Freshwater Inflows to the Nueces Estuary

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Freshwater Inflow Workgroup
Meeting—April 6, 2006
Background

- Choke Canyon Water Rights Permit - October 12, 1976
- Construction Completed 1982
- Inundation Occurred 1987
- Letter of Inquiry Received December 1989
“SPECIAL” CONDITION 5.B.

• "Following completion and filling of Choke Canyon Dam and Reservoir, scheduled releases shall be made from the reservoir system at Lake Corpus Christi Dam together with return flows to the estuaries for the proper ecological environment and health of related living marine resources therein. Water provided to the estuaries from the reservoir system under this paragraph shall be released in such quantities and in accordance with such operational procedures as may be ordered by the Commission."
Permittees shall provide not less than 151,000 acre-feet of water per annum for the estuaries by a combination of releases and spills from the reservoir system at Lake Corpus Christi Dam and return flows to Nueces and Corpus Christi Bays and other receiving estuaries.”
Extreme Annual Variability

Nueces Estuary

Inflow Balance (ac-ft/y)

Flooding Frequency
(Average number of flood events per year)

- 1940-1958: 2.3
- 1958-1982: 2.0
- 1982-1997: 0.8
Commission Actions

• May 1, 1990—First Commission Order

- Provided for Immediate Release of Specified Environmental Flows
- Established Advisory Committee to: “...to assist the Commission with the formulation of a permanent operating procedure for the reservoir system.”*

* Advisory Committee Completed Their Assessment and Submitted Their Report to the Commission in August 1991.
TAC Recommendations

• Provide Not Less Than 151,000 acft W/97,000 Delivered to Nueces System

• Measured at Calallen Dam

• Credit for Diverted Stormwater Runoff

• Credit for Excess Monthly Flows
TAC Recommendations (Cont.)

• Drought Contingency Plan—Relief

• Relief Based on Bay Salinities

• Development of Monitoring Plan

• Create Oversight Committee
1992– Interim Agreed Order

- Implemented the Interim Reservoir System Operational Plan for freshwater inflows.

- Called for the Creation of an Estuarine Advisory Council (Nueces Estuary Advisory Council)

  Established to: “...consider such additional information and related issues and to formulate recommendations for the Commission’s review and action...”
1995-Final Agreed Order

- KEY change from 1992 Order included a switch to the “Pass-Thru” approach (rather than releases from storage) and implementation of drought-contingency measures

- Continued the NEAC...to monitor implementation of the Order and to prepare recommendations, as needed, relating to any future changes to the Order
Agreed Order

• The City of Corpus Christi, as Operator of the Reservoir System, shall provide not less than 151,000 acft of water per annum for the estuaries

>70% storage capacity—138,000 acft target
>40% but less than 70%--97,000 acft target
>30% but less than 40%--1,200 acft target*
<30%--Total suspension of Pass-thrus*

* Implementation of Lawn Watering Restrictions
Target f.w. Inflow Regime (acft) for the Nueces Estuary

<table>
<thead>
<tr>
<th>MONTH</th>
<th>&gt;70%</th>
<th>&gt;40-&lt;70%</th>
<th>&gt;30-&lt;40%</th>
<th>&lt;30%</th>
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<td>2,500</td>
<td>2,500</td>
<td>1,200</td>
<td>0</td>
</tr>
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<td>March</td>
<td>3,500</td>
<td>3,500</td>
<td>1,200</td>
<td>0</td>
</tr>
<tr>
<td>April</td>
<td>3,500</td>
<td>3,500</td>
<td>1,200</td>
<td>0</td>
</tr>
<tr>
<td>May</td>
<td>25,500</td>
<td>23,500</td>
<td>1,200</td>
<td>0</td>
</tr>
<tr>
<td>June</td>
<td>25,500</td>
<td>23,000</td>
<td>1,200</td>
<td>0</td>
</tr>
<tr>
<td>July</td>
<td>6,500</td>
<td>4,500</td>
<td>1,200</td>
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<tr>
<td>August</td>
<td>6,500</td>
<td>5,000</td>
<td>1,200</td>
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<tr>
<td>September</td>
<td>28,500</td>
<td>11,500</td>
<td>1,200</td>
<td>0</td>
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<tr>
<td>October</td>
<td>20,000</td>
<td>9,000</td>
<td>1,200</td>
<td>0</td>
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<tr>
<td>November</td>
<td>9,000</td>
<td>4,000</td>
<td>1,200</td>
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</tr>
<tr>
<td>December</td>
<td>4,500</td>
<td>4,500</td>
<td>1,200</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>138,000</td>
<td>97,000</td>
<td>14,400</td>
<td>0</td>
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Freshwater Inflow Recommendation—Sep 2002

- TPWD staff recommends as a FWI target, that a total April thru July cumulative monthly Max H inflow (89,200 acft) be delivered during the spring/summer season (Apr. thru Jul.). In all other months, Max H monthly target flows would be sufficient.
Inflow Targets (in Acft)

<table>
<thead>
<tr>
<th>Month</th>
<th>Min Q-Sal</th>
<th>Min Q</th>
<th>Max H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>2,230</td>
<td>2,230</td>
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<tr>
<td>Feb</td>
<td>2,780</td>
<td>2,780</td>
<td>2,780</td>
</tr>
<tr>
<td>Mar</td>
<td>4,410</td>
<td>4,410</td>
<td>4,920</td>
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<tr>
<td>Apr</td>
<td>5,180</td>
<td>5,180</td>
<td>5,180*</td>
</tr>
<tr>
<td>May</td>
<td>32,130</td>
<td>32,140</td>
<td>37,770*</td>
</tr>
<tr>
<td>Jun</td>
<td>9,280</td>
<td>19,990</td>
<td>36,430*</td>
</tr>
<tr>
<td>Jul</td>
<td>9,820</td>
<td>6,980</td>
<td>9,820*</td>
</tr>
<tr>
<td>Aug</td>
<td>9,750</td>
<td>9,750</td>
<td>9,750</td>
</tr>
<tr>
<td>Sep</td>
<td>9,600</td>
<td>11,040*</td>
<td>9,600</td>
</tr>
<tr>
<td>Oct</td>
<td>4,380</td>
<td>8,690*</td>
<td>7,560</td>
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<tr>
<td>Nov</td>
<td>6,410</td>
<td>7,780*</td>
<td>7,780</td>
</tr>
<tr>
<td>Dec</td>
<td>4,670</td>
<td>4,670</td>
<td>4,670</td>
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<tr>
<td>Total</td>
<td>100,640</td>
<td>115,640</td>
<td>138,490</td>
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Rincon Bayou
Demonstration Project

Restoring Freshwater
to the upper Nueces Estuary

U.S. Bureau of Reclamation
Rincon Bayou Demonstration Project

- To increase the opportunity for freshwater flow events into upper Nueces Delta via Rincon Bayou
- Restore estuarine conditions, increase productivity
A Permanent Diversion Project

- Filled in Fall 2000.
- Rebuilt by City of Corpus Christi Fall 2001 for rule changes.
- Conservation groups trying to buy land.
- New monitoring program.
- Ecological credits?
Environmental Flow Protection in TCEQ Permitting
State Requirements for Protecting Bays and Estuaries

*Beneficial inflows* means a salinity, nutrient, and sediment loading regime adequate to maintain an ecologically sound environment in the receiving bay and estuary system that is necessary for the maintenance of productivity of economically important and ecologically characteristic sport or commercial fish and shellfish species and estuarine life upon which such fish and shellfish are dependent. Texas Water Code §11.147(a)
State Requirements for Protecting Bays and Estuaries (continued . . )

For permits issued within 200 river miles from the coast, . . . the commission shall include in the permit to the extent practicable when considering all public interests, . . . those conditions considered necessary to maintain beneficial inflows to any affected bay and estuary system. Texas Water Code §11.147(b)

The statute goes on to list several factors that shall be considered by the commission in making this determination.
State Requirements for Protecting Bays and Estuaries (continued . . )

Those factors include:

The need for freshwater inflows to preserve the sound environment of the bay or estuary;

The quantity of water and the needs of the applicant and those that would be served by the applicant;

The expected effects on the public welfare. This includes both the effects of not including some or all of the conditions in the permit and the effects of failure to issue the permit.
How Does the TCEQ Staff Make Their Recommendations?
State Requirements for Protecting Instream Flows

In considering a water right application, the commission shall consider the effect of the permit on existing instream uses, fish and wildlife habitats, and water quality.

Texas Water Code §§ 11.147(d)(e), 11.150, 11.151, 11.152
How Does the TCEQ Staff Make Their Recommendations?
404 Permit
ESA Response
FERC License
Water Right
Planning (TWDB)
Limited Biology

Instream Flow Studies
Completed or in Progress

- Little Cypress
- Ray Roberts
- Possum Kingdom
- Paluxy River
- Lake Bosque
- O.H. Ivie
- Allens Creek
- Canyon Dam
- Comal
- San Marcos
- Sulphur R
- Lake Granbury
- Allens Creek
- Cuero
- Sandies Cr
- Goliad
Default Method – Lyons Method

- Based on data and relationships from mountainous western states.
- Validated or calibrated on the Guadalupe River in Texas.
- Establishes minimum flow requirements based on 40% median daily flows in winter months and 60% of median daily flows in the summer months.
- Utilizes historic streamflow data from subject site.
Amendments that don’t increase the amount or rate of water diverted:

- Subject to meeting all other requirements of this subchapter;
- an amendment shall be authorized if;
- the requested change will not cause adverse impacts on other water right holders or the environment . . .
- of greater magnitude than under circumstances in which the permit . . was fully exercised according to its terms and conditions as they existed before the requested amendment.
Amendments that increase the amount or rate of water diverted:

• Special conditions designed to protect the environment only apply to that portion of the water right that is being amended.

• For example, on an amendment that increases the amount of water to be diverted, the original diversion amount would carry the original flow restrictions, if any.

• Only the increased amount of water would carry a new flow restriction.
The End

Questions?