Instream / Environmental Flows for Texas

Oklahoma Governor’s Water Conference

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Environmental Flows for Texas

- Freshwater Inflows – Bays and Estuaries
- Instream Flows – Rivers and Streams
Instream Flows in Texas

- 1957 – Water planning (TWDB)
- 1985 – Water rights permitting (TCEQ), Recommendations (TPWD)
- 1997 – SB1 – Regional water planning
- 2001 – SB2 – Studies to determine flow conditions for a Sound Ecological Environment (TCEQ, TWDB, TPWD)
- 2007 – SB3 – Local (rapid) assessment of environmental flow requirements (with future refinement)
SB2 Texas Instream Flow Program

Current Priority Studies
- Lower Sabine
- Middle & Lower Brazos
- Lower San Antonio

Study Designs
Completed Studies - 2012-13

Remaining Priority Studies
- Middle Trinity
- Lower Guadalupe
Completed Studies - 2016

Second Tier Studies
- Upper Guadalupe
- Neches
- Upper Sabine
- Bois d’Arc
Completed Studies - ?
SB3 E-flows Process

2008-2011
- Sabine, Neches (1), Trinity and San Jacinto (2)

2009-2012
- Colorado, Lavaca (3), Guadalupe, San Antonio and Aransas (4)

2010-2013
- Nueces (5), Rio Grande (6) and Brazos (7)
Lessons Learned

• Pre Senate Bill 2 (individual agency programs)  
  Project specific studies

• From Senate Bill 1 (Regional Water Planning)  
  Local stakeholders leading regional process

• From Senate Bill 2 (Texas Instream Flow Program)  
  Regional studies with combined agency resources and local stakeholder input

• From Senate Bill 3 (Eflows Process)  
  Local stakeholders and scientists leading the process for basin-bay systems using best available science plus refinement over time
Lessons Learned
Pre Senate Bill 2

• Different disciplines/agencies (Biology/Parks and Wildlife and Hydrology-Engineering/Water Development Board) think/speak/act completely differently

• Agencies as adversaries don’t get a lot done (instream flow activities)

• Agencies as partners can get results (Freshwater Inflow Program)

• Impacts of projects extend throughout a stream or river system (one or two project specific studies equals one study of an entire sub-basin)
Lessons Learned
From Senate Bill 1

- Water planning (like developing environmental flow recommendations) is part science and part local goals and values
- With assistance, regional stakeholders can do a decent job with the science
- Regional stakeholders do an excellent job with local goals and values
- Regional stakeholders take the results they develop much more seriously than the ones state agencies develop for them
Lessons Learned
From Senate Bill 2
Texas Instream Flow Program

Senate Bill 2 (2001)

“...conduct studies and analyses to determine appropriate methodologies for determining flow conditions in the state’s rivers and streams necessary to support a sound ecological environment.”
Stakeholder Involvement

- Goal for River Sub-Basin
- Objectives Required to Meet Goal
- Indicators to Measure Progress

Conceptual Model

Collect Baseline Information and Evaluate

Goal Development Consistent with Sound Ecological Environment

Study Design

Multidisciplinary Data Collection and Evaluation

Data Integration to Generate Flow Recommendations

Study Report

Goal Development Consistent with Sound Ecological Environment

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Study Report
Lessons Learned
From Senate Bill 2

• Local stakeholder input on goals, objectives, and indicators makes for a better study
Multi-Disciplinary Approach

Flow Regime

Hydrology and Hydraulics
Physical Processes
Water Quality
Biology
Connectivity

Flow Regime Diagram:
- Base Flow
- High Flow Pulses
- Overbank Flow
- Subsistence Flow

Discharge (cfs) vs. Time (Oct.-Aug.)
Lessons Learned
From Senate Bill 2

• Local stakeholder input on goals, objectives, and indicators makes for a better study
• There is a synergy when different disciplines and agencies work together
• Rivers and streams are more complex than we thought (single flows to flow regime)
Scientific Peer Review
National Academy of Sciences (2005)

Review of the TIFP

- “conforms with the best practices”
- “will provide enormous benefits to the state”
- identified several opportunities for improvement
Lessons Learned
From Senate Bill 2

• Local stakeholder input on goals, objectives, and indicators makes for a better study
• There is a synergy when different disciplines and agencies work together
• Rivers and streams are more complex than we thought (single flows to flow regimes)
• Scientific peer review is worth its weight in gold
Lessons Learned
From Senate Bill 2

• Local stakeholder input on goals, objectives, and indicators makes for a better study
• There is a synergy when different disciplines and agencies work together
• Rivers and streams are more complex than we thought (single flows to flow regimes)
• Scientific peer review is worth its weight in gold
• We can learn from others’ successes and failures
Lessons Learned
From Senate Bill 3
SB3 E-flows Process

Environmental Flows Advisory Group

Basin & Bay Area Stakeholders Committee

Standards, Strategies, Work Plans

Science Advisory Committee

Basin & Bay Expert Science Team

Environmental Flow Regimes
Lessons Learned
From Senate Bill 3

• Appoint your Science Advisory Committee early and kept it going
Senate Bill 3

Basin & Bay Area Stakeholders Committee

Recommended Standards and Strategies

Environmental Flow Standards and Set-Asides

Basin & Bay Expert Science Team

Environmental Flow Regimes

Science

+ Other Water Needs

+ Other Factors
Lessons Learned
From Senate Bill 3

• Appoint your Science Advisory Committee early and kept it going (there aren’t as many experts out there as you might think)

• It’s very difficult for scientists to come up with flow recommendations in only one year
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From Senate Bill 3

• Appoint your Science Advisory Committee early and kept it going (there aren’t as many experts out there as you might think)
• Its very difficult for scientists to come up with flow recommendations in only one year
• Its even more difficult for stakeholders to come up with recommendations in only six months
Lessons Learned From Senate Bill 3

• Appoint your Science Advisory Committee early and kept it going (there aren’t as many experts out there as you might think)

• It’s very difficult for scientists to come up with flow recommendations in only one year

• It’s even more difficult for stakeholders to come up with recommendations in only six months

• Results are improved with better available science and stakeholder relationships not necessarily more plentiful water
Lessons Yet to be Learned

- Balancing the needs of a complex ecosystem versus a relatively simple regulatory framework
- What to do with high pulse and overbank components of flow regime
- How to provide inter-annual variability
- How to provide flows in over allocated systems
- How to bridge a language barrier between water rights regulators/holders (firm yield) and instream flow scientists/engineers (inter- and intra-annual flow variability)
Questions?