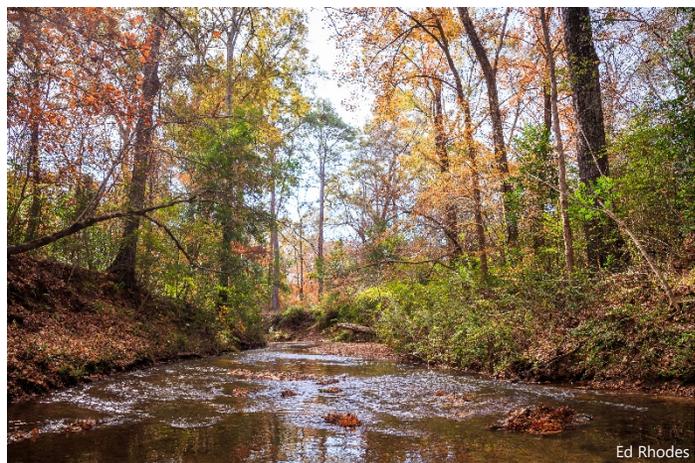


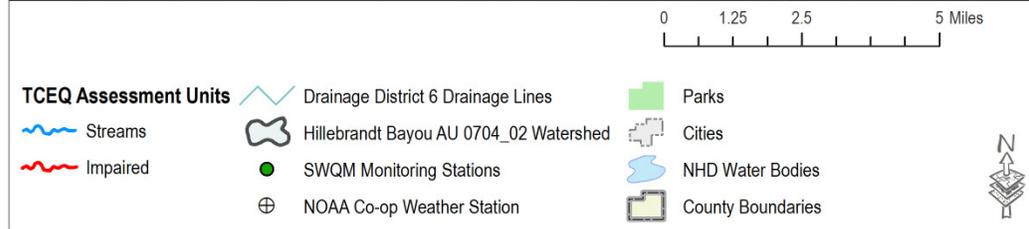
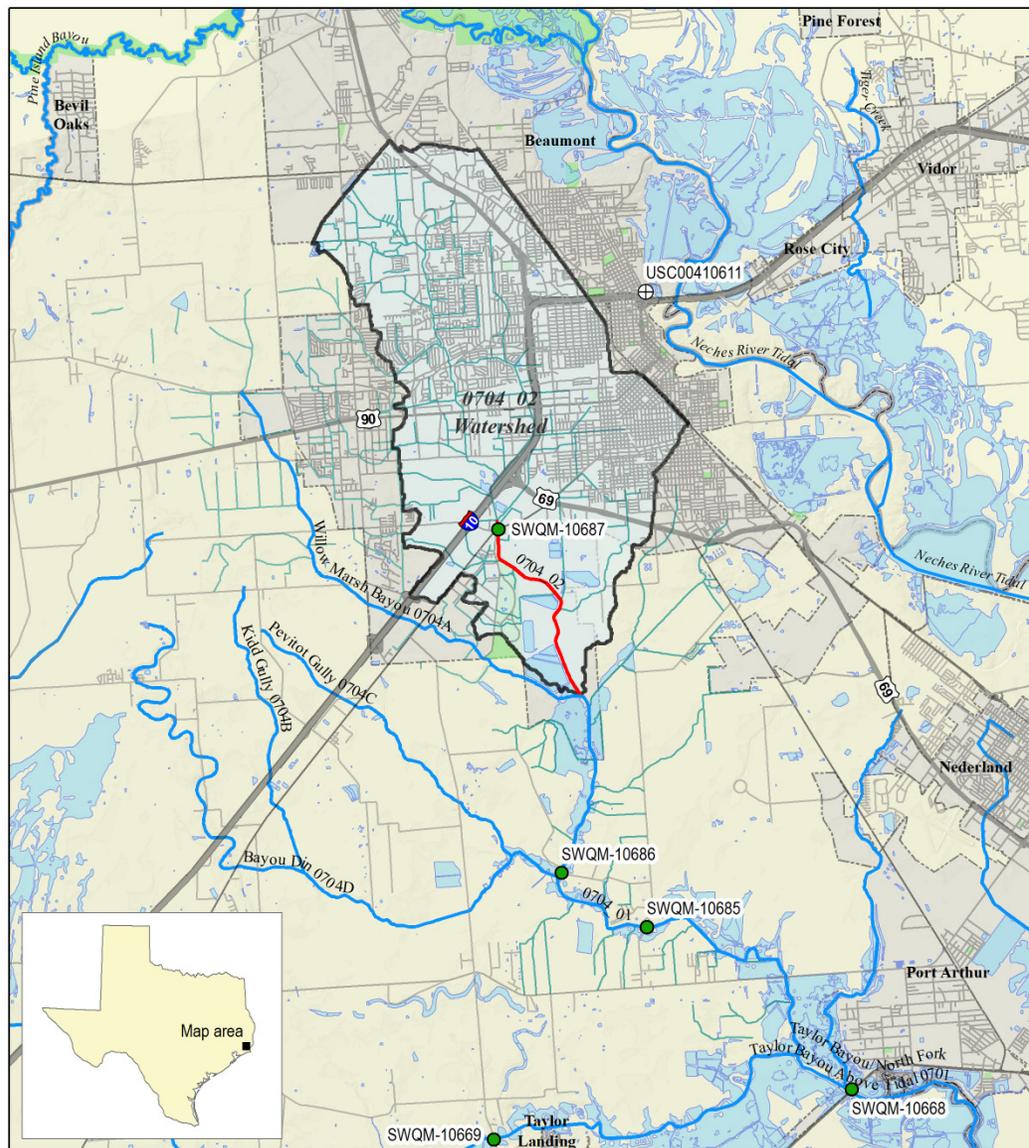
# Hillebrandt Bayou Technical Support Document

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Lucas Gregory | Research Scientist  
Texas Water Resources Institute

April 9, 2020

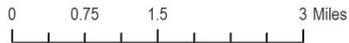
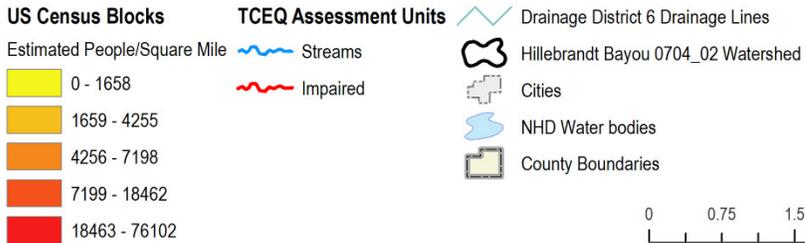
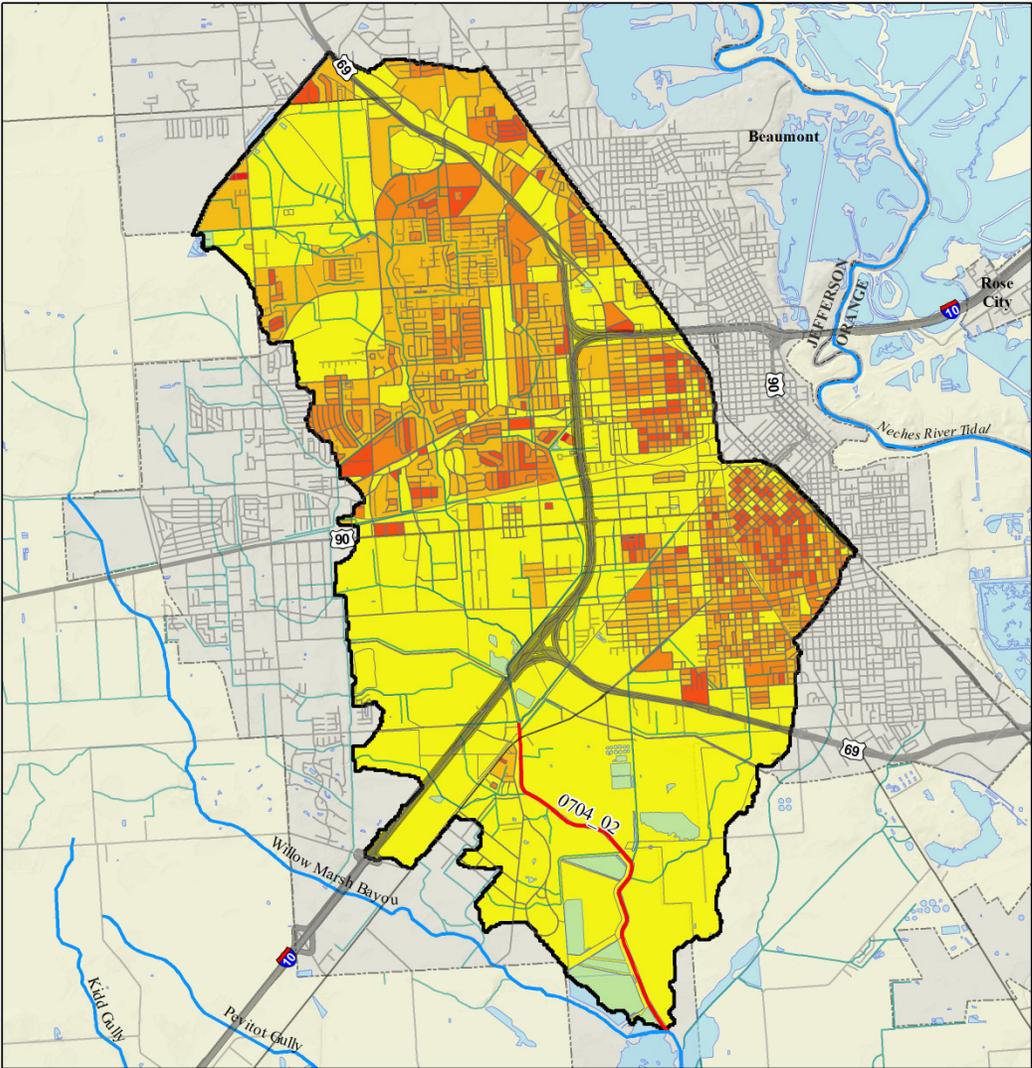


# Hillebrandt Bayou (AU 0704\_02) TMDL Watershed



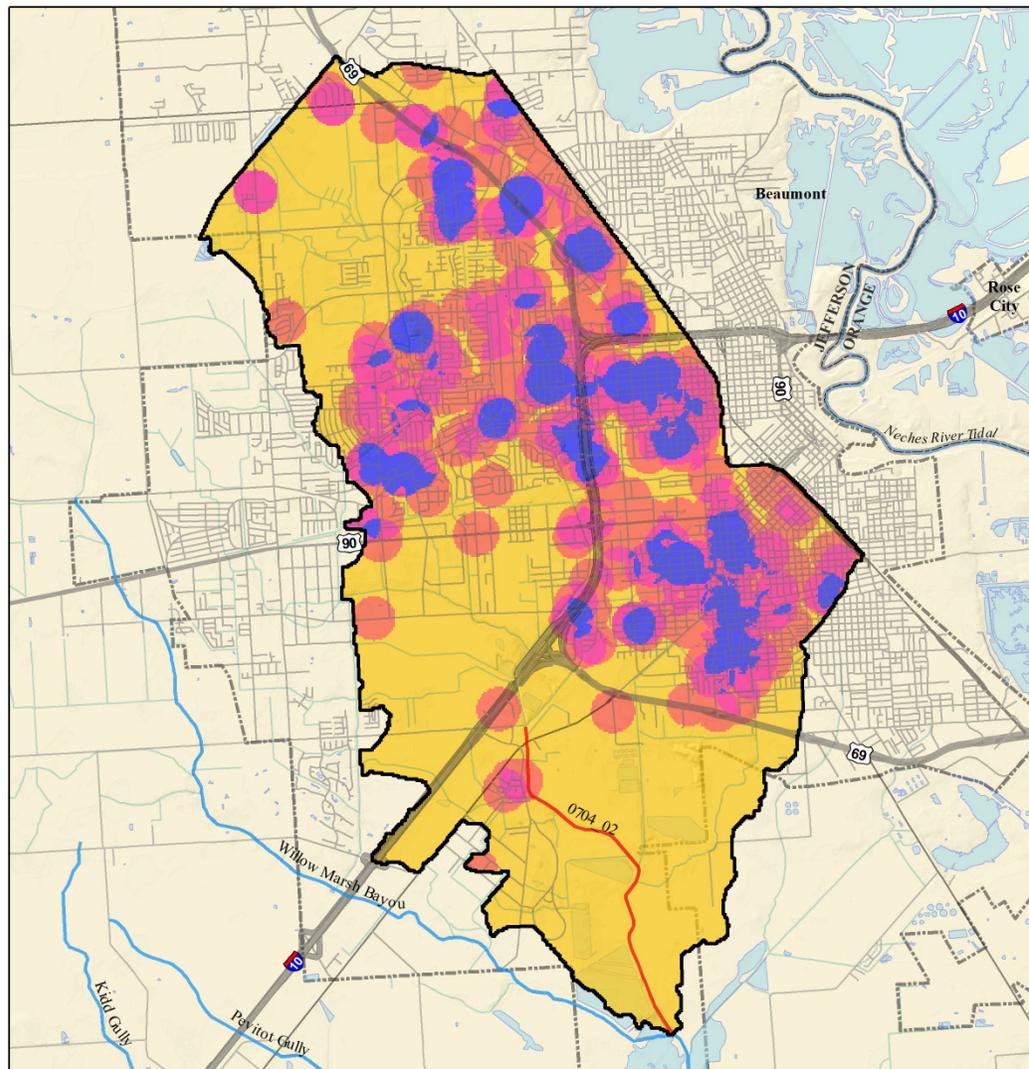
# Population

- 2010 population 61,273 (estimated)
- 2017 population 97,617 (estimated)



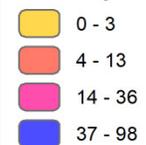
# Hillebrandt Bayou SSOs

- 404 reported incidents from 2005-2018

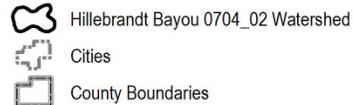


## SSO Event Density TCEQ Assessment Units

### SSOs/square mile



### Drainage District 6 Drainage Lines

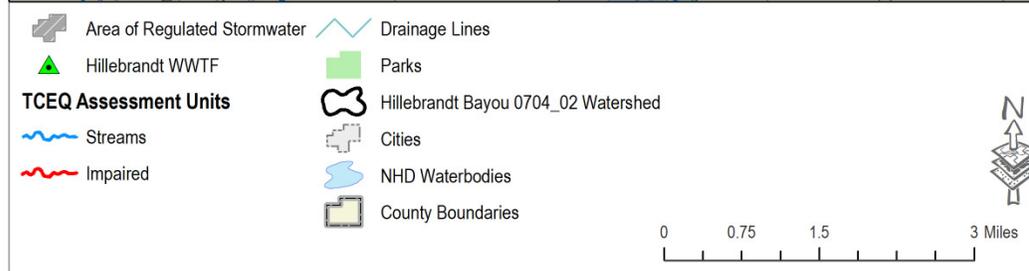
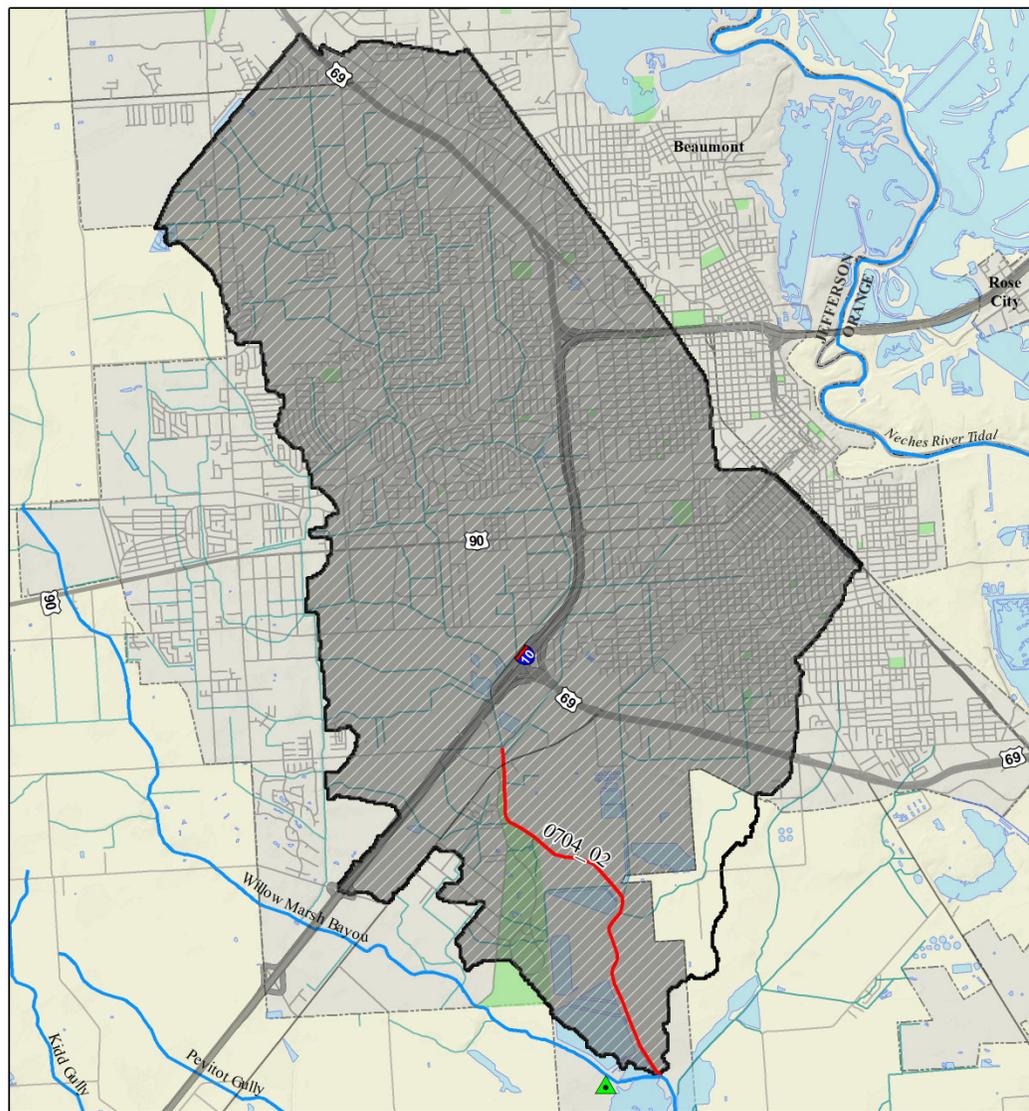


0 0.75 1.5 3 Miles

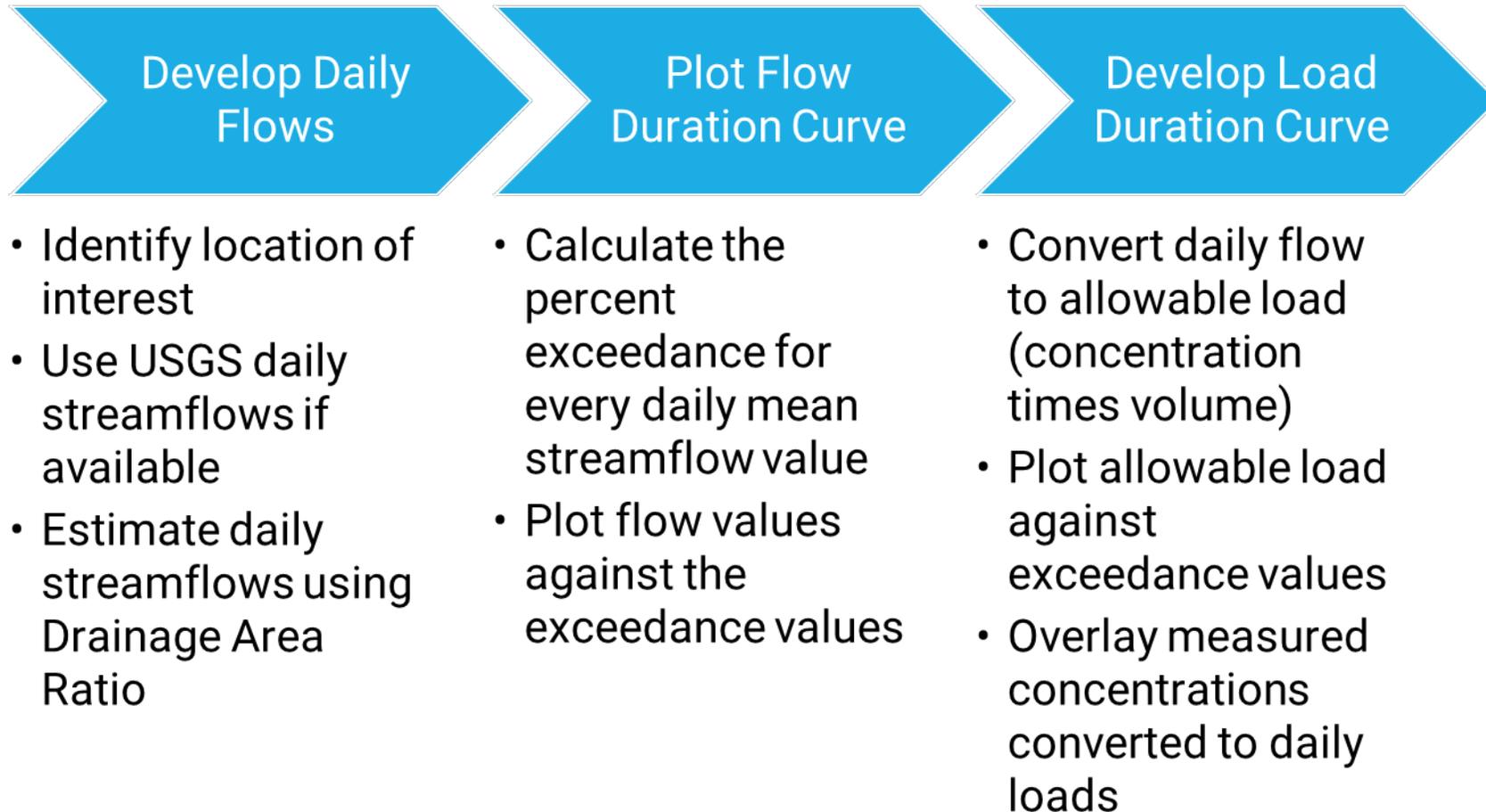


# Permitted Stormwater Area

- 35 square miles or 97% of the watershed



# General Process for Developing Load Duration Curves



# Hillebrandt Bayou Daily Flow

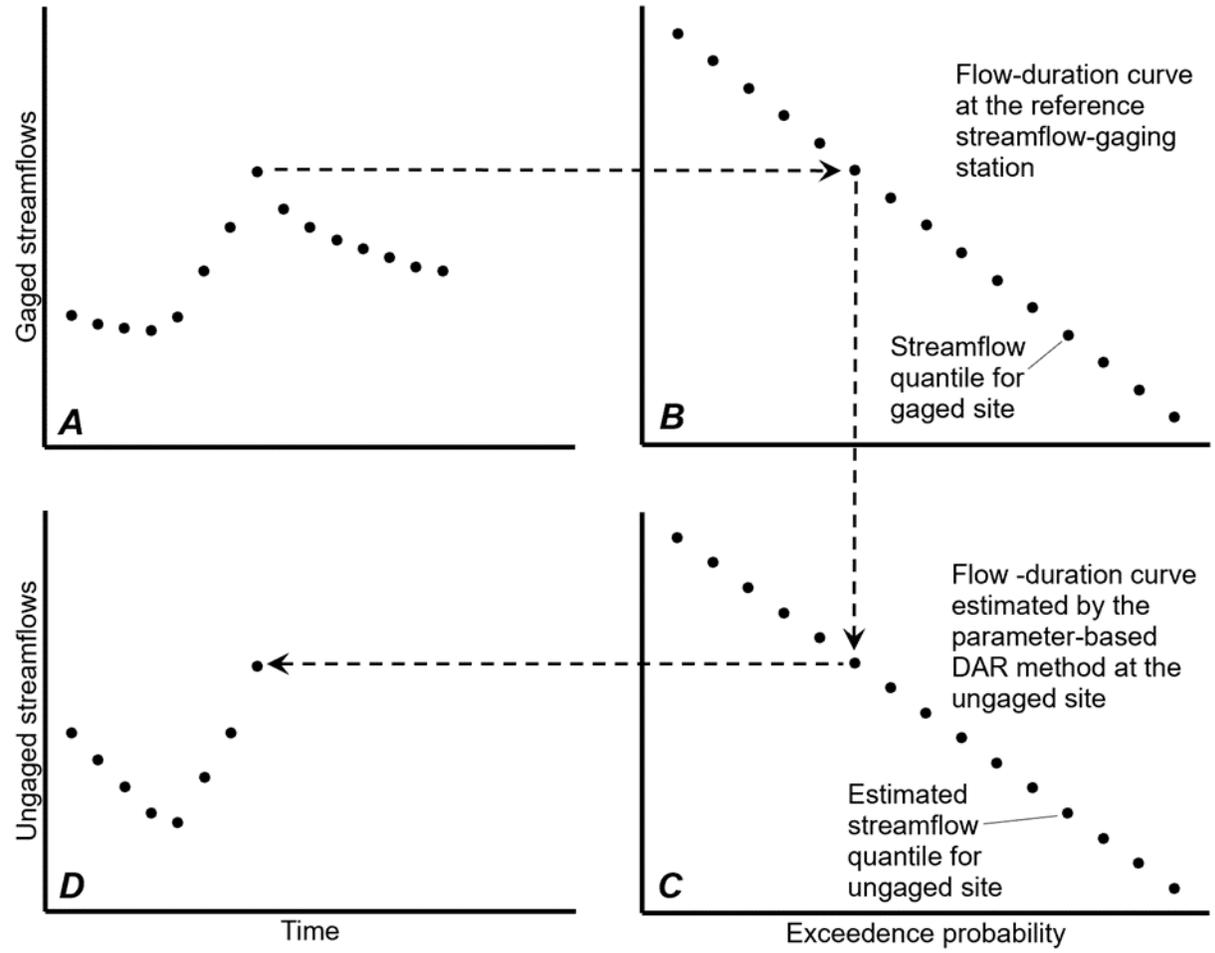
- No USGS stream gage to provide daily flows
- Drainage Area Ratio (DAR) method used to estimate the flow duration curve and daily streamflows
- Nearest streamgages are predominately rural watersheds, DAR modified to account for difference in land cover

# Hillebrandt Bayou Daily Flow

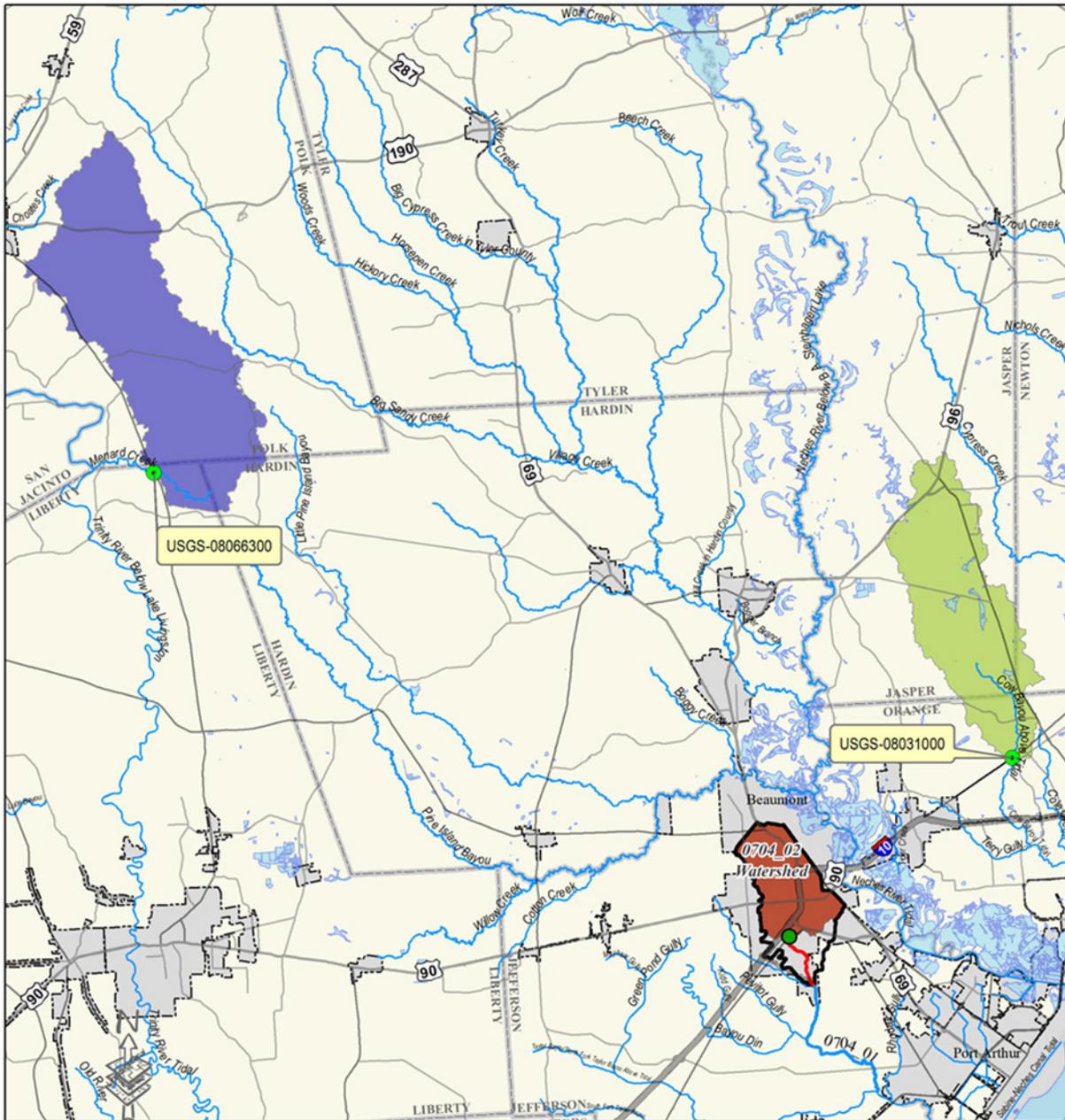
- Drainage Area Ratio – Daily streamflow in an ungaged basin equals the daily streamflow in a nearby gaged basin, multiplied by the ratio of the drainage areas.
- For example if the ungaged basin is half the size of the gaged basin, the daily streamflow is approximately half

# Hillebrandt Bayou Daily Flow

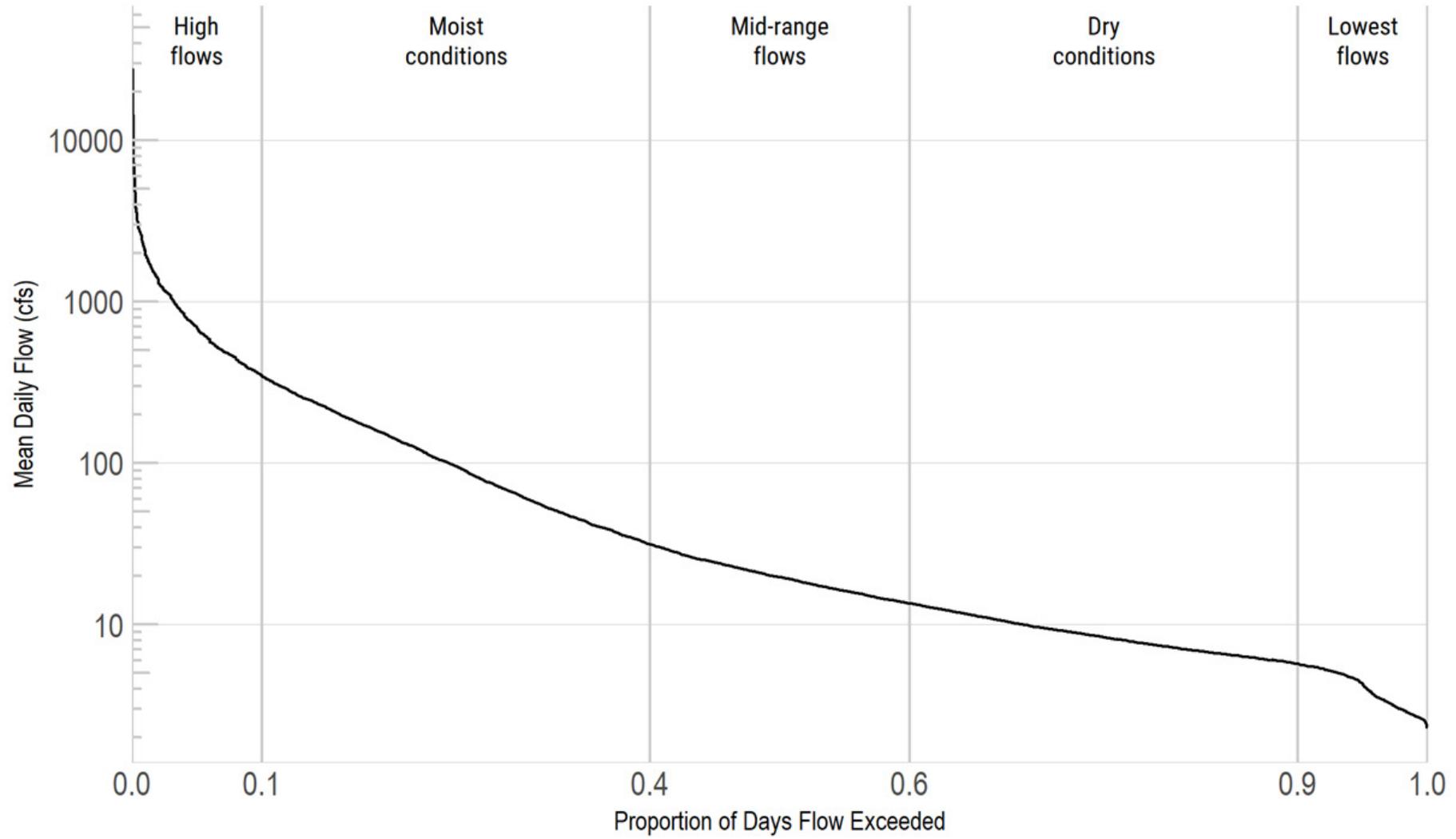
- Drainage Area Ratio – Assumes ungaged watershed has similar hydrology and land cover as gaged watershed.
- Additional terms and parameters for developed area ratio and wetland area ratio
- Parameter optimization used to weight developed area and wetland area terms
- Streamflows are corrected for permitted discharges



# Hillebrandt Bayou Daily Flow

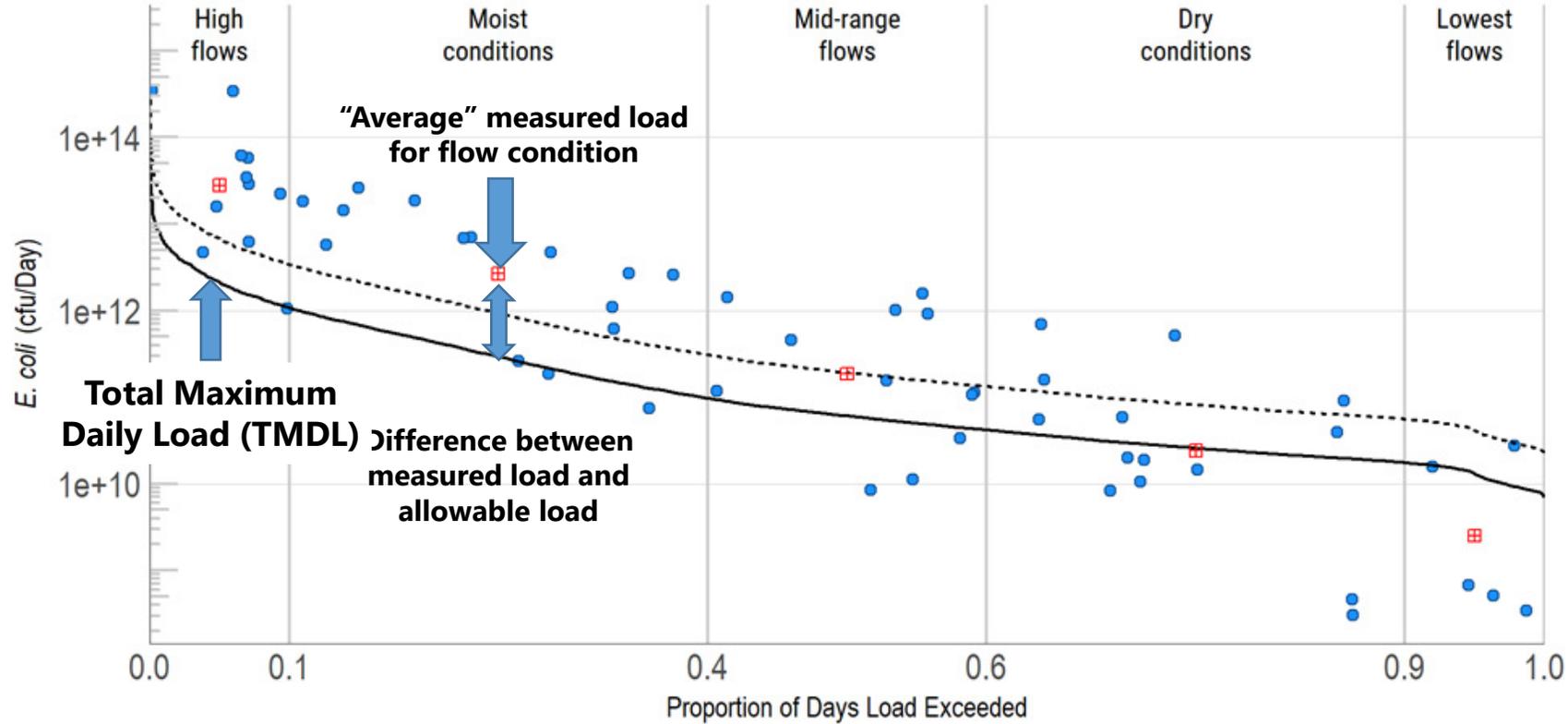


# Flow Duration Curve AU 0704\_02 - Station 10687



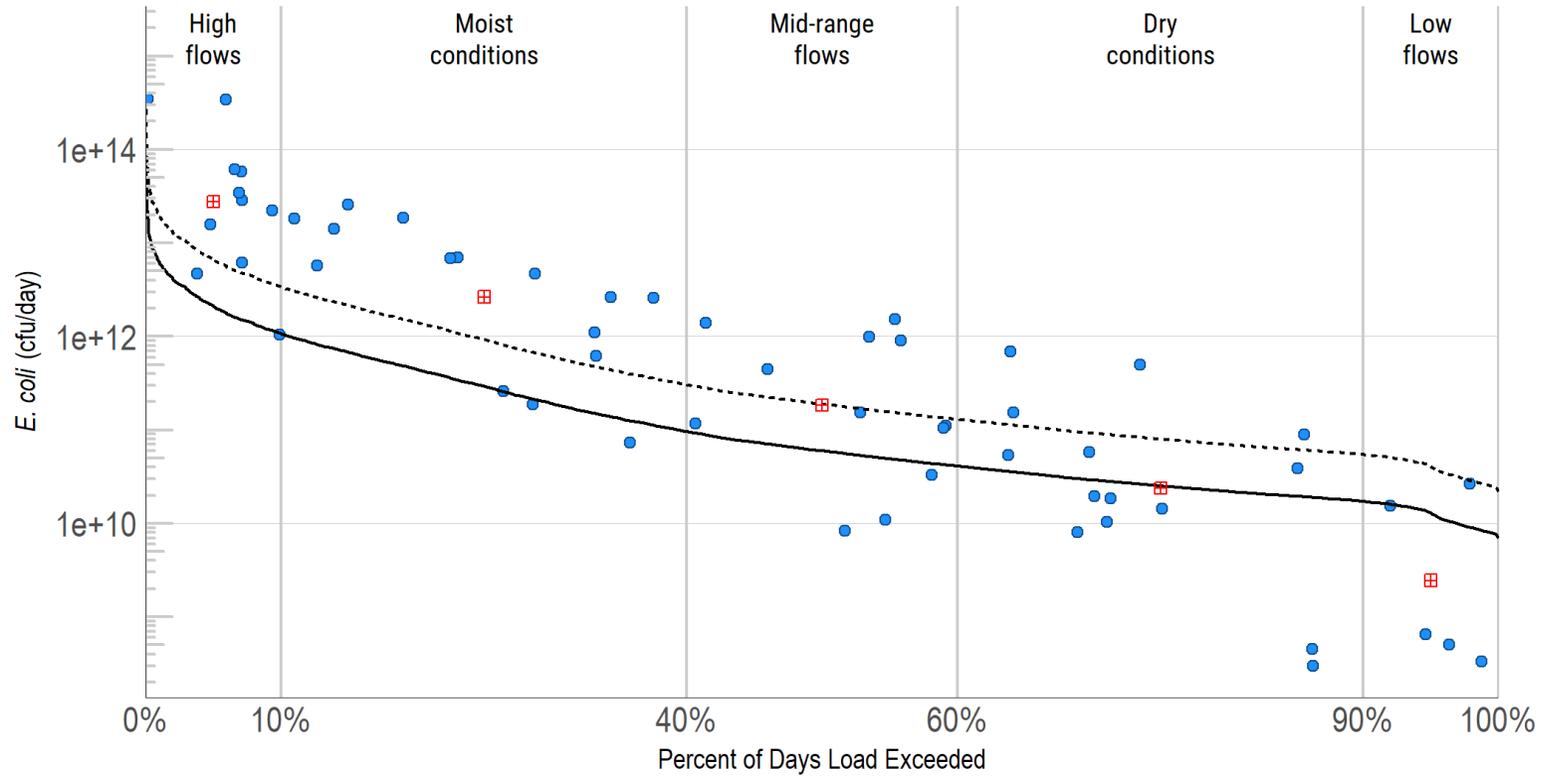
# Hillebrandt Bayou Load Duration Curve

Load Duration Curve AU 0704\_02 - Station 10687



- Geomean Criterion (126 cfu/100mL)
- Single Sample Criterion (399 cfu/100mL)
- Existing Geomean (cfu/day)
- Measurement Value (cfu/day)

# Load Duration Curve – Hillebrandt Bayou



— Geomean Criterion (126 cfu/100mL)      ■ Existing Geomean (cfu/day)  
- - - Single Sample Criterion (399 cfu/100mL)      ● Measurement Value (cfu/day)

Thank You!

Contact Info:

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