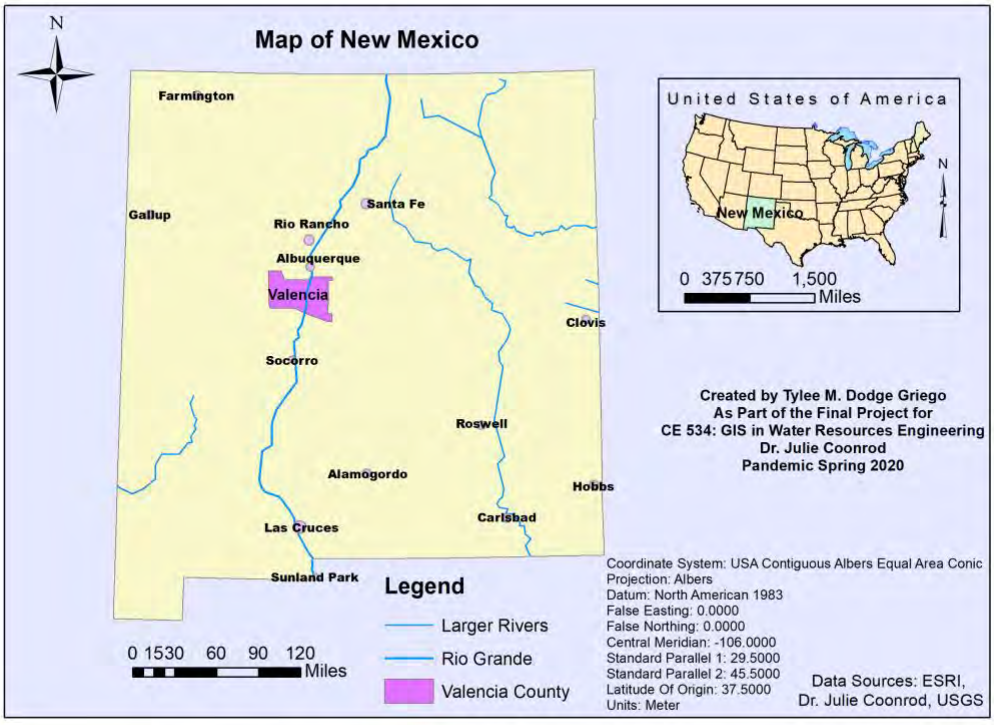
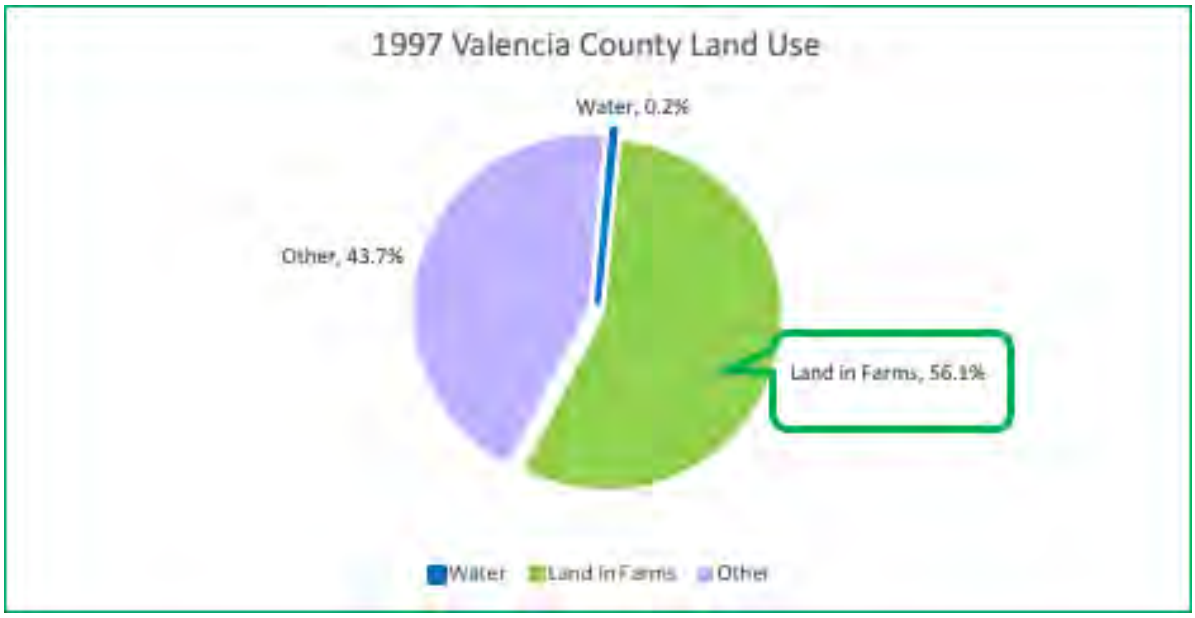
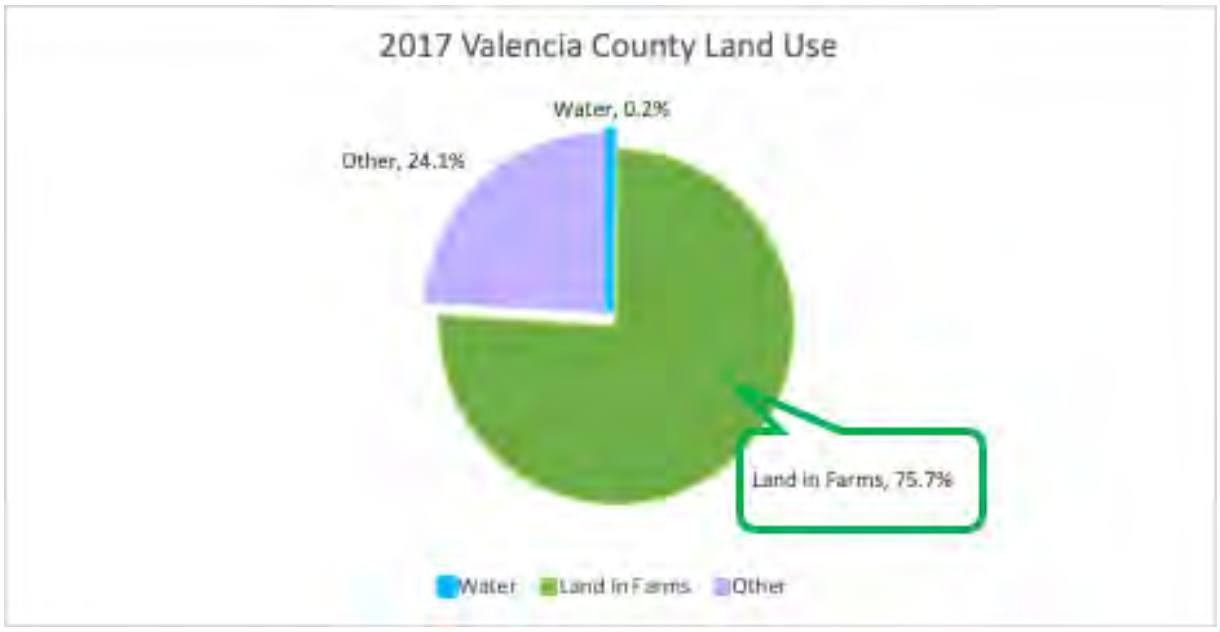
Mapping Valencia County:
A Comparison of CropScape Data vs. Census of Agriculture Data



Vicinity Map of Valencia County, New Mexico



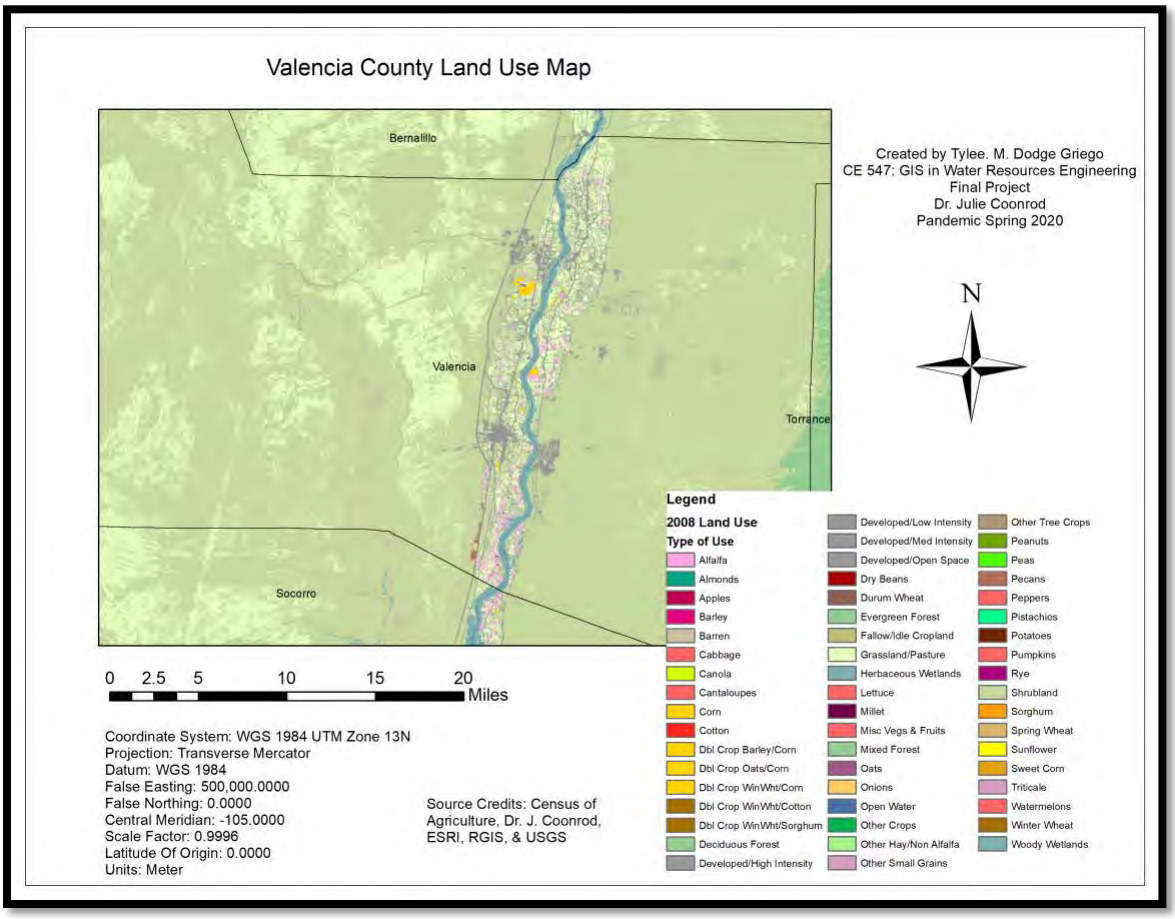
Valencia County Land Use Map for 1997 (based on Census of Agriculture Statistics, 1997; Griego et al., 2020)



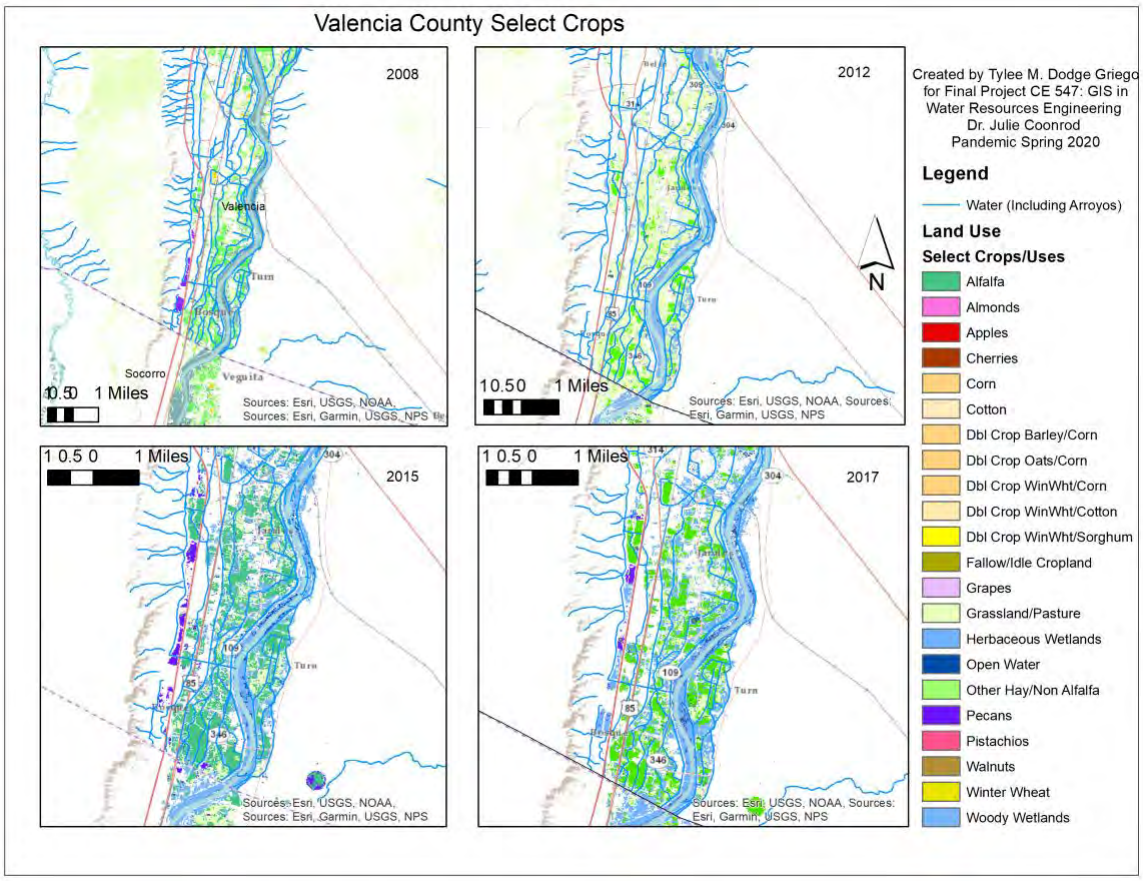
Valencia County Land Use Map for 2017 (based on Census of Agriculture Statistics, 2017; Griego et al., 2020)

Bosque Farms, 1935, the leveling of a field in preparation for irrigation (Lange, 1935)

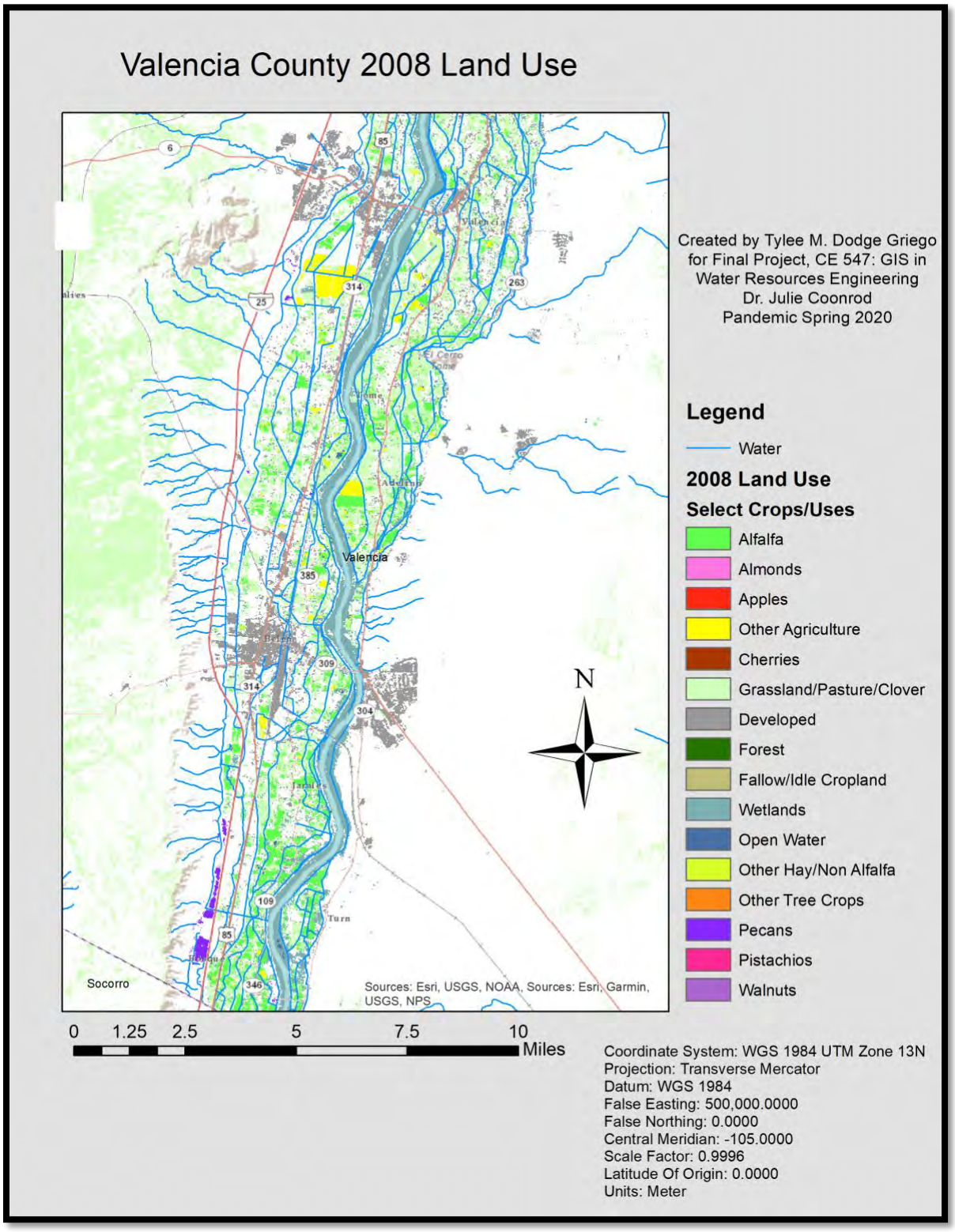
Valencia County, 2020, a unique way to pump irrigation water to the fields (Fleck, 2020)



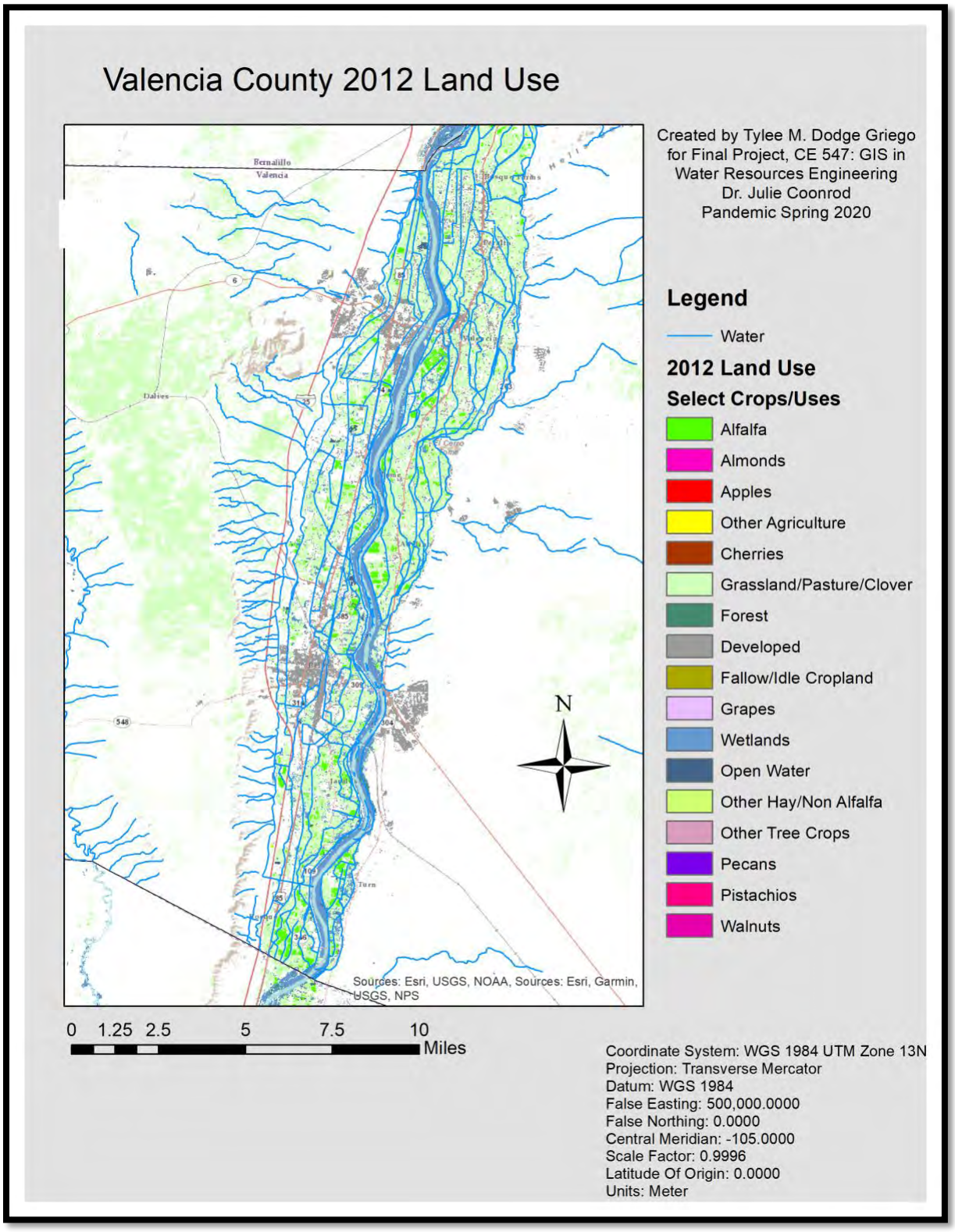
Valencia County Land Use in 2008



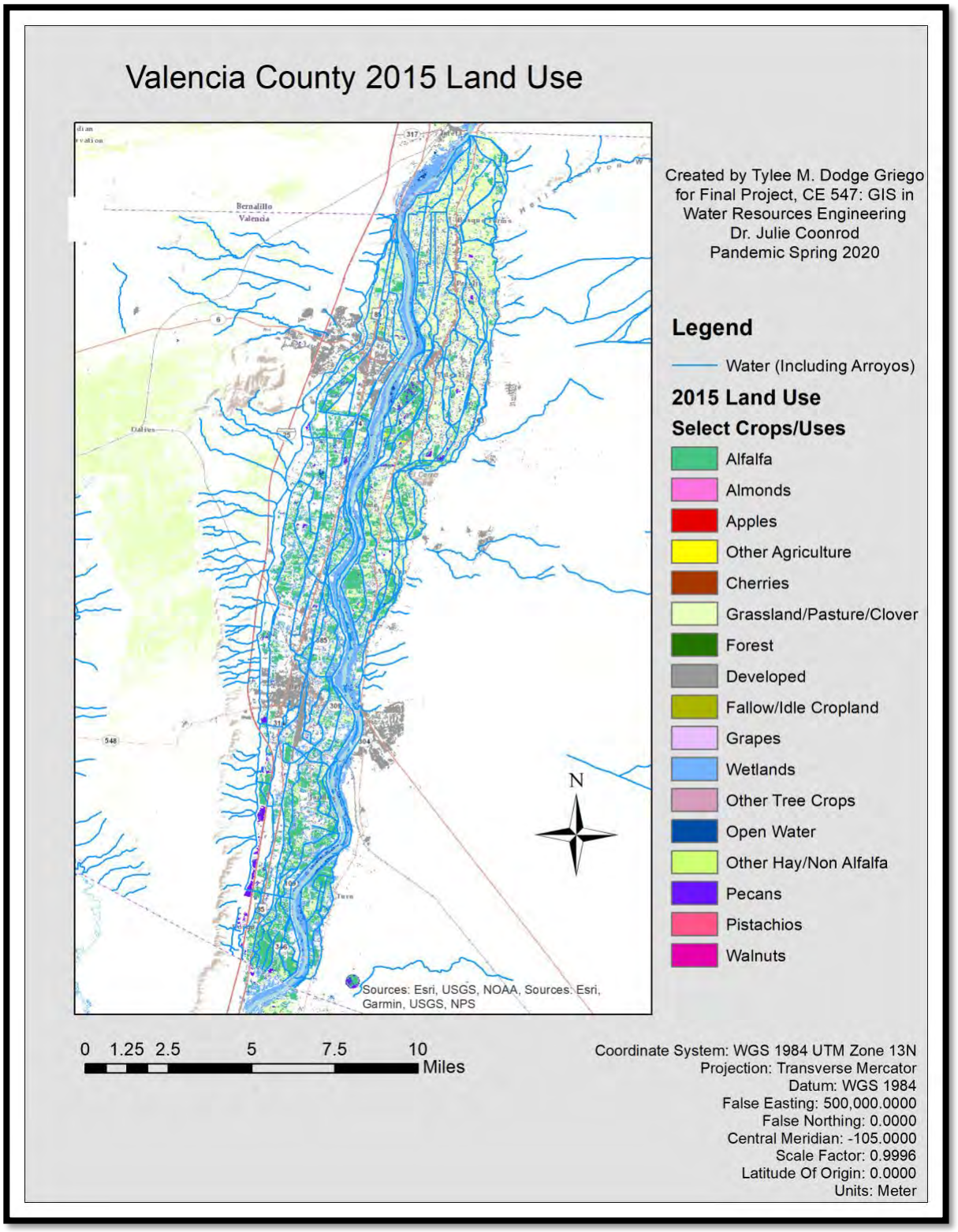
Valencia County Select Crops: 2008, 2012, 2015, 2017 (Data sources: CropScape, and as listed on map document)



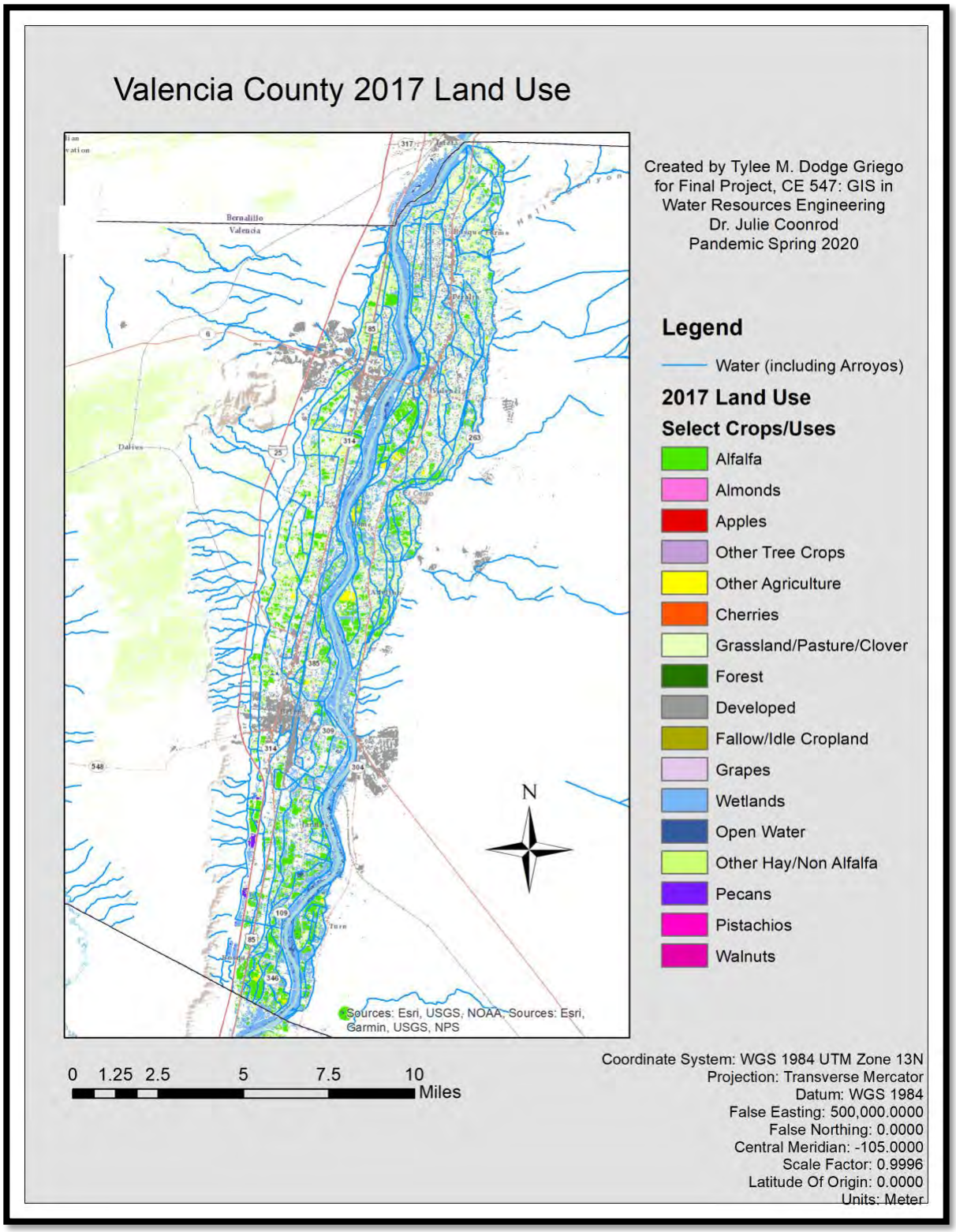
Valencia County 2008 Land Use Map
(note pecans shown in purple)



Valencia County Land Use
(note pecans shown in purple – are missing)

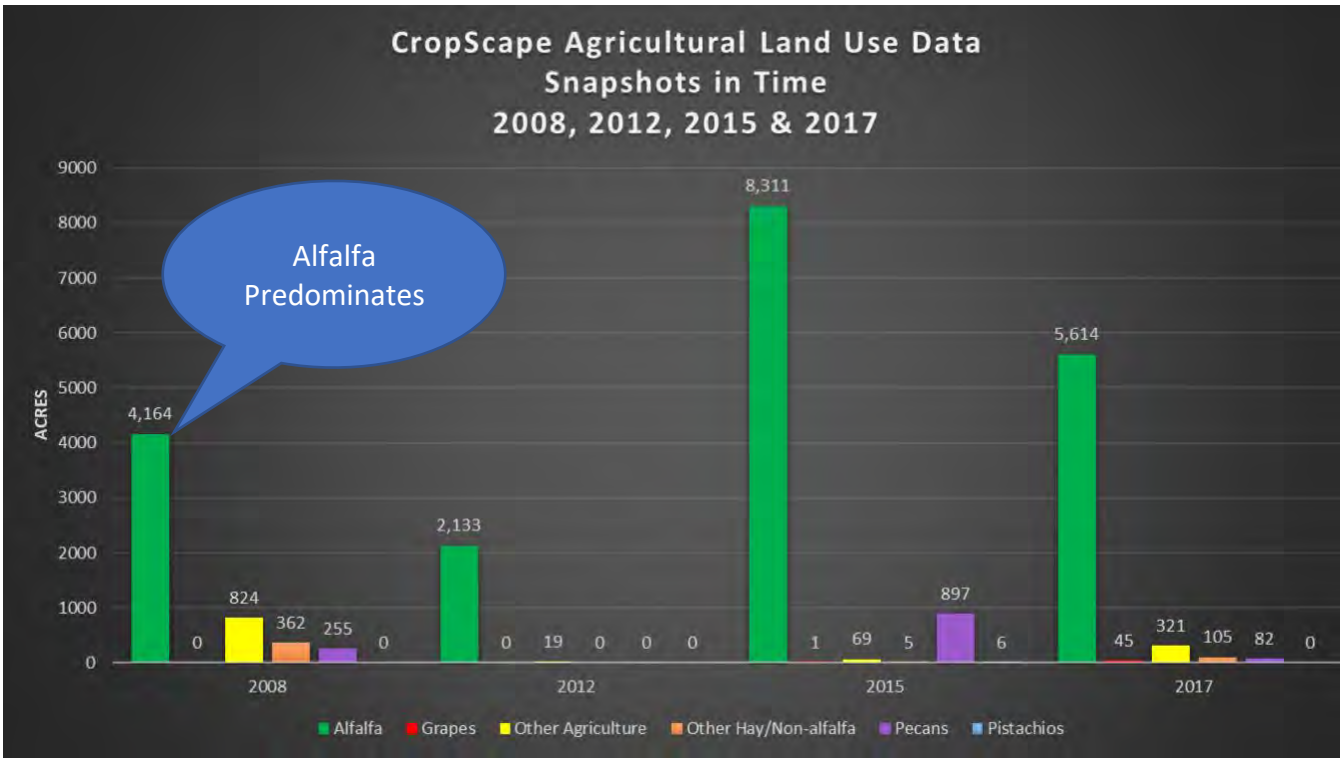


Valencia County 2015 Land Use Map
(note pecans shown in purple – pecans reappear)

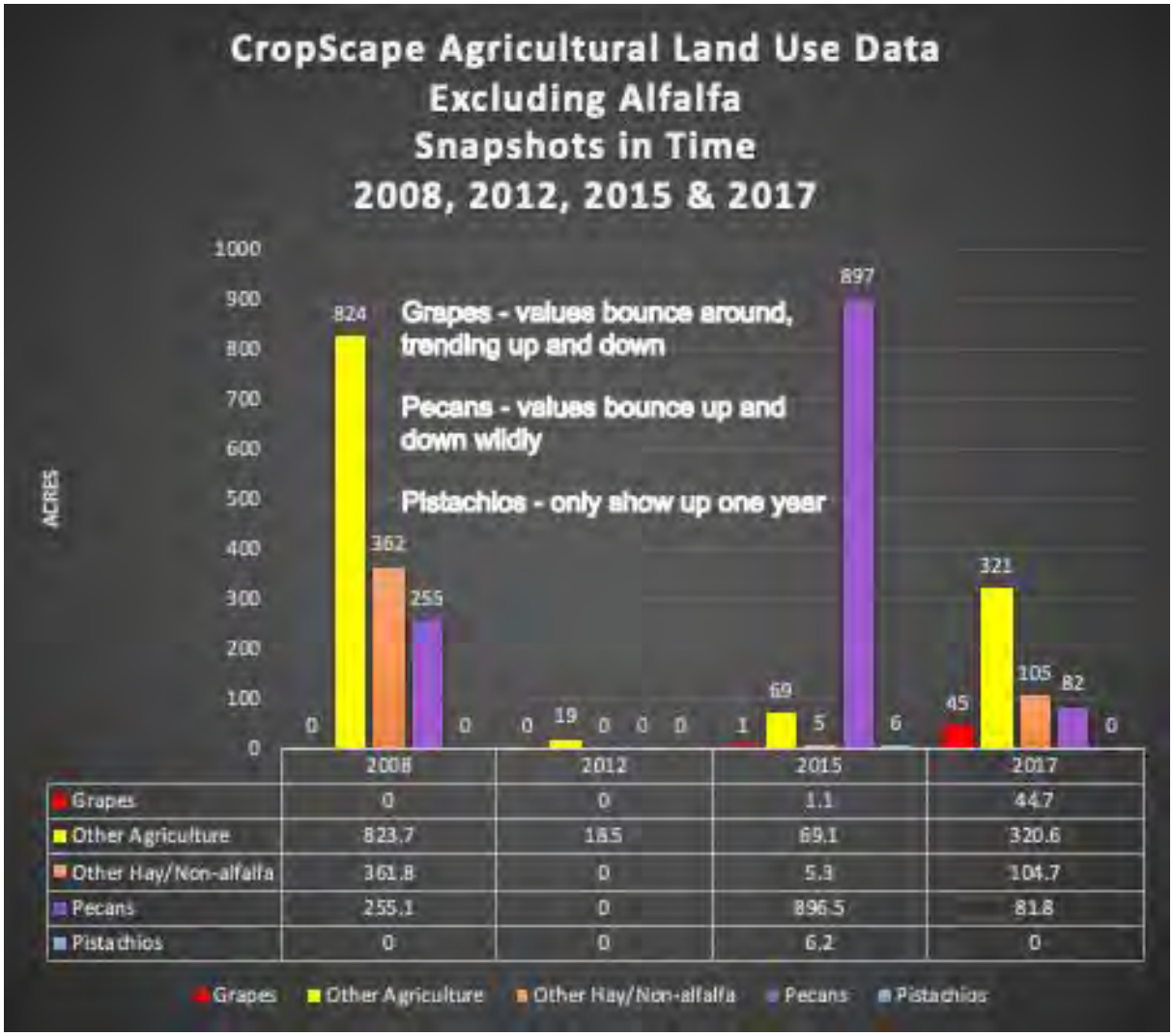


Valencia County 2017 Land Use Map
(note pecans shown in purple
– some areas of pecan trees are visible again,

while others appear to have become wetlands, according to CropScape)



CropScape Agricultural Land Use Data: Snapshots in Time: 2008, 2012, 2015, 2017 (graph constructed with data from CropScape, 2008, 2012, 2015, 2017)

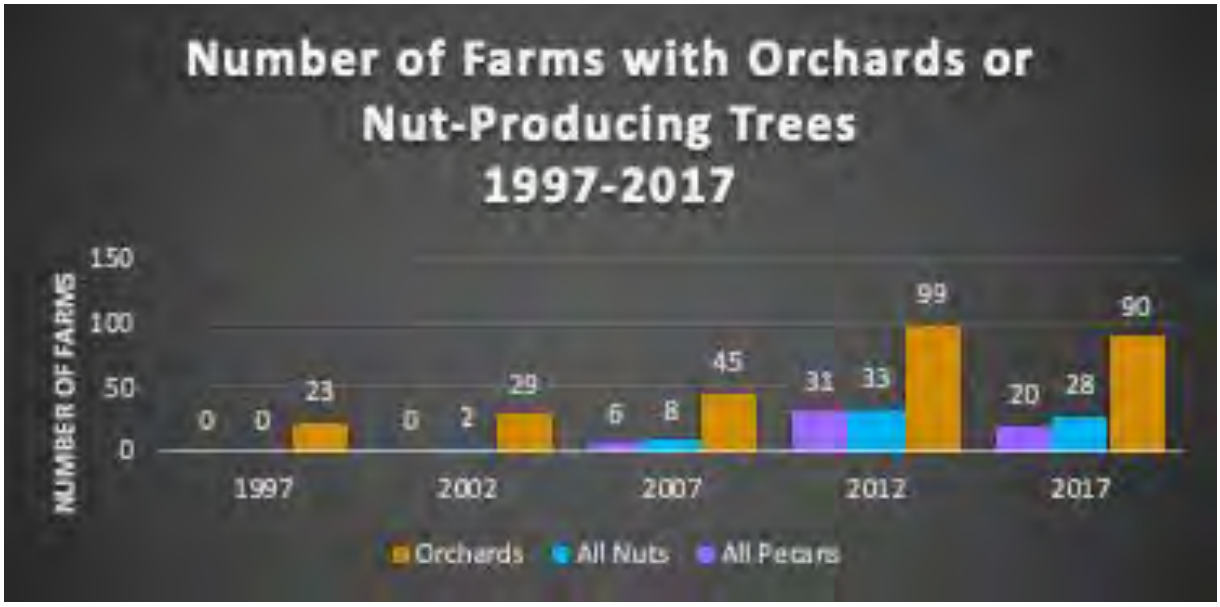


CropScape Agricultural Land Use Data (Excluding Alfalfa):

***Snapshots in Time*: 2008, 2012, 2015, 2017**

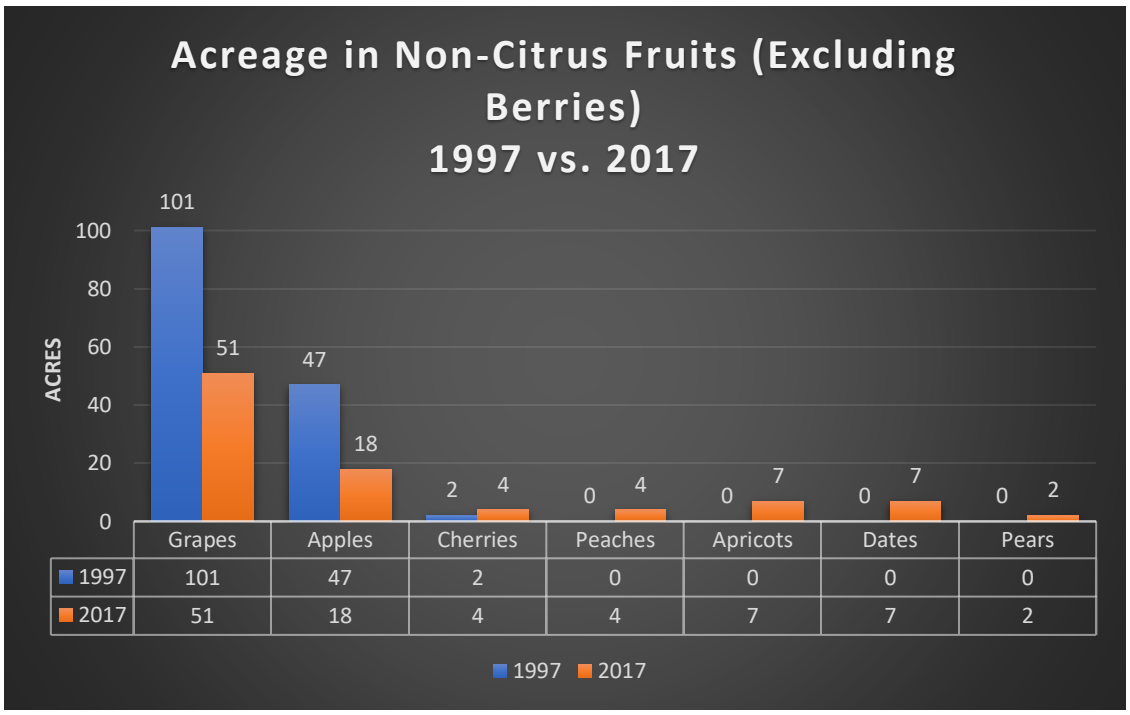
(graph constructed with data from

CropScape, 2008, 2012, 2015, 2017)



Number of Farms with Orchards or Nut-Bearing Trees, 1997-2017

(Data source: *Census of Agriculture*, 1997, 2002, 2007, 2012, 2017)



	Grapes	Apples	Cherries	Peaches	Apricots	Dates	Pears
1997	101	47	2	0	0	0	0
2017	51	18	4	4	7	7	2

Acreage in Non-Citrus Fruits (Excluding Berries), 1997 vs. 2017

(Data source: Census of Agriculture, 1997, 2017)

Land Use (acres)	1997 Census of Ag	2007 Census of Ag	Crop-Scape	2012 Census of Ag	Crop-Scape	Crop-Scape	Census of Ag	Crop-Scape
Alfalfa	8306	12201	4164.3	16195	2133.2	8311.3	9809	5613.5
Other Hay/Non-alfalfa	1689	2900	361.8	1000	-	5.3	2461	104.7
Apples	47	26	-	39	-	-	18	-
Cherries	2	1 + ǂD	-	3 + ǂD	-	-	4	-
Grapes	101	50	-	20	-	1.1	51	44.7
Orchards, All	156	93		580	-	-	559	
Pecans	0	<9	255.1	472	-	896.5	<462	81.8
Pistachios	0	ǂD	-	ǂD, 1 farm	-	6.2	ǂD, 6 farms	-
Other Tree Crops	<6	≥13 + ǂD*3		≥43 + ǂD	-	-	≥20 + ǂD*2 + ≠	-

Census of Agriculture vs. CropScape:

Comparison of Acreage Quantified for Select Crops

(Data source: Census of Agriculture, 1997-2017;

CropScape, 2008-2017)

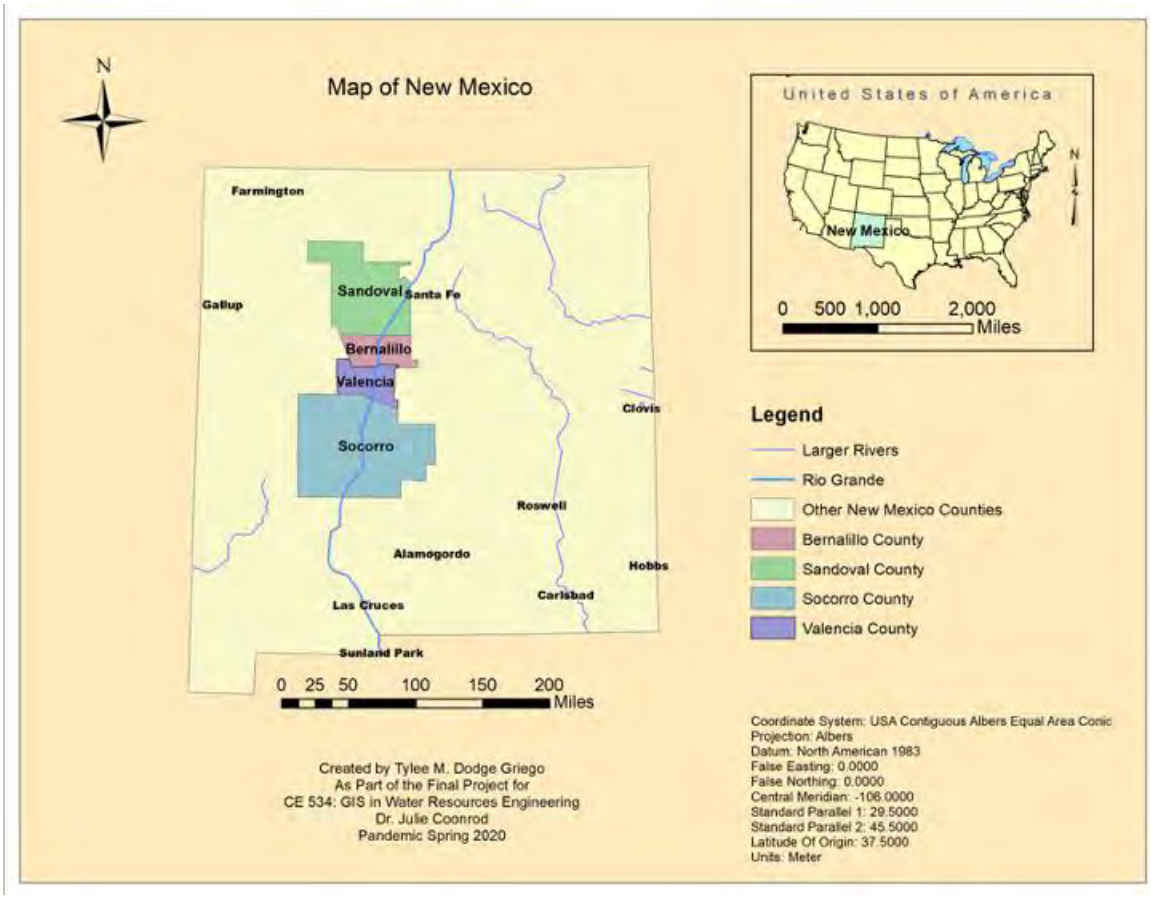
Conclusions

- CropScape does fairly well at correctly identifying crops occupying a larger amount of acreage in other areas.
- In Valencia County, with smaller acreage farms, CropScape is not accurately capturing the crops grown.
- CropScape is not accurately identifying alfalfa or other hay/non-alfalfa acreages.
- Additionally, during certain years, CropScape identifies peppers as growing in the center of the Rio Grande.
- CropScape is completely failing to capture the smaller acreage crops accurately.
    - Apple orchards and cherry orchards are completely absent from CropScape, while, as seen in Table 1, and Figure 19, apple orchards have been decreasing, while cherry orchards have increased slightly in acreage.

    - Peaches, Apricots, Pears, and Dates are completely absent from the CropScape data, while in the Census of Agriculture data, each of these categories has been increasing in acreage.
    - The results for the grapes are quite off when you compare the results from Figure 19 and Table 1 along with the maps created. CropScape has very different values for grapes than the Census of Agriculture's data, and it is not until 2017 that CropScape even gets close to the Census of Agriculture's data.
- Comparison was made with the maps produced to identify patterns in pecan orchards. The Census of Agriculture data shows us the amount of acreage in pecan orchards is gradually increasing. However, CropScape captures the pecan orchards very poorly, making it appear that pecan orchards appear and disappear from year to year, even becoming wetlands during 2017. Visual inspection of that area of Valencia County shows that the area is not a wetland, but rather a tree orchard.
- At this time, CropScape is an unreliable indicator of agricultural land uses occupying smaller amounts of acreage.

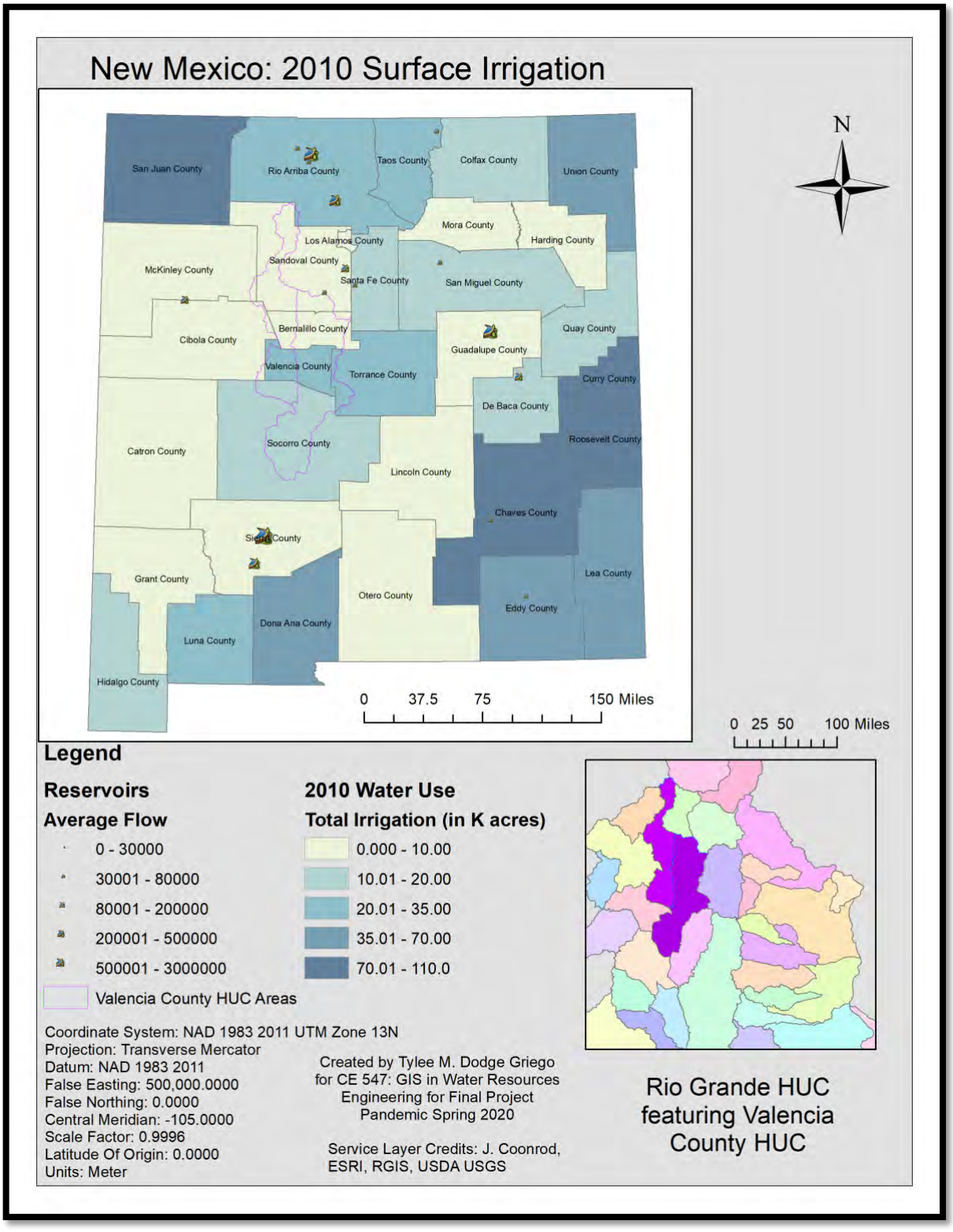
- CropScape may not be effective for use in Valencia County since most farms represent small amounts of acreage as compared to other agricultural areas.

Future Work

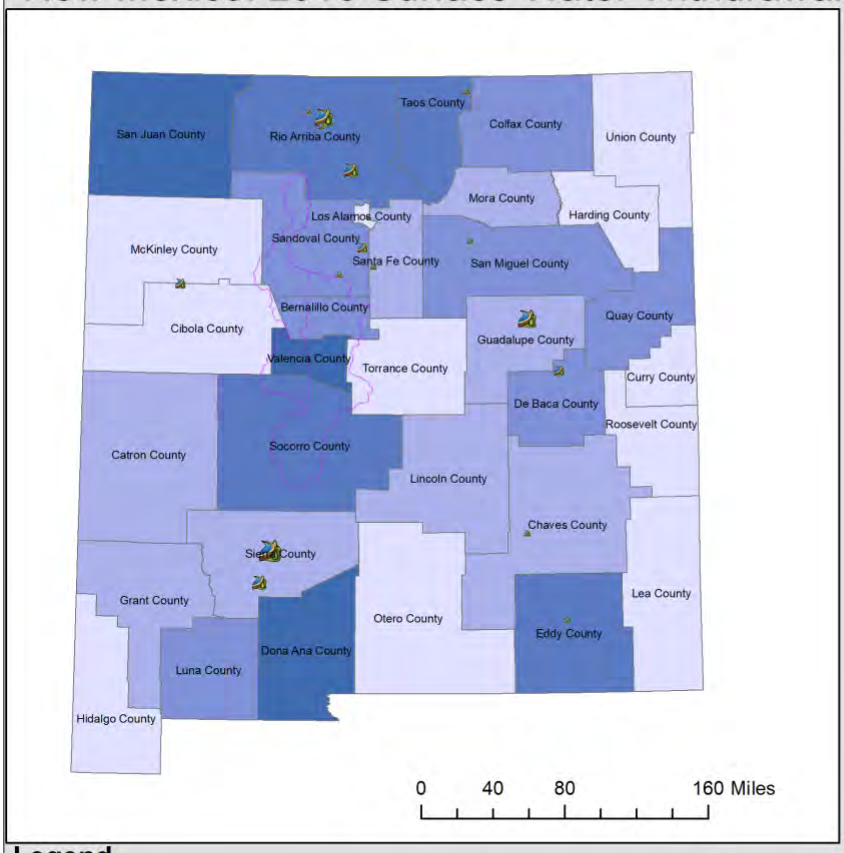


Middle Rio Grande Vicinity Map

Additional Maps & Figures



New Mexico: 2010 Surface Water Withdrawals for Irrigation



N

0 25 50 100 Miles

Legend

Reservoirs

Average Flow

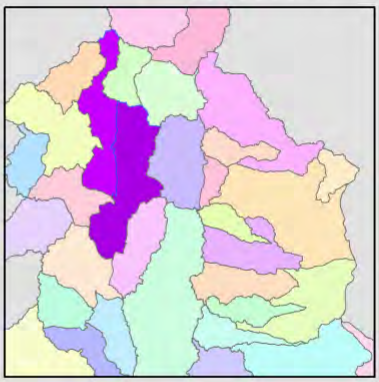
- 0 - 30000
- 30001 - 80000
- 80001 - 200000
- 200001 - 500000
- 500001 - 3000000

Valencia County HUC Areas

2010 Water Use

Mgal/day

- 0-10
- 10-30
- 30-70
- 70-140
- 140-300



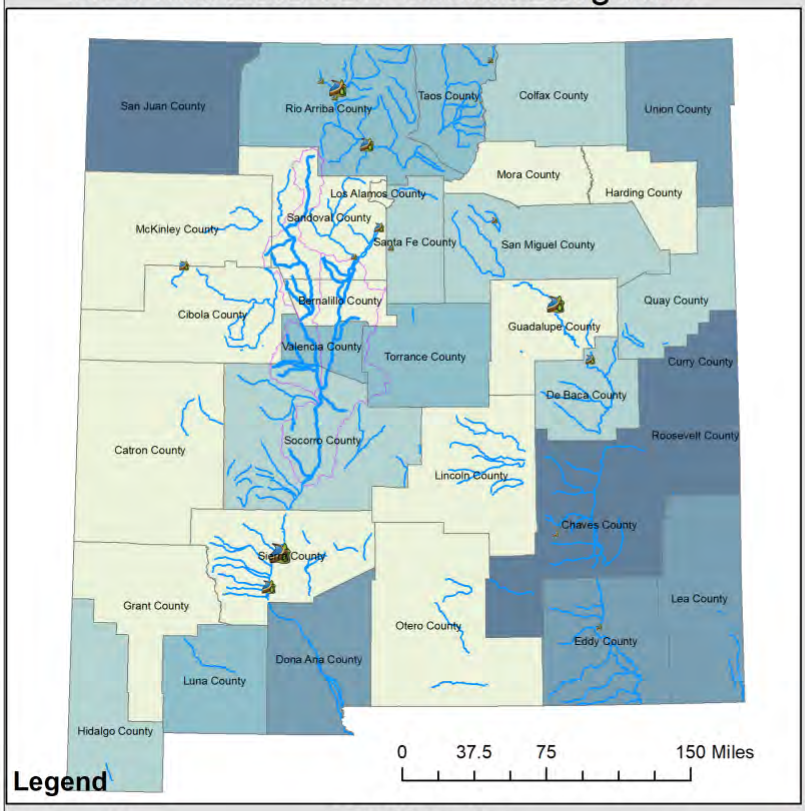
Rio Grande HUC featuring Valencia County HUC

Coordinate System: NAD 1983 2011 UTM Zone 13N
Projection: Transverse Mercator
Datum: NAD 1983 2011
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -105.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

Created by Tylee M. Dodge Griego
for CE 547: GIS in Water Resources
Engineering for Final Project
Pandemic Spring 2020

Service Layer Credits: J. Coonrod, ESRI, RGIS, USDA USGS

New Mexico: 2010 Surface Irrigation



N

0 25 50 100 Miles

Legend

Reservoirs

Average Flow

- 0 - 30000
- 30001 - 80000
- 80001 - 200000
- 200001 - 500000
- 500001 - 3000000

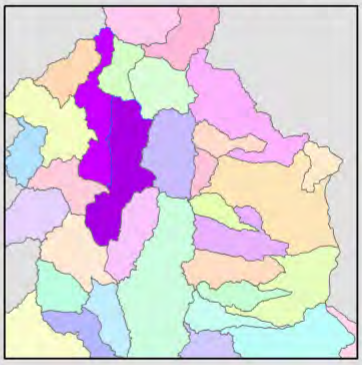
New Mexico Streams

Valencia County HUC Areas

2010 Water Use

Total Irrigation (in K acres)

- 0.000 - 10.00
- 10.01 - 20.00
- 20.01 - 35.00
- 35.01 - 70.00
- 70.01 - 110.0



Rio Grande HUC featuring Valencia County HUC

Coordinate System: NAD 1983 2011 UTM Zone 13N
Projection: Transverse Mercator
Datum: NAD 1983 2011
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -105.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

Created by Tylee M. Dodge Griego
for CE 547: GIS in Water Resources
Engineering for Final Project
Pandemic Spring 2020

Service Layer Credits: J. Coonrod, ESRI, RGIS, USDA USGS