Approved with Changes on May 1, 2002

Galveston Bay Freshwater Inflows Group
25 March 2002 Meeting Summary

Participants Present: John Bartos, Richard Browning, Jeff DallaRosa, Woody Frossard, Guy Jackson, Jim Kachtick, Ken Kramer, Cindy Loeffler, Bob McFarlane, Bruce Moulton, Paul Nelson, Chris Paternostro, Gary Powell, Linda Shead, Mary Ellen Whitworth, Pudge Willcox, Woody Woodrow

Support Team Present: Glenda Callaway, Lisa Gonzalez, Greg Graml, Anne Ray, Andy Sterbenz, Jeff Taylor, Pris Weeks

Others Present: Carlos Mendoza (USFWS), Dave Buzan (TPWD), Ann Sheridan (City of Houston)

1. The Galveston Bay Freshwater Inflows Group (GBFIG) met at the City of Houston's E.B. Cape Center for Public Works Excellence, 4501 Leeland, Room 131, Houston, Texas 77023. Self-introductions were made.

   Two membership changes were noted. Jeff Taylor is changing employment and will represent the City of Houston, Public Works and Engineering Department. Linda Shead has changed employment and will remain in GBFIG as a representative of the Sierra Club.

2. The December 4, 2001 and February 4, 2002 meeting summaries were approved with no new changes.

3. **Weeks** outlined the meeting agenda. There were no additions.

4. The following updates were provided by GBFIG members:

   Bartos provided an update on Region H activities. The legislature and Texas Water Development Board (TWDB) have not allocated enough money to fund the entire scope of work for Region H. As a result, at its last meeting, Region H prioritized items in its work plan. Galveston Bay ranked at the top of the list. Region H sent a letter to the TWDB identifying tasks undertaken by Region H that are not receiving enough funding.
   Jackson requested information providing a broad view of each of the Texas water planning regions.
   Sterbenz stated that an executive summary document is available through the TWDB website.
   Note: Links to the water planning regions' summary information: http://www.twdb.state.tx.us/assistance/rwpg/main-docs/regional-plans-index.htm and http://www.twdb.state.tx.us/publications/reports/RWPGdocuments/rwp_summary/rwp_summary_index.htm

Bartos stated that almost every other region in Texas is in the same situation as Region H. Many have not received enough funding to carry out the next round of planning.
Powell added the final Plan might be available in May 2002.
Woodrow stated that in regards to funding, in many regions mandatory issues would most likely dominate environmental issues.
Taylor suggested that appreciation be shown to Linda Shead. Her comments brought Galveston Bay issues to the top of the Region H list of priorities.

Browning stated that Region C is still in the scoping process and is trying to fit that scope within the available funding.

McFarlane reported that he analyzed the TWDB freshwater inflows data and Texas parks and Wildlife Department (TPWD) commercial harvest data in an attempt to verify the some of the freshwater inflows/fisheries harvest analyses run by the TWDB and TPWD in the past. His analyses have yielded some interesting results thus far. They can be viewed on the poster brought to this meeting. He would like to obtain the TPWD fisheries-independent data to incorporate into his analyses as well.
Loeffler suggested that the fisheries-independent data for oysters might not be as complete as the commercial harvest data. The resource sampling is more sporadic. She suggested that McFarlane look at Eric Powell's study and salinity model.
Callaway asked if the TWDB/TPWD joint report had ever been printed and distributed.
Loeffler replied, yes, she could bring copies if needed.
Powell added the web-based document constitutes an official document.

Kramer announced the Texas Center for Policy Studies is holding its 2nd annual conference on April 12, 2002. Interested parties can register online at http://www.texascenter.org. The conference will be held in Austin at the Ladybird Johnson Wildflower Center. Registration is$35.

Mendoza announced that the U.S. Fish and Wildlife Service's presence on the Internet is restored and e-mail systems are working.

Powell then updated the group on TWDB spatial distribution of flows research. TWDB is undertaking a Galveston Bay structures and practices study through a contract with the Galveston Bay Estuary Program (GBEP) (Jeff DallaRosa is the GBEP contact). The study will look at the effects of structures (e.g. levies, dikes, dams and channels) and practices (e.g. impounding water and discharging cooling water) on bay circulation and salinity patterns. These patterns in turn impact the transport and survival of eggs and larvae. Please note the study does not imply the removal and/or termination of structures and practices already in place.

Models can give hindcasts (model of past conditions), nowcasts (model of present conditions) and forecasts (model of future conditions). This study is interested in hindcasts and will look into the past by modeling the removal of structures and practices in 4 different scenarios during wet and dry years. A 5th scenario will model circulation and salinity patterns with all structures and practices removed (i.e. naturalized flows).

TWDB did a similar study for the Corpus Christi system. Nueces Bay once supported large populations of oysters and clams. However, this is no longer the case. The structures and practices hindcast model helped resource managers determine what changed the circulation and salinity patterns of Nueces Bay over the years.

The intent of the study is to help resource managers make decisions that might move conditions in the bay back to the way they once were. The study will also evaluate the aerial extent of nursery areas. The project is in its 2nd year and will finish at year's end.

With regard to freshwater inflows, the study will model the removal of all permitted diversions and impoundments south of the Lake Livingston Dam. The model will remove the Houston Ship Channel and the Gulf Intracoastal Waterway and will restore the natural contours of Galveston Bay.

Jackson asked if the model could simulate bay conditions prior to the removal of Redfish Bar.
Powell replied that to simulate this, the model would remove the Houston Ship Channel and increase the roughness coefficient. This will retard the flow of water as though Redfish Bar was still in place.
Woodrow asked how the model would account for subsidence, which is estimated to have increased the volume of Galveston bay by a third.
Powell replied that subsidence is not accounted for in the model.
Kachtick asked if the model could simulate the partial removal of (passes cut through) the Texas City Dike.
Powell stated that this might be done during the next phase of the project. There is talk that cuts placed through the dike might eliminate or reduce the blockage of egg and larval transport.

Paternostro then reported on a two new TWDB projects. The first project was undertaken in conjunction with the Texas General Land Office (GLO). $315,000 will be devoted over 5 years to study sedimentation processes from the Lake Livingston Dam down to Galveston Bay. TWDB subcontracted with Dr. Jonathan Phillips of the University of Kentucky for a qualitative analysis of sediment retention in the lower corridors of the Trinity River. Dr. Phillips will study geomorphology and sedimentation

processes including the transportation of sediment into the Upper Trinity River Delta. He will use maps and digital orthophoto quarter-quadrangle images (DOQQs) taken before and after construction of the Lake Livingston Dam to determine how erosional processes have changed since the dam was constructed. Sediment cores will be taken above and below the dam to determine grain properties, sources and residence times. Impacts of the Lake Livingston Dam will be assessed.

The second project is a subcontract with Texas Christian University (TCU) to study sediment transport in the Trinity River. Stream gages with automatic pump samplers will be used to determine amounts of suspended sediment. The project will also attempt a bed load study.

Kramer asked where the stream gages would be located.
Powell replied that they would be located near the USGS stream gage station at Romayor.
Woodrow asked if the project would look at sediment from ungaged portions of the watersheds.
Paternostro replied that he was unsure, however, other stream corridors may be studied. Dr. Tim DellaPenna of Texas A&M University at Galveston (TAMUG) will also undertake a sedimentation study for the TWDB.
McFarlane inquired about research on the processes behind the erosion and accretion of the Trinity River Delta.
Powell stated that previous projects have studied sedimentation of the Trinity River Delta. A project with the Bureau of Economic Geology and TPWD was inconclusive- the correlations failed. The delta is not getting sediment from the rivers, but rather is receiving sediment resuspended by ocean-generated storms. Researchers know that sedimentation processes in the delta are working, but are unsure how they are occurring.

5. **Weeks** then explained that the group would break out into three small working groups to go over the next steps of the GBFIG process. Callaway, Graml and Taylor would each lead a group. The three groups would individually discuss the quantitative, temporal and spatial aspects of the various management scenarios. The management scenarios ranked during the February 2002 meeting would be re-ranked by all GBFIG attendees.

Break and Management Scenario Re-Ranking Exercise

Scenario Rankings:	**Votes (March 2002)**	**Votes (Feb 2002)**
Drought management	5	1
Purchase water rights for environmental flows	5	9
Implement Water Master program	4	2
Conservation	3	7
Dedication of return flows	3	0
Lease water rights for environmental flows	3	5
Apply for water right to be used in drought periods	1	0
Cancellation of unused rights	1	1
Interbasin transfers	1	5
Reallocation of water rights for environmental flows	1	0
Require pass-throughs	1	7
Return flows to basin of origin	1	5
Spatial redistribution of return flows	1	0
Enforce water rights	0	1
Interbasin trade	0	1
Invoke Public Trust Doctrine	0	5
Move the diversionary point of water right upstream	0	0
New reservoir construction	0	1
Reallocation of flood storage	0	1
Special conditions on amended permits	0	0
Voluntary dedication of water rights	0	0

After the break each of the three working groups reported on their discussions.

***Group 1** (Callaway, Powell, Shead, Jackson, Willcox, Browning, Nelson, Buzan, Sterbenz):*

Shead reported that this group focused on defining inflow objectives. The objectives were defined as “maintaining sufficient inflow to maintain biodiversity and productivity while allowing for maximum development for human uses”.

The group discussed the question, how does one know when Max H is not being met 50% of the time? They decided upon a two-tier system:

- Tier 1: Given normal rainfall amounts, managers should be concerned that fisheries will be at risk if Max H is not met at least once over a five-year period.
- Tier 2: This tier was not fully defined, but would be applicable to years with less than normal rainfall amounts.

Callaway added that state resource agencies have studied 8 species for previous freshwater inflow studies (7 mobile species and oysters). The group decided that those same species and nursery areas should be the focus when defining inflow objectives for ecological productivity.

Group 2 *(Graml, Bartos, Frossard, Paternostro, Woodrow, Sheridan, Kramer, Whitworth):*

Graml reported that this group discussed monthly distribution of inflow targets (temporal distribution) and the critical nature of that distribution. They talked about looking at rolling averages of monthly inflows. For example, if large inflows were seen because of a wet month (e.g. April), can you roll them over and apply those inflows to the month of May?

The group also discussed spatial distribution in regards to ecological productivity and decided that GBFIG discussions might want to focus on productivity in the Trinity River side of the estuary.

The group also discussed releases of reservoir flows. They suggested that rather than pursue one large monthly reservoir release, intermittent releases might be better.

Woodrow added that the group felt it is important to consider triggers for implementing a management strategy. It is important to know when to implement a strategy and when to bring its activity to an end it.

Group 3 *(Taylor, Kachtick, Loeffler, McFarlane, Moulton, Mendoza):*

McFarlane reported that this group discussed in regards to “Max H not being met 50% of the time”, what does 50% mean? They also talked about spatial conditions and triggers and how organisms cope with changes. More ecology needs to be brought into the discussion. It must be decided for what species to manage. One cannot manage for all species simultaneously.

Weeks then polled everyone on his or her thoughts of the small working groups. It was decided that next time, each group will have a mini agenda and the groups will consist of different people at the next meeting.

Graml then gave a presentation on items that GBFIG members should consider as they enter into the next phase of management scenario discussions.

Some questions that GBFIG members might want to consider at future meetings include:

a) From a modeling standpoint, what are the quantitative targets that the group is managing toward and what targets are most important?
b) At what frequencies are these targets needed?
c) What is the impact of firm yield?
d) What are the quantitative measures of the performance of a given management scenario?

He suggested the group delve into more quantitative discussions. Not all scenarios as written can be modeled. However, numerical products can be used for comparisons of management scenarios. GBFIG might want to go through a thought process similar to that undertaken by the Lower Colorado River Authority (LCRA) in its freshwater inflows work to decide what the quantitative inflow targets should be.

Weeks asked if there is a list of quantitative criteria to use for the next discussion.
Graml suggested that the group review the LCRA list of criteria. GBFIG might want to adapt it and expand upon it.
Callaway suggested reviewing GBFIG Work Plan Task III for the next meeting to ensure that discussions do not stray off course.

6. **Weeks** then asked how the group would like to structure the next GBFIG meeting. There are two different discussions happening at the same time:
    1) A policy discussion related to Task IV and
    2) A scientific discussion of how to quantify things and when is enough information known by the group to make a decision?

   She asked how the goals should be quantified and how does one go about getting the numbers needed for the bigger policy discussion? This might be done best by talking about smaller details in groups and saving the larger policy discussion for the entire group.
   Callaway stated that the policy and scientific discussions must happen together.
   Shead suggested the group make decisions based on the available information, but keep the language flexible so that it can change as the science develops.

   Weeks stated that the Taylor memo would be reviewed at the next meeting.

   Tentative dates for the next GBFIG meeting include April 29, 2002 or May 1, 2002 (at SJRA, Conroe)

7. Adjourn