



Guadalupe-Blanco River Authority

Guadalupe River Habitat Conservation Plan

Second Public Stakeholder Meeting

December 12, 2022

NATHAN PENCE

EXECUTIVE MANAGER OF ENVIRONMENTAL SCIENCE

Introductions: GBRA Staff and Consultants



- Nathan Pence
Executive Manager of
Environmental Science
npence@gbra.org
- Chad Norris
Deputy Executive Manager of
Environmental Science
cnorris@gbra.org
- Jana Gray
HCP Coordinator
jgray@gbra.org

Mussels



Project Management,
HCP, NEPA



Water
Quality

PLUMMER



Water Quantity

ESA Legal



**Suzanne
Schwartz** Facilitation



Meeting Agenda

- Meeting Purpose / Overview of Agenda
- Fundamentals of Habitat Conservation Plans
- Follow-up from the First Stakeholder Meeting
- Update from the Technical Advisory Group
- GRHCP Covered Activities
- GRHCP Hydrologic Modeling Approach
 - Surface Water Quantity Modeling
 - Water Quality Modeling
- Input Session Explained
- GRHCP Website
- Next Stakeholder Meeting



Fundamentals of Habitat Conservation Plans

The
Endangered
Species Act
prohibits
take of listed
species

- **Take:** action of or attempt to hunt, *harm*, harass, pursue, shoot, wound, capture, kill, trap, or collect a species
- **Harm:** any act that kills or injures species, including significant habitat modification or degradation



Fundamentals of Habitat Conservation Plans

- **Purpose of a Habitat Conservation Plan**

- Allow GBRA to legally proceed with an activity that would otherwise result in the unlawful take of a listed species

- **What is it?**

- A plan to mitigate for GBRA's potential impacts to federally protected endangered species

- **What it is not?**

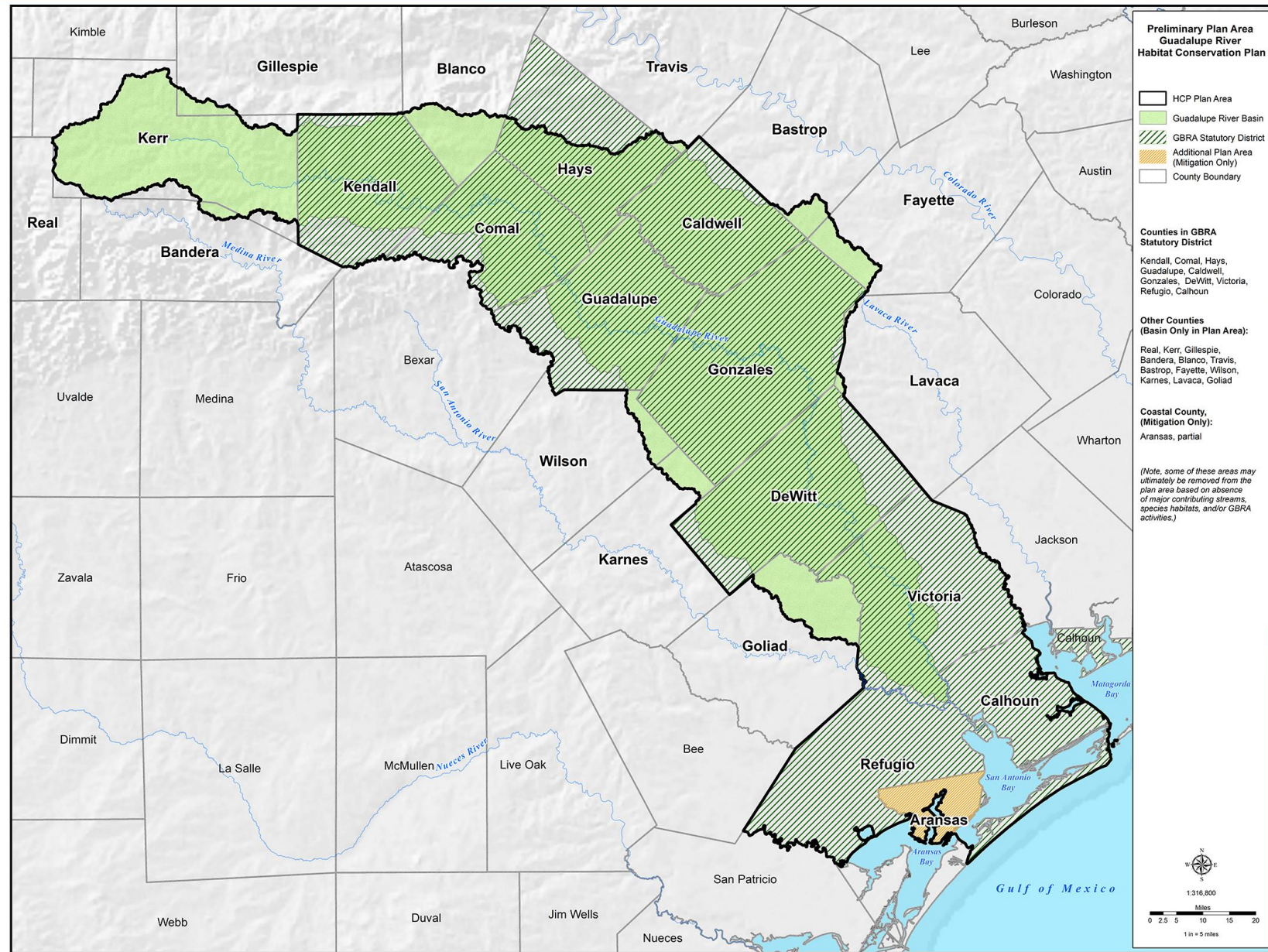
- Not a re-do of the Environmental Flows planning process.
- Not a general conservation planning process
- Will not cover all GBRA's conservation efforts

Guadalupe River Habitat Conservation Plan



Follow-up from First Stakeholder Meeting

Revised GRHCP Plan Area



Follow-up from First Stakeholder Meeting



Species considered but not covered:

- American Eel
- Guadalupe Bass
- Sea Turtle
- Cagle's Map Turtle
- Jaguarundi

On the Website:

- References and literature used in development of the GRHCP
- Provide links to other HCPs with 30 or 50 - year permit terms
- Recording of the meeting can be found at:

<https://www.gbra.org/environmental/habitat-conservation-plan/>

Update from the Technical Advisory Group

Members:



Dan Opdyke
Chair of Committee
Anchor QEA
Water quality and hydromodeling



Cindy Loeffler
Retired TPWD
Texas Water Policy and HCPs



Webster Mangham
Trinity River Authority
Mussel Policy and River Authority
operations

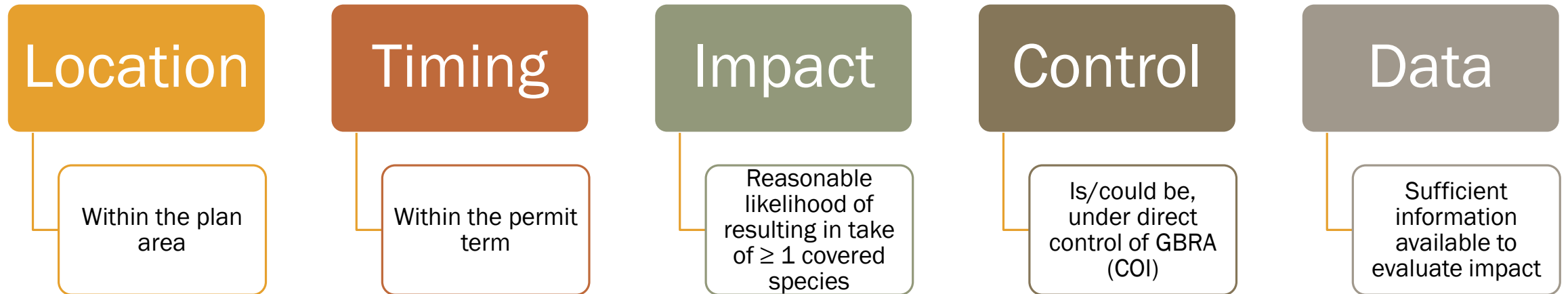


Ryan Smith
Texas Nature Conservancy
Texas water and ecosystems

Technical Advisory Group Activities

- TAG may review any and all draft technical memos and HCP chapters, but will focus on technical issues
- First formal meeting was held October 3, 2022
- Comments have been provided on the following memos
 - Project goals
 - Permit term
 - Covered species
 - Covered activities
 - Existing information on species
 - Hydrologic modeling needs
- Additional memos will be reviewed in the coming months
- Changes in response to TAG comments will be reflected in HCP chapters

GRHCP Covered Activities - Methodology



GRHCP Covered Activity Types – Preliminary List

Water Supply
Impoundment, Production,
Diversion & Delivery

Use of water rights to divert, treat, and transport water to supply municipal, industrial, agricultural, and other water needs from GBRA-owned and/or operated facilities.

Wastewater
Treatment/Discharges

Collection and treatment of wastewater and discharge of treated effluent from GBRA-owned and/or operated facilities.

O&M of Dam Facilities (and
failed structures)

In-stream dams and associated power-generation plants and other infrastructure from GBRA-owned and/or operated facilities.

GRHCP Covered Activity Types – Preliminary List

Other In-stream Infrastructure

Various localized infrastructure in the Guadalupe River or major tributaries owned and/or operated by GBRA.

Water Management Activities

Various activities related to managing water in the Guadalupe River or major tributaries from GBRA-owned and/or operated facilities

Distribution and Utility Lines

Underground and overhead pipelines and cables to transport water, wastewater, electricity, and other services from GBRA-owned and/or operated facilities.

GRHCP Covered Activity Types – Preliminary List

Parks/Recreation Facilities

O&M of various parks and park facilities owned and/or operated by GBRA

Permitting

Issuance of GBRA permits for waterfront construction

Administration & Maintenance of Buildings

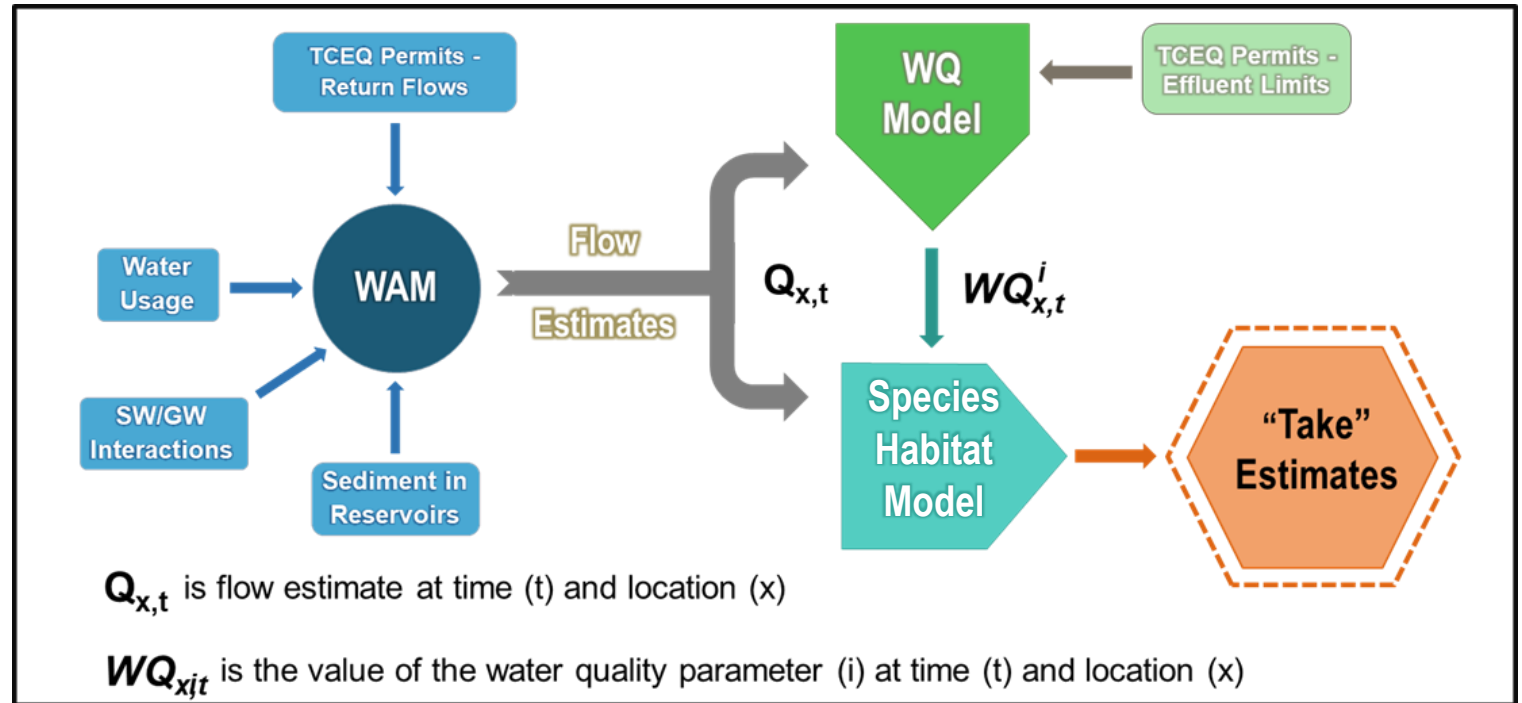
Construction and O&M of various administration and maintenance buildings/facilities owned and/or operated by GBRA.

GRHCP Implementation & Other Conservation Activities

Habitat restoration, research/sampling/monitoring efforts, and other conservation measures with the primary purpose of mitigating impacts to species by covered activities

Why Model?

- Inform decision making for GRHCP
- Assess Impacts from Activities – Water Quantity and Quality
- Quantify take estimates for GBRA and 2nd party stakeholders
- Evaluate resiliency of conservation measures

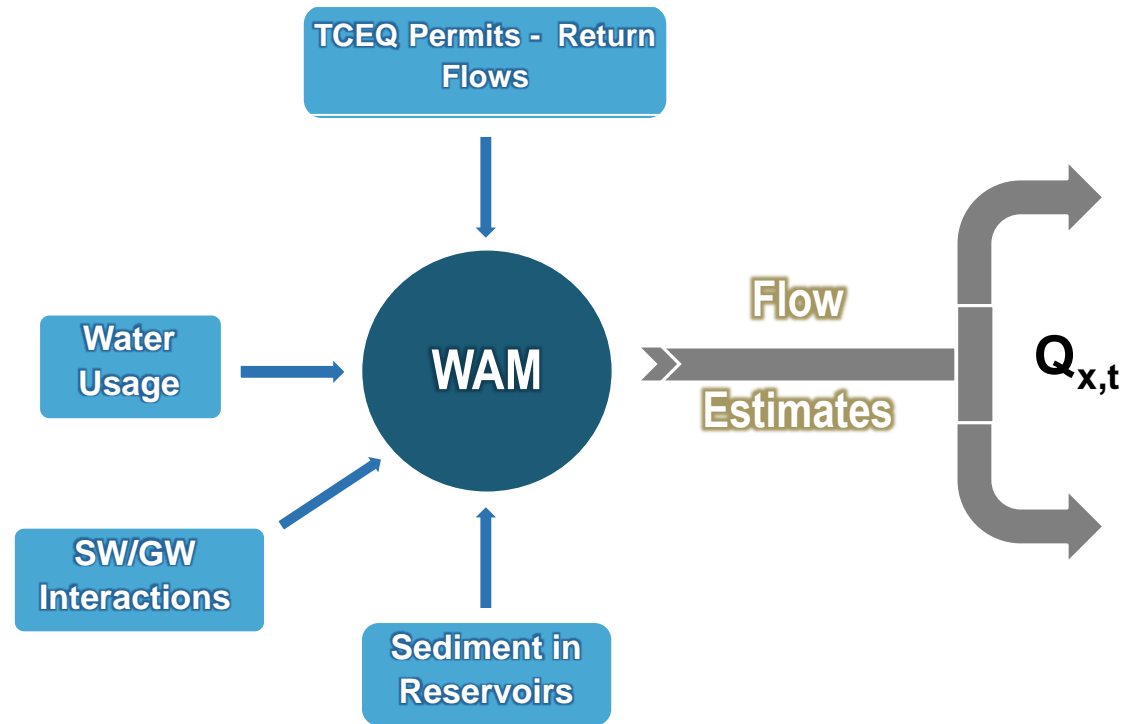


GRHCP Hydrologic Modeling Approach

Surface Water Quantity

General Approach:

- Use Water Availability Model (WAM) for the Guadalupe - San Antonio (GSA) River Basin
- Provide monthly (daily) regulated streamflow estimates at specific locations throughout the entire basin
- Simulate all existing surface water rights and major reservoir operations in the basin
- Simulate assumed hydrologic and water management conditions



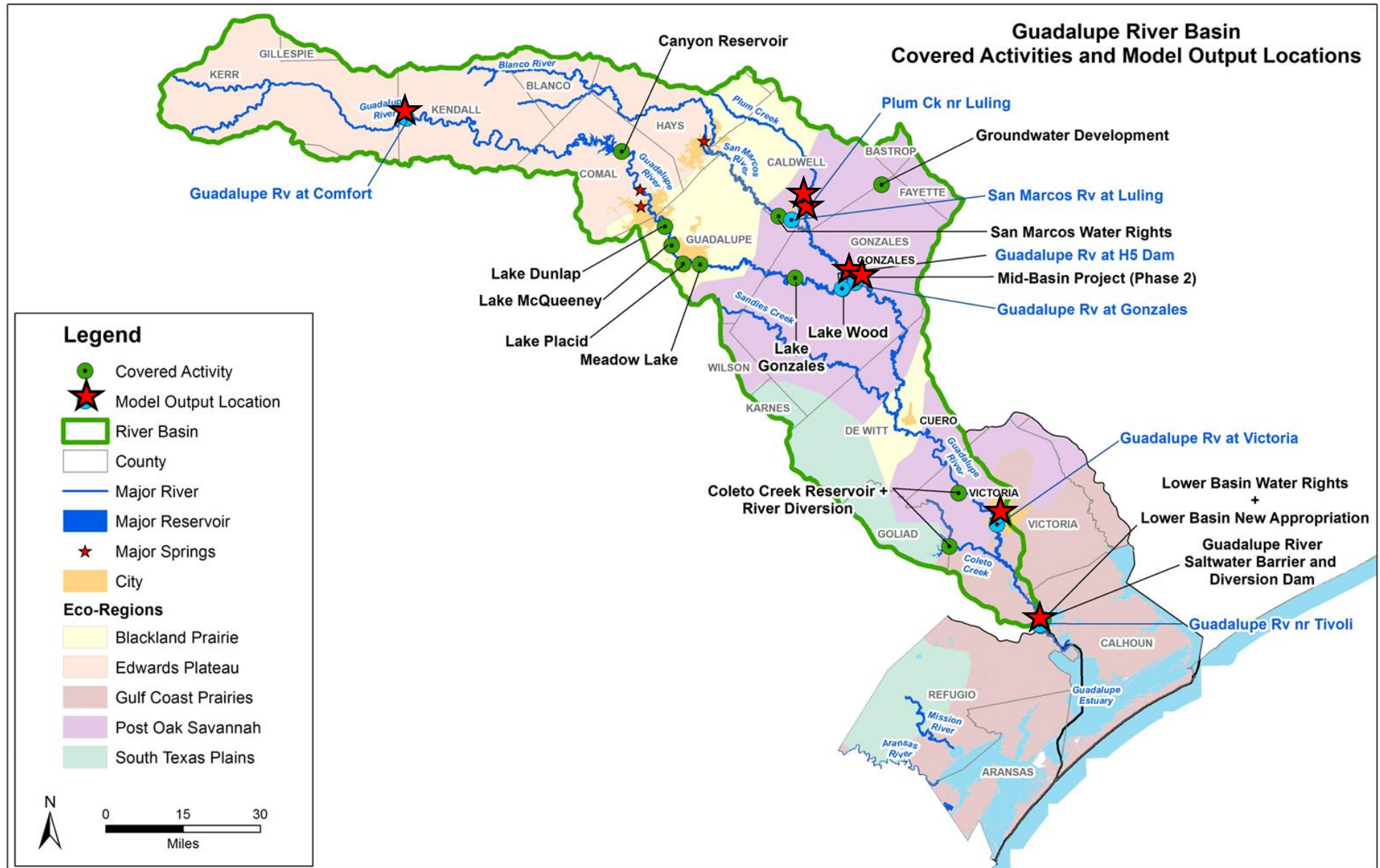
$Q_{x,t}$ is flow estimate at time (t) and location (x)

GRHCP Hydrologic Modeling Approach – Surface Water Quantity

Selected Streamflow Locations* for Model Output

1. Guadalupe River at Comfort
2. Guadalupe River at H5 Dam
3. San Marcos River at Luling
4. Plum Creek near Luling
5. Guadalupe River at Gonzales
6. Guadalupe River at Victoria
7. Guadalupe River near Tivoli

* USGS Gage Station



GRHCP Hydrologic Modeling Approach

Water Quantity Assumptions

	Current (2020)	Future (2070)
GRHCP	Average of 2010-2020 reported surface water use	<ul style="list-style-type: none"> • Firm Yield of Canyon Lake under 2070 conditions • Full authorized consumptive use under all other GBRA water rights
Non-GRHCP	Average of 2010-2020 reported surface water use for all use types	<ul style="list-style-type: none"> • Municipal - using population/water use projections from 2022 State Water Plan • Industrial - No change from current use • Irrigation - No change from current use
Return Flows	Average of 2010-2020 reported surface water use	<ul style="list-style-type: none"> • Estimate using population projections from 2022 State Water Plan • Conservation assumption – 25% reduction from current • Reuse assumption – 50% reduction of increased amount

GRHCP Hydrologic Modeling Scenarios – Surface Water Quantity

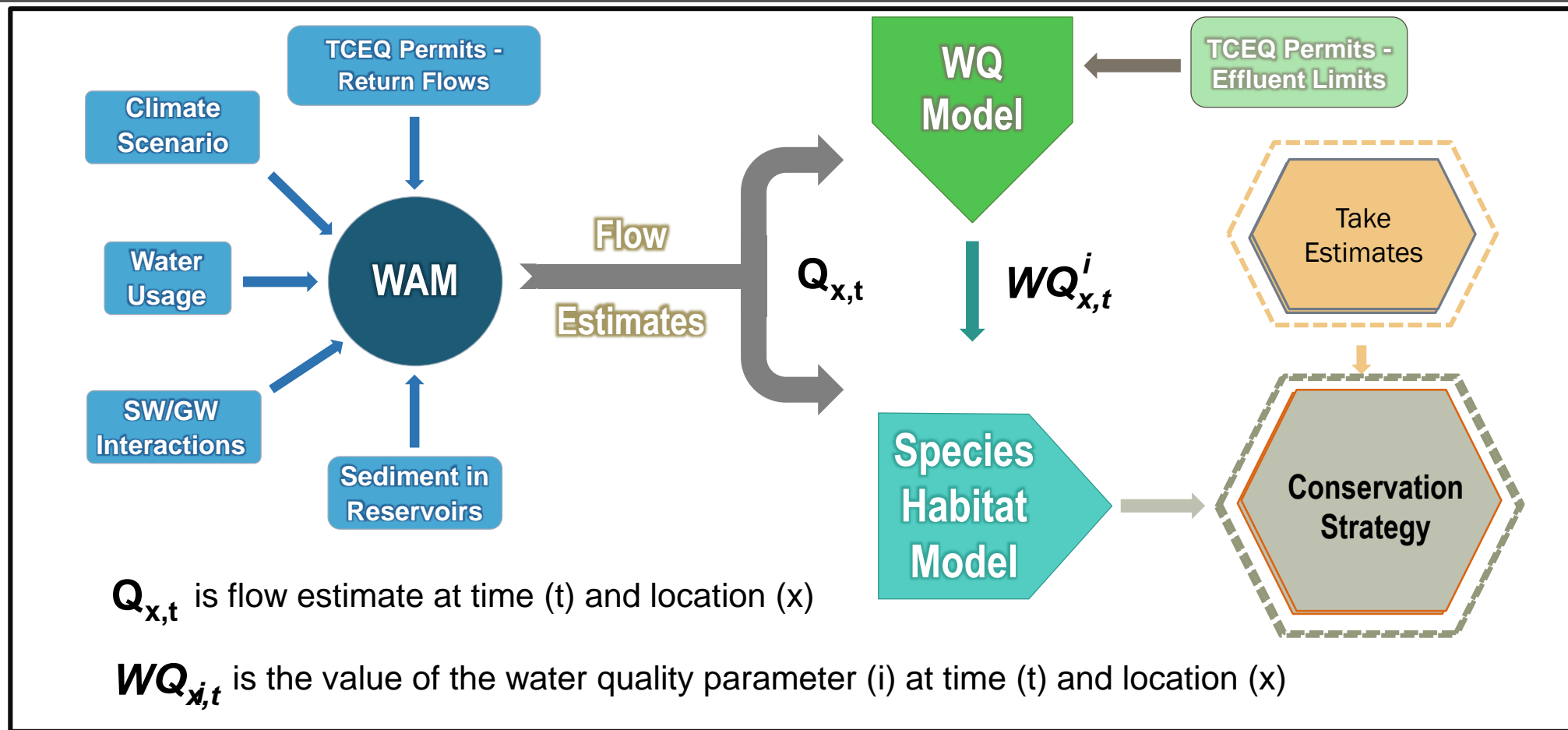
Initial Scenarios

Scenario	Purpose	Flow and Related Attributes
Reference	Determining Baseline	Current water management in the basin without GBRA + second parties covered activities
Covered Activities	Impact Analysis	Current water management in the basin with future GBRA + second parties covered activities.

Subsequent Scenarios

Scenario	Purpose	Flow and Related Attributes
Climate Change	Evaluate resiliency of future mitigation efforts	Use future evaporation, precipitation, and streamflow projections
Conservation Strategy (up to two scenarios)	Assess extent to which conservation measures mitigate take	Proposed future operational flows, conservation flows, and restoration
Supplemental (if needed)	TBD	TBD

GRHCP Hydrologic Modeling Approach Overview



GRHCP Hydrologic Modeling Approach

Water Quality

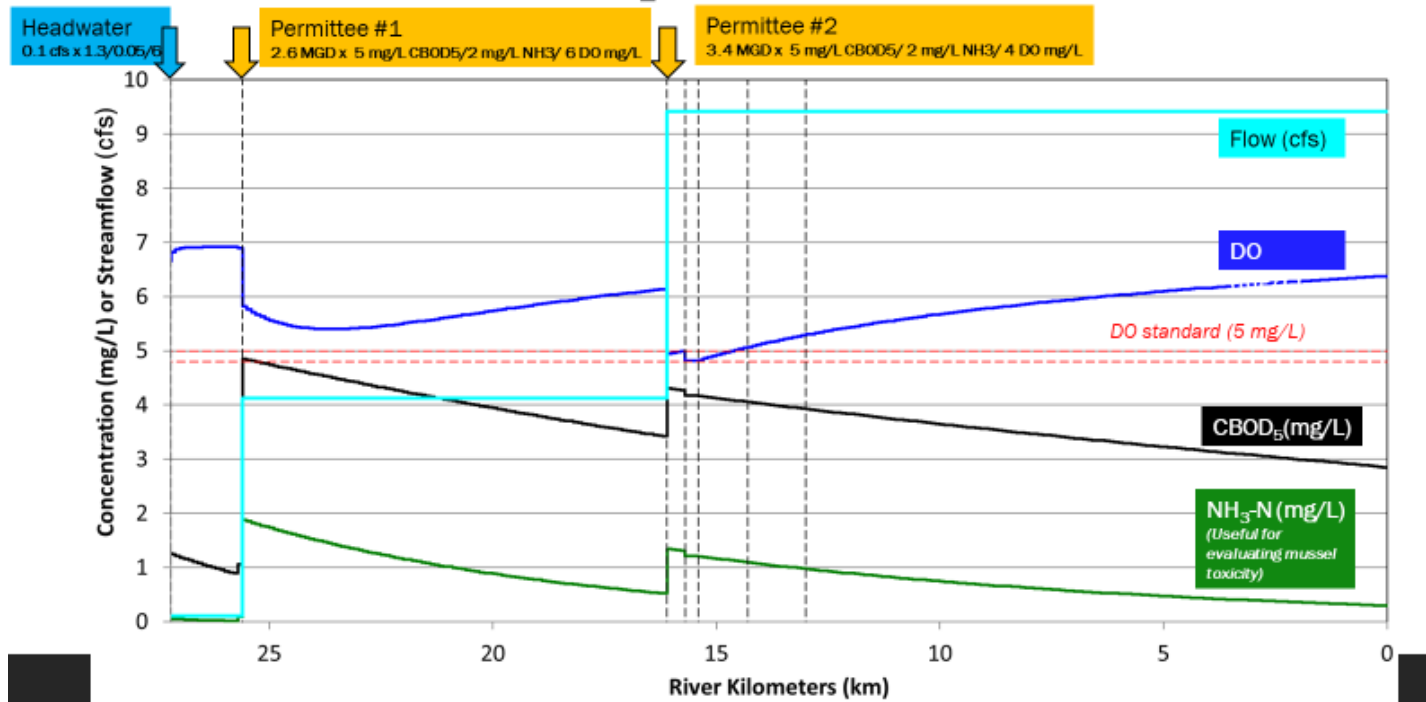
General Approach

- Water quality modeling will be used to assess how the predicted flows (streamflows and wastewater treatment plant return flows) can impact water quality in the basin.
- TCEQ's standard model (QUAL-TX) will be used as the water quality modeling platform.
- QUAL-TX Models are used in permitting for TPDES outfalls and are used for determining effluent limits to protect dissolved oxygen standards in receiving stream

GRHCP Hydrologic Modeling Approach

Water Quality

QUAL-TX Model Outputs



Key water quality constituents considered will be **Dissolved Oxygen, Temperature, and Ammonia.**

Assumptions

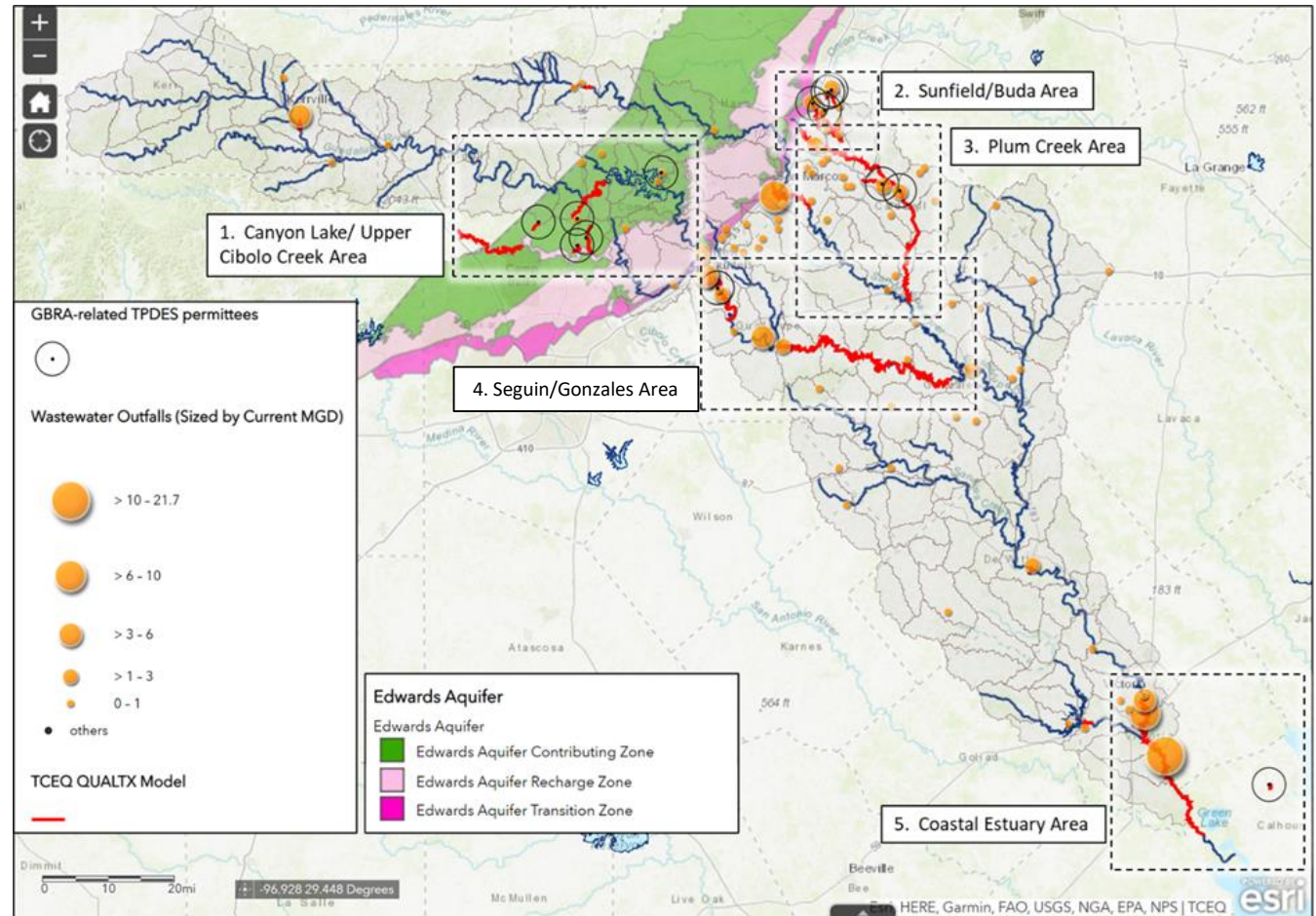
- Monthly flow estimates from WAM will be discretized into daily flows to calculate the 7Q2 critical flow.
- Each GBRA discharge in the future scenarios will have the same permit limits as they have today – excluding discharge volume.

GRHCP Hydrologic Modeling Approach

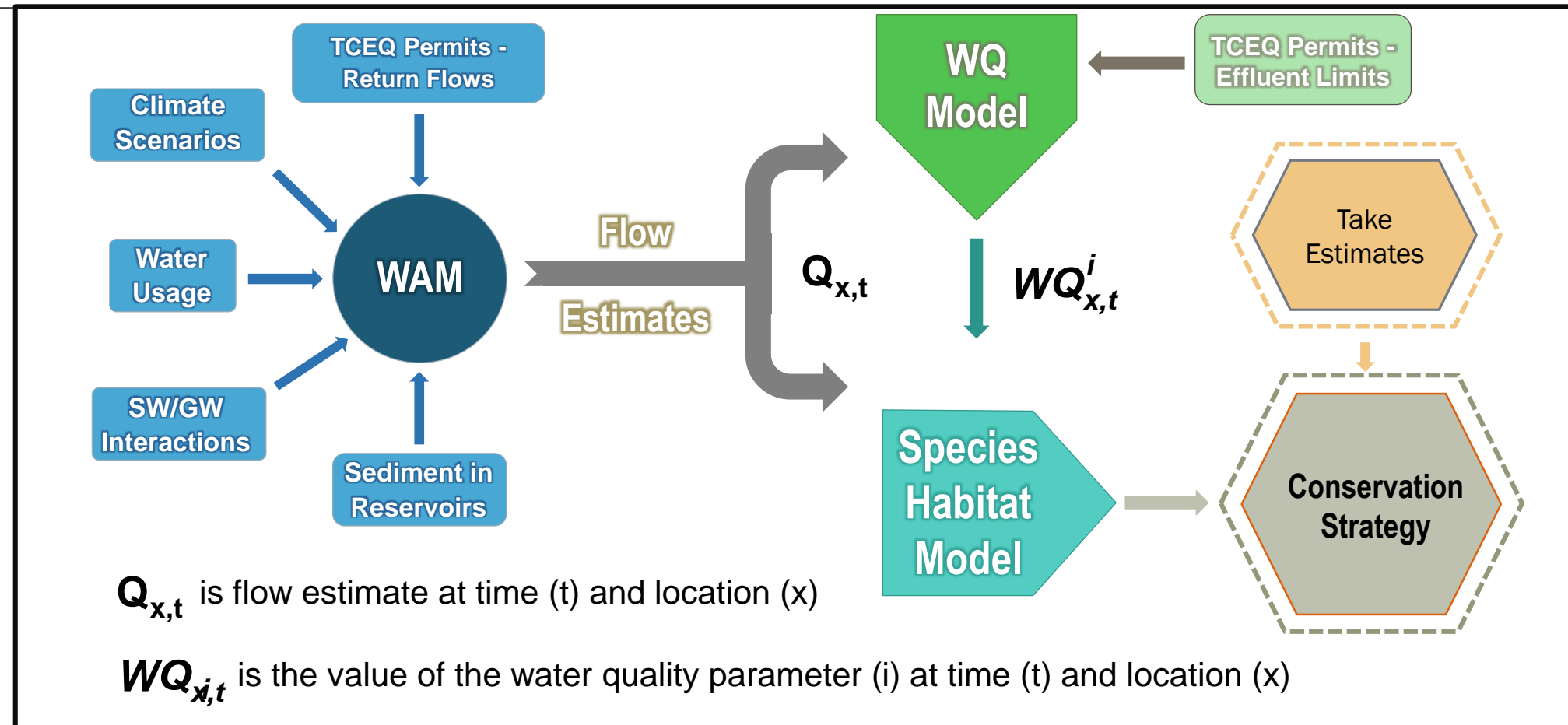
Water Quality

Five Water Quality Modeling Focus Areas

1. Canyon Lake/Upper Cibolo Creek Area
2. Sunfield/Buda Area
3. Plum Creek Area
4. Seguin/Gonzales Area
5. Coastal Estuary Area



GRHCP Hydrologic Modeling Approach Overview



Input Session Explained

Why are we holding these input sessions?

- Give stakeholders an opportunity to provide input
- Add to our base of information
- Anticipate issues and refine our work
- Inform how information is communicated in final document

Input Session Explained

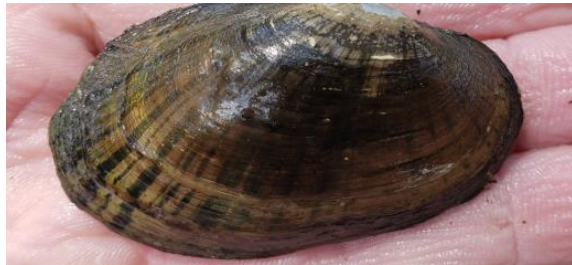
Logistics

- Break into four groups:
 - Go to easel pad with color indicated on your agenda
 - Each group will be facilitated by a Project Team member or GBRA staff
 - Experts will circulate among the groups
- Virtual participants will provide input on the virtual platform

Discussion leaders will facilitate input on the following:

- Comments on or concerns, or anything missed about the approach used for:
 - Covered Activities
 - Surface Water Quantity
 - Water Quality Modeling

gbra.org/environmental/habitat-conservation-plan



Information available on GRHCP website:

- Upcoming and past meetings and events
- Proposed Covered Species
- Documents
 - Technical Memoranda that have completed the review process
 - TAG overview and review process
- Maps
- Frequently Asked Questions
 - References cited in Technical Memoranda

Next Public Stakeholder Meeting

Spring 2023

Topics of Discussion:

- Climate Change
- Species Impact Analysis

