2018 Texas Master Naturalists Water Certification Webinar

Texas Water Entitites

TEXAS

PARKS &

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Chapter Nine:

Texas Water Law and Planning

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Texas' climate gradient



...creates a diverse system of springs, streams, rivers, lakes and estuaries.





Evolution of water law in Texas

- Spanish Colonial
- Mexican rule
- Republic of Texas
- State of Texas
- Prior Appropriation surface water belongs to the state
- Groundwater is privately held







Poll #1: Groundwater in Texas is: a.) private property b.) a public resource c.) considered secret and occult

Texas Water Entities







TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



Texas Water Entity Roles and Responsibilities



The mission of the Texas Water Development Board (TWDB) is **to provide leadership**, **information**, **education**, **and support for planning**, **financial assistance**, **and outreach for the conservation and responsible development of water for Texas**. Our mission is a vital part of Texas' overall vision and the state's mission and goals that relate to maintaining the viability of the state's natural resources, health, and economic development.



TPWD designated as the state agency with primary responsibility for protecting the state's fish and wildlife resources.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Mission Statement:

The Texas Commission on Environmental Quality strives to protect our state's public health and natural resources consistent with sustainable economic development. Our goal is clean air, clean water, and the safe management of waste.



Groundwater conservation districts are the state's preferred method of groundwater management in order to protect property rights, balance the conservation and development of groundwater to meet the needs of this state, and use the best available science.

Texas Legislature 101

- Meets 140 days every other year in Regular Session.
- 181 State Legislators
 - 150 State Representatives in Texas House
 - State Representatives represent approximately 167,000 citizens
 - 31 State Senators in Texas Senate
 - State Senators represent approximately 806,000 citizens
- Senate President: Lieutenant Governor Dan Patrick
- Speaker of the House: Joe Straus





http://droughtmonitor.unl.edu/DataArchive.aspx

Groundwater: Source of Springs and River Baseflows



- Springs
 - Support unique aquatic environments, including rare species

PARKS 8

WILDLIF

- Serve as a barometer of local aquifer conditions
- Relatively inexpensive means of monitoring groundwater
- Provide important baseflows to rivers



River Baseflows

- Dependent on aquifer discharge
- Important component of environmental flow regime, including inflows to bays and estuaries
- Support habitats during dry periods





Rule of Capture

- Rule of Capture was adopted by Texas Supreme Court in 1904
- Law of the biggest pump
- EXCEPT if it causes subsidence, or is intentionally malicious
- Groundwater Conservation Districts (GCDs) were created to balance one private property owners rights from another











Powers and Duties of GCDs

Participate in Joint Planning and establish Desired Future Conditions

Develop and adopt a Management Plan

Develop Rules to implement Management Plans to achieve DFC

Use Chapter 36 Toolbox to determine well spacing, permitting structure, production limits on wells, etc.

Issue permits, register wells, and ensure proper drilling completion



1985: Resource Protection Responsibilities added to TPW Code

TPWD designated as the state agency with primary responsibility for protecting the state's fish and wildlife resources. Resource protection activities include:

- investigating fish kills and pollution events;
- identifying the responsible party and seeking restitution, where appropriate;
- providing recommendations to protect fish and wildlife resources; and
- providing recommendations on instream flows and freshwater inflows.



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Alex Nunez, © Texas Parks and Wildlife Department

TPWD's Role in Surface Water Rights Process



- Parks and Wildlife Code Sec
 12.0011
- Texas Water Code Sec 11.147 and 11.152 - Water Rights Permitting requires the TCEQ to assess the effects of the issuance of a water use permit on existing instream uses, water quality, fish and wildlife habitat, and freshwater inflow needs for bays and estuaries and to consider TPWD recommendations. Water Resources Branch works with TPWD Legal Division coordinate agency input to TCEQ.

TPWD's Role in Water Quality Standards Process

- TPWD participates in basin wide stakeholder committees who develop assessments and reports on the water quality in each watershed and river basin in the state
- TPWD also plays a role in periodic revisions of water quality standards. TPWD reviews and comments on wastewater discharge permits and related policy and guidance.
- TPWD participates in related activities such as data collection and training. For example, Water Resources is coordinating contract with TCEQ to develop a statewide seagrass monitoring protocol.



Poll #2: Surface water in Texas belongs to: a.) you and me b.) the Texas Water Development Board c.) The Texas Commission on Environmental Quality

Senate Bill 1 (1997-present) Regional Water Planning



- Water supply plan to meet Drought of Record needs
- 50-year planning horizon
- 5-year planning cycle
- Created the Texas Water Bank and Texas Water Trust
- Ecologically Unique Stream Segments
- Must consider environmental water needs



Regional Water Planning: Planning Process





Required Tasks:

- Describe the regional water planning area;
- Quantify current and projected population and water demand over a 50-year planning horizon;
- Evaluate and quantify current water supplies;
- Identify surpluses and needs;
- Evaluate water management strategies and prepare plans to meet the needs;
- Evaluate impacts of water management strategies on water quality;

Interactive State Water Plan https://2017.texasstatewaterplan.org/statewide

Regional Water Planning: Planning Process





Required Tasks (continued):

- Describe how the plan is consistent with long- term protection of the state's water, agricultural, and natural resources;
- Recommend regulatory, administrative, and legislative changes;
- Describe how sponsors of water management strategies will finance projects; and
- Adopt the plan, including the required level of public participation.

Interactive State Water Plan https://2017.texasstatewaterplan.org/statewide

Projected Population Growth



River and Stream Segments of Unique Ecological Value



A RWPG may recommend a river or stream segment as being of unique ecological value if the segment meets one or more of the following criteria:

- Biological function
- Hydrologic function
- Riparian conservation areas
- Unique or critical habitats and exceptional aquatic life uses
- Unique or extensive natural communities including threatened and endangered species habitat

Texas Water Code Section 16.051



(f) The legislature may designate a river or stream segment of unique ecological value. <u>This designation means solely that a state</u> <u>agency or political subdivision of the state</u> <u>may not finance the actual construction of a</u> <u>reservoir in a specific river or stream segment</u> <u>designated by the legislature under this</u> <u>subsection.</u>

Texas Water Code Section 16.051



- (g) A state agency or political subdivision may not obtain a fee title or an easement that would:
 - (1) destroy the unique ecological value of a river or stream segment designated by the legislature...
 - (2) significantly prevent the construction of a reservoir on a site designated by the legislature...

Designated and Additional Recommended Ecologically Unique Stream Segments





SB 1 Water Planning Rules



Evaluations of potentially feasible water management strategies shall include:

a **quantitative reporting** of: *environmental factors including effects on environmental water needs, wildlife habitat, cultural resources, and effect of upstream development on bays, estuaries, and arms of the Gulf of Mexico;*





SB 1 Water Planning Rules



Evaluations of potentially feasible water management strategies shall include:

Evaluations of effects on environmental flows will include TCEQ adopted environmental flow standards, site specific information or environmental planning criteria after coordinating with TPWD to ensure that water management strategies are adjusted to provide for environmental water needs.

Strategies for Meeting Future Demand (least environmentally impacting)

- Water conservation
- Wastewater reuse/rainwater harvesting/brush management/other alternative supplies
- Water marketing
- Conjunctive use of surface and groundwater (ASR)

Strategies for Meeting Future demands (more environmentally impacting)

- Groundwater pumping
- Interbasin transfers
- Direct diversion to off-channel reservoirs
- On-channel reservoirs
- On-channel reservoirs that destroy irreplaceable habitat



Poll # 3: Where does your water come from? a.) a surface water body b.) an aquifer c.) the water tower

Relative Volume of Recommended Water Management Strategies 2070



Figure ES.7 - Share of recommended water management strategies by strategy type in 2070



Development of the state water plan is central to the mission of the Texas Water Development Board. Based on 16 regional water plans, the plan addresses the needs of all water user groups in the state – municipal, irrigation, manufacturing, livestock, mining, and steam-electric power – during a repeat of the drought of record that the state suffered in the 1950s. The regional and state water plans consider a 50-year planning horizon: 2020 through 2070.

This website lets water users statewide take an up-close look at data in the 2017 State Water Plan and how water needs change over time by showing:

- projected water demands,
- existing water supplies,
- the relative severity and projected water needs (potential shortages),
- the water management strategies recommended to address potential shortages, and
- recommended capital projects and their sponsors.

Environmental Flows:

Flows that remain in the stream and provide for aquatic and riparian habitat; water quality protection; recreation; navigation; and freshwater inflows to bays and estuaries.













Inflows to Estuaries



Nutrients



....create and sustain estuaries.



Reduced Freshwater Inflows Impact Bays and Estuaries



 Reduced freshwater inflows during 2011 led to record high salinities in Texas estuaries that contributed to a coast-wide red tide harmful algal bloom event.

• The 2011 bloom started in September and lasted into 2012. Fish mortality was estimated at 4.4 million.

 Oysters have been impacted by parasites and diseases – the commercial oyster season closed in 2011. Total economic loss was estimated at \$7.5 million.





Senate Bill 2 (2001) Texas Instream Flow Program

THE SCIENCE OF INSTREAM FLOWS

A Review of the Texas Instream Flow Program



Texas Instream Flow Studies: Technical Overview

Report 369 May 2008 exas Commission on Environmental Quality exas Parks and Wildlife Department exas Water Development Board



Texas Instream Flow Program In 2001, Senate Bill 2 directed (but did not fund) TCEQ, TPWD & TWDB to:

Establish data collection & evaluation program

 Determine "appropriate methodologies" to identify flow conditions necessary to support a sound ecological environment

http://www.twdb.texas.gov/surfacewater/flows/instream/index.asp



FIGURE 9.7 - Subsistence Flow, Image courtesy of the Texas Instream Flow Program (TIFP), 2008.



FIGURE 9.8 - Base Flow, Image courtesy of the Texas Instream Flow Program (TIFP), 2008.



FIGURE 9.9 - High Pulse Flow, Image courtesy of the Texas Instream Flow Program (TIFP), 2008.



FIGURE 9.10 - Overbank Flow, Image courtesy of the Texas Instream Flow Program (TIFP), 2008.



Senate Bill 3 Environmental Flows (2007- present)

Environmental flow regimes are to be developed and recommended by expert science teams working with technical support from state agencies and academic institutions; recommendations shall be based solely on best available science.





Environmental Flow Regime Definition



"A schedule of flow quantities that reflects seasonal and yearly fluctuations that typically would vary geographically, by a specific location in a watershed, and that are shown to be adequate to support a sound ecological environment and to maintain the productivity, extent, and persistence of key aquatic habitats in and along the affected water bodies."

Environmental Flows Process



Each Basin/Bay Area Stakeholders Committee reviews findings of Expert Science Team and recommends environmental flow regimes to TCEQ

Through rulemaking, TCEQ adopts environmental flow standards and establishes an environmental flow "set aside" if unappropriated water is available; rulemaking process allows for broad public input

Environmental Flows Management



Environmental flow standards and implementation strategies are subject to "adaptive management," meaning that the success and/or failure of management measures will be assessed and adjusted as new science and information becomes available. Flow standards will be subject to periodic review and revision.

Texas Environmental Flow Standard Locations

N



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Sabine Rv nr Ruliff, TX

Gage ID	08030500
Link to eflow table	More info
Link to basin rule TAC298	More info
Link to gage website	More info
Agency	
Station name	Sabine Rv nr Ruliff, TX
State	ТХ
Site Status (Active/Inactive)	А
Drainage area (sq mi)	9,329
Reviewed	Y
BFI years Zoom to	80

SB 3: Next Steps



- Adaptive management requires periodic review and possible revision of the standards.
- Develop strategies to meet environmental flow needs.
- Decision Support Tools
- Voluntary Water Marketbased approach
- Continue to improve science!





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Search

- Nueces River and Corpus Christi and Baffin Bays
- Brazos River and Associated Bay and Estuary System

https://www.tceq.texas.gov/permitting/water_rights/wr_technical-resources/eflows

Environmental Flow Information Toolkit (EFIT)



1. Decision Support Tool (DST)

Multi-disciplinary geospatial tool to identify/prioritize water rights and groundwater permits with highest conservation value.

2. EFIT Strategies

Identify and implement voluntary strategies to secure water for the environment, suitable for Texas policy and public dialogue.

Texas Water Explorer









Poll #4: Environmental Flows provide: a.) aquatic and riparian habitat b.) water quality protection c.) recreation d.) navigation e.) all of the above