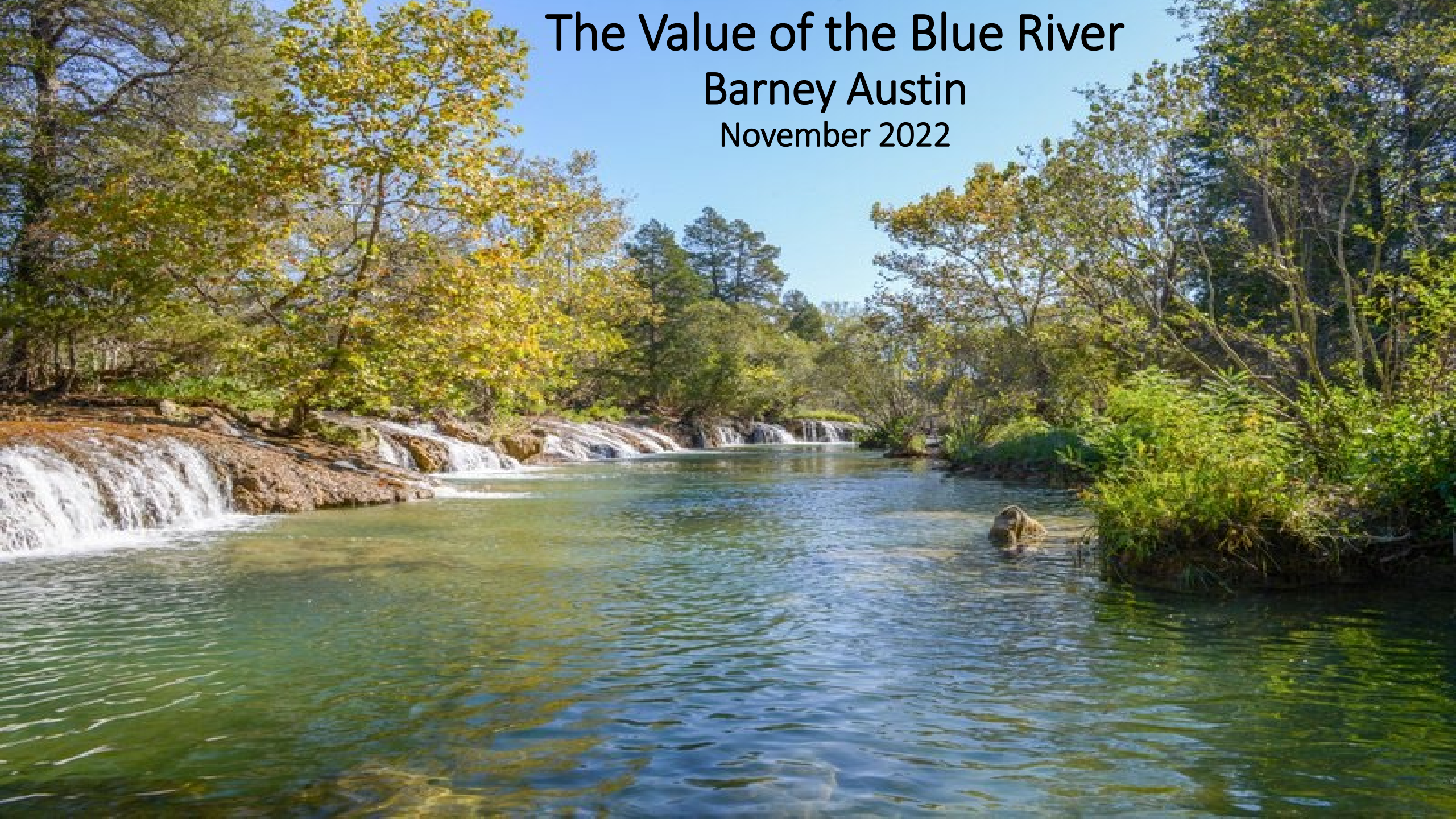


The Value of the Blue River

Barney Austin
November 2022



Sustainability of the Blue River

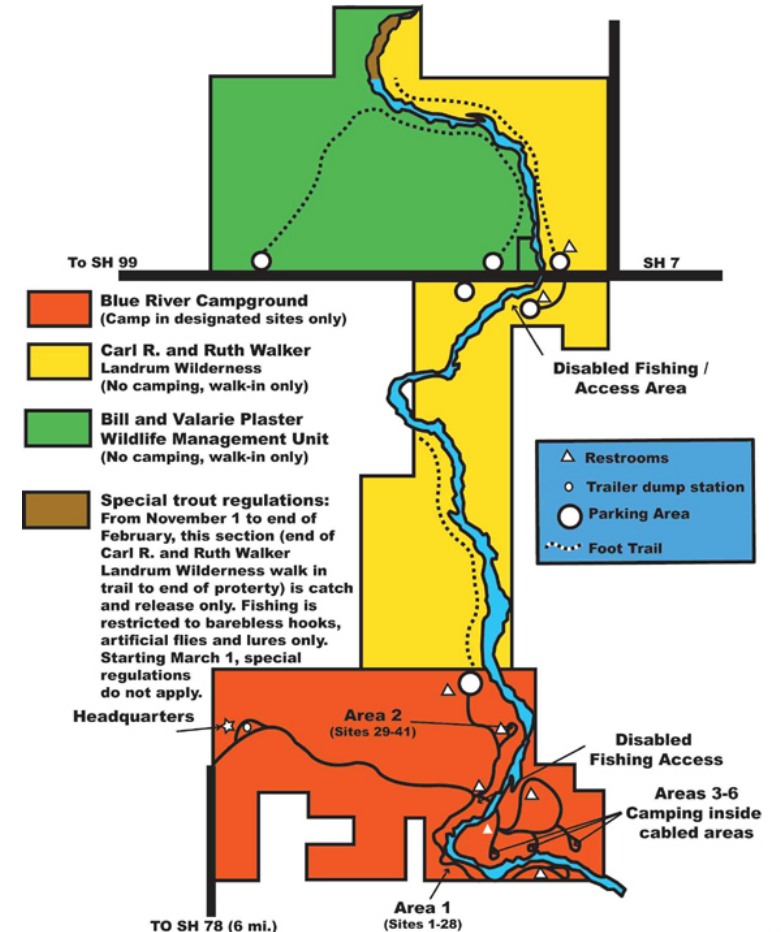
- Secretary of Energy and Environment
- OWRB
- ODWC
- Chickasaw Nation
- Choctaw Nation

Flow protection?



Blue River Economic Valuation Study - Objectives

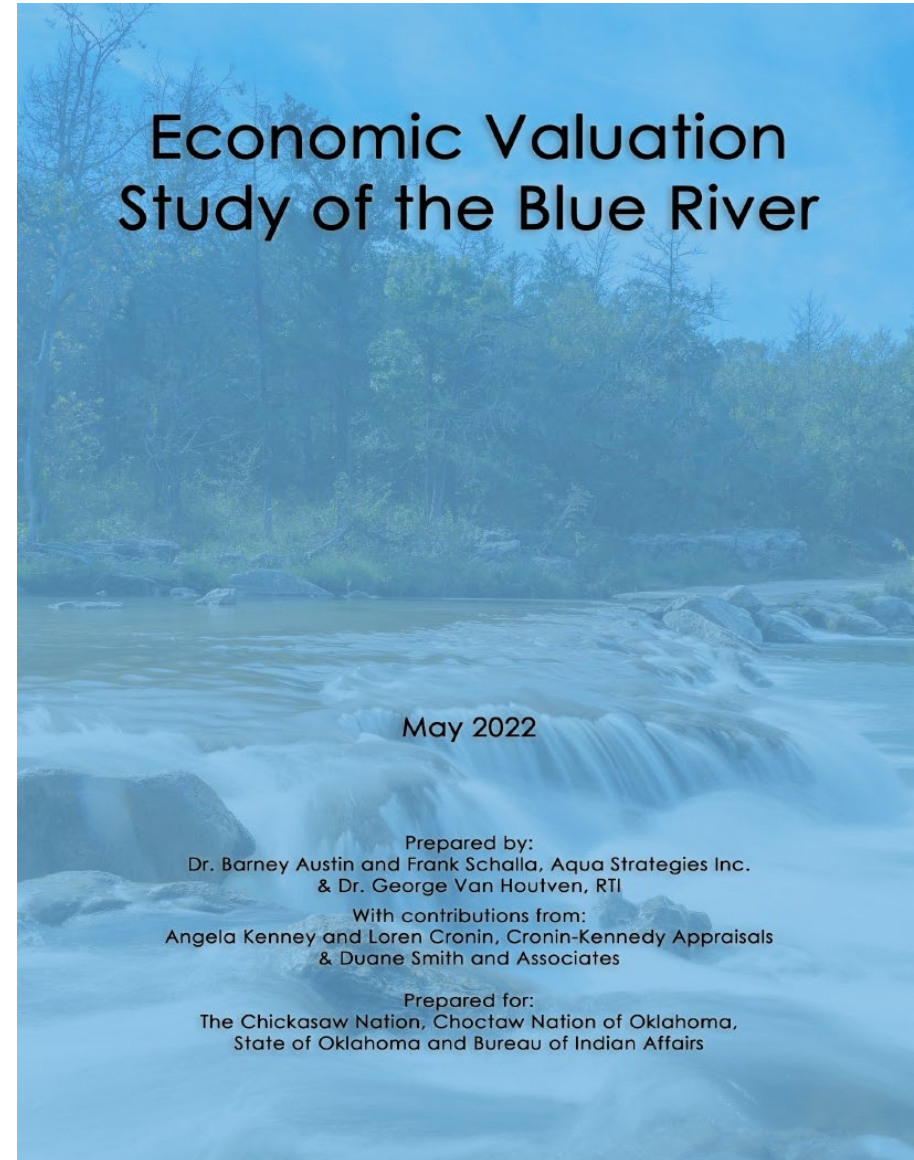
- Evaluate economic value provided by water resources in the Blue River watershed
- Calculate out-of-basin replacement costs for consumptive use
- Water availability and reliability assessment



Blue River Economic Valuation

- George Van Houtven (RTI)
- Barney Austin (ASI)
- Frank Schalla (ASI)

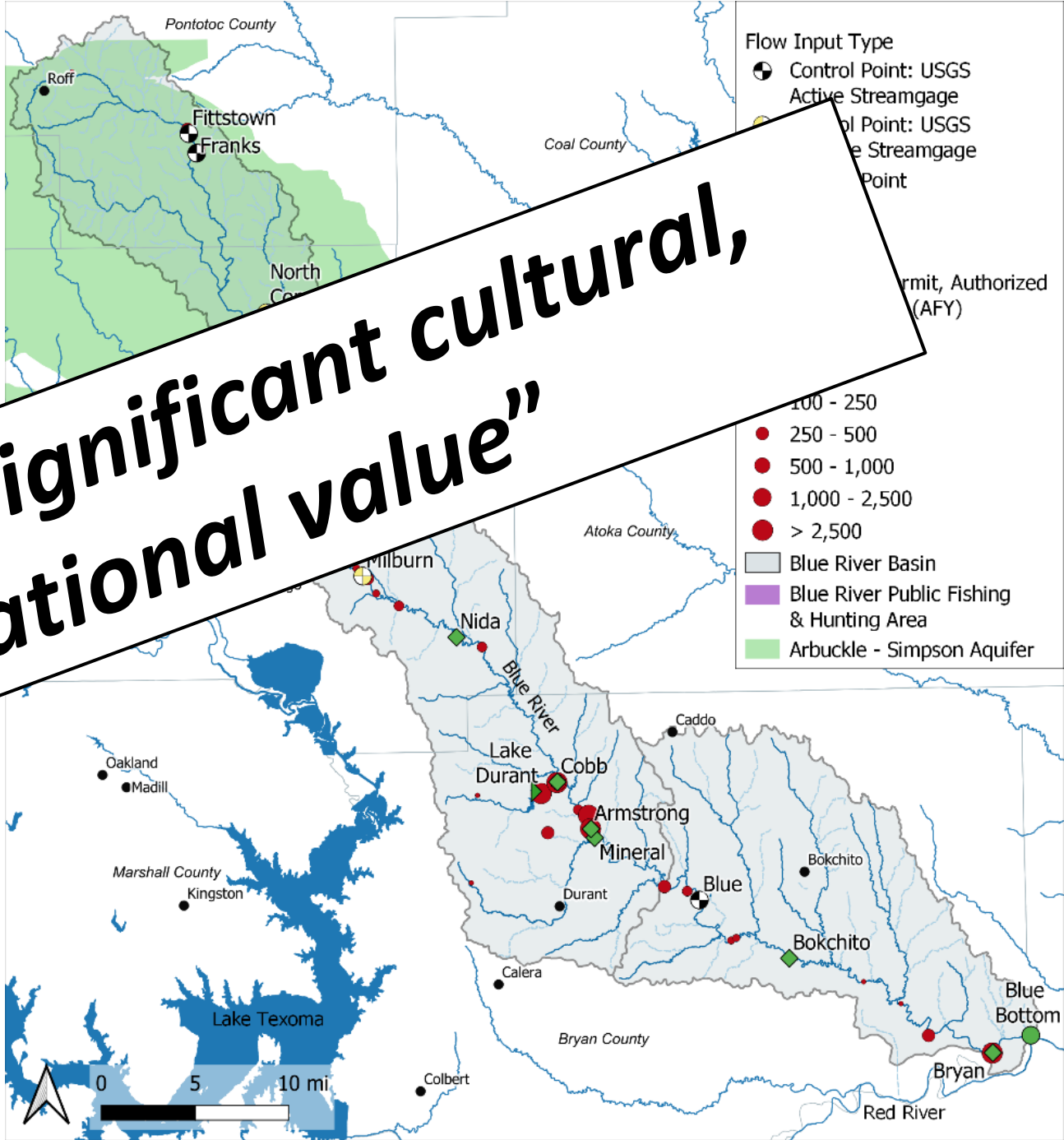
- Cronin-Kennedy Appraisals
- Brian Vance and Duane Smith



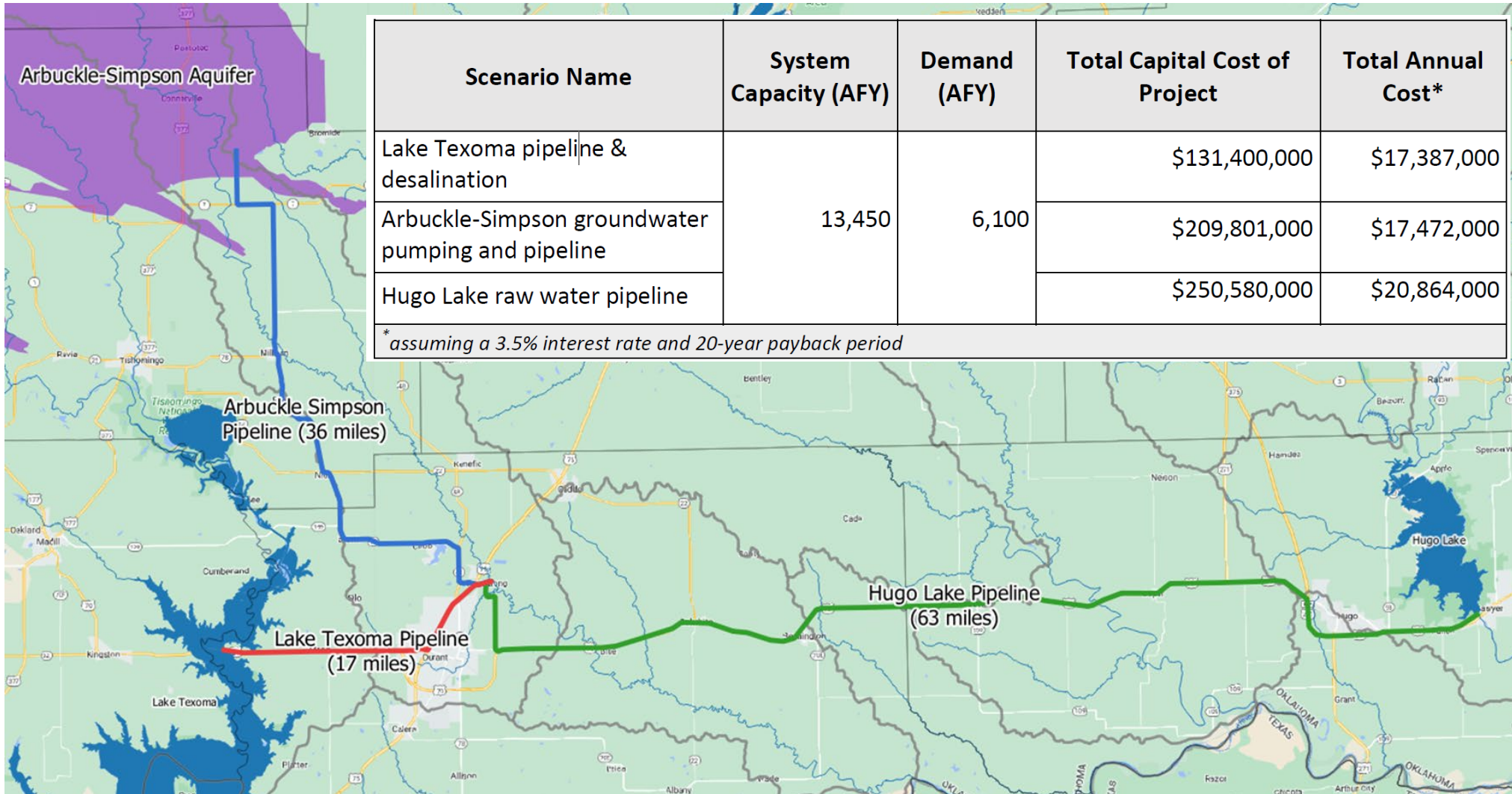
The Blue River

- 685 mi² and 130 miles+ of river
- Spring-fed with no mainstem dams
- Ecologically important
- Recreation
- Fish hatchery (Florida)
- Industry and
- City
- Agriculture
- Choctaw and Chickasaw Nations

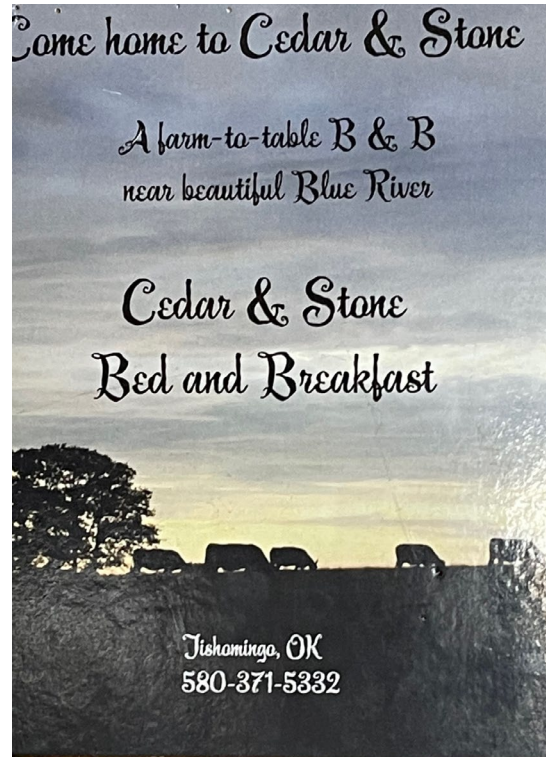
Class B Basins: "Of significant cultural, ecological or recreational value"



Replacement Costs for Consumptive Uses



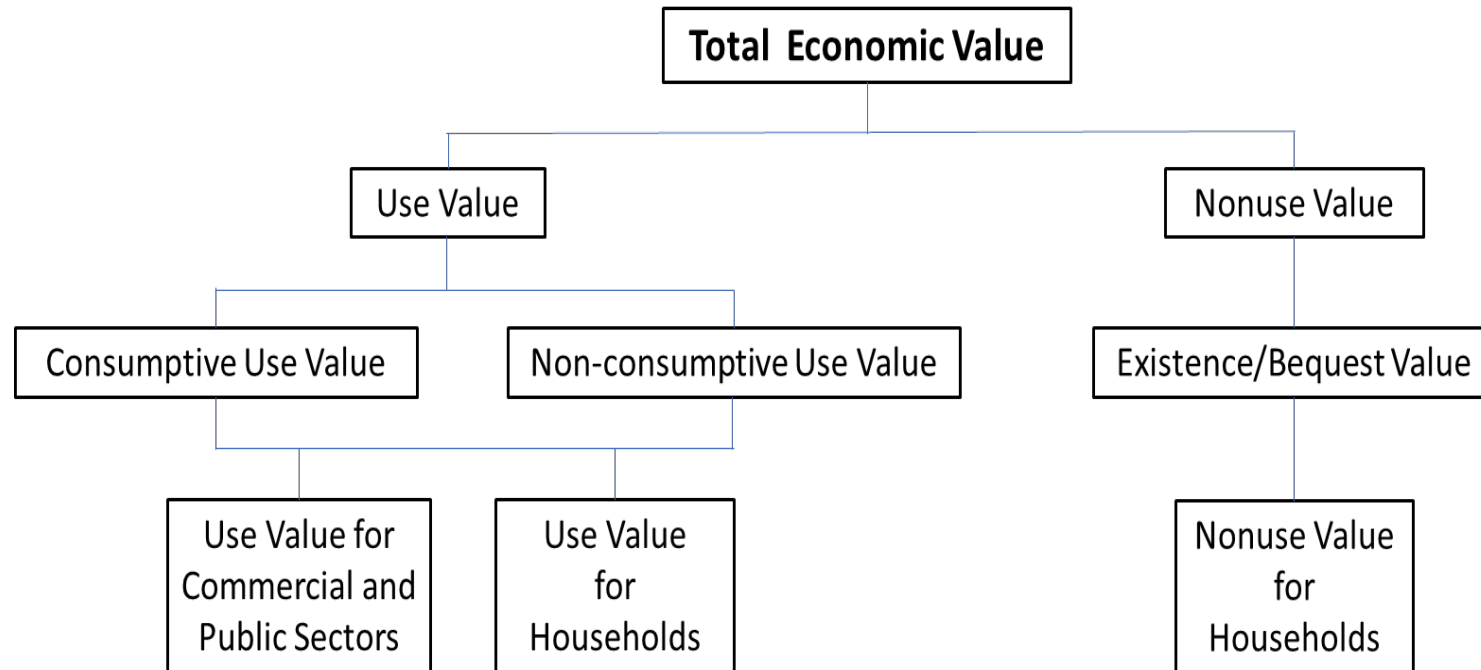
Stakeholder Engagement



	Tues (09/07)	Wed (09/08)	Thurs (09/09)
8:00			
8:30		Kara Berst (Zoom)	
9:00			Bryan Co RWD#2
9:30		Tye Baker	
10:00	Durant Fish Hatchery		Janet Reed
10:30			
11:00			
11:30	Meet Duane and Kris at Red's in Tishomingo	Donald (Inslee Fish Farm)	Jeremy McBride Durant WTP
12:00			
12:30			
13:00			
13:30			
14:00	Susan Paddack	JD Strong	
14:30			
15:00			
15:30	Blue River One Stop		
16:00			
16:30	Old Silo Winery		
17:00		Blue River Valley Winery	
17:30			
18:00			



Economic Valuation Framework

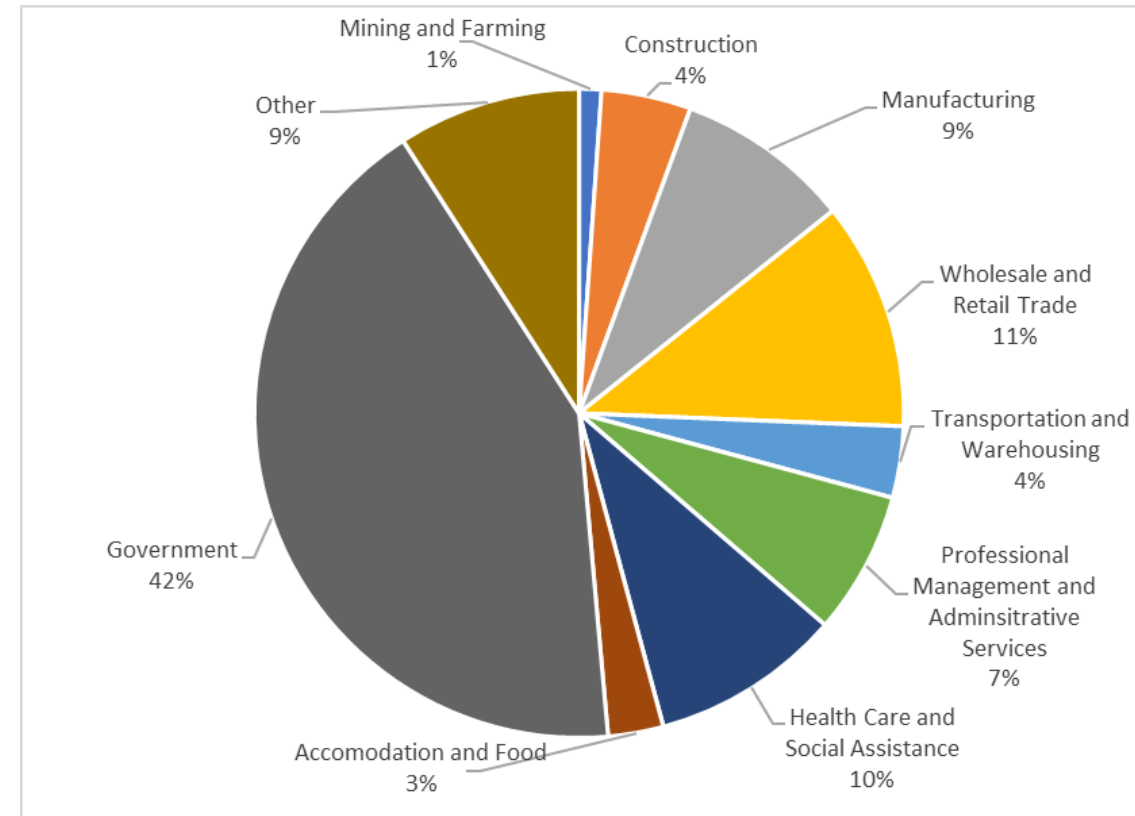


- Public Water Supplies
- Durant State Fish Hatchery
- Outdoor Recreation
- Amenities for Nearby Properties
- Cultural

Public Water Supply

- Blue River is source for 86% of Bryan County's public water supply system
- Except for ag and mining, all other establishments get water from public supply system
- Bryan County economy
 - GDP: +\$1.8 billion/year
 - Employment: 26,800 jobs
- Blue River is needed to support ~85% of the county and Durant region economy
 - \$1.5 billion/yr in GDP
 - +22,000 jobs

Breakdown of Economic Earnings in Bryan County by Sector



Durant State Fish Hatchery

- Withdraws 767 AFY from Blue River (permit is 6,445 AFY)
- Only source of Florida largemouth bass (FLMB) for public lakes in OK (2 million/yr)
- Critical input for largemouth bass fishing in public lakes, which is responsible for
 - 759,000 angler days per year
 - \$40 million/yr in net value to anglers
 - \$70 million/yr in spending by anglers
 - \$85 million/yr in state-level economic output



Public Access Outdoor Recreation

- Blue River Public Fishing and Hunting Area (PFHA) receives ~70,000 visits/yr
 - ~60% trout fishing
 - ~30% other fishing
- Annual benefits of PFHA include
 - \$5.4 million/yr in net value to visitors (over 70% to trout anglers)
 - \$6.5 million/yr in visitor spending
 - \$7.9 million/yr in regional economic output

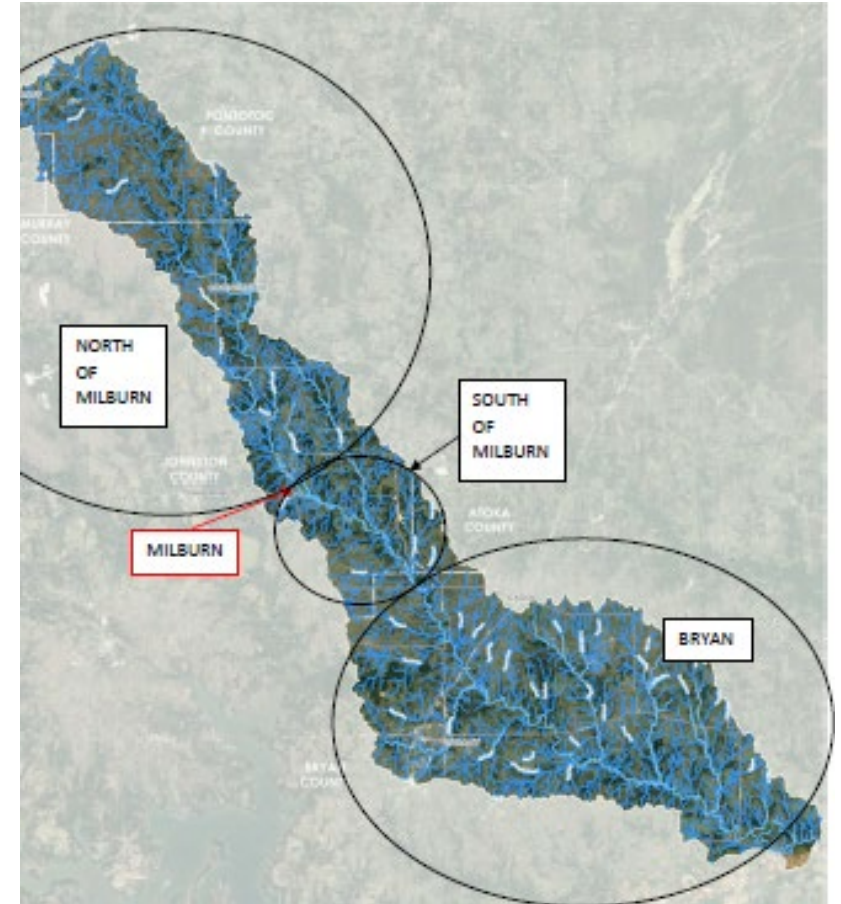


Amenities for Nearby Residents

- Blue River amenity benefits capitalized into riverfront and nearby property values
- Expert appraisal of value premium (Cronin-Kennedy)

INDICATED RIVER VALUES \$/LINEAR FT OF RIVER			
	MIN	MAX	MEDIAN
NORTH OF MILBURN	\$ 77.37	\$ 248.85	\$ 160.30
SOUTH OF MILBURN	\$ -	\$ 96.55	\$ -
BRYAN	\$ -	\$ 15.11	\$ -

- Extrapolated to
 - **North of Milburn:** \$12 - \$38 million in added value per year
 - **South Milburn:** \$0 - \$4 million in added value per year
 - **Bryan:** \$0 - \$10 million in added value per year.



Cultural Use Values

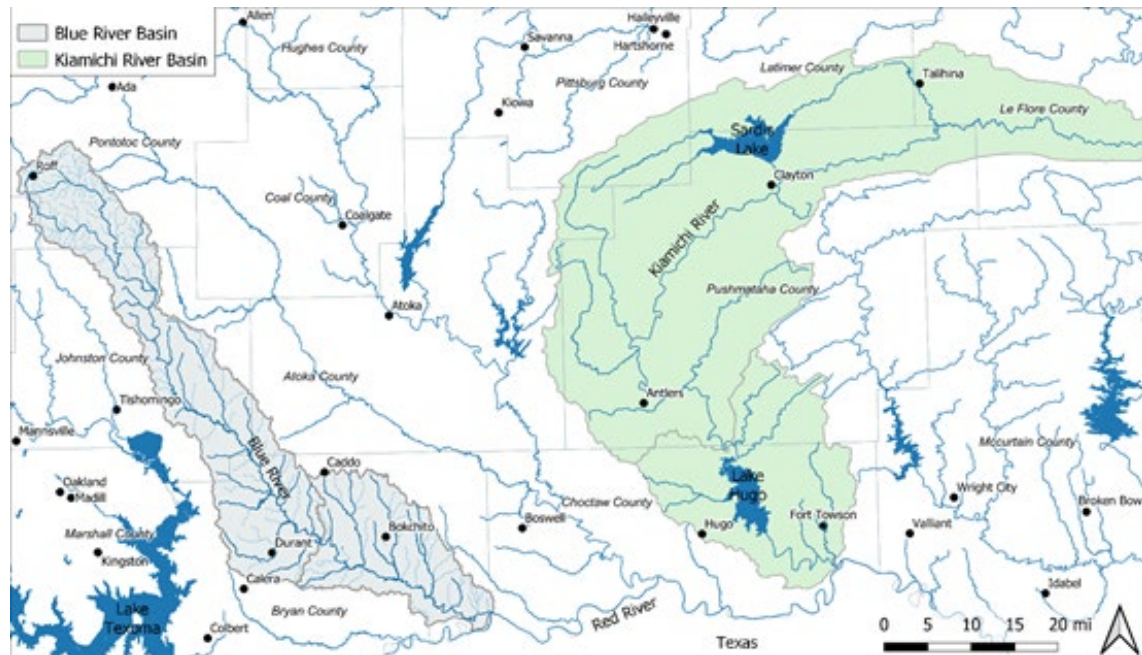
- Blue River has traditionally supported a variety of cultural practices, many of which are now under threat
 - Fewer riparian areas support rivercane, widely used by Chickasaw and Choctaw
 - Significant decline in mussel species traditionally used for jewelry, spoons, etc
- Very difficult to assign monetary value, but likely to be among the highest values

“The often-intangible nature of some sociocultural values attributed to water regularly defies any attempt at quantification but, nevertheless, can be regarded amongst the highest values.” (United Nations, 2021, p.viii)



Nonuse (Existence/Bequest) Values

- No existing studies have estimated economic nonuse values for the Blue River
- Best alternative is to transfer benefit estimates from studies of similar areas
 - Two similar willingness-to-pay survey studies have been conducted for protecting water flows in the Kiamichi River
 - Include WTP estimates by residents outside watershed for protecting habitat, heritage, and local identity of the river
- Extrapolating these values to residents across OK implies \$26 million per year in nonuse values



Summary of Economic Results

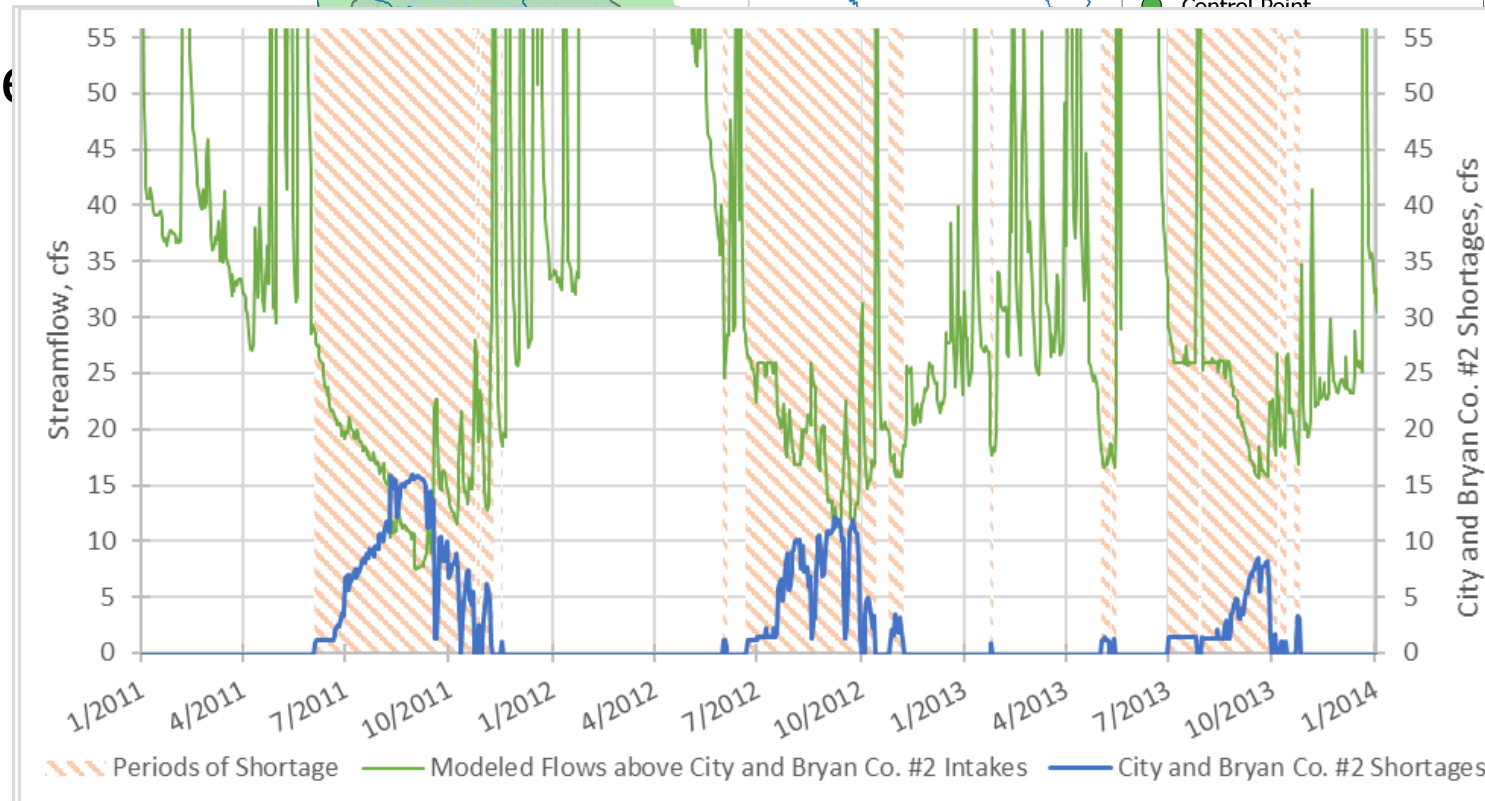
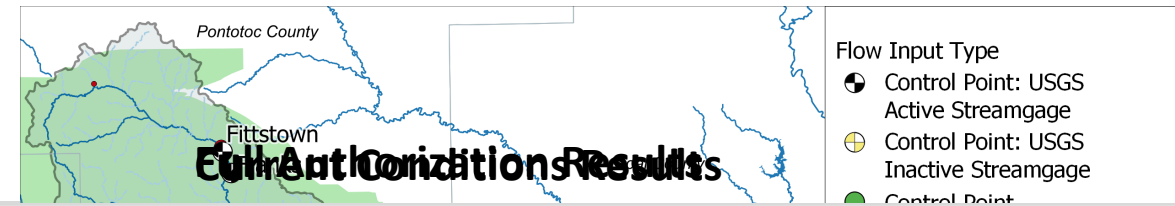
Benefit Category		Annual Economic Value (\$/year)	Annual Economic Impact (\$/year)
1	Public Water Supply (Bryan Co.)	\$17-21 million in avoided water supply replacement cost	\$1.5 billion contribution to county GDP
2	Production of Largemouth Bass for Public Lakes in OK	\$40 million in benefits to anglers*	\$85 million contribution to state economic output*
3	Recreation at Blue River PFHA	\$5 million in benefits to recreational visitors	\$9 million contribution to state economic output
4	Amenity Benefits to Local Residents	\$12-52 million in benefits to shoreline and nearby residents	Not quantified in dollar terms
5	Cultural Use Values	Not quantified in dollar terms	Not quantified in dollar terms
6	Nonuse Values	\$26 million in benefits to state residents	Not applicable
*This value includes <u>all</u> largemouth bass fishing in Oklahoma's public lakes, which is heavily, though not exclusively, supported by the Durant State Fish Hatchery's production of Florida largemouth bass.			

Economic value is a monetary measure of the human well-being derived from a natural resource.

Economic impact is a measure of the flow of economic transactions through the economy generated by the resource. Although both expressed in dollar terms, they measure different economic outcomes that cannot be meaningfully added together.

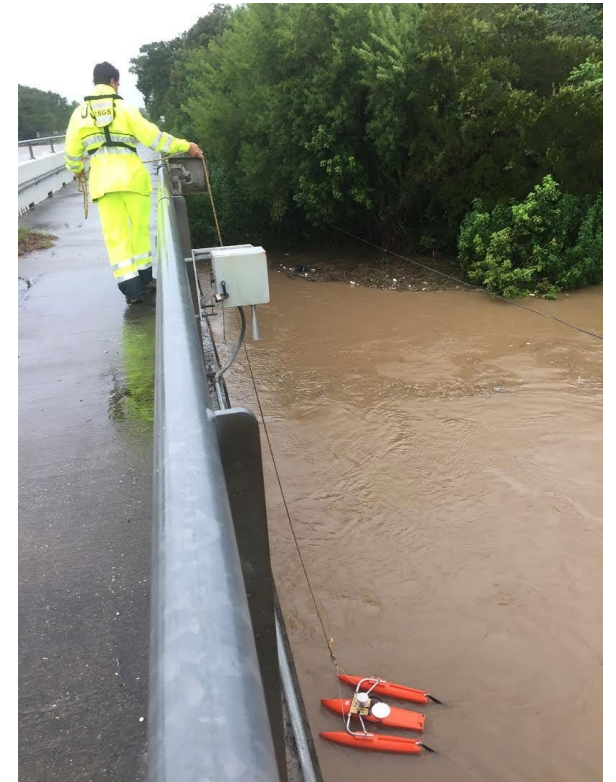
Water Right Reliability Analysis

- Reliability of Durant / Bryan Co. RWD #2
- Existing Blue River RiverWare
 - All existing/pending
 - Domestic use set-aside
 - Naturalized flows
 - Seniority enforced
- Scenarios
 - Current conditions
 - Full authorization
- Lake Durant



Water Right Reliability Analysis – Protective Flow

- USGS Blue River near Connerville gage
- Protecting reliability
 - RiverWare model: 38 cfs
- Other data/studies
 - 7Q2: 31.6 cfs
 - 25th percentile / 75th exceedance: 37.9 cfs
 - SB288/OWRB: 10-25% reduction in 25th percentile flow: 28 to 34 cfs

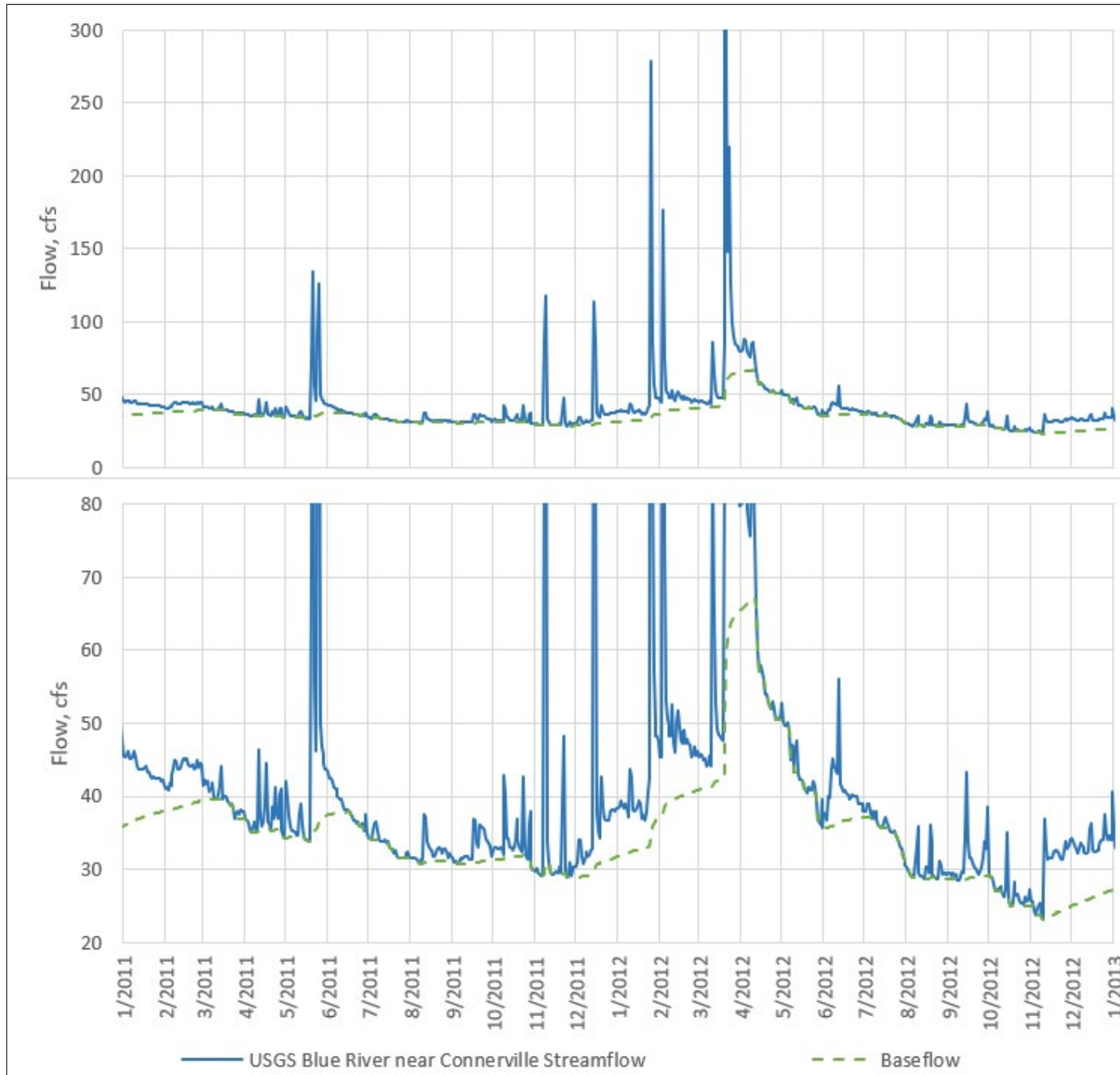


Conclusions

1. The economic, environmental and cultural value of the Blue River is exclusively dependent on maintaining its flow reliability and exceptional water quality.
2. The Blue River generates an annual economic impact of more than \$1.5 billion, and at least \$144 million in annual economic value to Oklahomans.
3. This economic analysis further reinforces the findings of other scientific research in advocating for a minimum flow of 38 cfs at the USGS Connerville streamgage to support consumptive and non-consumptive uses. Flows below that minimum will result in degradation of the region's economic, environmental and cultural values.

Q&A

Baseflow



The Water Settlement

- Basins 11 and 12: “Class B”
- Highest level of protection
- *“Of significant cultural, ecological or recreational value”*
- Conferral threshold at 20,000 AFY or three percent of the MAF.
- MAF at Connerville appr.:
 - 133 cfs = 96,000 AFY
- Conferral threshold: 4 cfs = 2,900 AFY

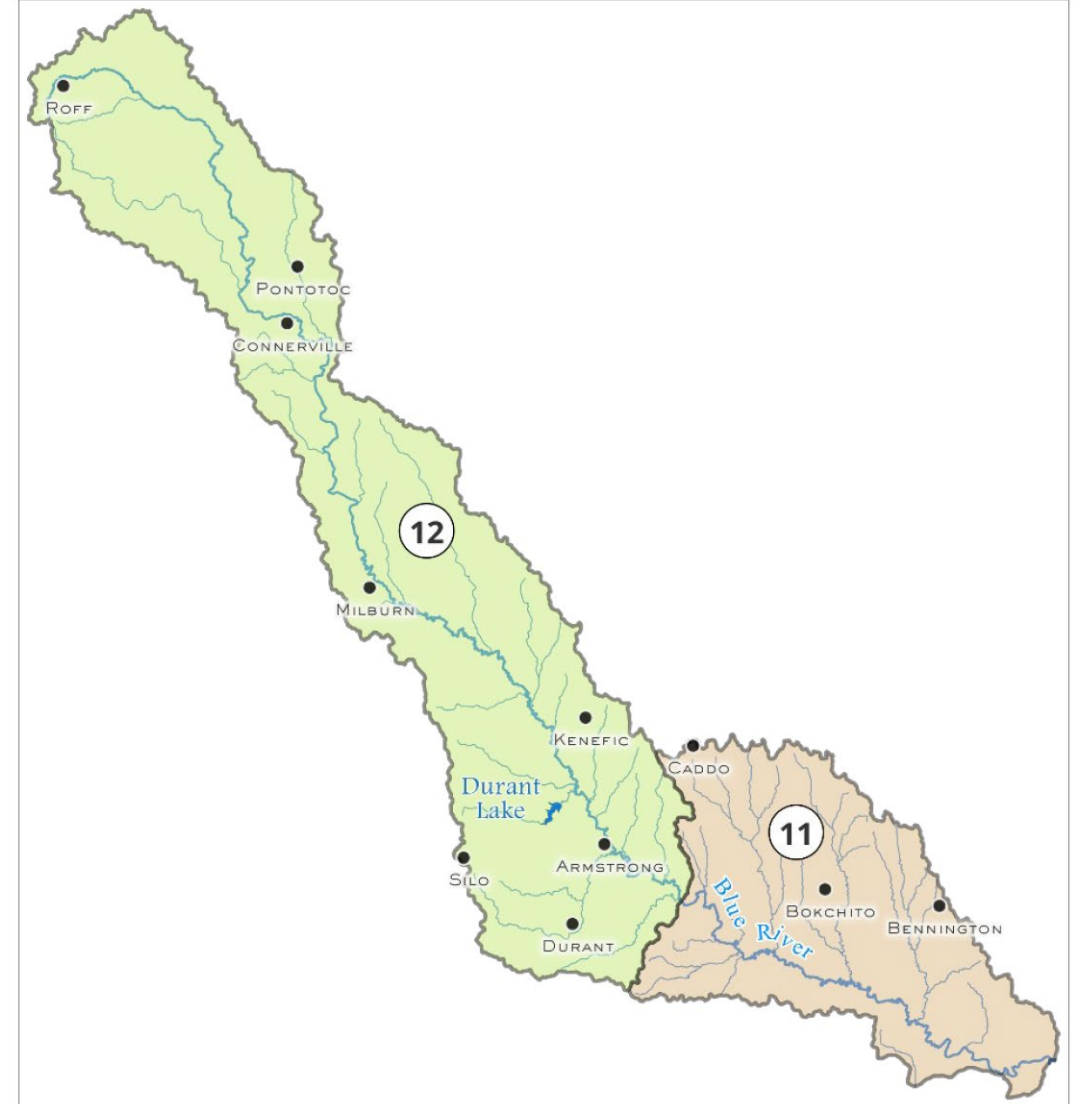


Figure 2. Basins 11 and 12 in the Blue River watershed.