



IBWC NORTH FLOODWAY WATERSHED

PLANNING PROJECT

FOR: 319 CLEAN WATER ACT NPS PROGRAM

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CURRENT DATA

Surface Water Quality Monitoring (SWQMIS) (TCEQ)

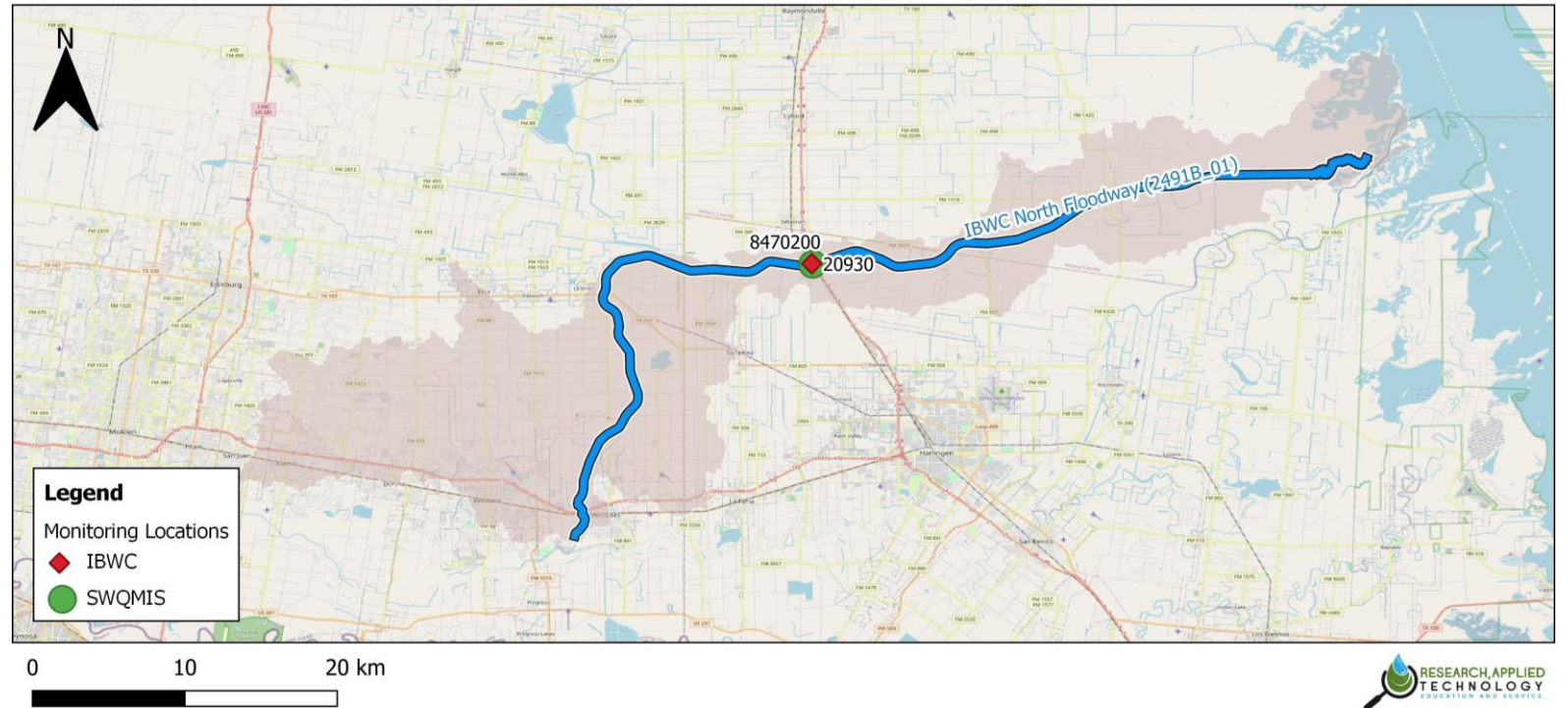
- Water Quality
 - (2011-2019)
 - 28 Samples

US International Boundary and Water Commission (USIBWC)

- Flow Data
 - Continuous
 - (2011- 2021)

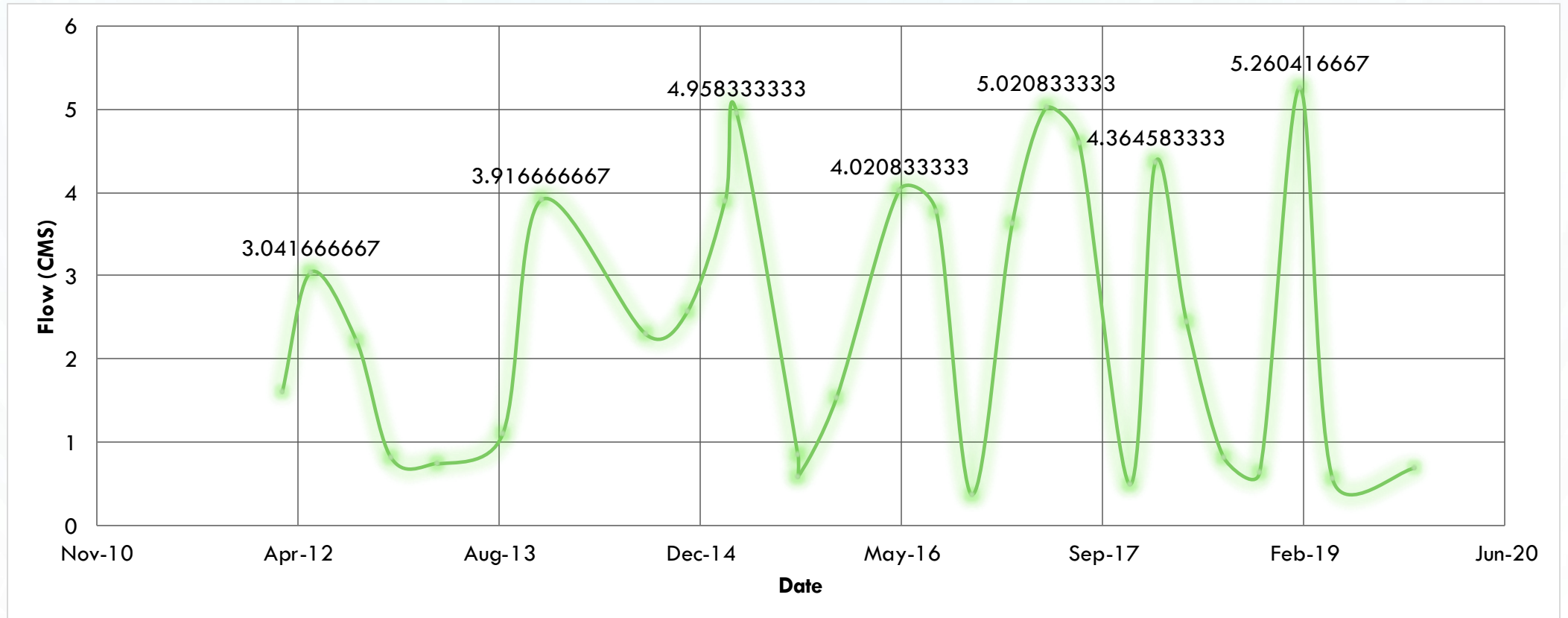
GIS

- Arc-GIS:
 - North and Central Watershed Delineation
- QGIS:
 - Updated Watershed Delineation



FLOW DATA

NEAR SEBASTIAN → STATION: 8470200

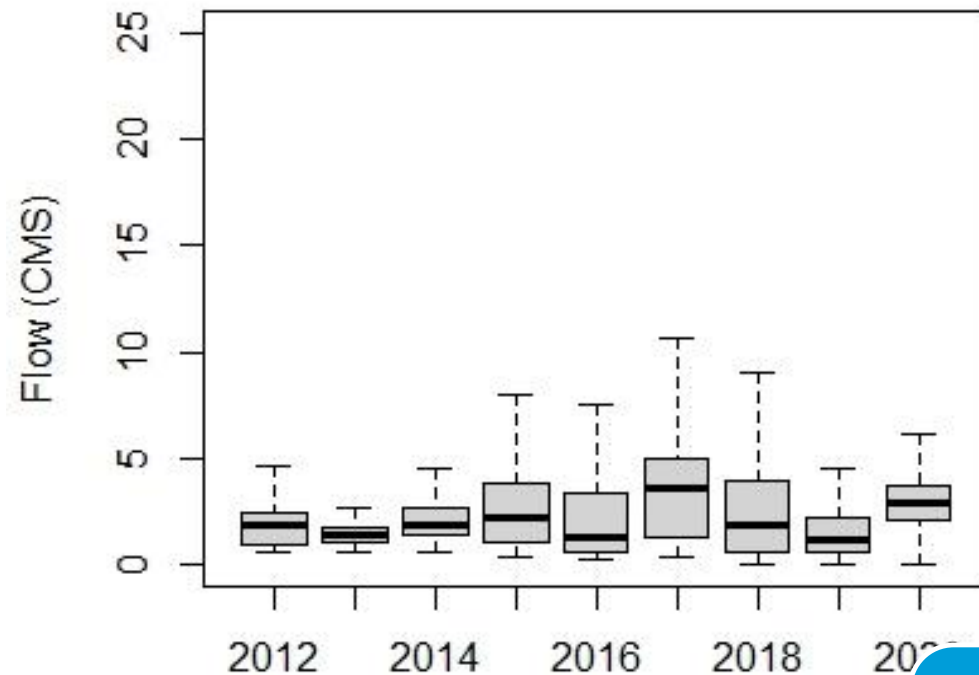


FLOW DATA

USIBWC

STATION: 8470200

IBWCNF Near Sebastian

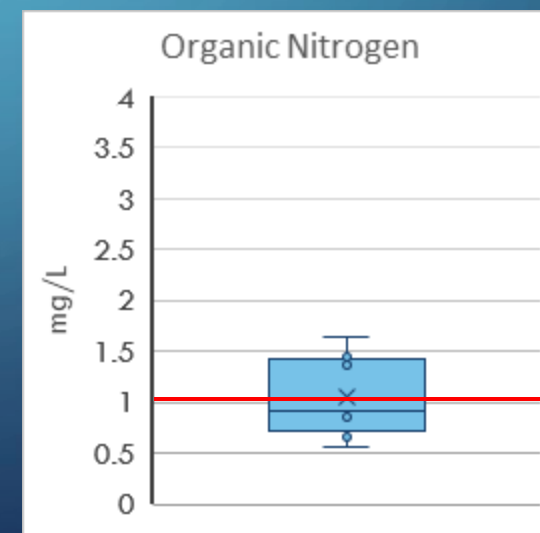
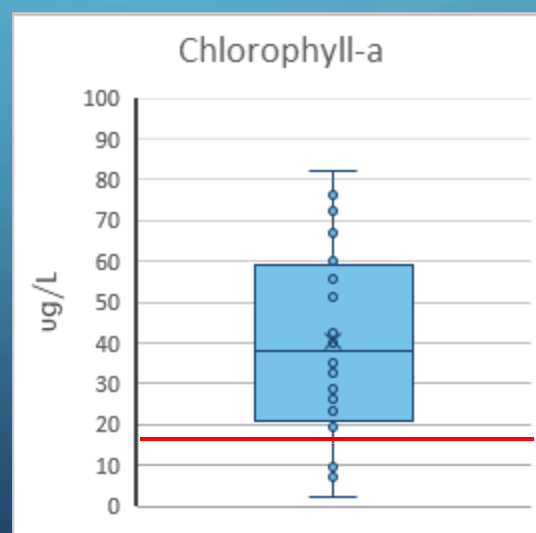
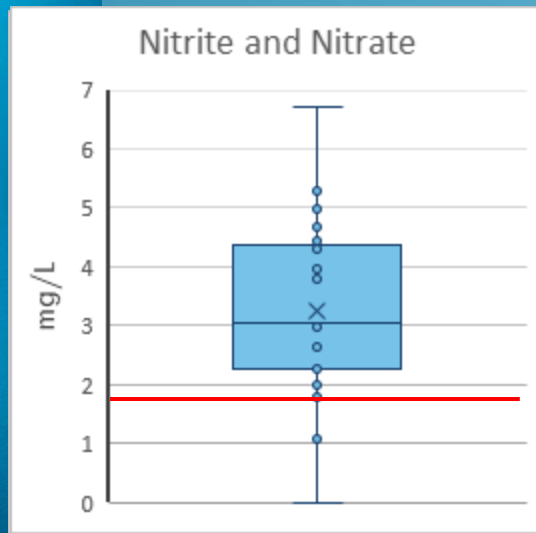
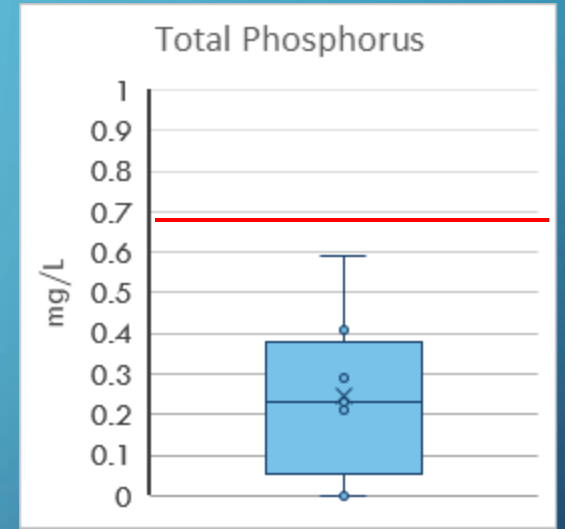
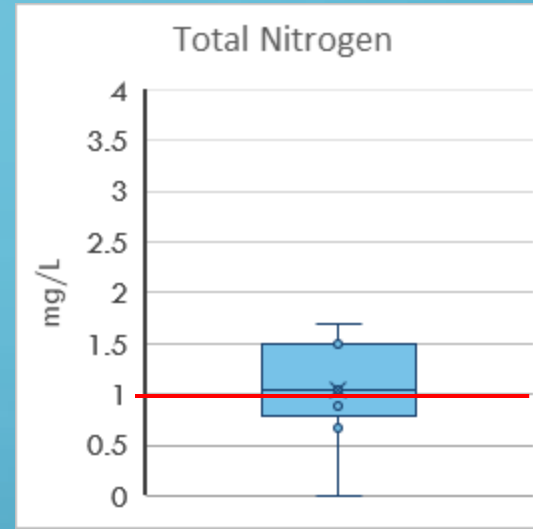
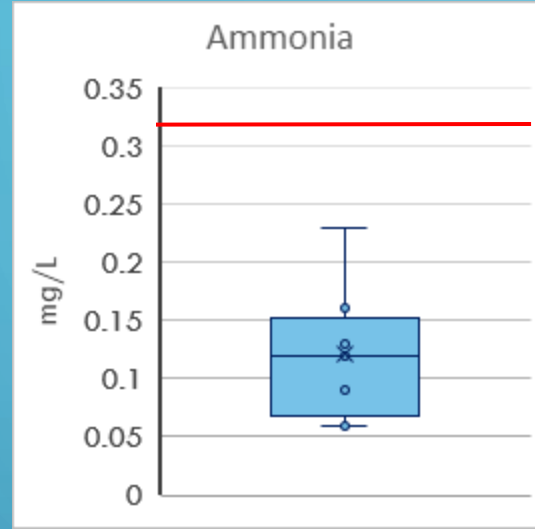
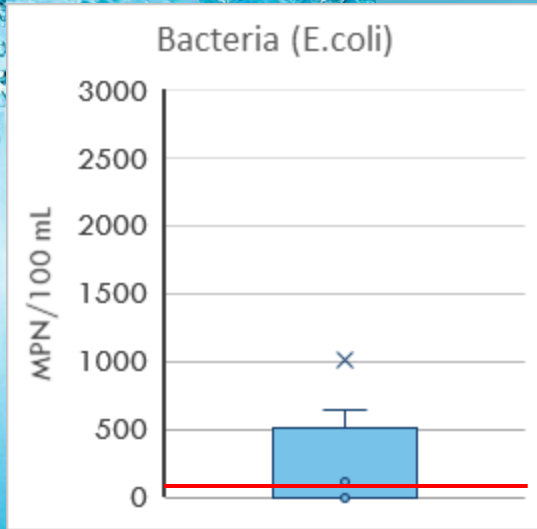


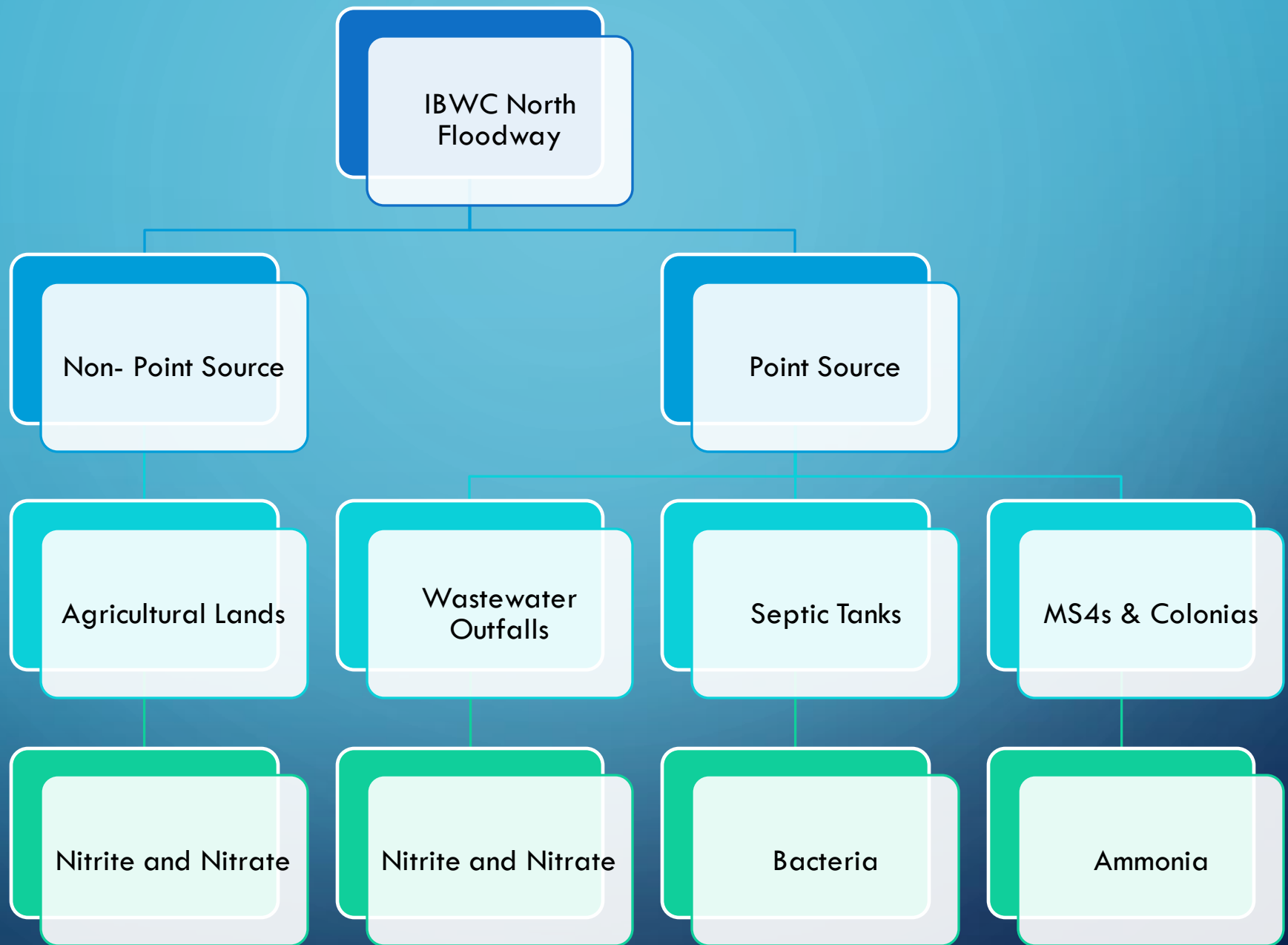
	Flow (CMS)
Median	1.8
Mean	6.3
Min	-
Max	8,412.6

July 27, 2020

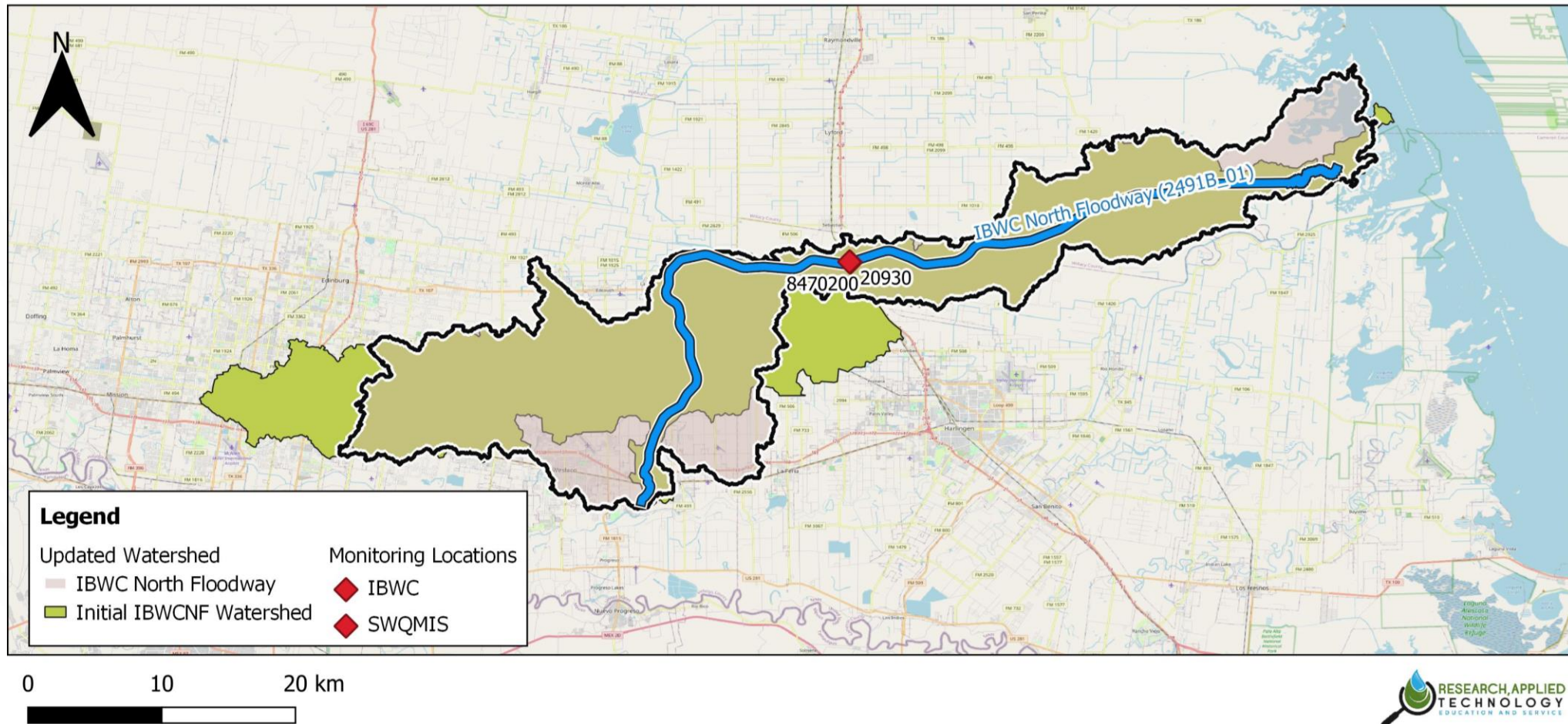
- Maximum Flow: 8,412.6
- Local Data: Hurricane Hanna
- 18 inches to 4ft

WATER QUALITY STATION: 20930

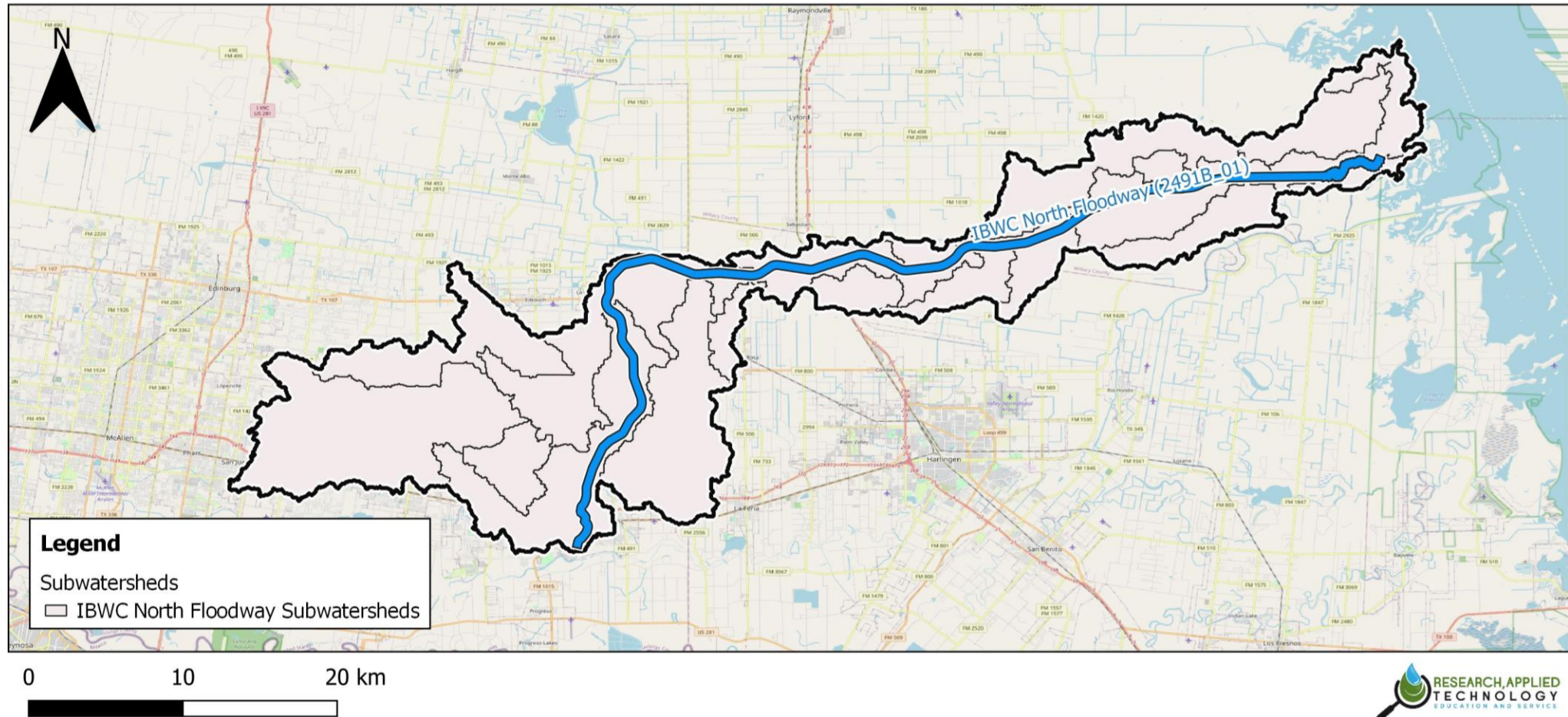




INITIAL WATERSHED DELINEATION

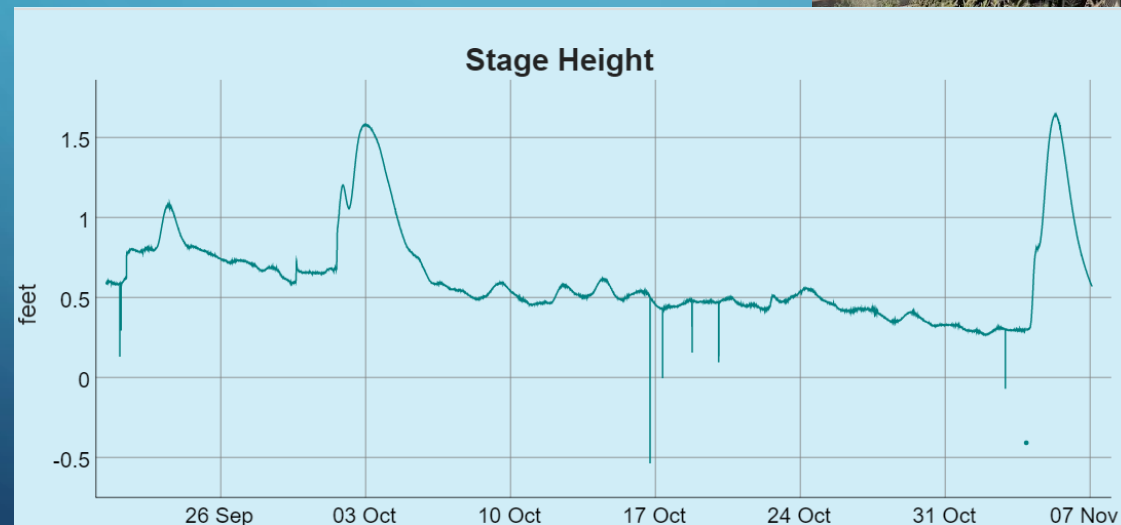
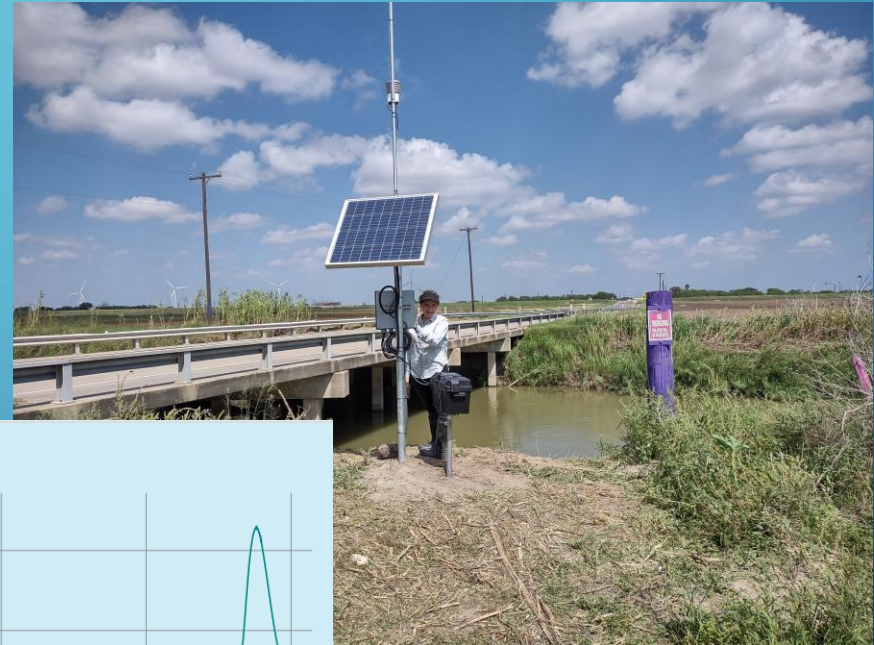


UPDATED WATERSHED DELINEATION



CURRENT AND FUTURE EFFORTS

- RTHS within the IBWCNF waterway.
 - Fresh Water Flows – TWDB #3
 - Sampling Event soon.



A decorative graphic on the left side of the slide, consisting of white and light blue lines and circles that resemble a circuit board or a stylized tree structure.

WATERSHED DELINEATION

STUDY AREA

- Lower Rio Grande Valley Region has 5 primary waterways identified as:
 - Arroyo Colorado (AC)
 - Brownsville Ship Channel (BSC)
 - Hidalgo Willacy Main Drain (HWMD)
 - IBWC North Floodway (IBWCNF)
 - Raymondville Drain (RVD)
- HUC 8- LRGV Watershed
 - United States Geological Survey (USGS)

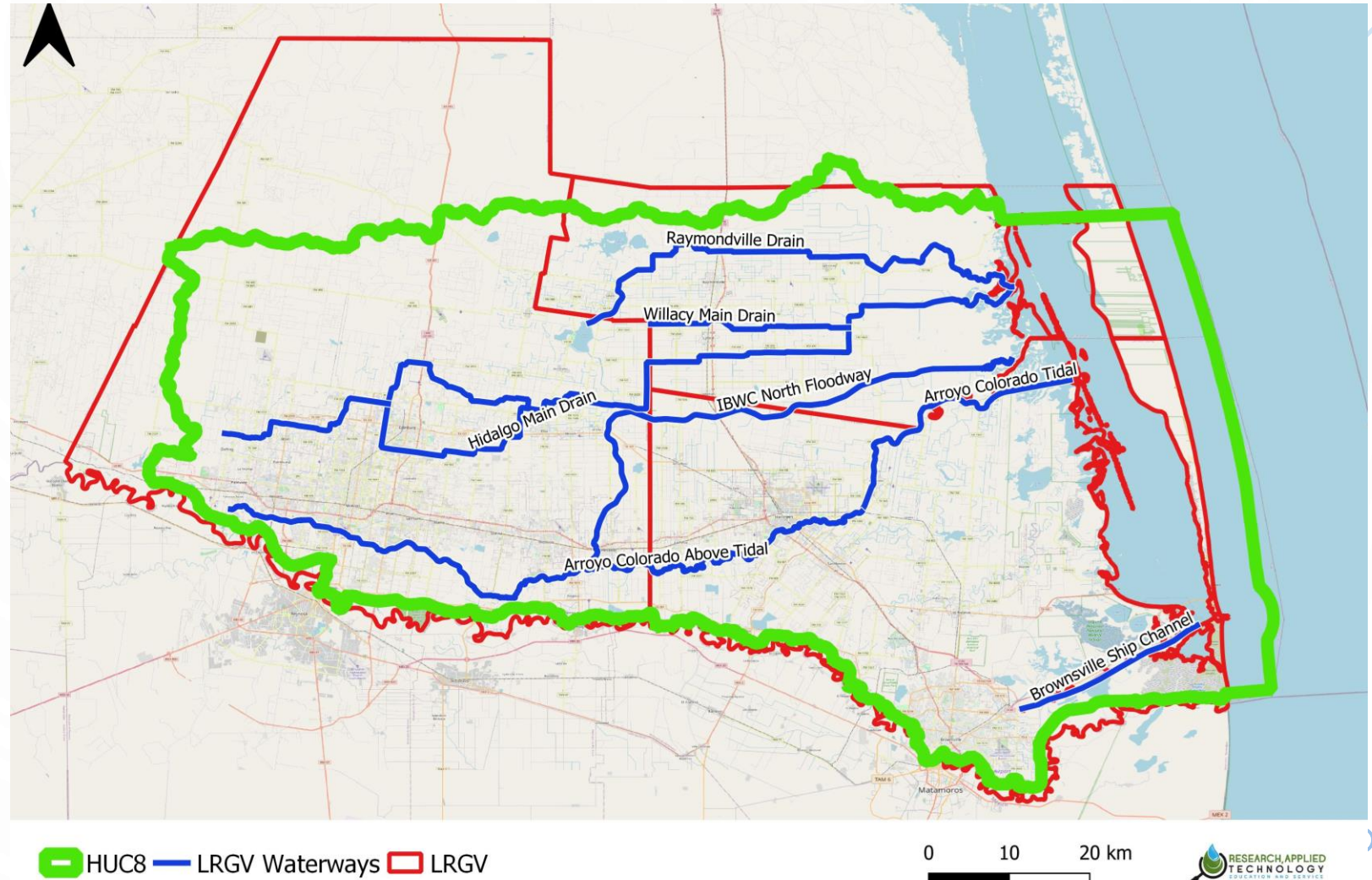
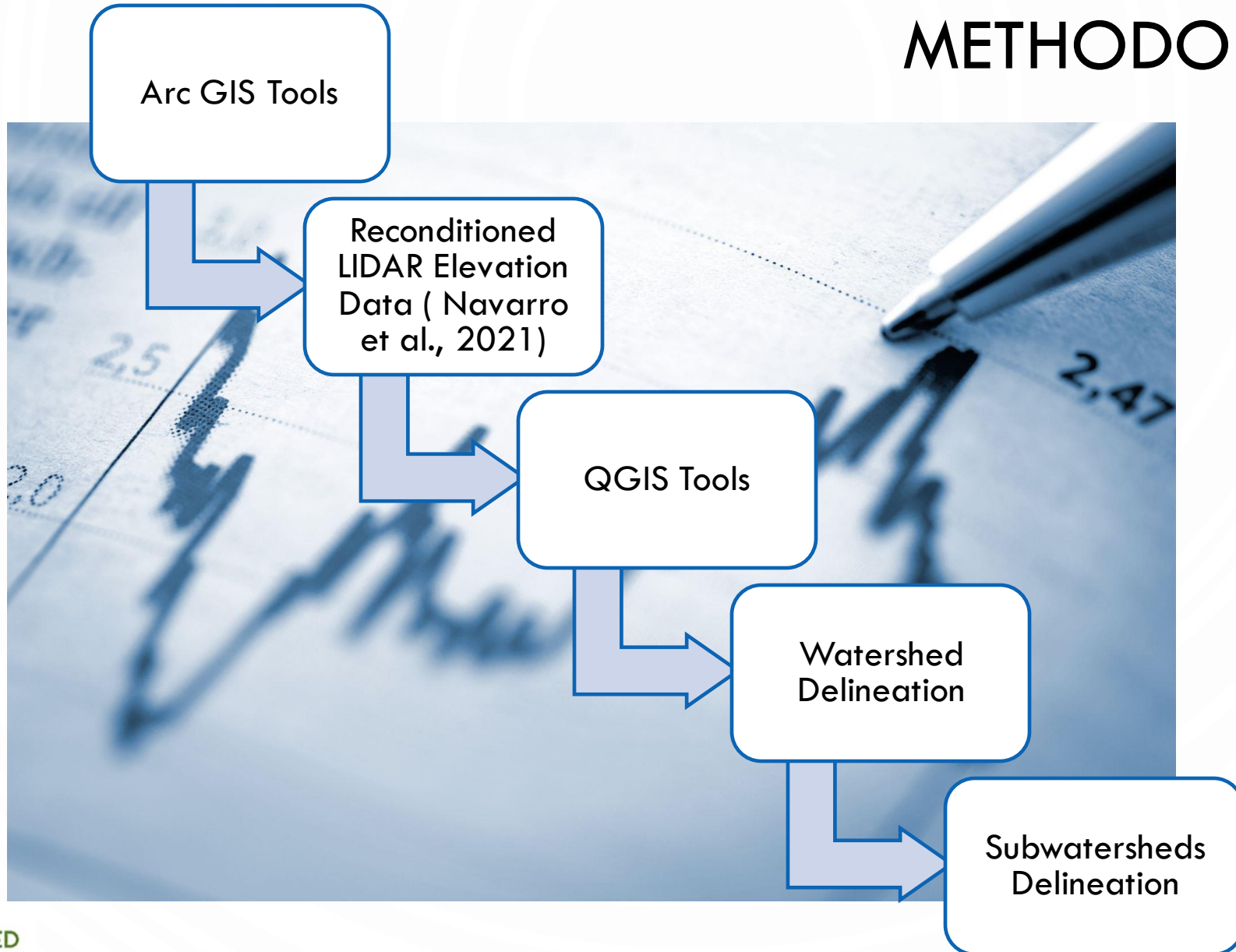


Figure 1. LRGV region and HUC 8

METHODOLOGY



LIDAR ELEVATION DATA RECONDITIONING

ArcGIS

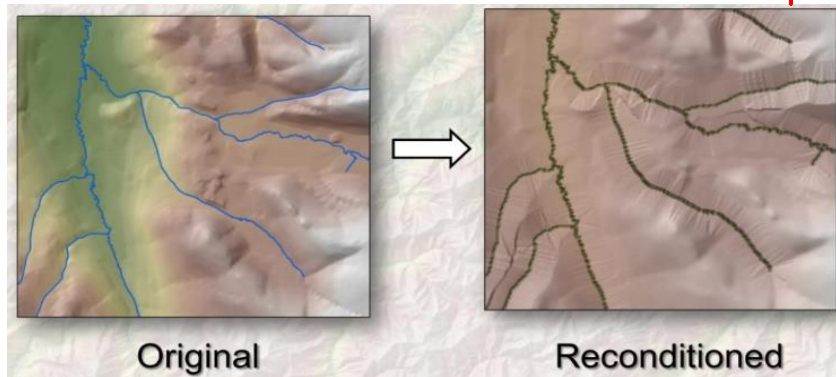


Figure 2. Elevation data reconditioning example:
Source: U.S. Forest Service, Rocky Mountain Research Station Boise Aquatic Sciences Lab

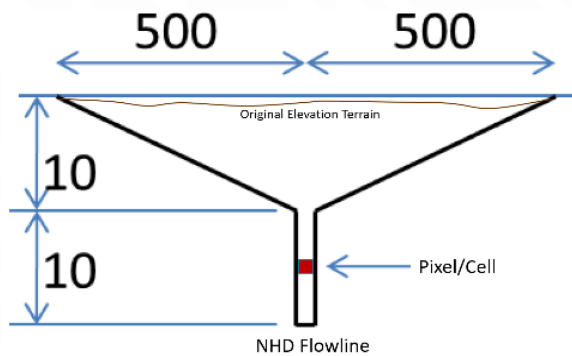
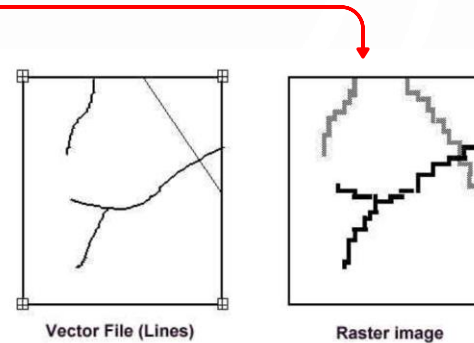


Figure 3. Cross-section for LIDAR Elevation Reconditioning



- Reconditioned elevation data consist of burned rasterized waterways that have a better representation of topographic features.
- The stream burning algorithm can more accurately represent waterway positions through use of raster representation of a vector stream network to trench known stream features into the elevation data resulting in a comprehensive watershed delineation (Y. Chen et al., 2012; Callow et al., 2007; Sanders, 1999).
- AGREE reconditioning (Hellweger, 1997)

WATERSHED DELINEATION PROCESS



Figure 5. Channel Order

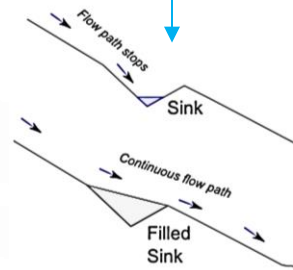
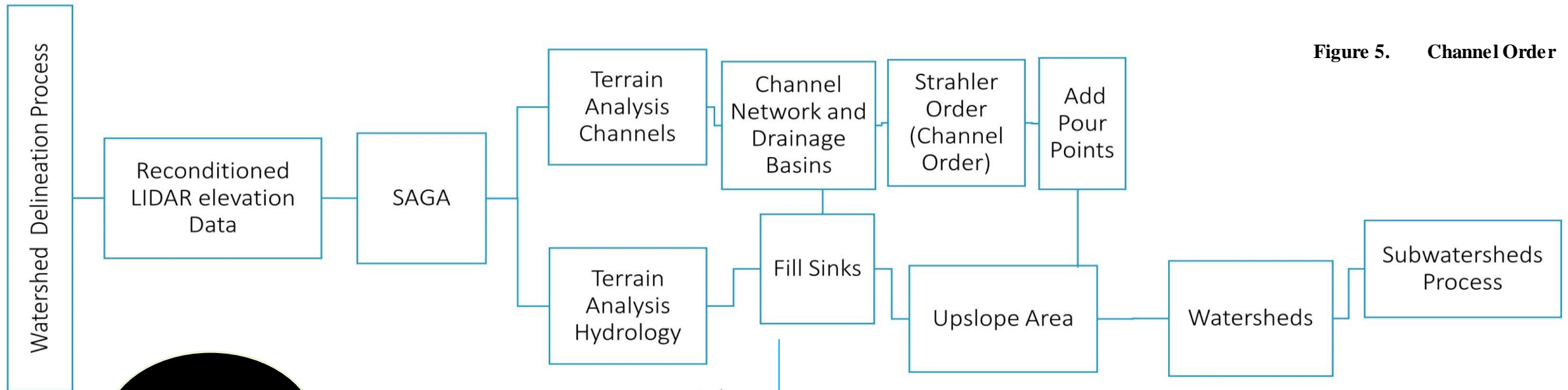


Figure 4. Fill Sinks

CHANNEL ORDER

QGIS

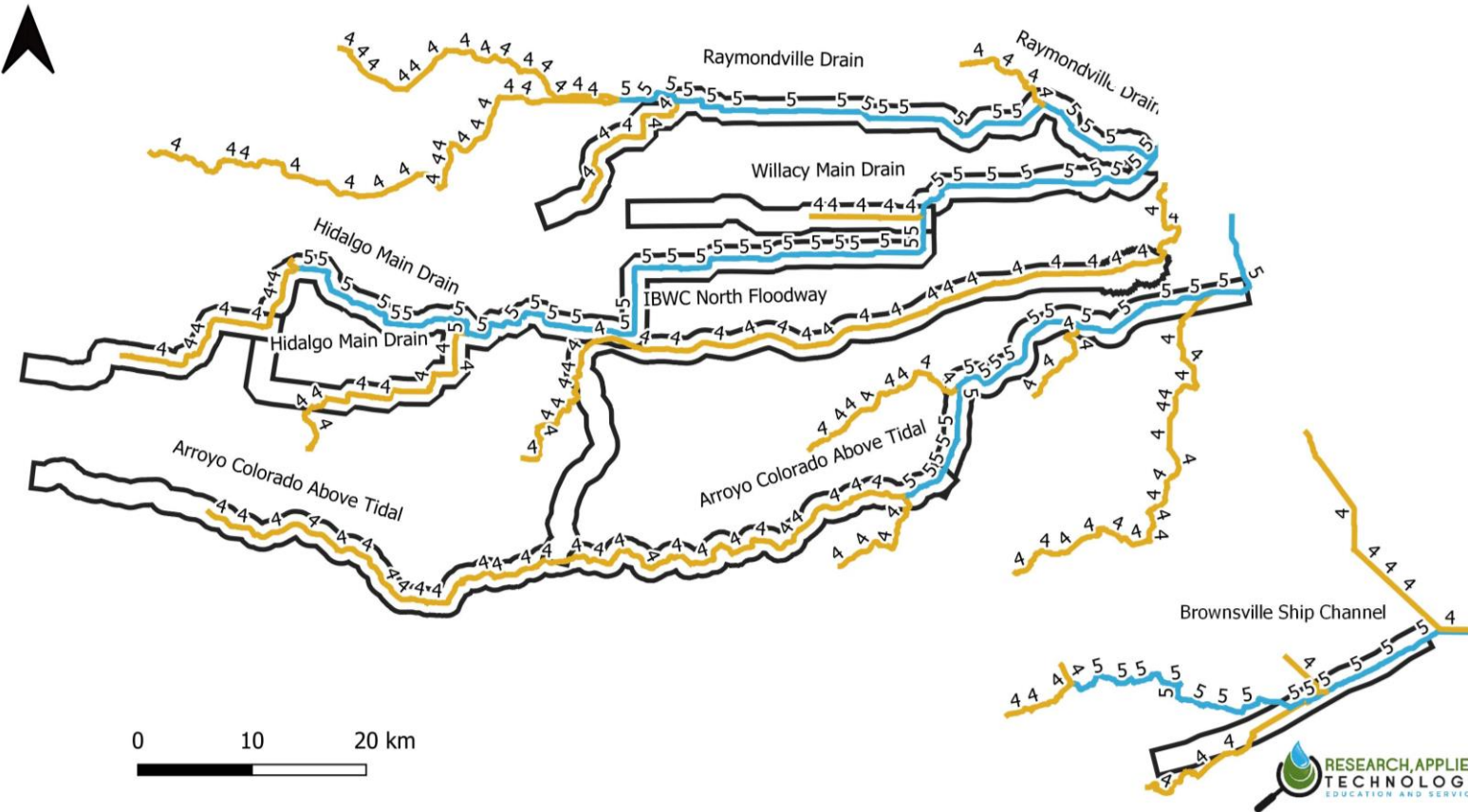


Figure 6. Channel Order for primary waterways

SUBWATERSHEDS DELINEATION PROCESS

QGIS

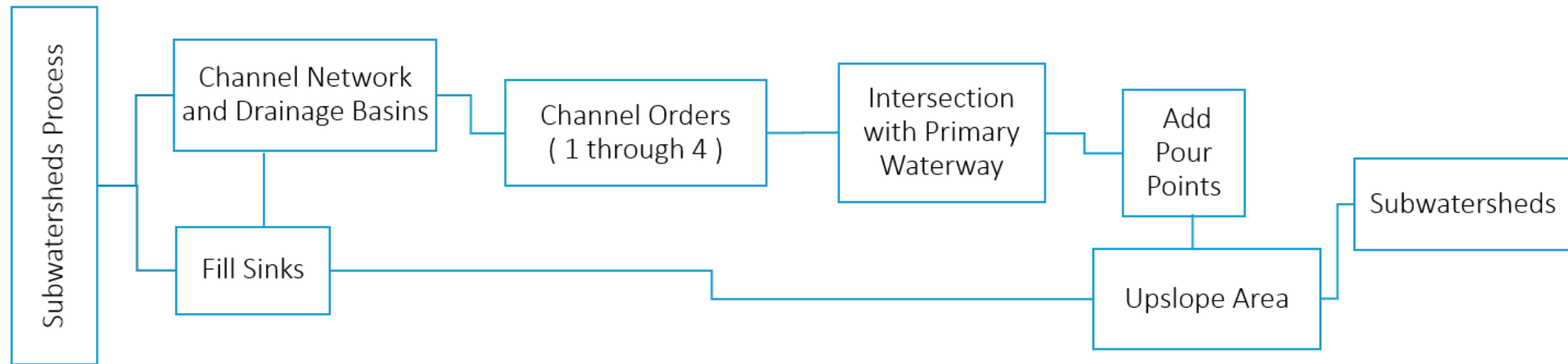


Figure 7. Subwatersheds Delineation Process conducted through QGIS

POUR POINT IDENTIFICATION

QGIS

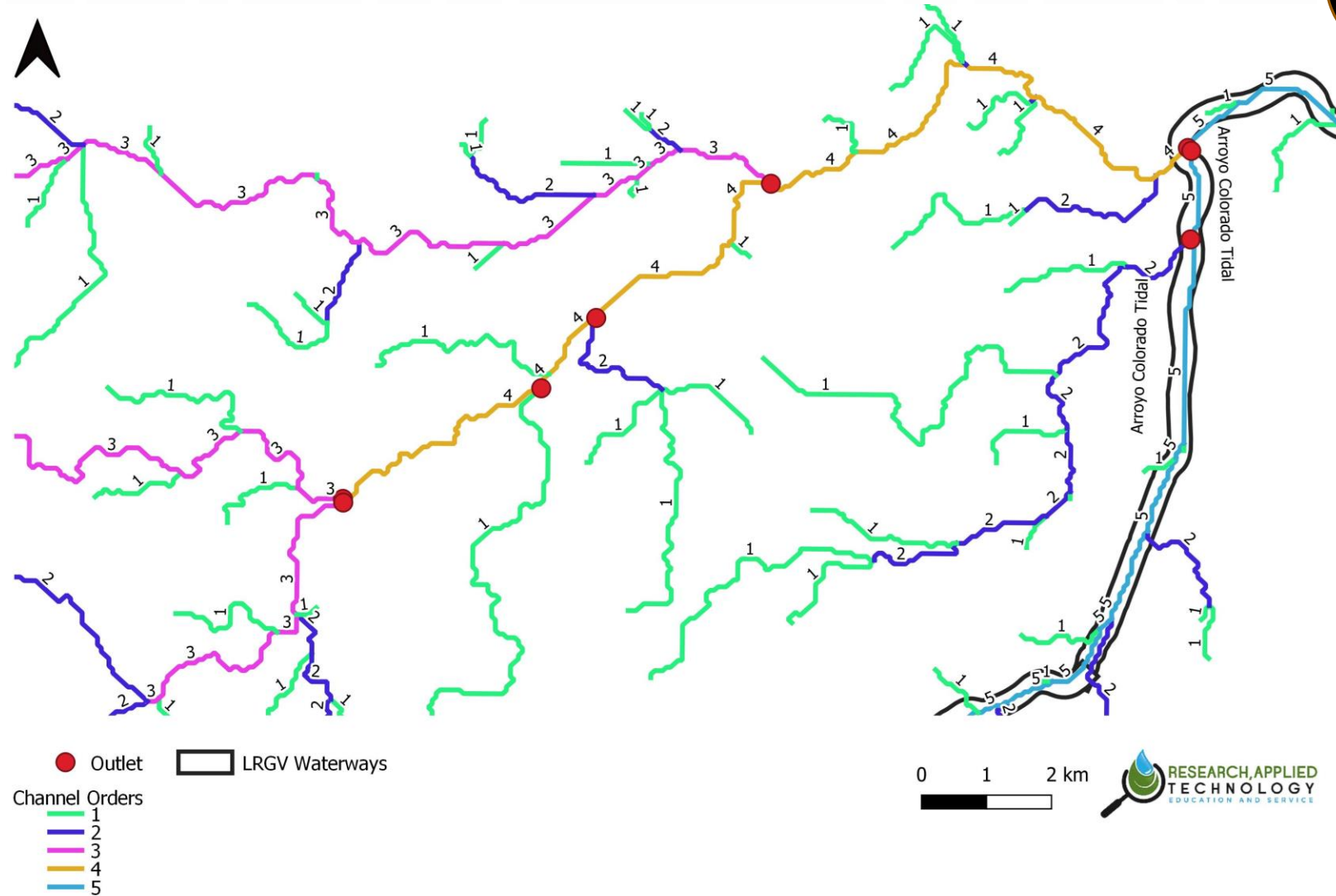


Figure 8. Channel Order for primary waterways

WATERSHEDS AND SUBWATERSHEDS

Table 1. LRGV Watershed Summaries

Watershed Name	Watershed Area (km ²)	Number of Subwatersheds
AC	1876.3	43
BSC	1481.2	29
HWMD	1602.4	48
IBWCNF	730.9	21
RVD	1333.9	43
SPI North	136.3	7
Total:	7161.1	191

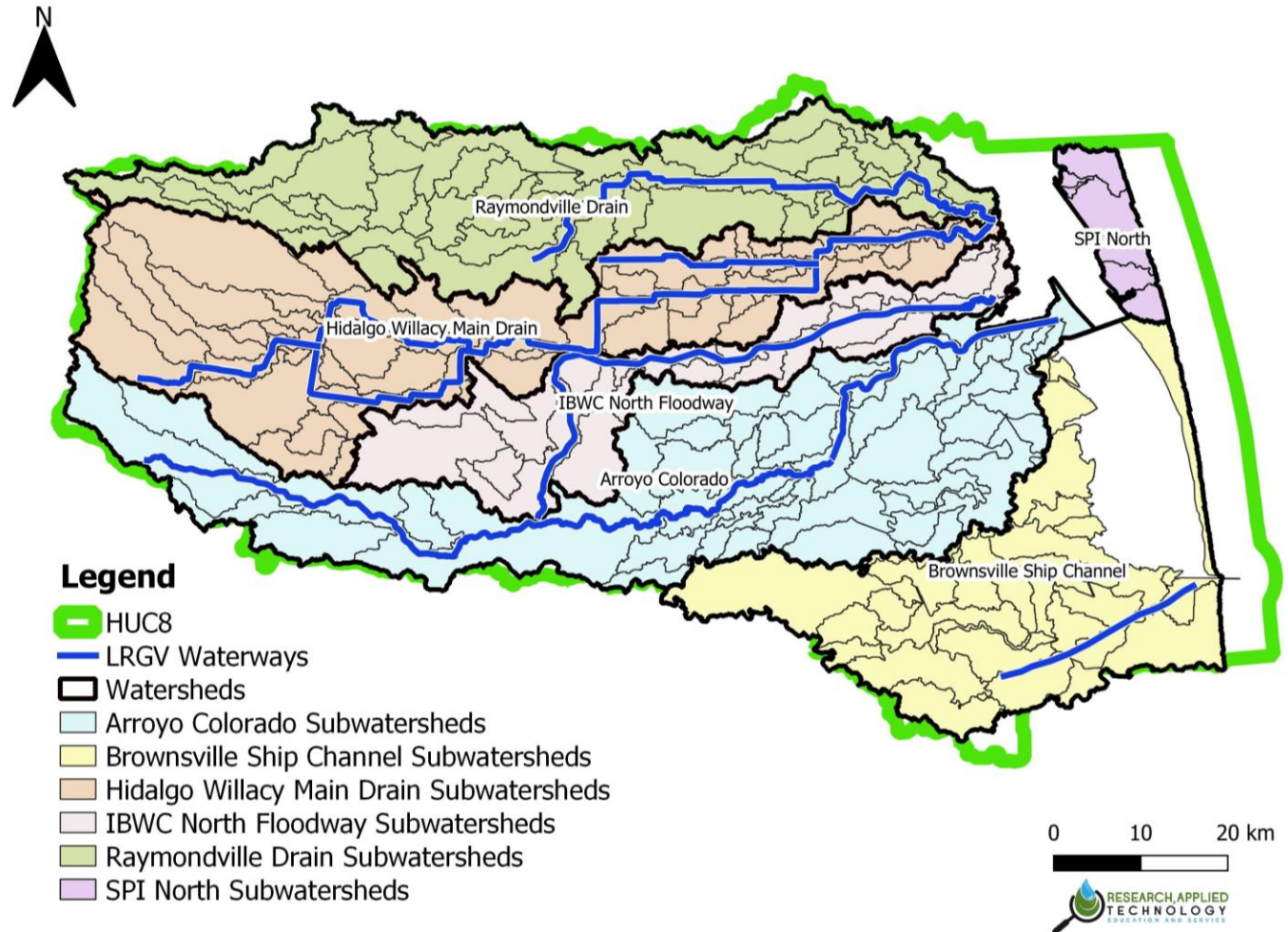


Figure 9. Watershed Delineation Primary Waterways

DATA ACCESSIBILITY

Website → reon.cc

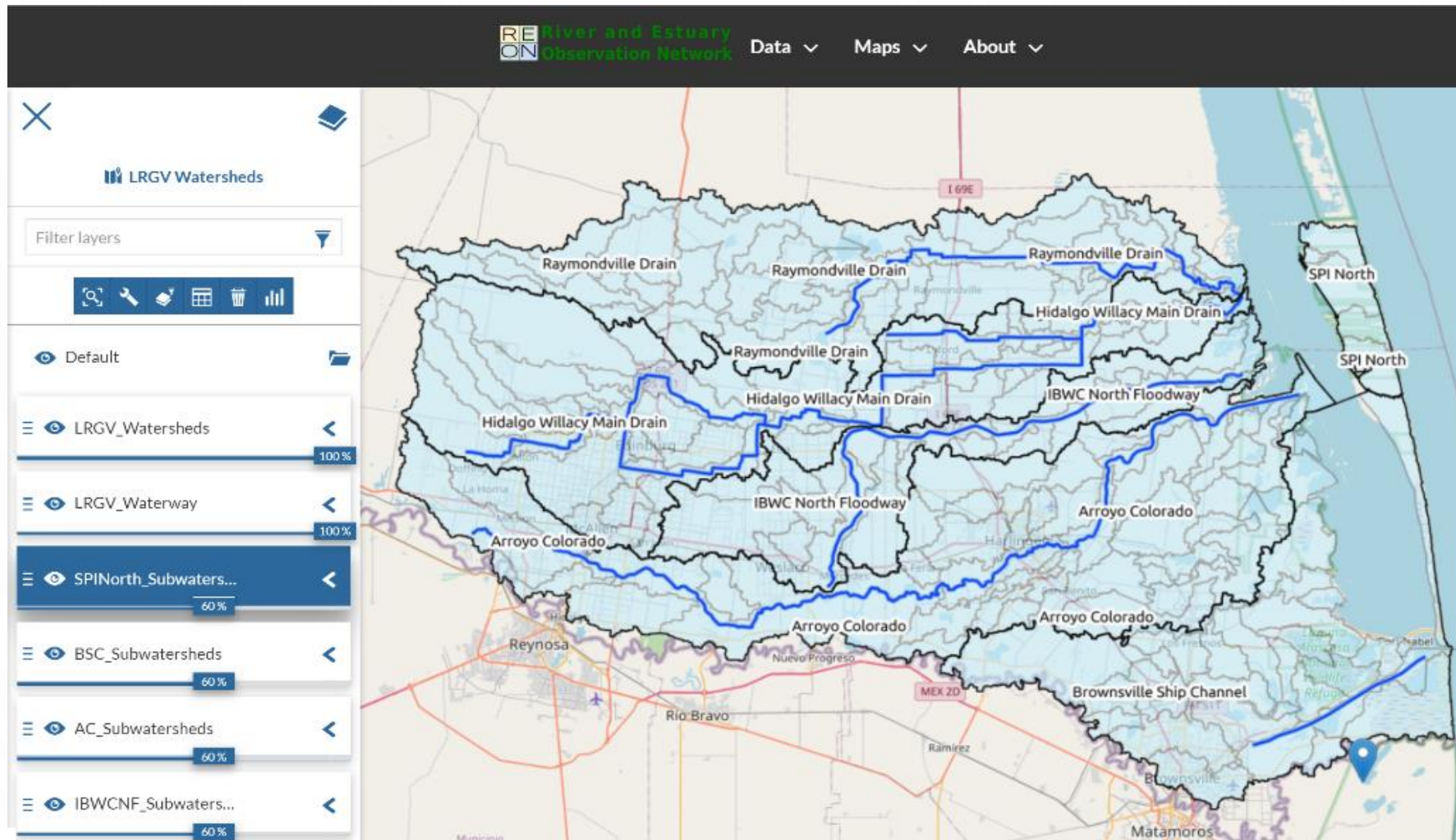


Figure 10. REON Website

CONCLUSION

- 6 Primary Watersheds and 191 Subwatersheds
- Limited to consider artificial drainage pathways:
 - Railroads, roads, highways...
- Watershed Validation Report
- Comparison with USGS HUC 10 watershed boundaries
- Initial RTHS Identification Discussion



INITIAL LOCATIONS OF THE RTHS

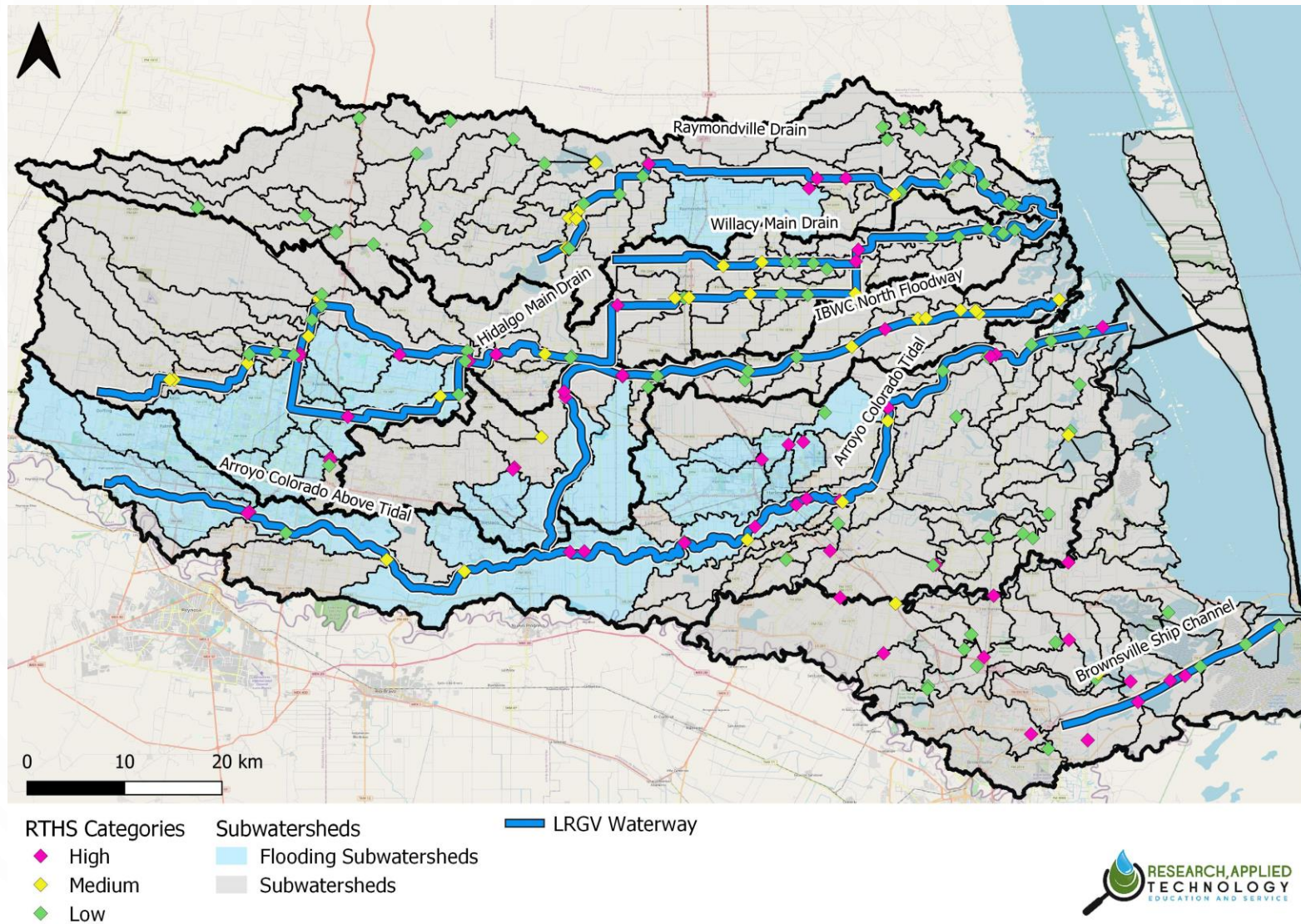


Figure 11. RTHS Locations based on the locations of the Pour Points of the Subwatersheds.