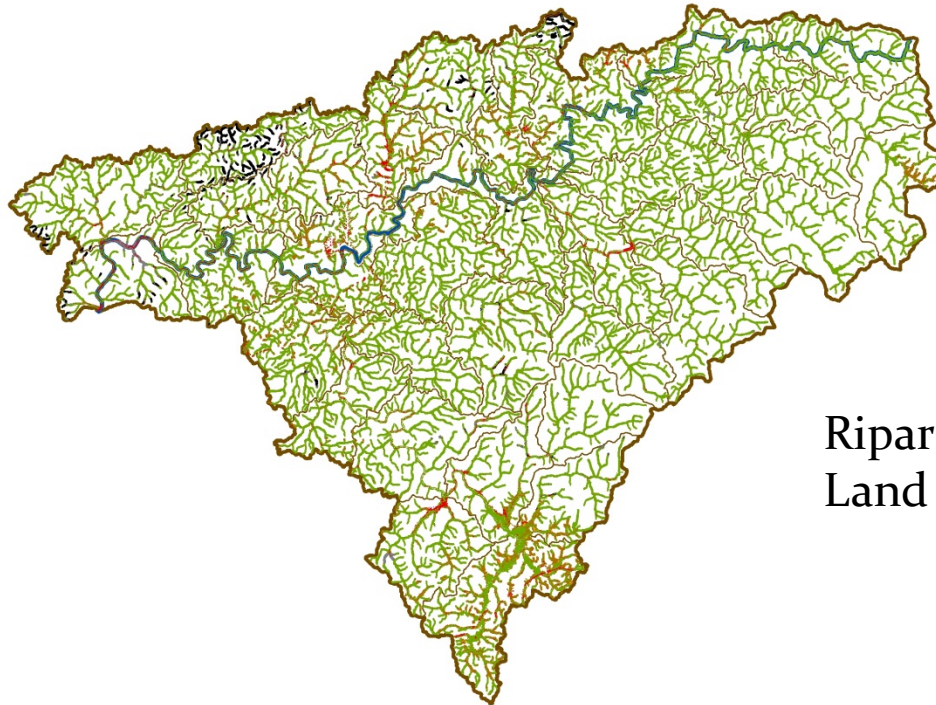
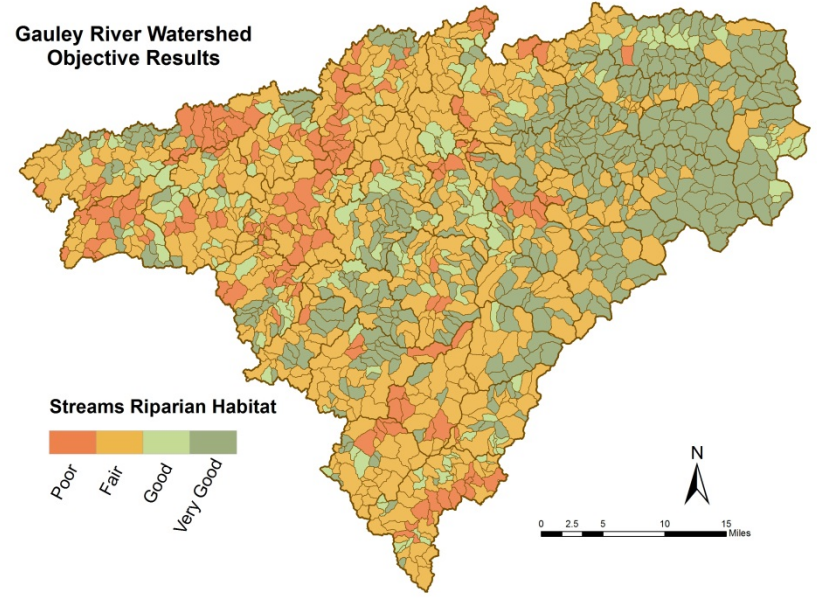
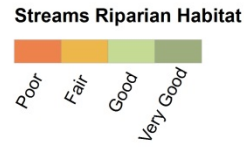
Headwaters streams (1a)
Forested riparian area

Streams
Hydrologic
Connectivity

Gauley River Watershed
Relative Results



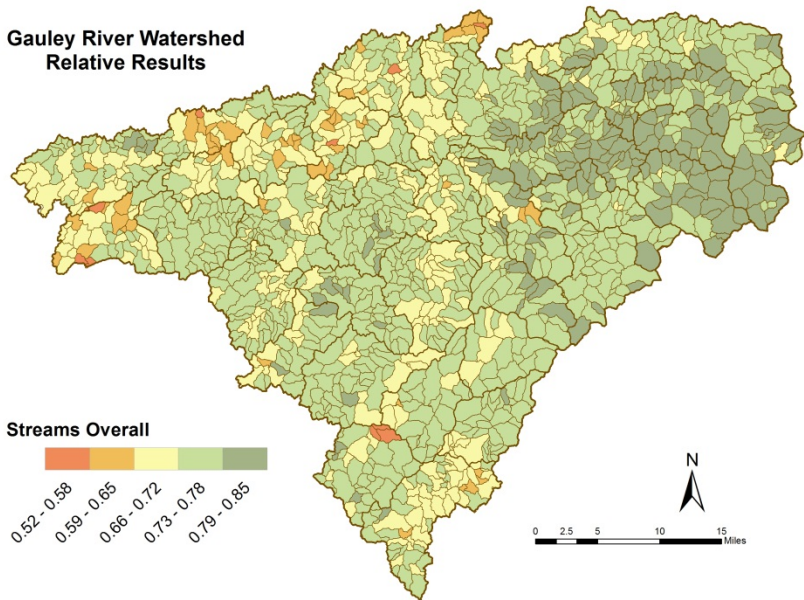
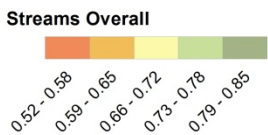
Gauley River Watershed
Objective Results



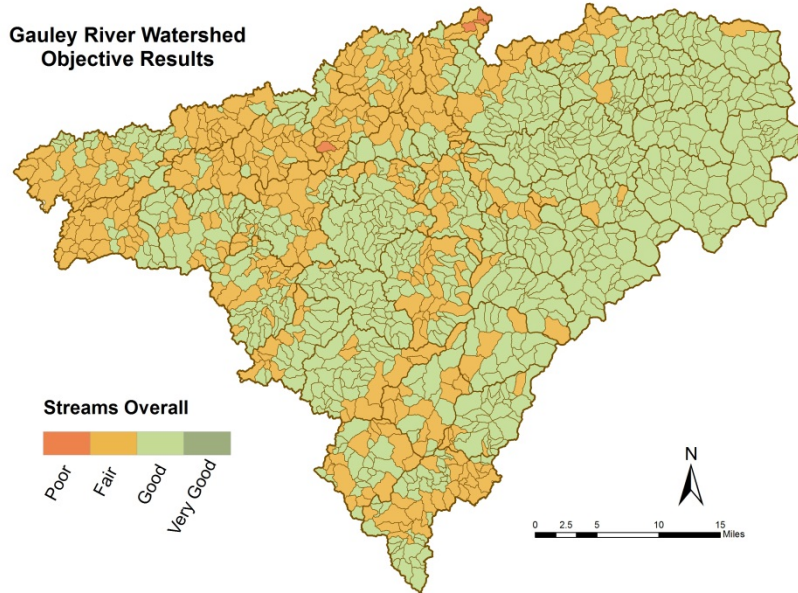
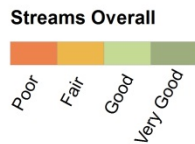
Riparian Area
Land Use/Land Cover

Streams
Riparian
Habitat

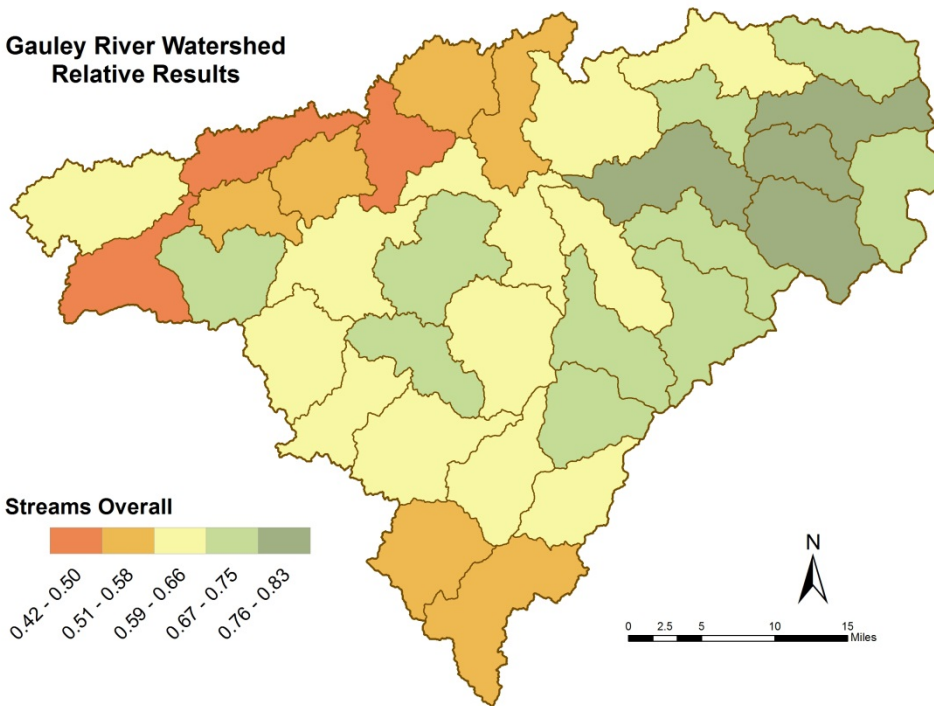
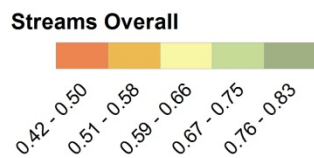
**Gauley River Watershed
Relative Results**



**Gauley River Watershed
Objective Results**



**Gauley River Watershed
Relative Results**



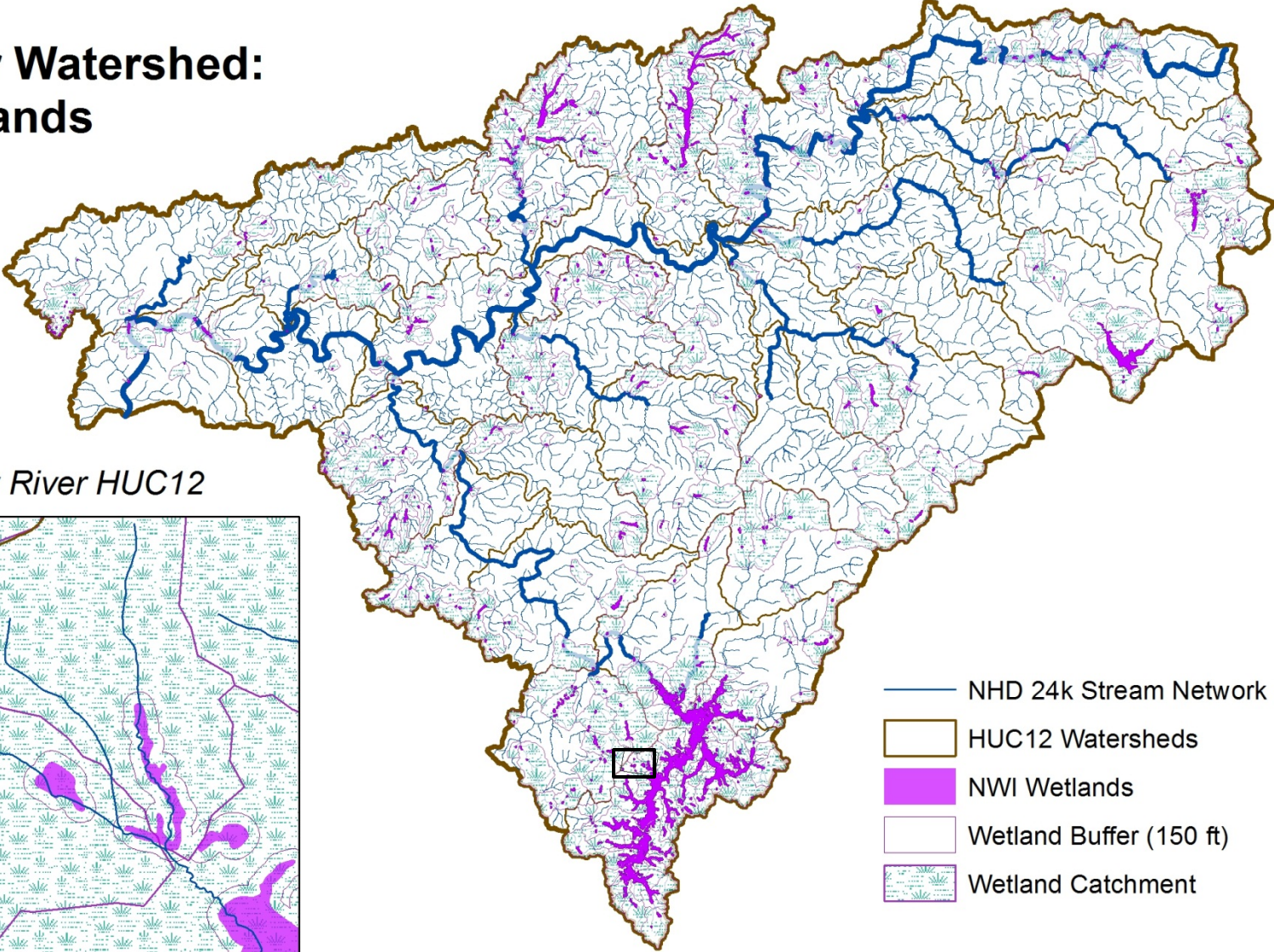
Streams
Model
Overall

Gauley Watershed: Wetlands



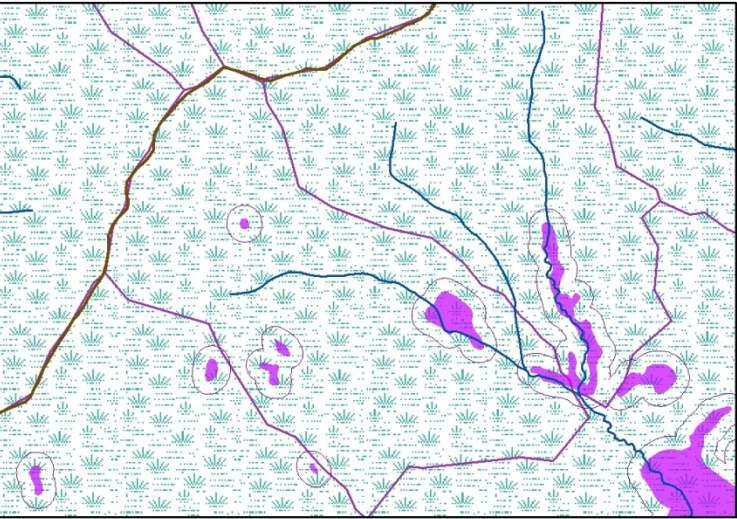
Cranberry Glades ©pocahontascountywv.com

Gauley River Watershed: Wetlands

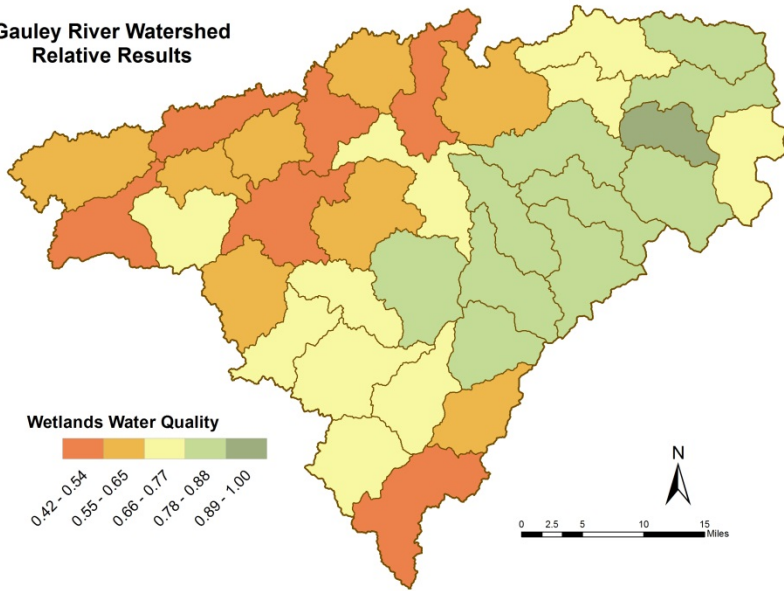
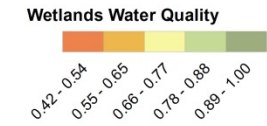


- NHD 24k Stream Network
- HUC12 Watersheds
- NWI Wetlands
- Wetland Buffer (150 ft)
- Wetland Catchment

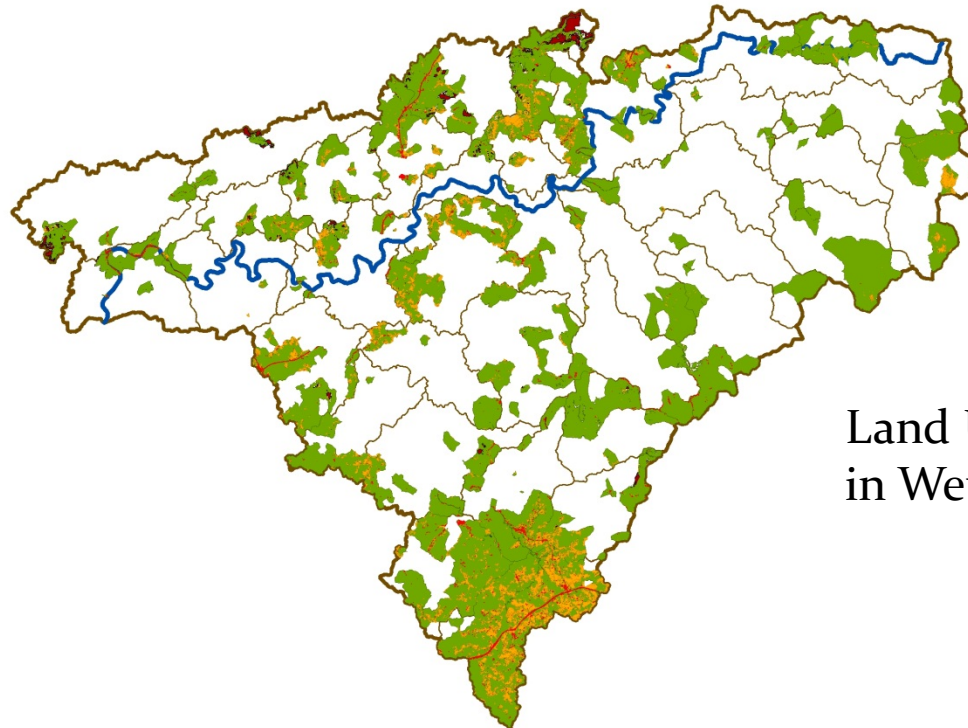
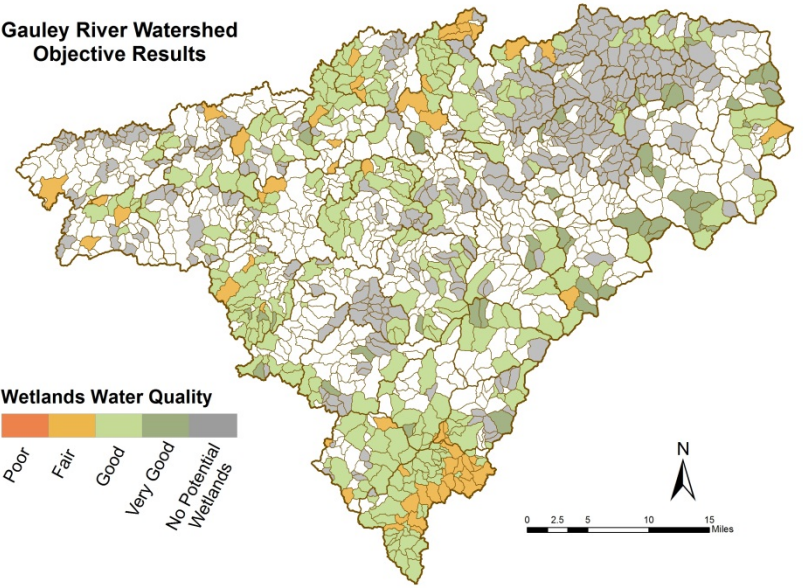
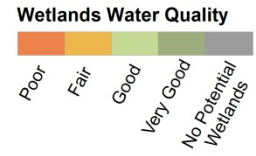
Otter Creek - Meadow River HUC12



Gauley River Watershed
Relative Results



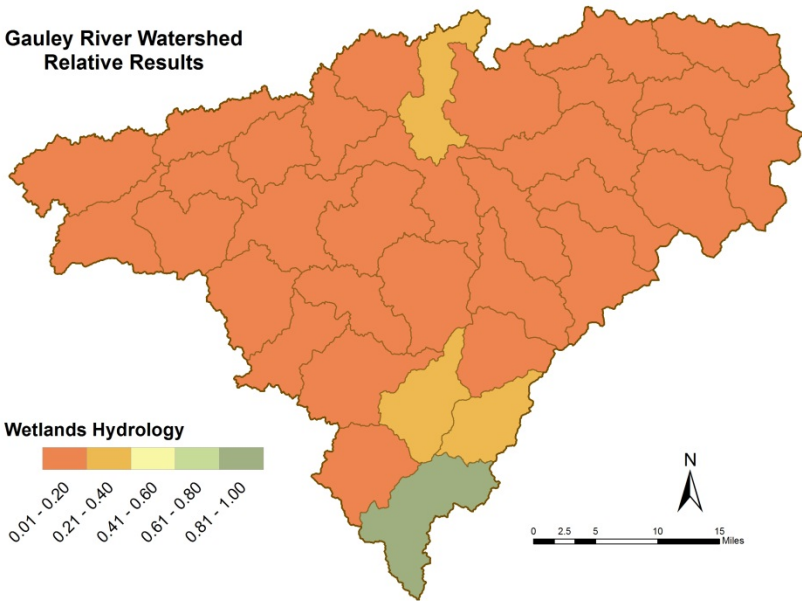
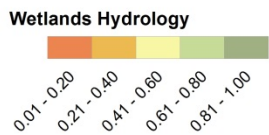
Gauley River Watershed
Objective Results



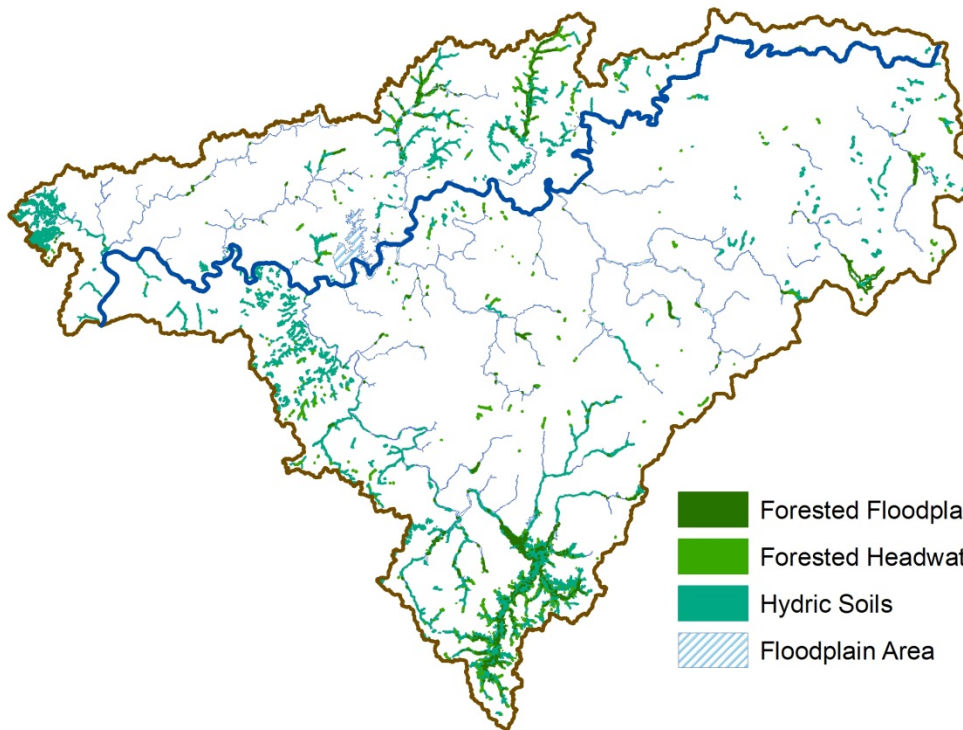
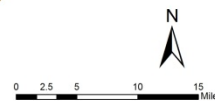
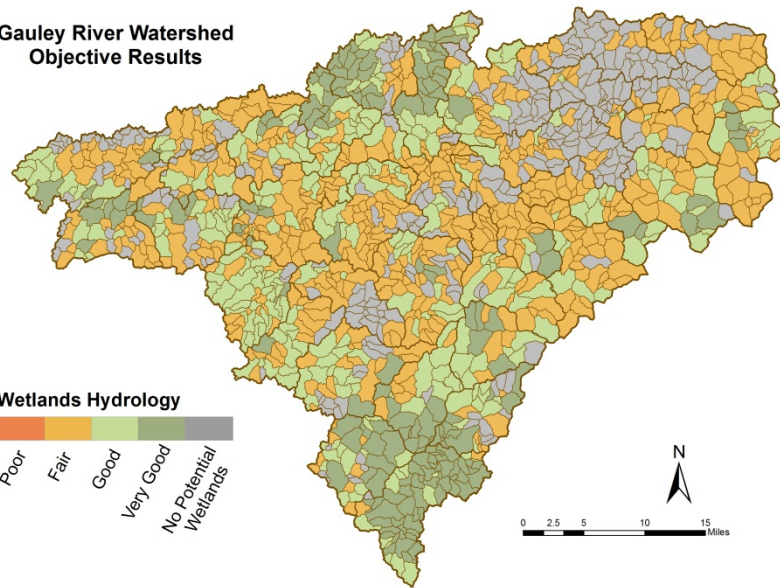
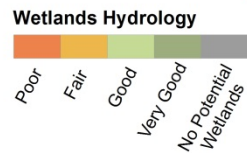
Land Use/Land Cover
in Wetland Catchment

Wetlands
Water
Quality

Gauley River Watershed
Relative Results

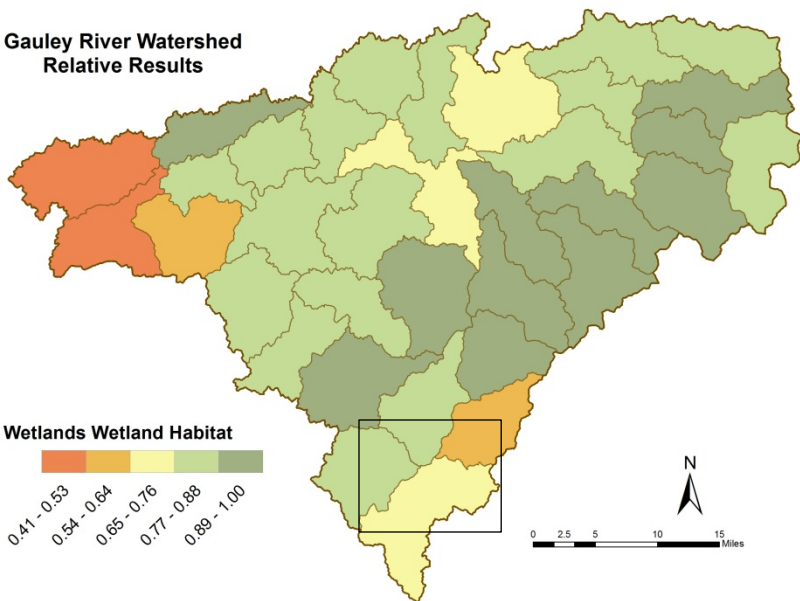
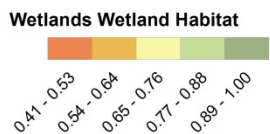


Gauley River Watershed
Objective Results

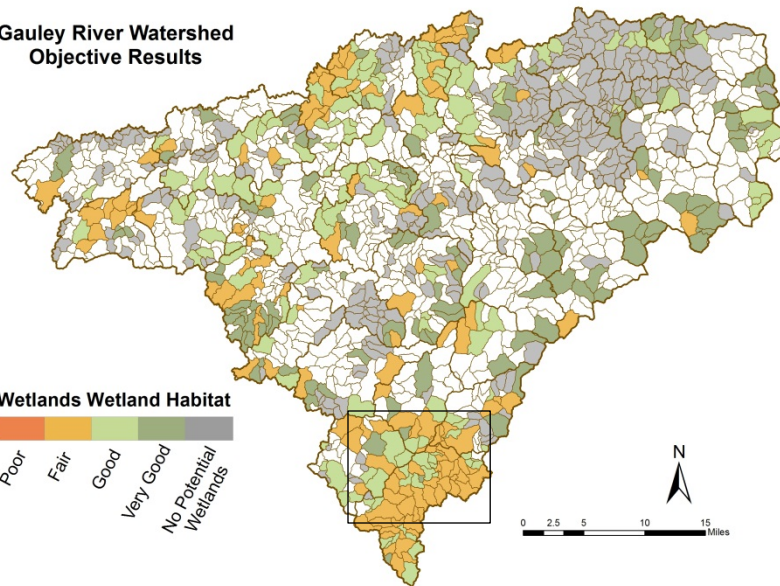
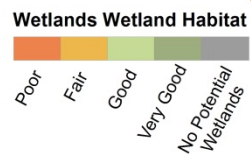


Wetlands
Hydrology

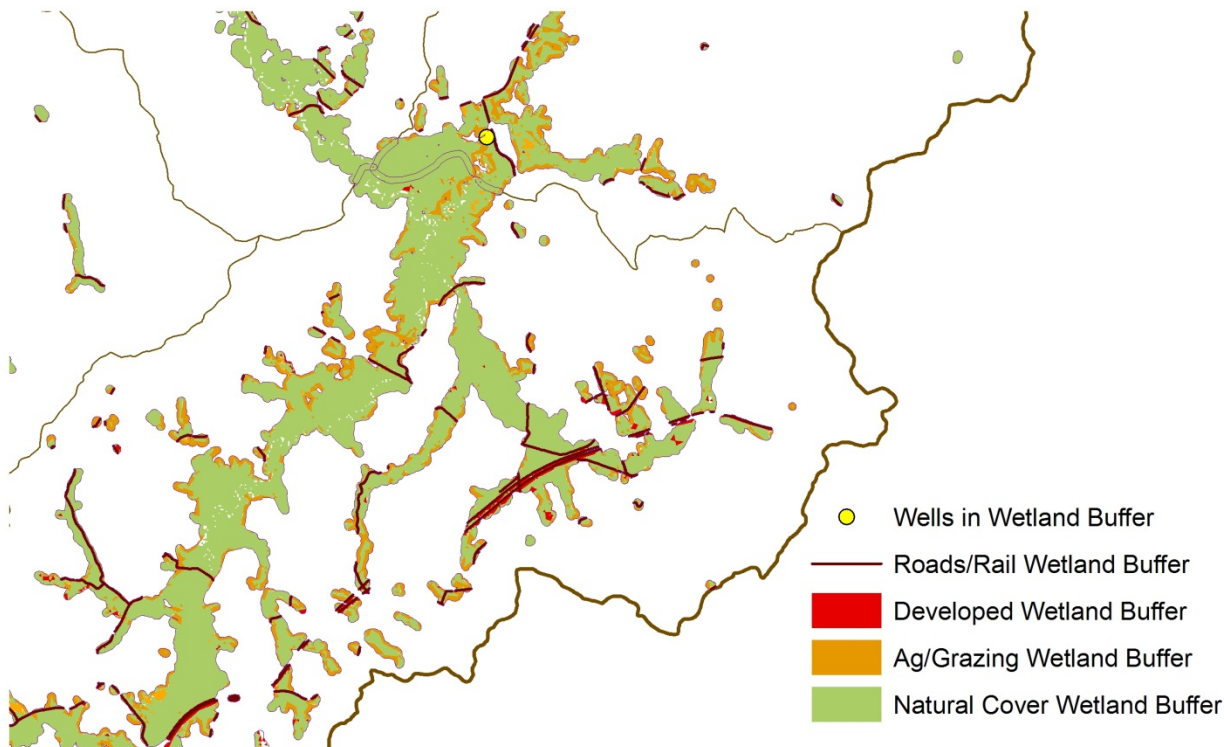
**Gauley River Watershed
Relative Results**



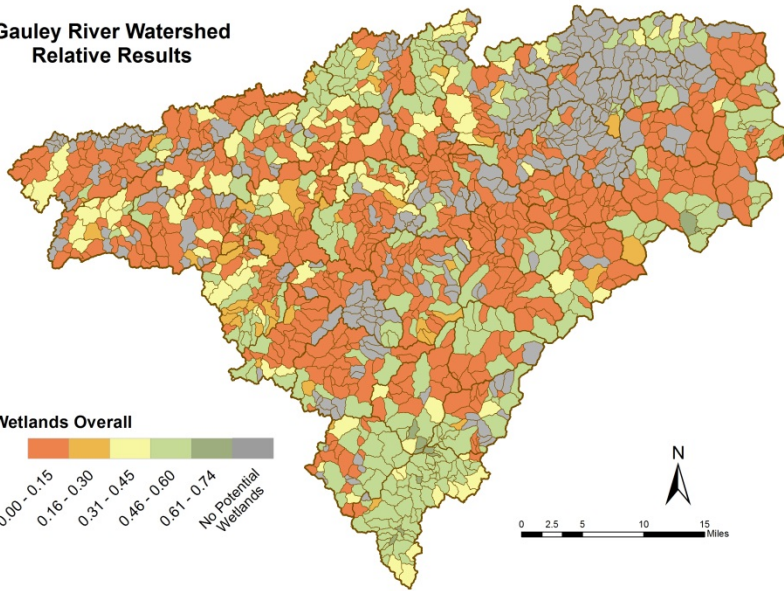
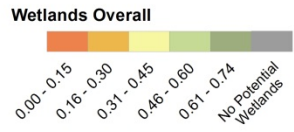
**Gauley River Watershed
Objective Results**



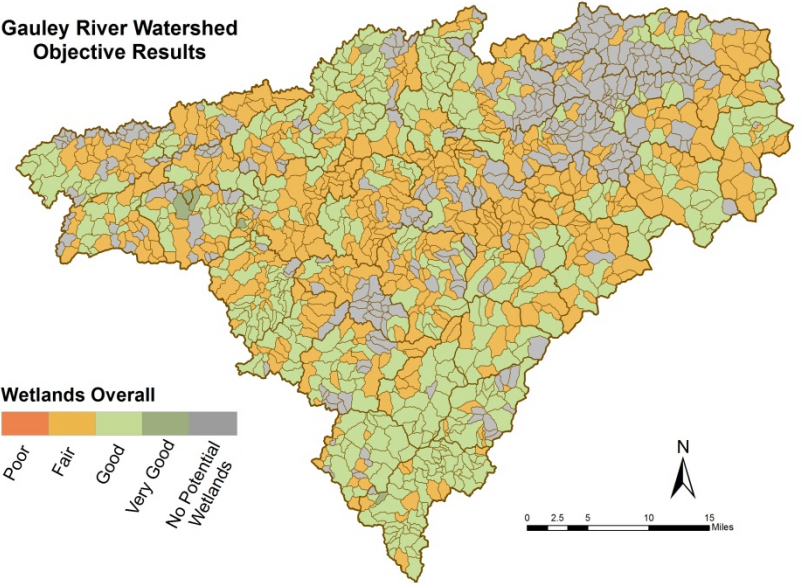
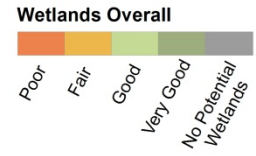
Wetlands Wetland Habitat



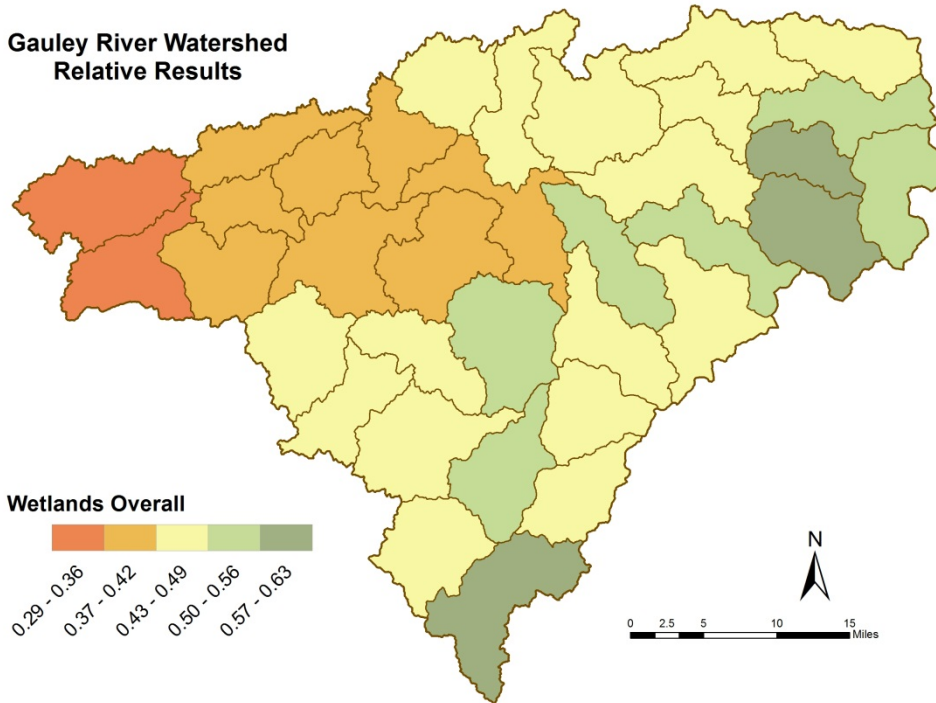
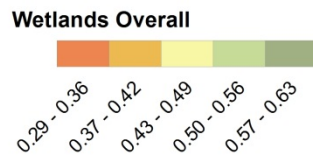
**Gauley River Watershed
Relative Results**



**Gauley River Watershed
Objective Results**



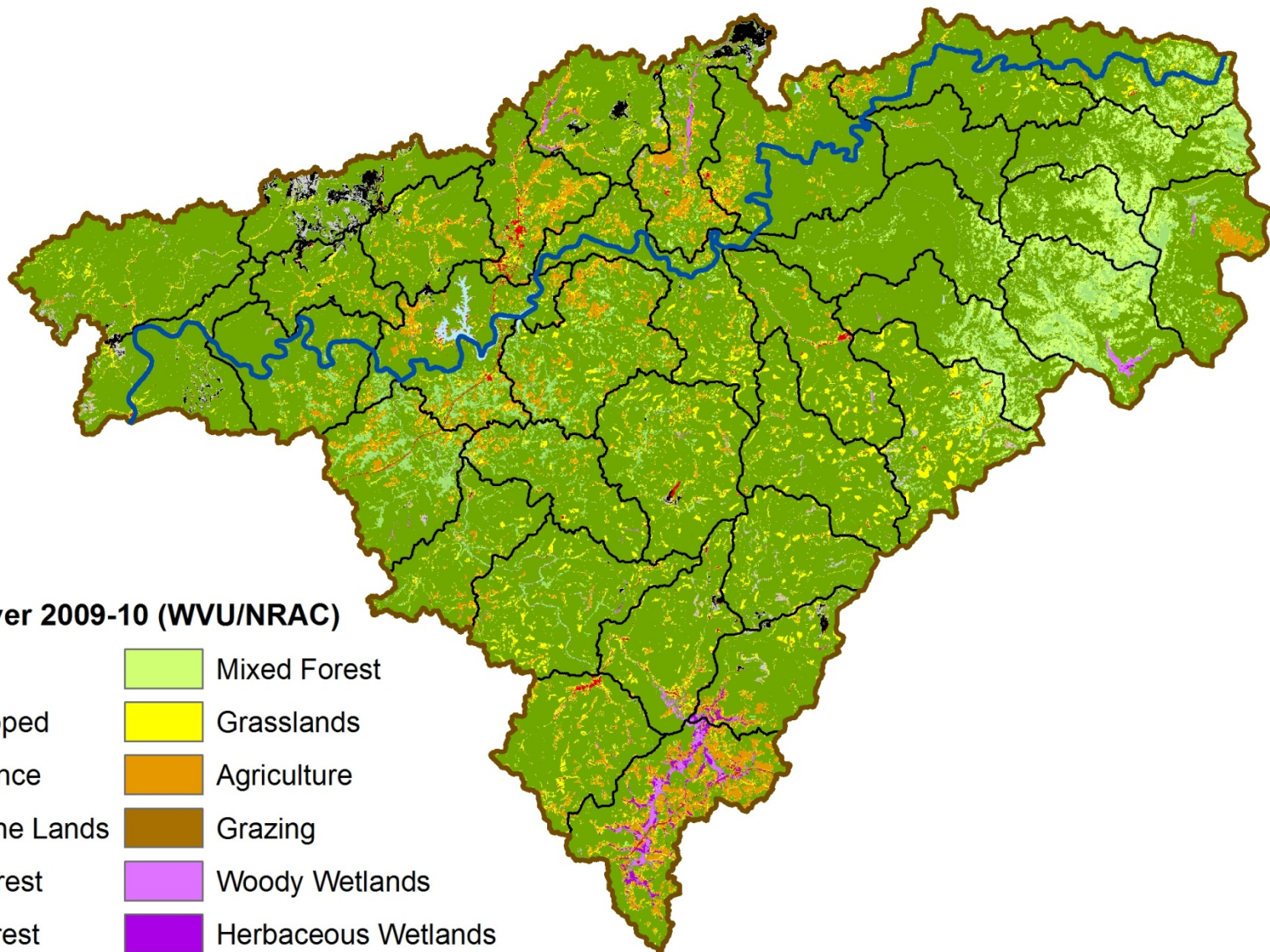
**Gauley River Watershed
Relative Results**















Wetlands
Model
Overall

Gauley Watershed: Uplands

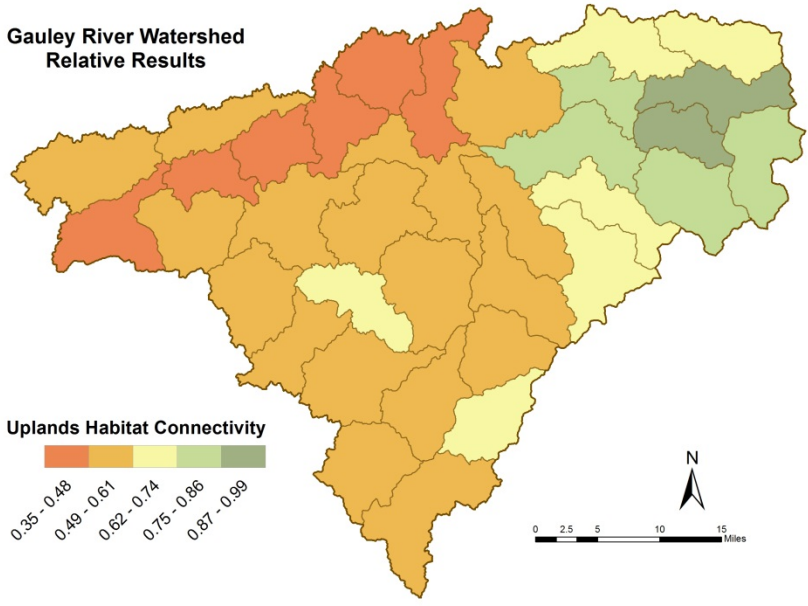
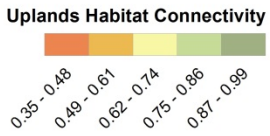




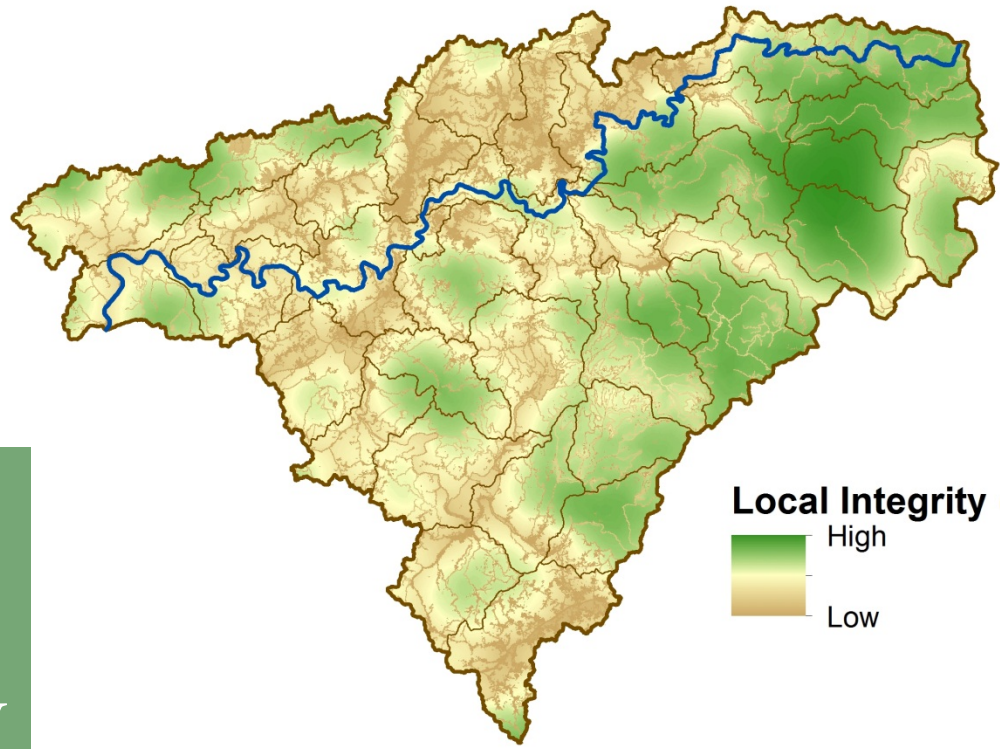
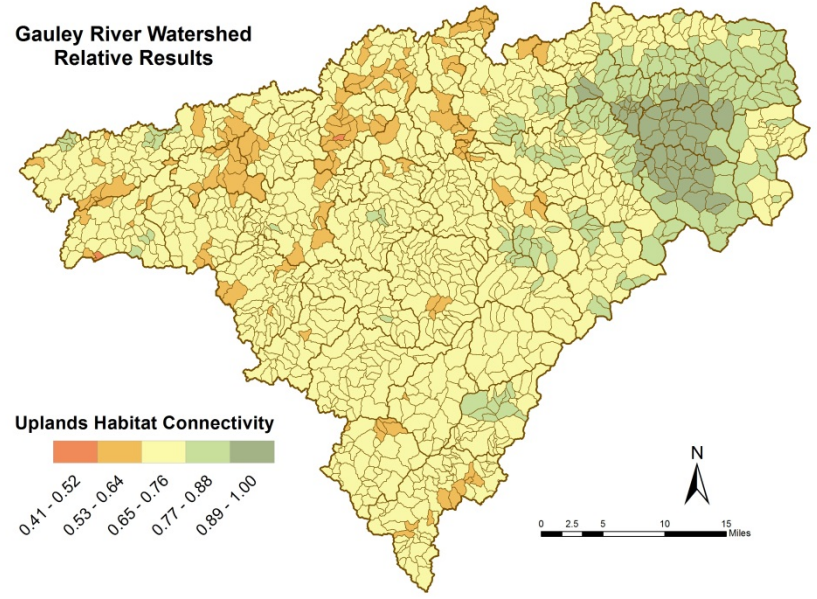
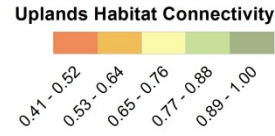
Land Use/Land Cover 2009-10 (WVU/NRAC)

- | | |
|---|---|
|  Water |  Mixed Forest |
|  Barren/Developed |  Grasslands |
|  Mine Disturbance |  Agriculture |
|  Reclaimed Mine Lands |  Grazing |
|  Deciduous Forest |  Woody Wetlands |
|  Evergreen Forest |  Herbaceous Wetlands |

**Gauley River Watershed
Relative Results**



**Gauley River Watershed
Relative Results**



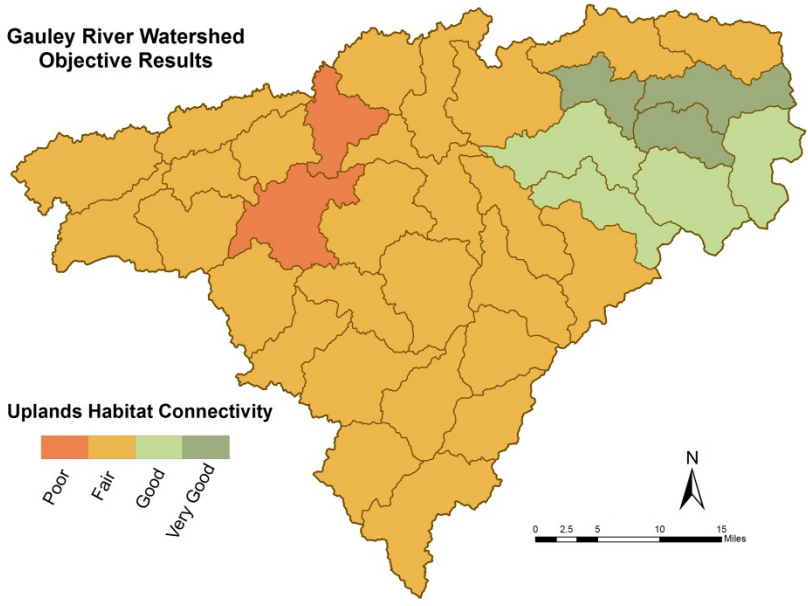
Local Integrity (TNC)



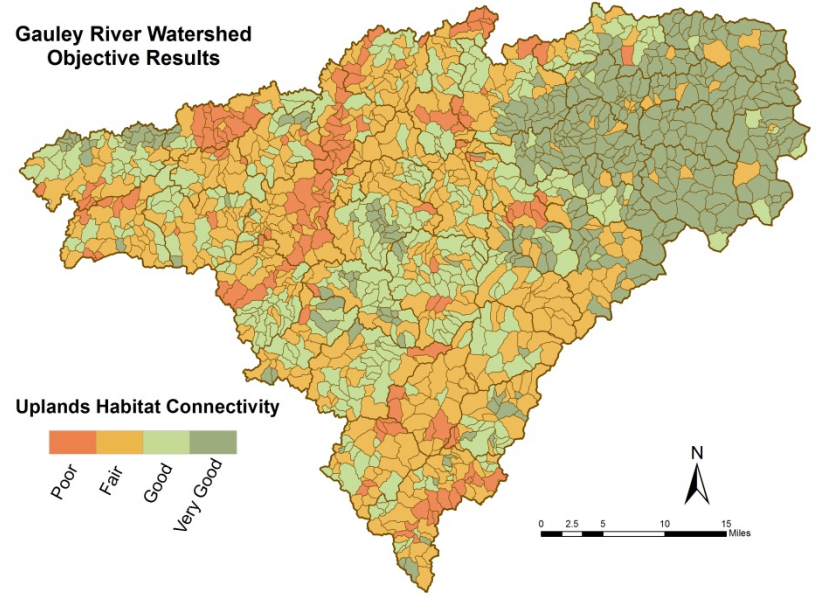
Integrity Level	Color
High	Green
Low	Brown

Uplands Habitat Connectivity

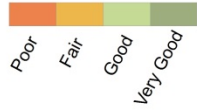
Gauley River Watershed
Objective Results



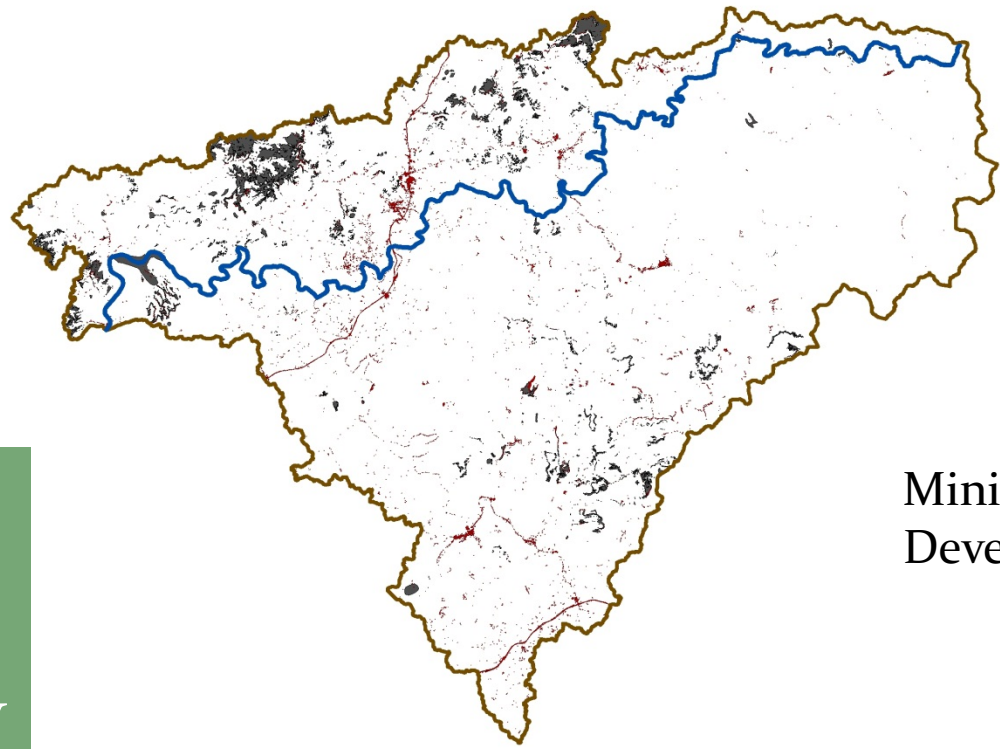
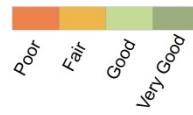
Gauley River Watershed
Objective Results



Uplands Habitat Connectivity



Uplands Habitat Connectivity

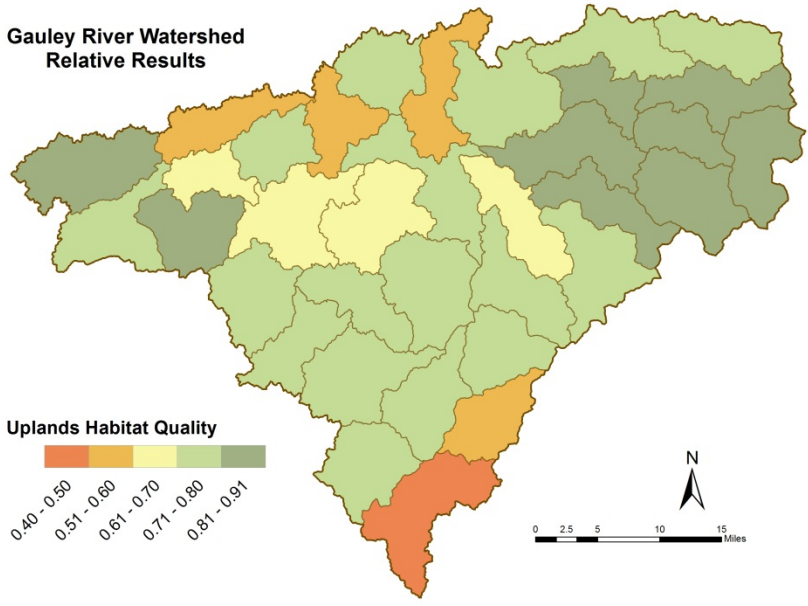


Mining
Development

Uplands
Habitat
Connectivity

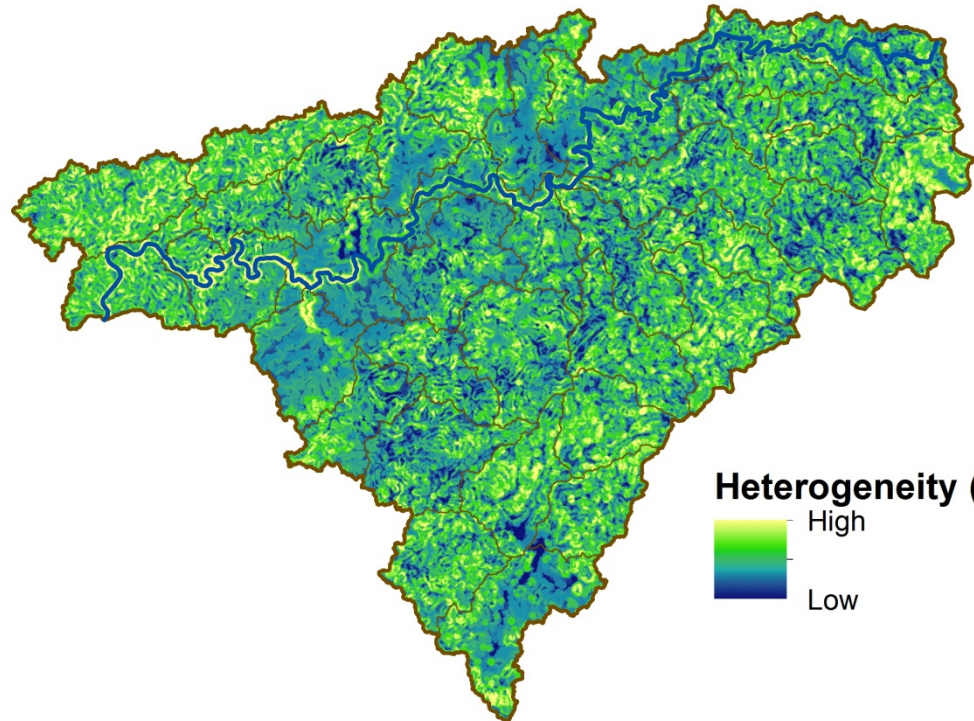
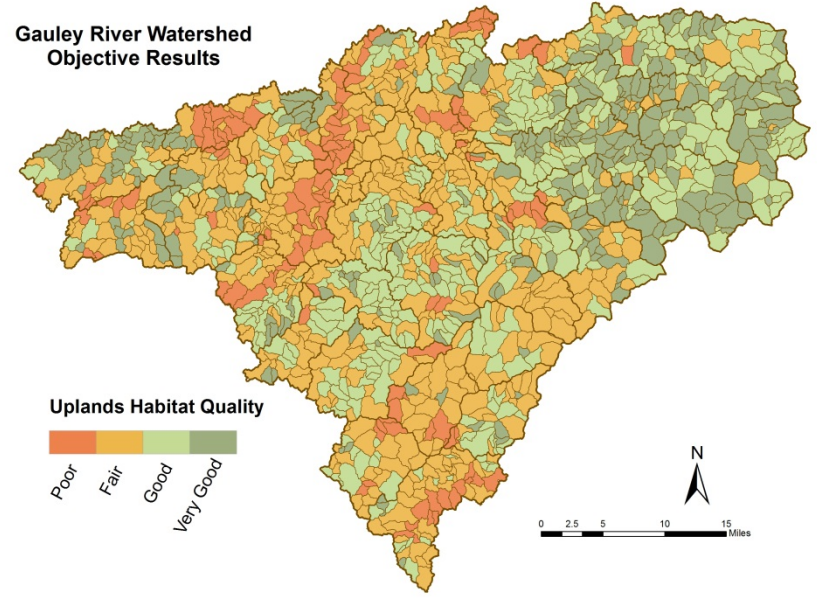
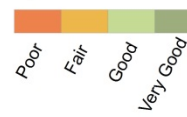
Gauley River Watershed
Relative Results

Uplands Habitat Quality

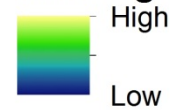


Gauley River Watershed
Objective Results

Uplands Habitat Quality



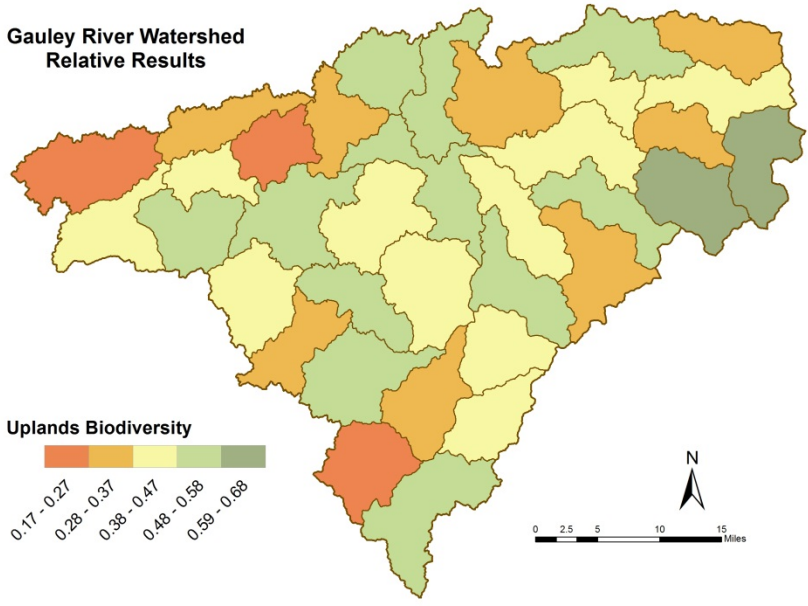
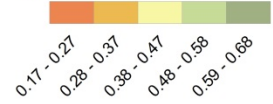
Heterogeneity (TNC)



Uplands
Habitat
Quality

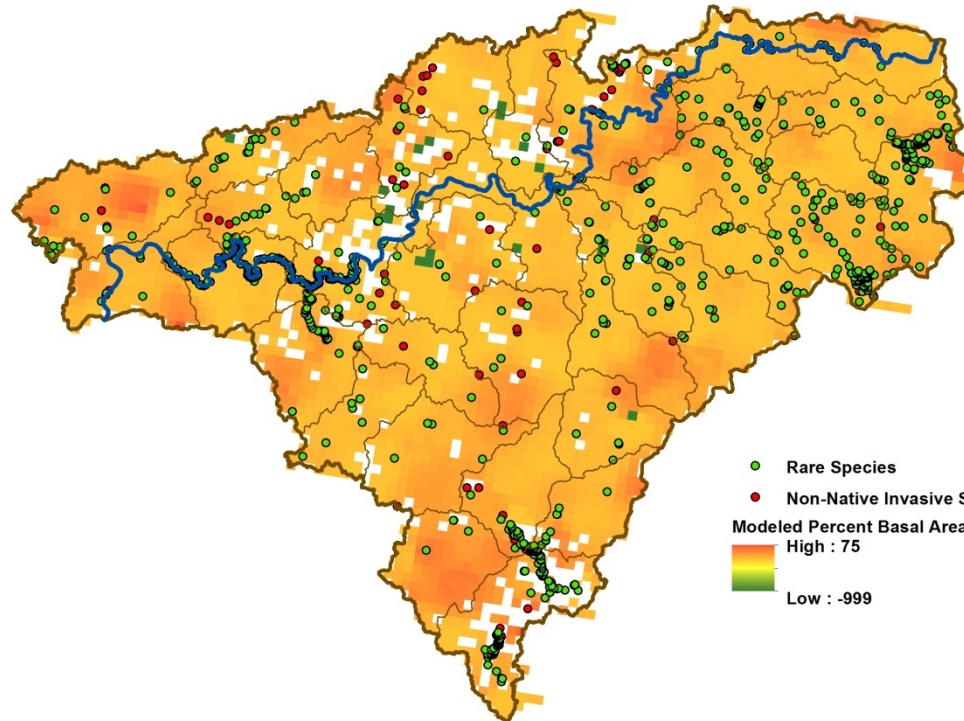
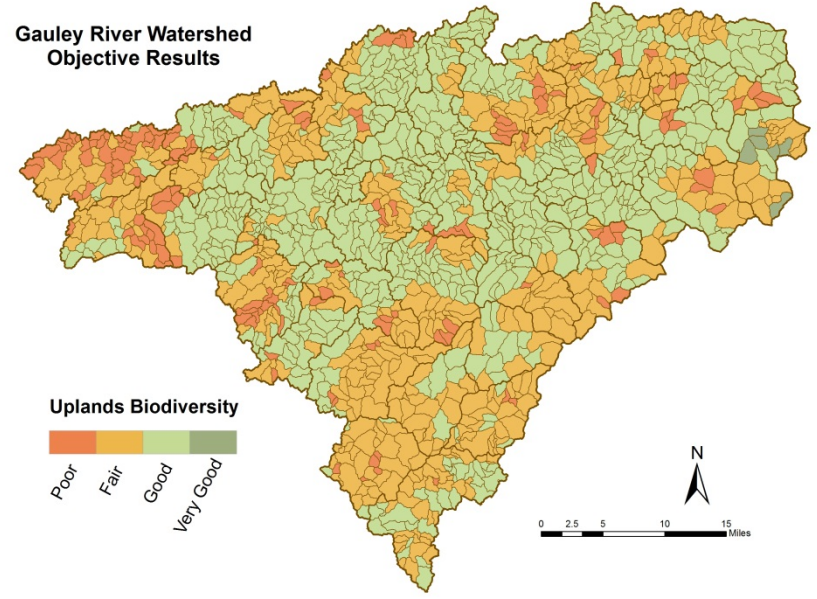
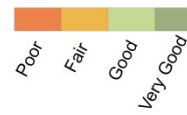
Gauley River Watershed
Relative Results

Uplands Biodiversity



Gauley River Watershed
Objective Results

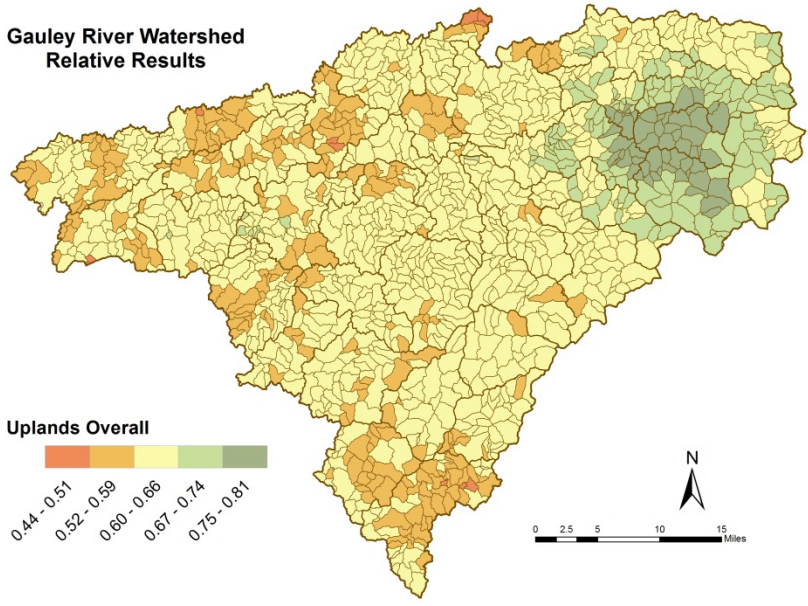
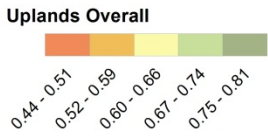
Uplands Biodiversity



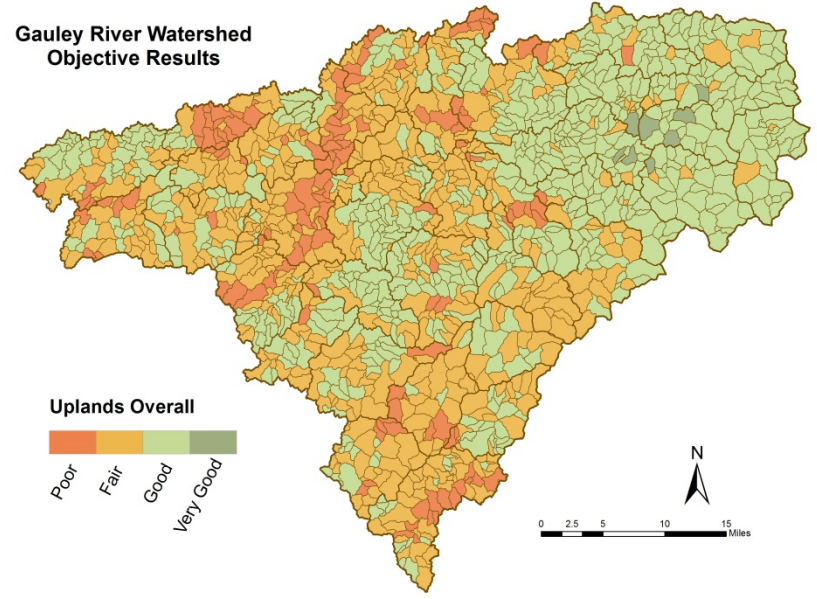
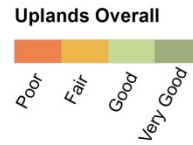
● Rare Species
● Non-Native Invasive Species
Modeled Percent Basal Area Loss
High : 75
Low : -999

Uplands Biodiversity

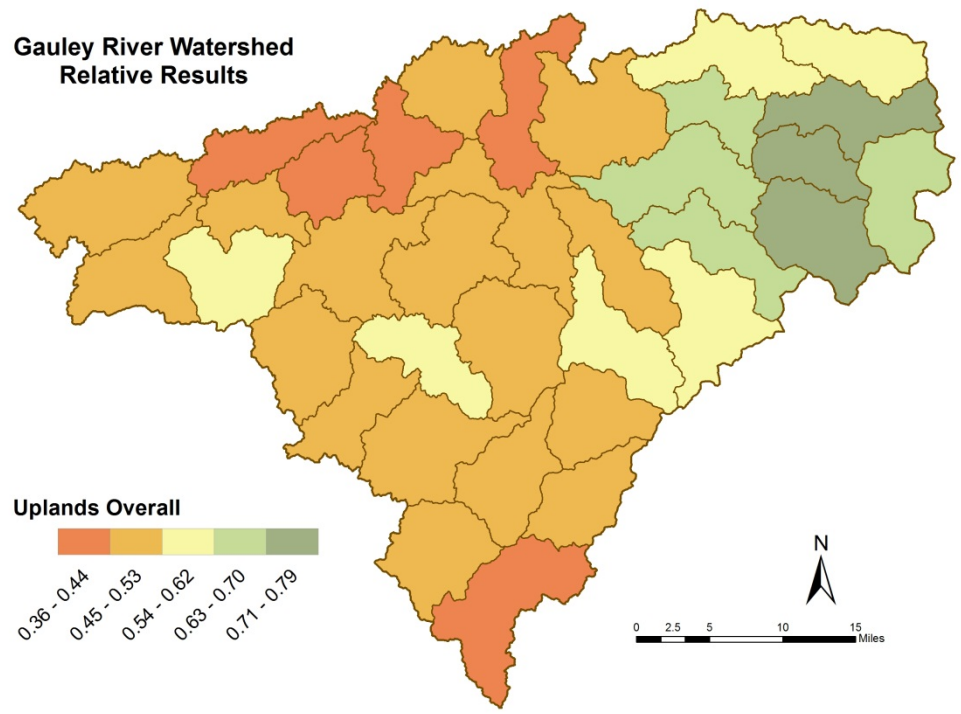
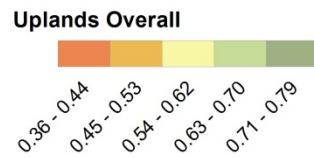
**Gauley River Watershed
Relative Results**



**Gauley River Watershed
Objective Results**



**Gauley River Watershed
Relative Results**

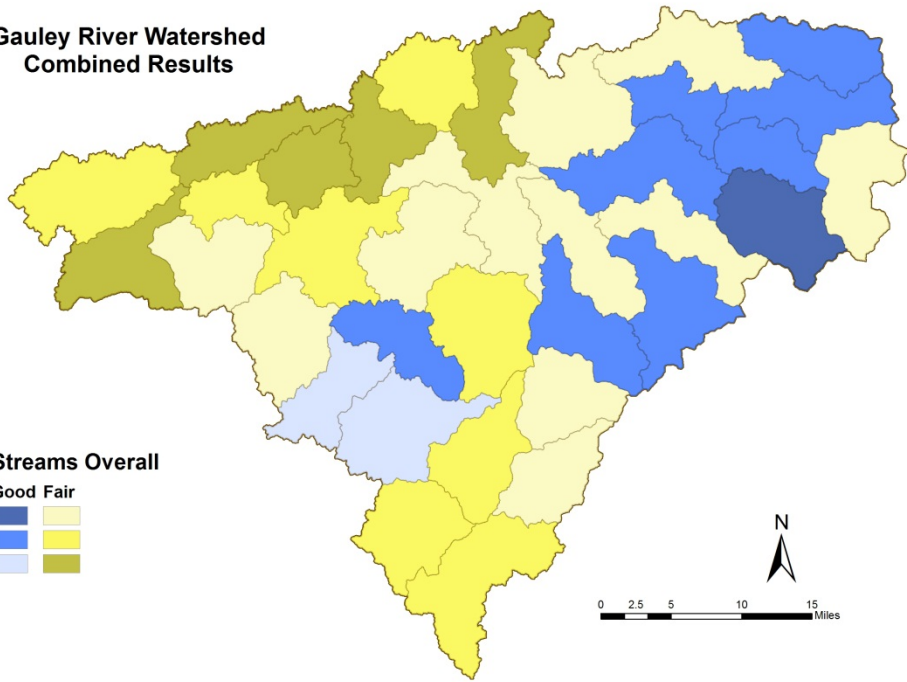


**Uplands
Model
Overall**

Gauley Watershed: Sample Combined Results



Gauley River Watershed Combined Results

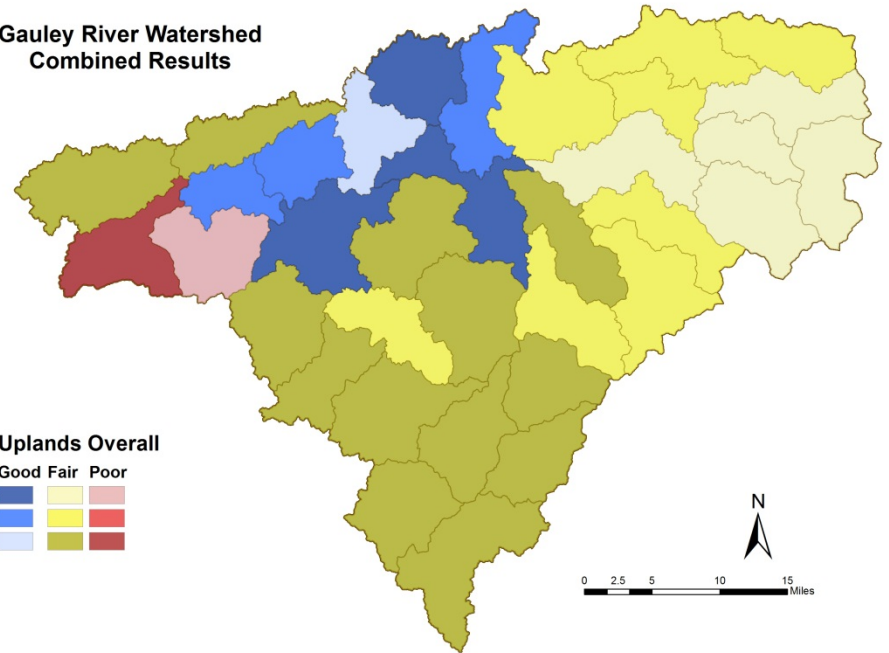


Streams Overall

Good Fair



Gauley River Watershed Combined Results



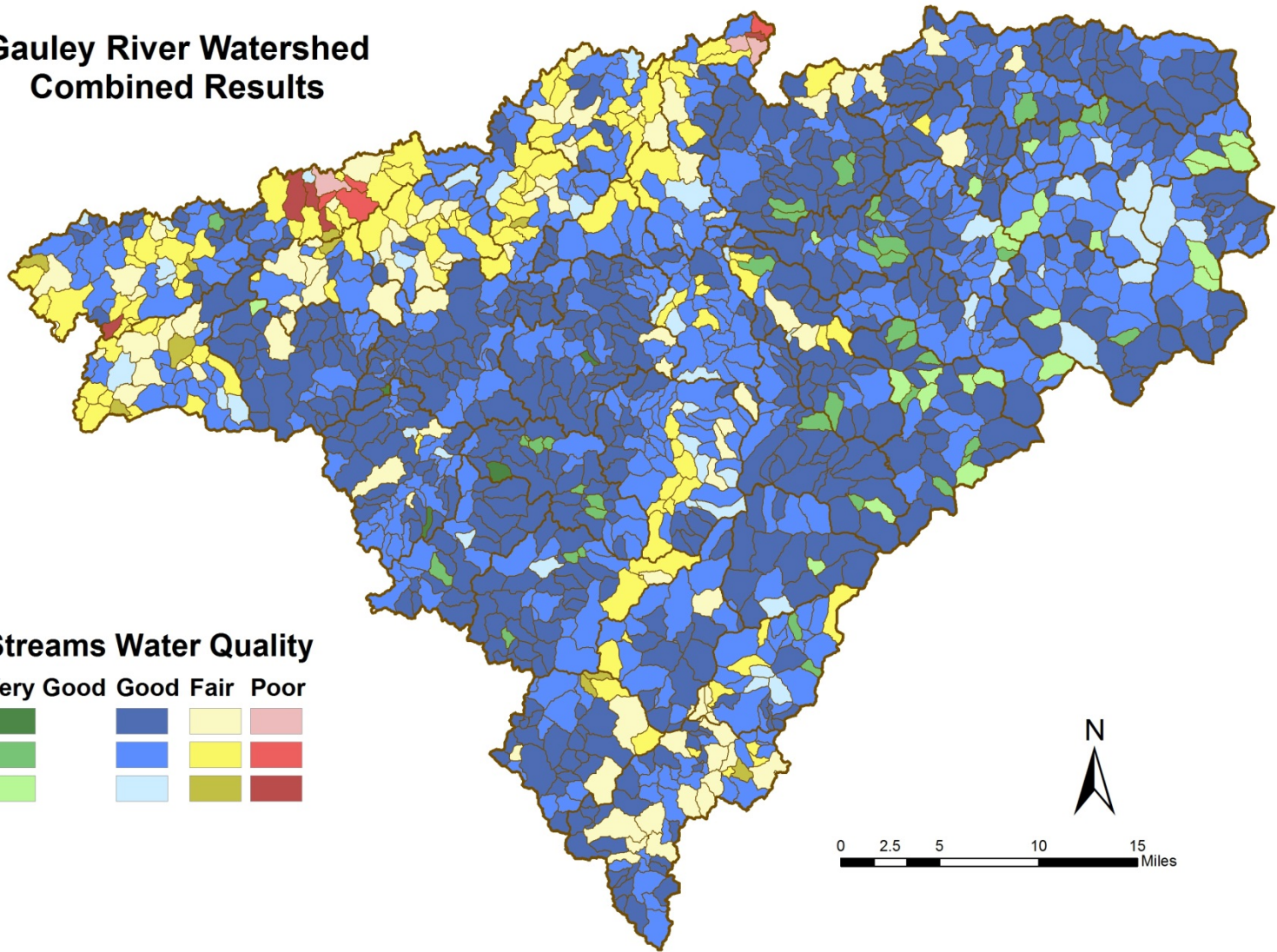
Uplands Overall

Good Fair Poor



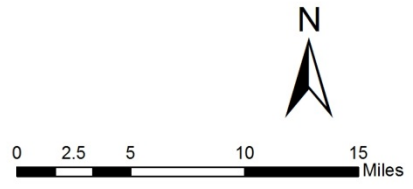
Combined
Results

Gauley River Watershed Combined Results



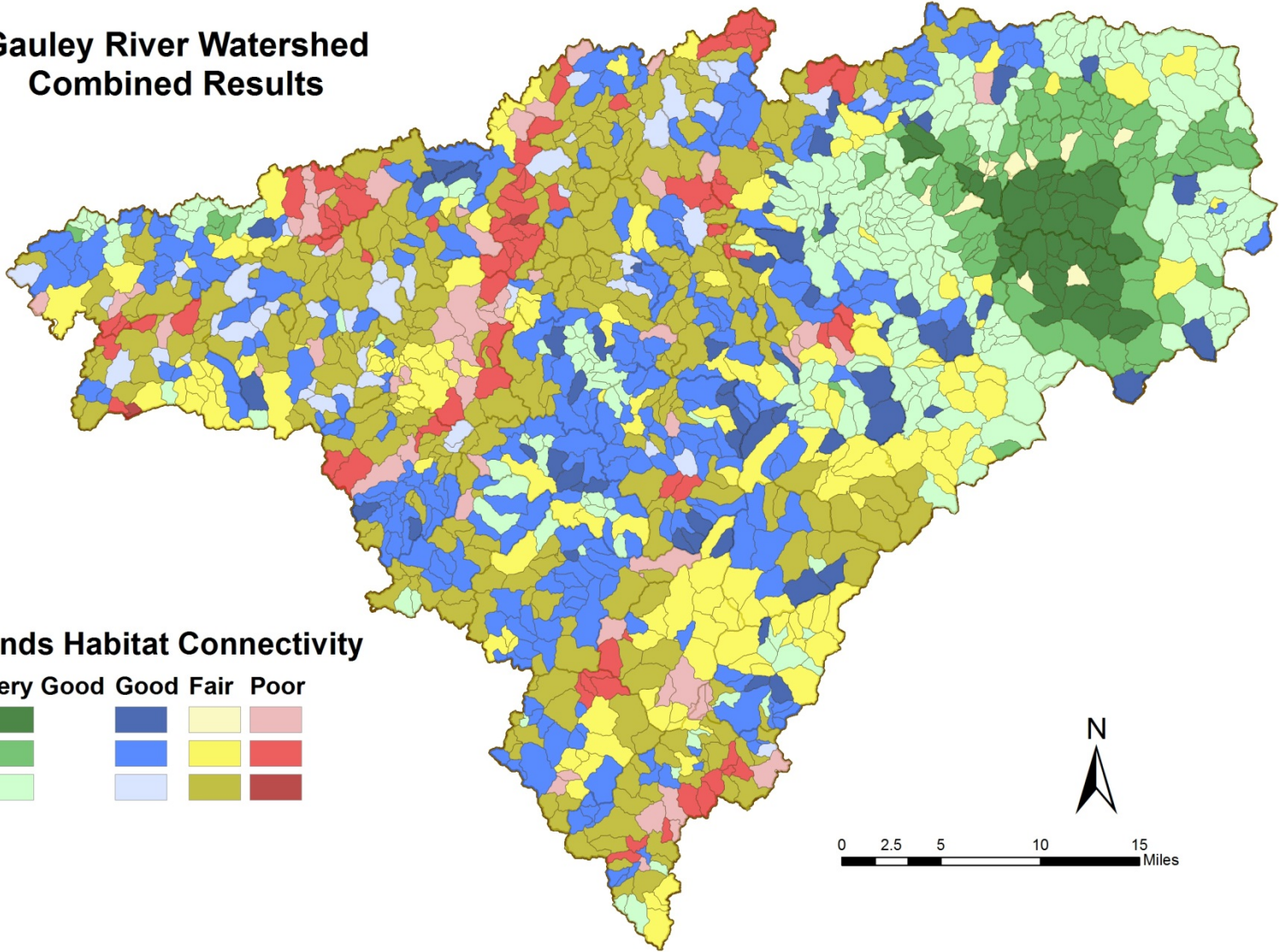
Streams Water Quality

	Very Good	Good	Fair	Poor
Highest Quality				
Lowest Quality				

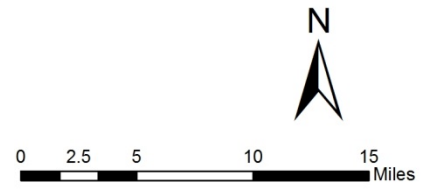


Combined
Results

Gauley River Watershed Combined Results



Uplands Habitat Connectivity



Combined
Results

Streams Overall Combined Results

HUC12	StreamsObjective	StreamsRelative	StreamsCombined
050500050803	2	0.416560891	2.416560891
050500050701	2	0.468024402	2.468024402
050500050809	2	0.475159043	2.475159043
050500050806	2	0.499726298	2.499726298
050500050801	2	0.508066158	2.508066158
050500050802	2	0.552932252	2.552932252
050500050807	2	0.557347909	2.557347909
050500050602	2	0.563808056	2.563808056
050500050604	2	0.565904833	2.565904833
050500050805	2	0.587531314	2.587531314
050500050605	2	0.589445884	2.589445884
050500050702	2	0.595871244	2.595871244
050500050501	2	0.604951136	2.604951136
050500050302	2	0.619252408	2.619252408
050500050804	2	0.622022334	2.622022334
050500050303	2	0.623582507	2.623582507
050500050601	2	0.638230873	2.638230873
050500050608	3	0.641736276	3.641736276
050500050404	2	0.648314019	2.648314019
050500050609	2	0.649872945	2.649872945
050500050606	3	0.650561088	3.650561088
050500050603	2	0.664028911	2.664028911
050500050808	2	0.676109592	2.676109592
050500050401	2	0.685497915	2.685497915
050500050502	2	0.698930872	2.698930872
050500050101	2	0.707279134	2.707279134
050500050104	3	0.707932257	3.707932257
050500050607	3	0.720990587	3.720990587
050500050403	3	0.722129447	3.722129447
050500050301	3	0.726838184	3.726838184
050500050402	3	0.731400175	3.731400175
050500050103	3	0.750795104	3.750795104
050500050202	3	0.754533943	3.754533943
050500050102	3	0.763677456	3.763677456
050500050201	3	0.827238599	3.827238599

Uplands Overall Combined Results

HUC12	UplandsObjective	UplandsRelative	UplandsCombined
050500050803	3	0.35823619	3.35823619
050500050701	2	0.379935226	2.379935226
050500050809	2	0.407562537	2.407562537
050500050806	3	0.415393252	3.415393252
050500050801	3	0.443937317	3.443937317
050500050802	3	0.445389123	3.445389123
050500050807	2	0.448806644	2.448806644
050500050602	1	0.461425246	1.461425246
050500050604	3	0.463193689	3.463193689
050500050805	2	0.471617844	2.471617844
050500050605	2	0.478251791	2.478251791
050500050702	2	0.479526276	2.479526276
050500050501	2	0.48671093	2.48671093
050500050302	3	0.496079239	3.496079239
050500050804	2	0.499381405	2.499381405
050500050303	3	0.499506016	3.499506016
050500050601	2	0.509731716	2.509731716
050500050608	2	0.514041989	2.514041989
050500050404	2	0.514764598	2.514764598
050500050609	2	0.516251388	2.516251388
050500050606	2	0.51632932	2.51632932
050500050603	2	0.520603083	2.520603083
050500050808	2	0.536114618	2.536114618
050500050401	2	0.539584269	2.539584269
050500050502	2	0.546577515	2.546577515
050500050101	2	0.54878529	2.54878529
050500050104	2	0.559075325	2.559075325
050500050607	1	0.581945875	1.581945875
050500050403	2	0.63449658	2.63449658
050500050301	2	0.649751867	2.649751867
050500050402	2	0.660970102	2.660970102
050500050103	2	0.678320561	2.678320561
050500050202	2	0.742008016	2.742008016
050500050102	2	0.766523937	2.766523937
050500050201	2	0.791479345	2.791479345



COMMENTS/QUESTIONS?

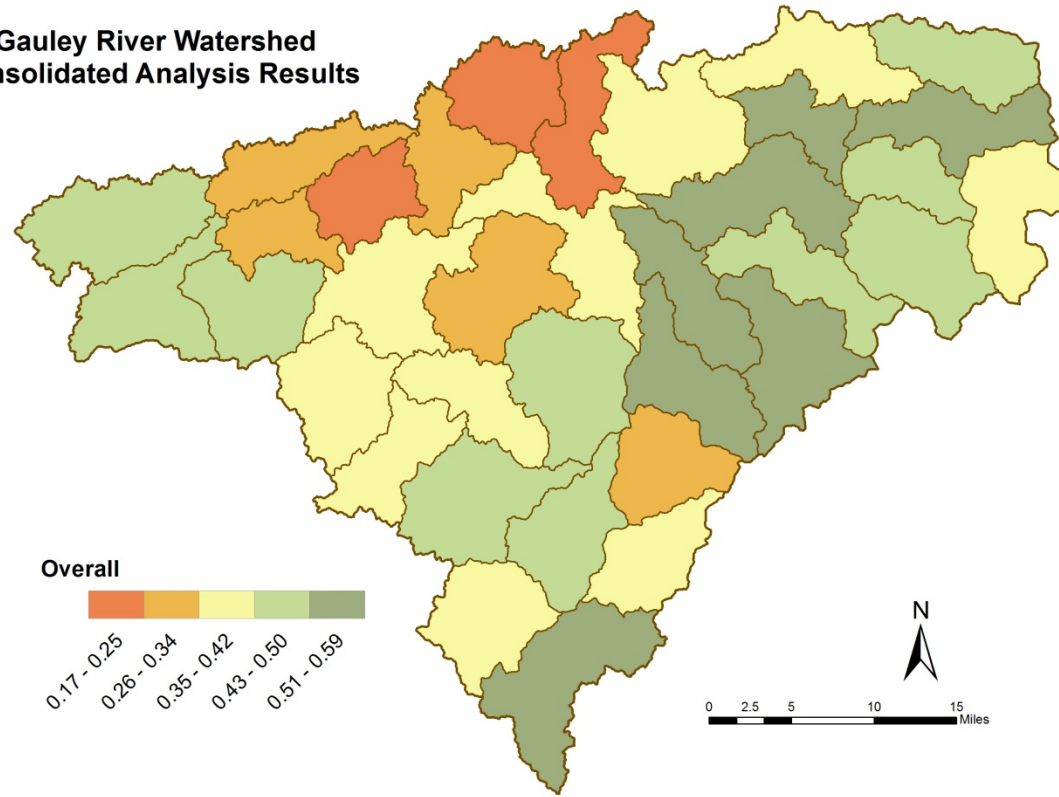
Gauley Watershed: Consolidated Analysis



Gauley River © www.ytravelblog.com



**Gauley River Watershed
Consolidated Analysis Results**

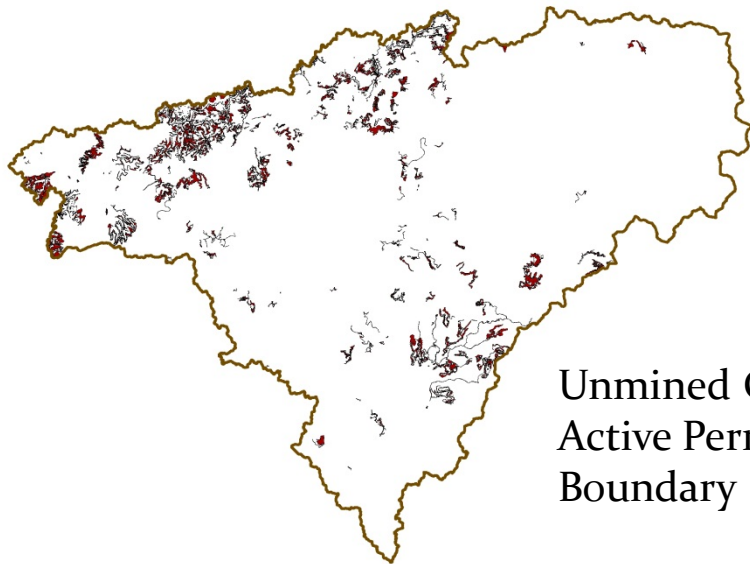


Energy: Unmined coal, Marcellus shale thickness, Wind development potential, Proposed transmission lines/pipelines/power plants/wind, Geothermal development potential

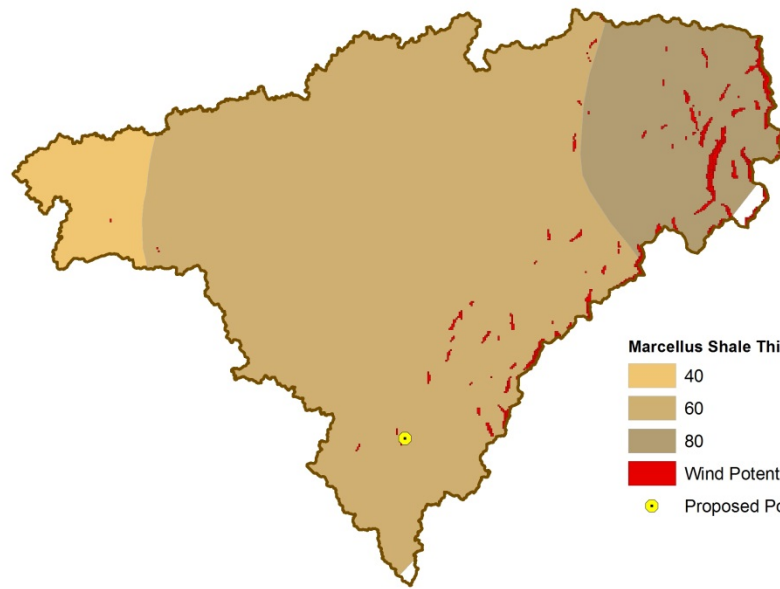
Climate Change: TNC Resiliency & Current density models, TNC Climate Wizard Precipitation & Temperature change

Priority Interest Areas: TNC aquatic & terrestrial portfolio, US Forest Service proclamation boundary, WV Division of Forestry priority HUC₁₂ watersheds

Consolidated
Analysis
Overall

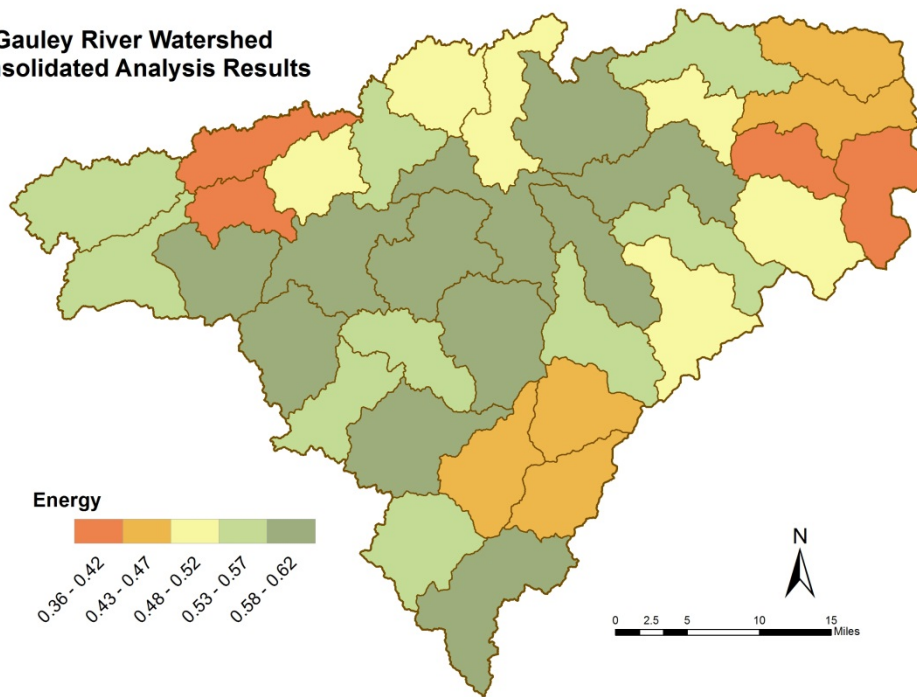


Unmined Coal in
Active Permit
Boundary



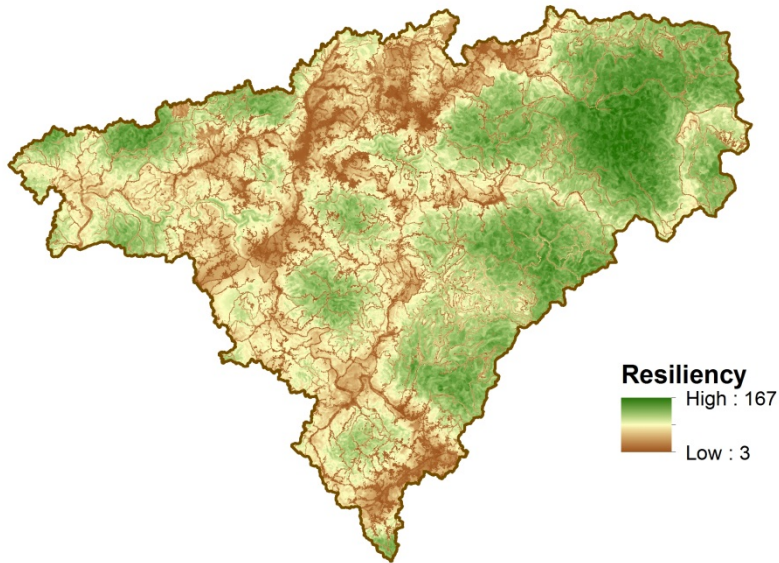
Marcellus Shale Thickness
 40
 60
 80
Wind Potential
 Proposed Power Plant

**Gauley River Watershed
Consolidated Analysis Results**

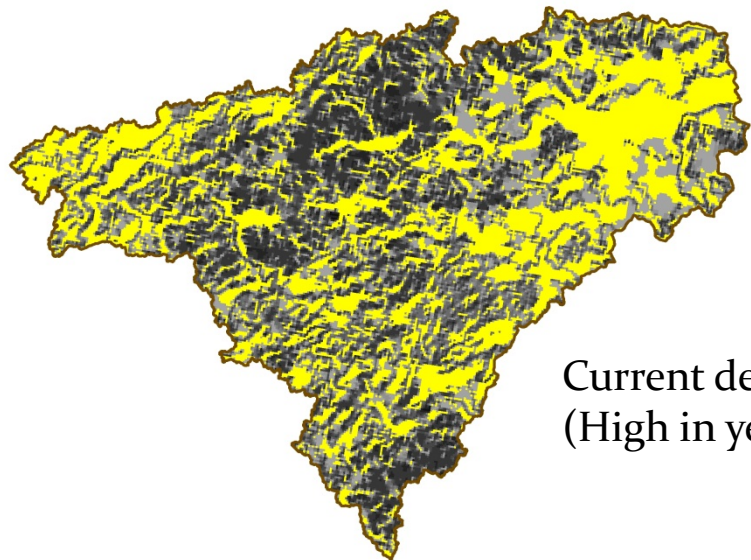


Energy
 0.36 - 0.42
 0.43 - 0.47
 0.48 - 0.52
 0.53 - 0.57
 0.58 - 0.62

Consolidated
Analysis
Energy

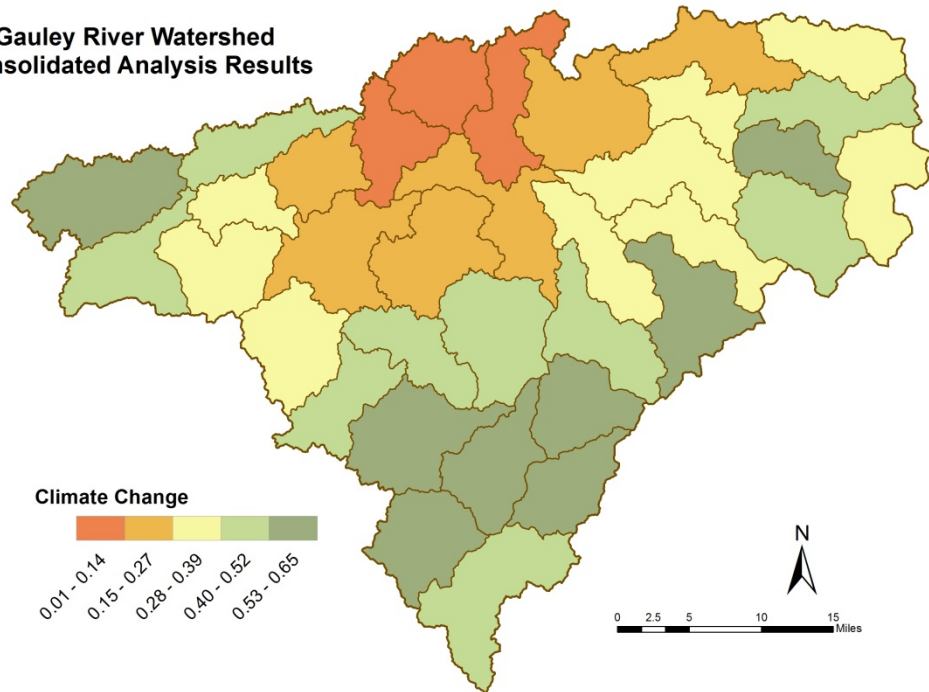


Resiliency
High : 167
Low : 3



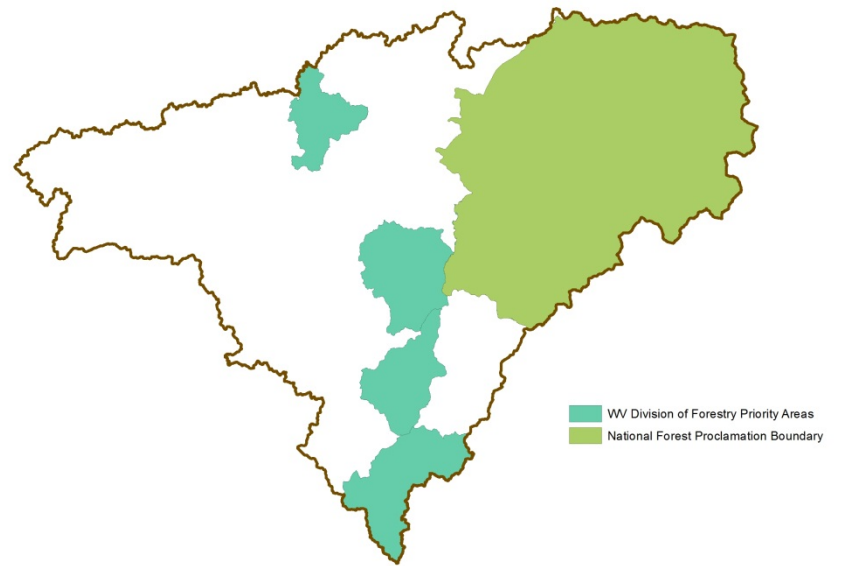
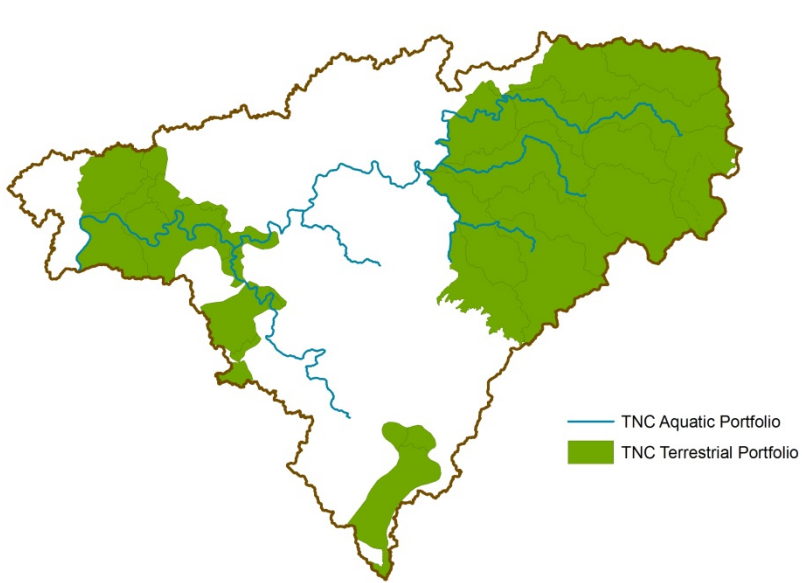
Current density
(High in yellow)

**Gauley River Watershed
Consolidated Analysis Results**

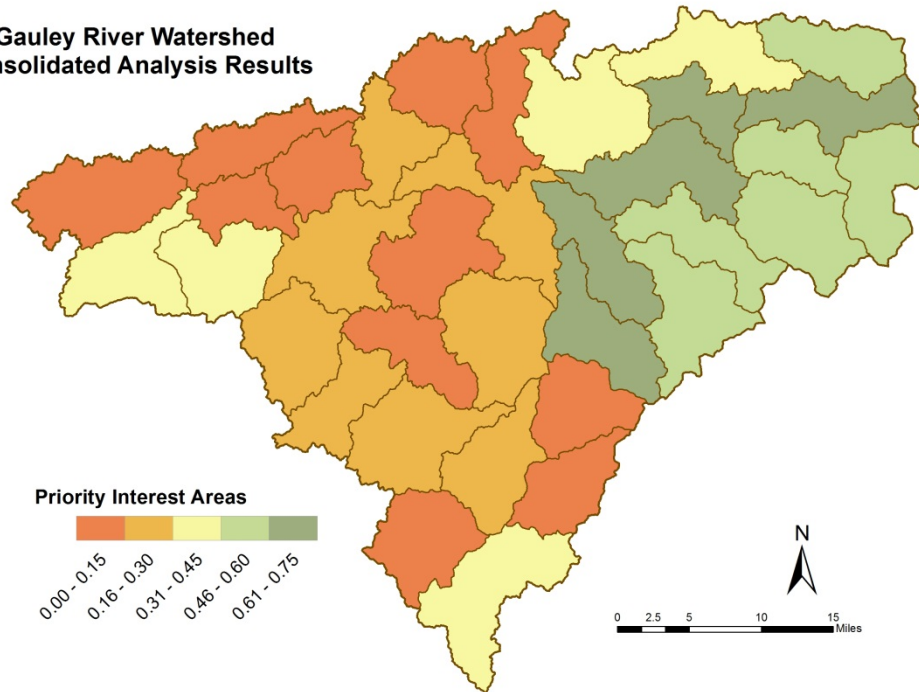


Climate Change
0.01 - 0.14
0.15 - 0.27
0.28 - 0.39
0.40 - 0.52
0.53 - 0.65

Consolidated
Analysis
Climate Change



**Gauley River Watershed
 Consolidated Analysis Results**



Consolidated
 Analysis
 Priority
 Interest Areas



COMMENTS/QUESTIONS?