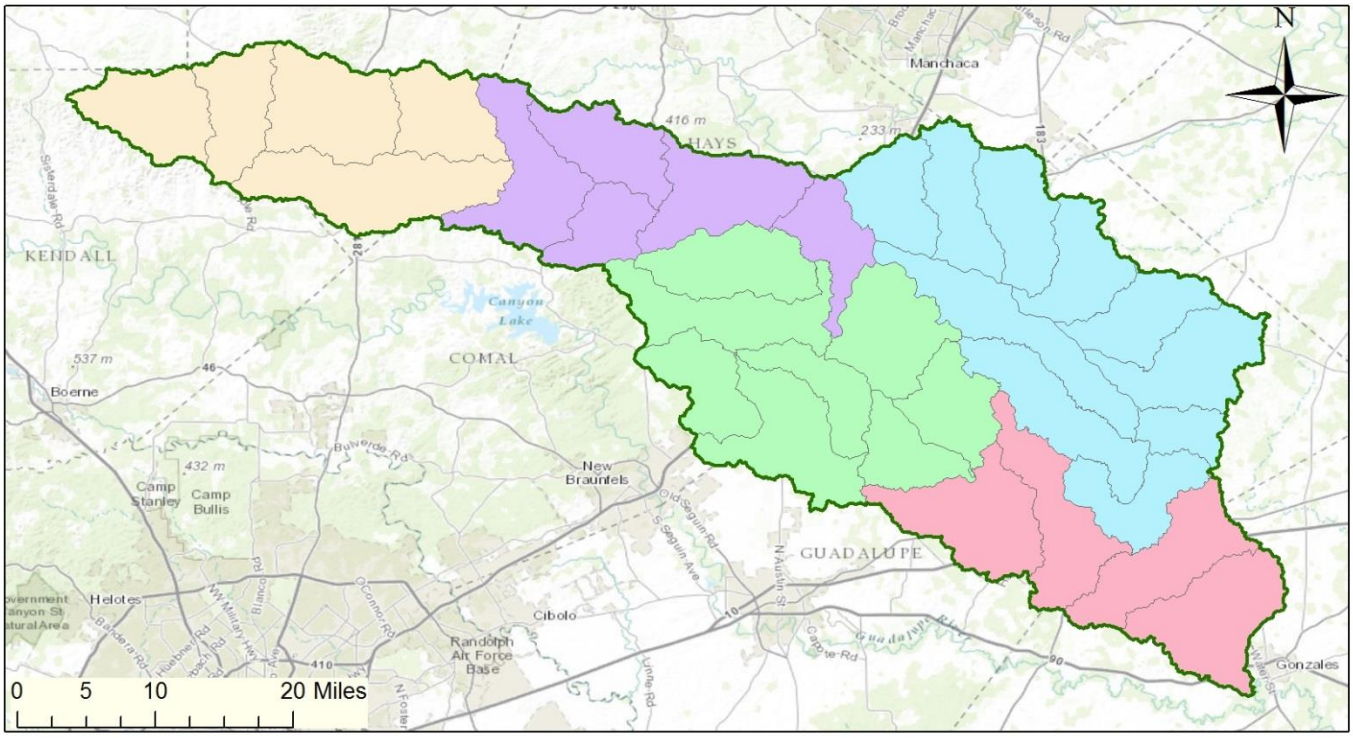
Exercise 2 Solution

Part1:



San Marcos Basin

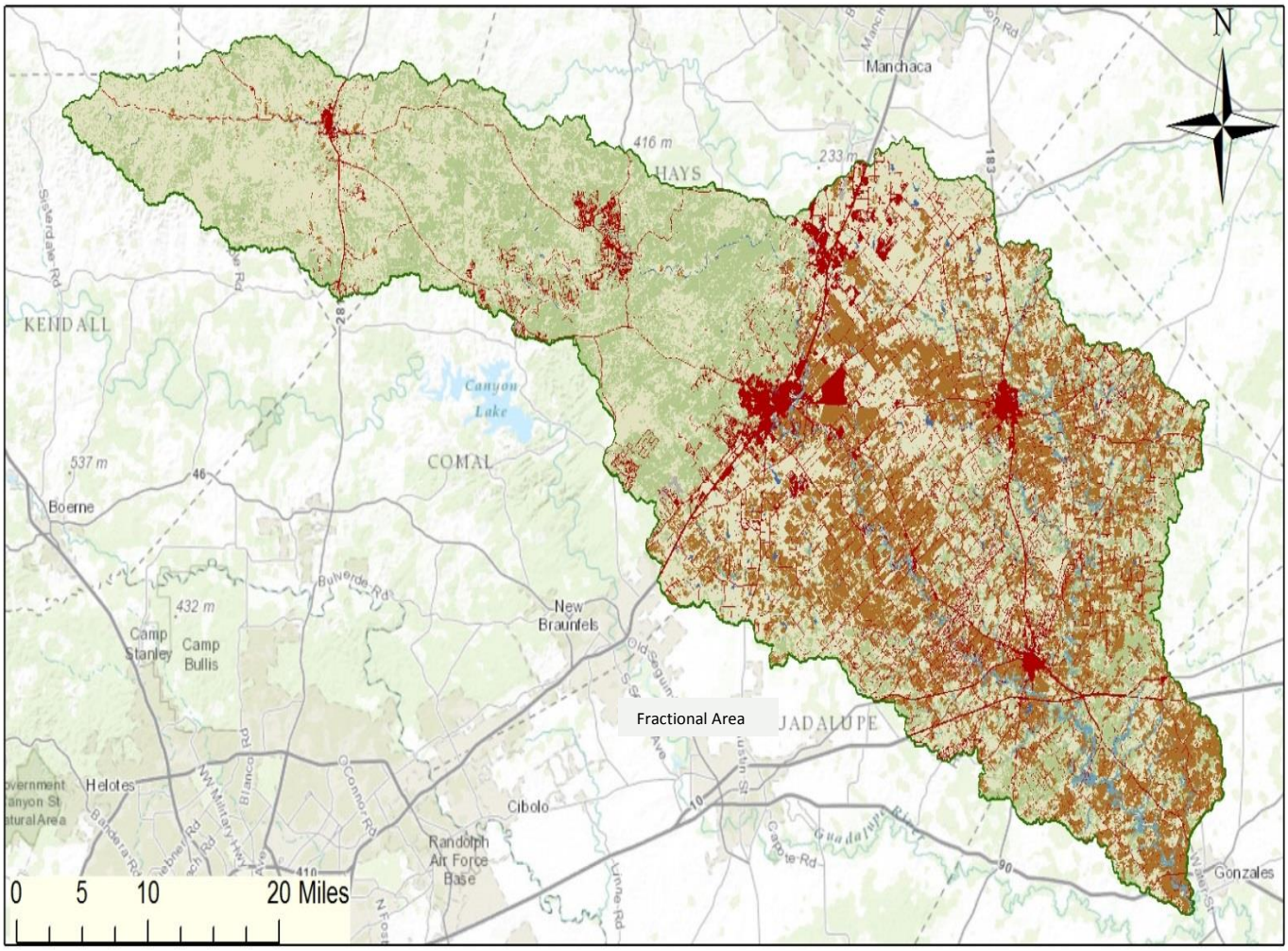
By, Cassandra Fagan
9/15/2015

Number of HUC 10's = 5
Number of HUC 12's = 32

Subwatershed
HUC_10
- 1210020301
- 1210020302
- 1210020303
- 1210020304
- 1210020305

Basin

Part 2:



San Marcos Basin

By, Cassandra Fagan
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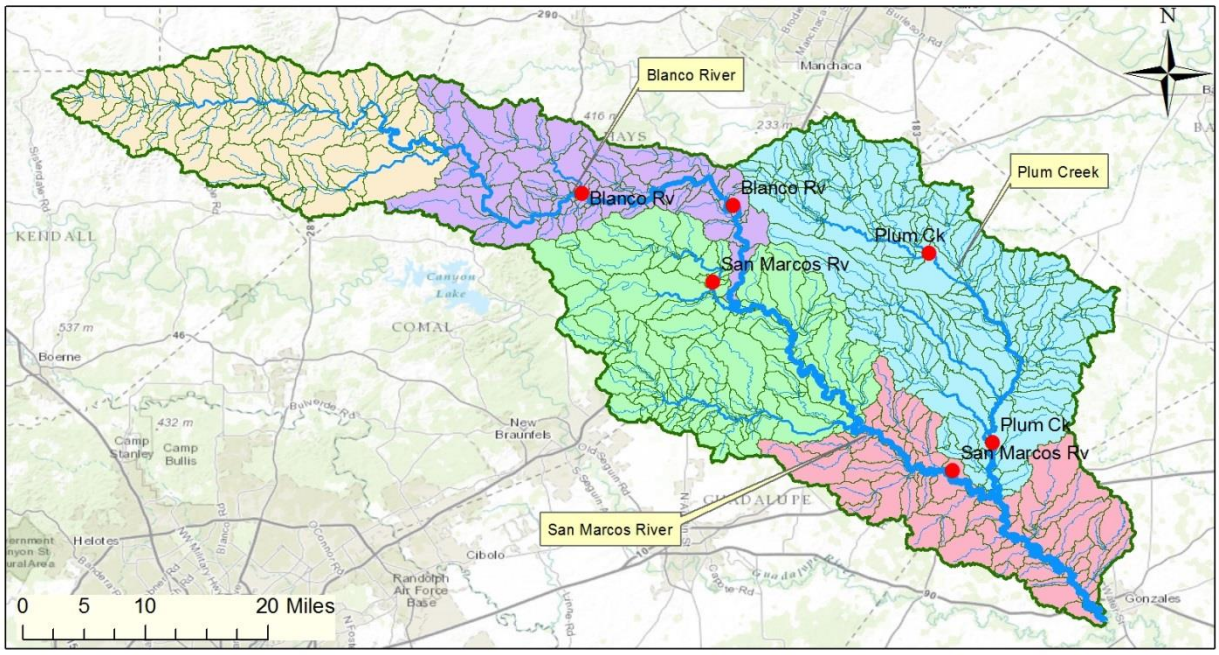
LC_CLASS	PercentArea	Area_sqkm
SnowIceBarren	0.002	8
OpenWater	0.004	20.21
Wetland	0.021	98.51
Development	0.092	433.53
Agriculture	0.192	902.08
Forest	0.259	1215.22
ShrubScrubGrass	0.43	2020.39

Land Cover

- OpenWater
- Development
- SnowIceBarren
- Forest
- ShrubScrubGrass
- Agriculture
- Wetland

Area = # of cells * 30 m * 30 m /(1000^2) = Area in km^2

Part 3:



San Marcos Basin

By, Cassandra Fagan
9/15/2015

Gages

Mean Annual Flow (cfs)

- 0.00- 10.40
- 10.41 - 34.89
- 34.90- 67.54
- 67.55 - 115.96
- 115.97 - 224.13
- Catchment

Basin

HUC 10

- 1210020301
- 1210020302
- 1210020303
- 1210020304
- 1210020305

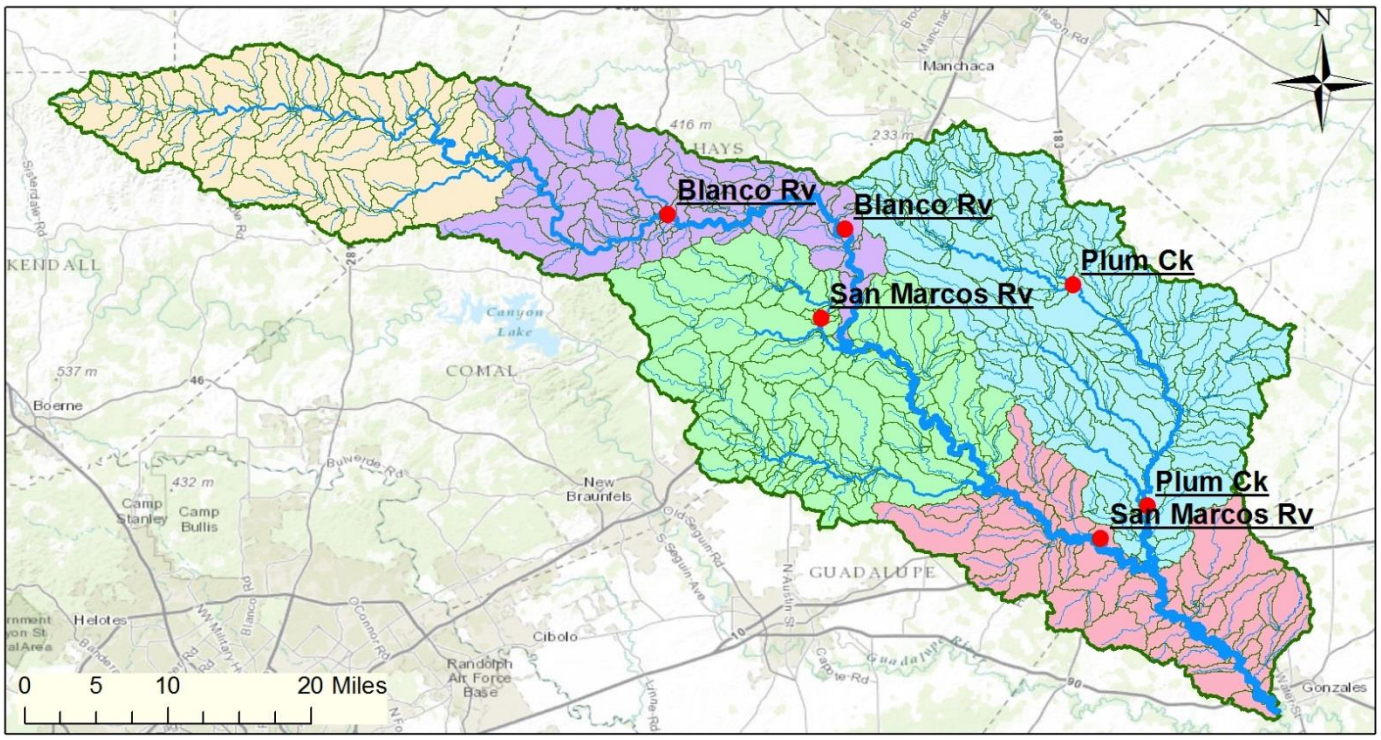
Catchments in San Marcos Basin- 555

Average Area = 6.34 km^2

Flowlines in San Marcos Basin = 557

Average length = 3.394km

Part 4:



San Marcos Basin

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Gages

Mean Annual Flow (cfs)

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Basin

HUC 10

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- 1210020302
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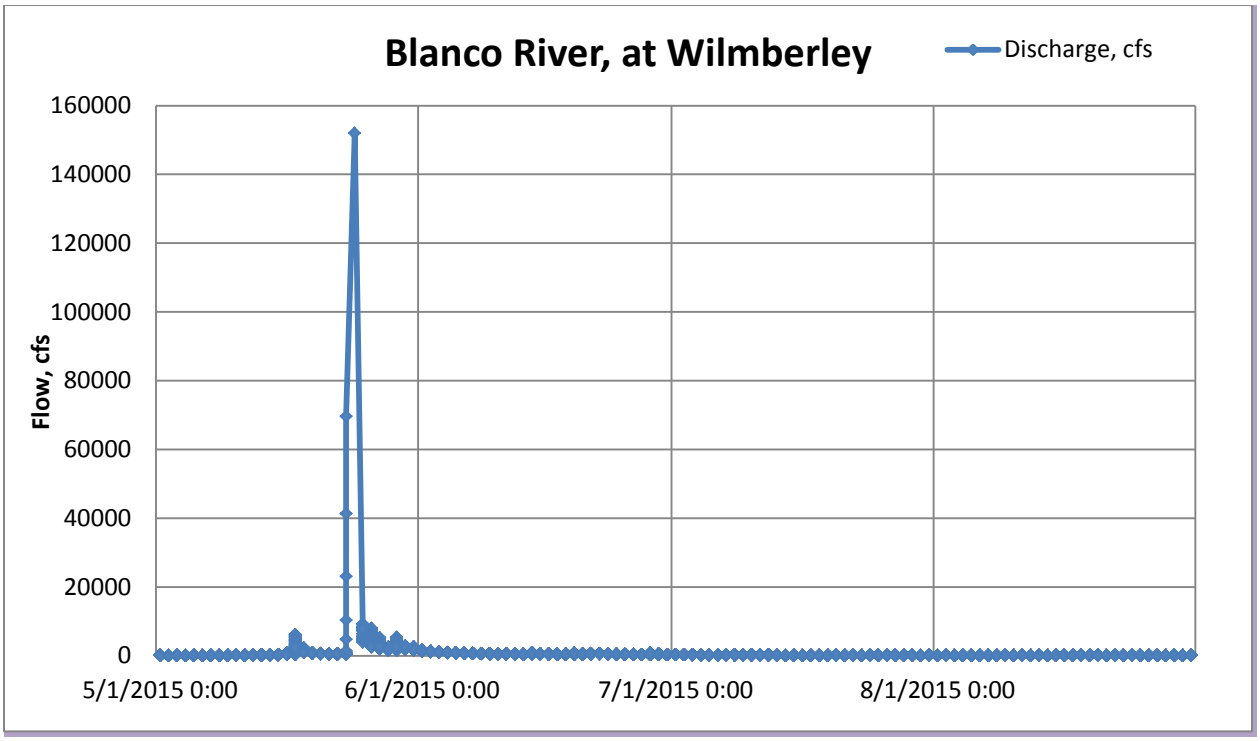

Comparing the gage data to the flowline data:

	Flowline Data			Gage Data		Distance upstream to gage (km)
SiteName	TotDASqMile	Q0001C (cfs)	Q0001E (cfs)	DASQMile	MAFlow (cfs)	
Plum Ck at Lockhart,TX	312	67.55	139.61	309	114	6.07
Blanco Rv nr Kyle, TX	415	83.40	164.06	412	165	3.02
Blanco Rv at Wimberely, TX	356	73.36	166.40	355	142	1.408
San Marcos Rv at Luling, TX	845	151.44	451.87	838	408	10.48
San Marcos Rv at San Marcos, TX	50	15.21	15.21	49	176	0.784
Plum Ck nr Luling, TX	124	31.65	57.03	112	49	1.91

The Flowline attribute, Q0001C is naturalized flow with gage regression and Q0001E is flow with gage adjustment. The Q0001E values are closer to the MA Flow value from the USGS gage data. The Q0001C values do not account for groundwater sources. The Edward's Aquifer springs, located in the San Marcos, are a large contributor of flow, especially for the San Marcos Rv at Luling, TX. This explains the large discrepancy between the Q0001C and the Q0001E, and MA Flow data for San Marcos Rv at Luling, TX. The Edwards aquifer appears to be responsible for the flow observed in the San Marcos River at San Marcos where the contributing area is a lot smaller and NHD+ flow only estimated to be 15.21 cfs, compared to the observed mean annual flow of 176 cfs.