September 20, 2005

Ms. Carola Serrato, Chair
Mr. Scott Bledsoe, III, Chair
Region N Water Planning Group
c/o Nueces River Authority, Coastal Bend Division
6300 Ocean Drive, Unit 5865
Corpus Christi, Texas 78412-5865

Re: Comments on Initially Prepared 2006 Regional Water Plan for Region N

Dear Ms. Serrato, Mr. Bledsoe, and Planning Group Members:

The National Wildlife Federation, Lone Star Chapter of the Sierra Club, and Environmental Defense appreciate the opportunity to provide written comments on the Initially Prepared Regional Water Plan for Region N. We consider the development of comprehensive water plans to be a high priority for ensuring a healthy and prosperous future for Texas and we appreciate the contributions you have made towards that goal.

As you know, our organizations have provided, either individually or collectively, periodic input during the process of developing the plan. These written comments will build upon those previous comments in an effort to contribute to making the regional plan a better plan for all residents of the Coastal Bend region and for all Texans.

Our organizations appreciate the amount of effort that has gone into developing the draft Plan for Region N. We recognize that the draft Plan is subject to revision prior to adoption and is subject to continued revision in the future and provide these comments with such revisions in mind. Your consideration of these comments will be appreciated.

I. BACKGROUND AND OVERVIEW

Our organizations support a comprehensive approach to water planning in which all implications of water use and development are considered. Senate Bills 1 and 2 (SB1, SB2), and the process they established, have the potential to produce a major, positive change in the way Texans approach water planning. In order to fully realize that promise, water plans must provide sufficient information to ensure that the likely impacts and costs of each potential water management strategy are described and considered. Only with that information can regional planning groups ensure compliance with the overarching requirement that "strategies shall be selected so that cost effective water management strategies which are consistent with long-term protection of the state's water resources, agricultural resources, and natural resources are adopted." 31 TAC § 357.7 (a)(9).

Complying with this charge is essential in order to develop genuine plans that are likely to be implemented as opposed to a list of potential, but expensive and damaging, projects that likely will produce more controversy than water supply.

This document includes two types of comments. We consider the extent to which the initially prepared plan complies with the requirements established by SB1 and SB2 and by the Texas Water Development Board (TWDB) rules adopted to implement those statutes. In addition, our comments address important aspects of policy that might not be controlled by specific statutes or rules. We recognize that the financial resources available to the planning group are limited, which may restrict the ability of the group to fully address some issues as much as you would like. These comments are provided in the spirit of an ongoing dialogue intended to make the planning process as effective as possible.

We strongly support the state's water planning process and we want the regional water plans and the state plan to be comprehensive templates that can be endorsed by all Texans. Key principles that inform our comments are summarized below, followed by specific comments keyed to different aspects of the initially prepared plan.

Principle I: Maximize Water Efficiency

We strongly believe that improved efficiency in the use of water must be pursued to the maximum extent reasonable. New provisions included in SB2 and TWDB rules since the first round of planning mandate strengthened consideration of water efficiency. New water supply sources that are potentially environmentally damaging and expensive should not be considered unless, and until, all reasonable efforts to improve efficiency have been exhausted. In fact, that approach is now mandated. The Texas Water Code, as amended by SB1 and SB2, along with the TWDB guidelines, establishes stringent requirements for consideration and incorporation of water conservation and drought management. As you know, Section 16.053 (h)(7)(B), which was added after completion of the first round of regional planning, prohibits TWDB from approving any regional plan that doesn't include water conservation and drought management measures at least as stringent as those required pursuant to Sections 11.1271 and 11.1272 of the Water Code. In other words, the regional plan must incorporate at least the amount of water savings that are mandated by other law. In addition, the Board's guidelines require the consideration of more stringent conservation and drought management measures for all other water user groups with water needs.

Consistent with TWDB's rules for water planning, we consider water conservation measures that improve efficiency to be separate and distinct from reuse projects. We agree that reuse projects merit consideration. However, the implications of those projects are significantly different than for water efficiency measures and must be evaluated separately. Section 31 TAC § 357.7 (a)(7)(A) of the TWDB rules sets out detailed requirements for evaluation of water management strategies consisting of "water conservation practices." Section 357.7(a)(7)(B) addresses water management strategies that consist of drought management measures. The separate evaluation of water management strategies that rely on reuse is mandated by 31 TAC § 357.7 (a)(7)(C).

The Coastal Bend region is in a relatively dry area of a relatively dry state and it only makes sense for the region to plan to use water as efficiently as possible. Region N has incorporated water conservation into the initially prepared regional plan, but much more needs to be done. For municipal use, Region N's stated goal that all water user groups with a per capita usage rate of over 165 gallons per capita per day (gpcd) should reduce by 15% is not nearly as strong as it should be. While average municipal gpcd throughout Region N is not terribly high, the average disguises the fact that many municipalities in Region N still have high usage rates and, thus, the potential for significant water savings. We do acknowledge that the planning group has recommended that all groups meet this less stringent goal, not just groups with needs.

We encourage Region N to adopt the municipal water conservation goal adopted by Region L:

> "For municipal water user groups (WUGs) with water use of 140 gpcd and greater, reduction of per capita water use by 1 percent per year until the level of 140 gpcd is reached, after which, the rate of reduction of per capita water use is one-fourth percent (0.25) per year for the remainder of the planning period; and
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> For municipal WUGs having year 2000 water use of less than 140 gpcd, reduction of per capita water use by one-fourth percent per year."

These excerpts are from Initially Prepared 2006 South Central Texas Regional Water Plan (SCTR Plan) at p. 6-1. Region K also has fairly strong water conservation goals. Both Region K & L distinguish between reuse and true water efficiency measures.

TWDB rules are clear in requiring that a regional plan must, for each WUG for which a new interbasin transfer is recommended, include "a conservation water management strategy, pursuant to § 11.085 (l), that will result in the highest practicable level of water conservation and efficiency achievable." See 31 TAC § 357.7 (a)(7)(A)(iii) (emphasis added). The water efficiency measures included in Region N's initially prepared plan do not achieve the levels of water savings needed to support the authorization of new interbasin transfers of surface water.

Principle II: Limit Nonessential Use during Drought

Drought management measures aimed at reducing demands during periods of unusually dry conditions are important components of good water management. As noted above, Senate Bill 2 and TWDB rules mandate consideration and inclusion in regional plans of reasonable levels of drought management as water management strategies. It just makes sense to limit some nonessential uses of water during times of serious shortage instead of spending vast sums of money to develop new supply sources simply to meet those nonessential demands.

Because drought management measures are not included as water management strategies, Region N's initially prepared plan does not comply with applicable requirements.

Principle III: Plan To Ensure Environmental Flows

New rules applicable to this round of planning require a quantitative analysis of environmental impacts of water management strategies.[1] Environmental flows provide critical economic and ecological services that must be maintained to ensure consistency with long-term protection of water resources and natural resources, which also is required before a regional water plan can be approved. See § 16.053 (h)(7)(C) of the Texas Water Code and 31 TAC § 357.7 (a)(13). An initial critical step towards assessing consistency with long-term protection is an analysis of the overall impact of existing water rights and recommended water management strategies on environmental flows. That analysis should consider both changes in flow patterns and the biological significance of such changes. *Although Appendix L does include some analyses of flow alterations, those analyses do not provide an adequate basis for evaluating the ecological significance of projected flow levels. Without information about ecological effects, the initially prepared plan does not include information adequate to demonstrate consistency with long-term protection of the state's natural resources.*

Even a good quantitative analysis that shows little additional adverse impact on environmental flows, however, would not automatically demonstrate consistency of the regional plan with long-term protection of natural resources. If existing water rights, when used as projected, would cause serious disruption of environmental flows resulting in harm to natural resources, merely minimizing additional harm from new strategies would not produce a water plan that is consistent with long-term protection of natural resources or that would protect the economic activities that rely on those natural resources.

As you know, the National Wildlife Federation (NWF) undertook an analysis of the effect of existing water rights on freshwater inflows to the Nueces Estuary. We acknowledge the ongoing discussions between the planning group and NWF about undertaking a revised comprehensive analysis of the expected impacts of existing water rights and proposed water management strategies on freshwater inflows. We strongly support the inclusion of such an analysis in the plan and believe that it would provide information critical to a meaningful assessment of the consistency of the regional water plan with long-term protection of the state's natural resources (more on this below).

In addition, we believe that environmental flows should be recognized as a water demand and plans should seek to provide reasonable levels of environmental flows. As an example, we would note that the initially prepared plan for the Lower Colorado River Basin (Region K) does include such recognition of environmental flows as a water demand.

[1] The rules require that each potentially feasible water management strategy must be evaluated by including 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." 31 TAC § 357.7 (a)(8)(A)(ii).

Principle IV: Minimize New Reservoirs
New reservoirs should be considered only after existing sources of water, including water efficiency and reuse, are utilized to the maximum extent reasonable. When new reservoirs are considered, adverse impacts to regional economies and natural resources around the site must be minimized and the reservoir must be shown to be consistent with long-term protection of the state's water, agricultural, and natural resources.

Alternative sources that would be less damaging and less costly are available; therefore the apparent recommendation to proceed with Stage II of Lake Texana has not been justified in the plan. We do not read the initially prepared plan as including the potential off-channel reservoir near Lake Corpus Christi as a recommended strategy. However, if it were to be recommended, additional analyses are required regarding its potential impacts.

Principle V: Manage Groundwater Sustainably
Wherever possible, groundwater resources should be managed on a sustainable basis. In our terminology, a sustainable basis means that in the long-term (well beyond the current planning horizon) withdrawals must be balanced with recharge while also maintaining adequate natural discharges such as seeps and significant springs. Mining groundwater supplies will, in many instances, adversely affect surface water resources and constitute a tremendous disservice to future generations of Texans. Generally speaking, depleting groundwater sources will not be consistent with long-term protection of the state's water resources, natural resources, or agricultural resources.

The Region N IPP calculates groundwater availability based on allowing significant drawdowns for the Gulf Coast aquifer (up to 125 feet below predevelopment levels in the unconfined aquifer and up to 250 feet below predevelopment levels in the confined aquifer). The plan describes these levels of drawdown as "long-term (sustainable) yields" but gives little further detail. The problem of labeling that approach sustainable becomes apparent even in considering the next scheduled round of regional planning. As discussed on page 3-20, the withdrawals proposed here are of such a magnitude that they just meet the regional water planning group's drawdown targets (up to 250ft). Thus, as soon as the next five-year increment is added to the planning horizon, the planning group will be faced with either redefining the acceptable drawdowns (that is, increasing them) or lowering the acceptable pumping levels in that decade.

Although the initially prepared plan uses the term "sustainable yield," it does not appear to be recommending an approach that is sustainable long-term. We urge the planning group to adopt a true sustainability goal for groundwater management and to provide additional information about the implications of the proposed groundwater management approach for the Gulf Coast aquifer and what it could mean for the region long-term (i.e., beyond the planning horizon).

Principle VI: Facilitate Short-Term Transfers
Senate Bill 1 directs consideration of voluntary and emergency transfers of water as a key mechanism for meeting water demands. Water Code Section 16.051 (d) directs that rules governing the development of the state water plan shall give specific consideration to

"principles that result in the voluntary redistribution of water resources." Similarly, Section 16.053 (e)(5)(H) states that regional water plans must include consideration of "voluntary transfers of water within the region using, but not limited to, regional water banks, sales, leases, options, subordination agreements, and financing arrangements…." Thus, there is a clear legislative directive that the regional planning process must include strong consideration of mechanisms for facilitating voluntary transfers of existing water rights within the region, particularly on a short-term basis as a way to meet drought demands.

In addition, emergency transfers are intended as a way to address serious water shortages for municipal purposes. They are a way to address short-term problems without the expense and natural resource damage associated with development of new water supplies. Water Code Section 16.053 (e)(5)(I), as added by SB1, specifically directs that emergency transfers of water, pursuant to Section 11.139 of the Water Code, are to be considered, including by providing information on the portion of each non-municipal water right that could be transferred without causing undue damage to the holder of the water right. Thus, the water planning process is intended as a mechanism to facilitate voluntary transfers, particularly as a means to address drought situations, by collecting specific information on rights that might be transferred on such a basis and by encouraging a dialogue between willing sellers and willing buyers on that approach. Generally, the IPP seems to do a good job of considering voluntary transfers of water and we commend the planning group for looking at those possibilities.

II. PAGE-SPECIFIC COMMENTS

EXECUTIVE SUMMARY

The regional water planning process is intended to be an open, public process. However, it is not reasonable to expect that most members of the general public will be able to spend the time to read the plan in its entirety. Thus, a comprehensive executive summary is critical for educating members of the public about the contents of the plan and directing them to issues of particular interest to them.

We urge the planning group to revisit the executive summary. As drafted, it lacks concise summaries of vital information about the plan. For example, it does not summarize the total amount of the projected water needs for the whole region. (This figure does not come to light until well into Chapter 4.) That total could be determined from adding up all the entries in Table ES-5, but it should be made much more accessible than that. The executive summary also fails to include a discussion of the total capital costs or annual costs for meeting projected needs using the recommended strategies. Indeed, the executive summary, and the overall plan, seem to be lacking a concise listing of the recommended strategies.

Some unit cost information for potential strategies is provided in Figure ES-11, but deriving an estimate of total costs is not easily accomplished using that information, particularly because recommended strategies are not identified. Indeed in reviewing the

IPP, we struggled to identify a clear list of recommended strategies. Different parts of the document suggest that different strategies are being recommended.

The executive summary does not adequately describe the potential strategies. Although they are listed in Tables ES-3 and ES-4, there isn't enough information to understand what the various strategies entail. Those tables do summarize "environmental issues/special concerns," but the information provided is extremely difficult to interpret.[2] In particular, additional information is needed for those strategies that are actually recommended. In short, the executive summary fails adequately to summarize the regional plan.

Some other regions, such as Region D, have a better model for the executive summary; it goes through the plan chapter by chapter and summarizes the main points of each chapter. Reading the executive summary of the Region D IPP, for example, serves to provide a good orientation to the entire plan. As drafted, the executive summary of the Region N IPP does not accomplish that same purpose.

(Page ES-16) Water Supply Strategies to Meet Needs

The IPP includes summary statements about future projects that, in the view of the planning group, should be considered "consistent" with the regional water plan. We believe these statements are much too broad. The IPP states, with respect to TWDB funding decisions: "The CBRWPG considers projects that do not involve the development of or connection to a new water source to be consistent with the regional water plan even though not specifically recommended in the plan." That language suggests that projects involving increased diversion from existing supply sources, such as a reservoir, river, or aquifer, should be considered consistent even if not evaluated and recommended in the regional plan. The same issues arise with respect to the statement relating to TCEQ permitting decisions to the effect that, within the planning region, consistency with the regional plan should not be a significant factor. That is not a reasonable approach and is not consistent with legislative direction. It would subvert the purposes of the planning process.

Although we do not disagree that many projects such as repair and upsizing of pump stations, wastewater treatment plants, and storage structures for treated water should be considered consistent with the plan, even if not separately listed, we are not aware that problems have arisen with those types of projects being considered inconsistent. Similarly, we agree that permit applications such as those dealing with most temporary diversions should not be required to be specifically listed in the regional plan, but are unaware that serious problems have arisen in the approval process for such applications regarding consistency with regional water plans. Regardless, the language in the IPP is much too broad.

[2] As noted in our comments below, many of these strategies raise environmental concerns not acknowledged in Table ES-3.

Table ES-3 lists potential water management strategies providing a total of up to 200,000 + acre-feet per year of new water supplies.[3] Table ES-4 lists additional strategies providing up to about 12,500 acre-feet per year.[4] By contrast, the total projected "need" for Region N in 2060 is 46,084 acre-feet as shown in Table 4A-24 (page 4A-56). We are unable to locate a summary or other information listing which strategies actually are recommended.

Although the planning process is designed to result in the assessment of a wide range of potentially feasible management strategies, the ultimate directive is to produce a plan for meeting projected needs. The TWDB rules direct that the planning groups shall "provide **specific recommendations of water management strategies** based upon identification, analysis, and comparison of all water management strategies the regional water planning group determines to be potentially feasible so that the cost effective water management strategies which are environmentally sensitive are considered and adopted…." 31 TAC § 357.5(e)(4) (emphasis added). Those specific recommendations are lacking. The IPP includes an analysis and comparison of potentially feasible water management strategies, but does not appear to take the step of clearly recommending which strategies should be used. That is a critical shortcoming. The IPP seems to constitute more a list of potentially feasible strategies than a plan for meeting needs.

The need for specific recommendations aimed at meeting the projected needs is confirmed in at least one other section of the TWDB rules:

> Regional plan development must include "**specific recommendations of water management strategies to meet the needs** in sufficient detail to allow state agencies to make financial or regulatory decisions to determine consistency of the proposed action before the agency with an approved regional water plan. Strategies shall be selected so that cost effective water management strategies which are consistent with long-term protection of the state's water resources, agricultural resources, and natural resources are adopted." 31 TAC § 357.7(a)(9) (emphasis added).

The IPP does not seem to include a clear statement about the total amount of water supply that the regional planning group is recommending to be developed from this list of potential strategies. In other words, the planning group should make clear that it is recommending only the development of the amount of supply required to meet projected needs rather than the development of an estimated 210,000 acre-feet of supply. To plan for over 400% more water than is needed would be directly inconsistent with TWDB's rules directing that the planning process be based on population and demand projections approved by TWDB. *See* 31 TAC § 357.5 (d). Water is a limited resource in the state. Both the water and state funds for development must be shared equitably. Using common

[3] Unfortunately, the Table does not include a total so the reader is forced to add up the individual entries. For many strategies, the additional supply is given as a range and for others no supply amount is provided.
[4] Again, as for Table ES-3, no total is provided and for many strategies no estimated supply amount is provided.

assumptions for planning across all planning regions is one way to help achieve that equity. Planning for demand significantly in excess of projections is not equitable and does not meet regulatory requirements.

We understand the desire of the planning group to have the flexibility of alternative strategies. However, the regional plan is not set in stone. The very reason that plans are updated every five years is to allow for adjustments on an incremental basis. If recommended projects aren't moving forward when a future plan is adopted, recommendation of different strategies may be appropriate at that time. Similarly, if population and demand projections have changed at that point, appropriate adjustments in recommendations should be made. In the rare case that changes to a plan would be needed more quickly than every five years, the plan can be amended

Nor does a possible future drought worse than the drought of record justify planning for such a large excess supply. In fact, SB1 is quite specific in directing the use of the "drought of record" as the appropriate target for planning. *See* Tex. Water Code Ann. § 16.053 (e)(4). Besides, with the adoption of a safe yield approach for the Lake Corpus Christi/Choke Canyon Reservoir/Texana system, the region already has designed in a cushion of about 22,000 acre-feet of yield for such an eventuality (see IPP at page 1-3).

(Page ES-28) Social and Economic Impacts of Not Meeting Projected Water Needs
The calculations referred to in this discussion all assume that water needs are left entirely unmet. That should be made clear. As drafted, that qualification is stated only as applying to the second-last sentence. These calculations estimate impacts that would result under a worst-case scenario pursuant to which no additional supplies are provided and no attempt is made to mitigate impacts. In reality, in the event of such a shortage, water would be diverted from nonessential uses to essential uses. The effect of such movements of water would be to dramatically reduce the economic impacts reported here. We urge the planning group to make clear that these figures represent a type of worst-case scenario involving the failure to meet any of the projected needs and the failure to mitigate impacts. Furthermore, the source of these projections should be acknowledged.

SECTION 1, PLANNING AREA DESCRIPTION

(Page 1-5) Section 1.2.3 Major Springs
Since the first round of planning, the TWDB rules have been revised to require consideration of springs important for natural resource protection. *See* 31 TAC § 357.7 (a)(1)(D). A spring that is not important for water supply purposes, because of its size or the quality of the water, still may be important for natural resource protection. The IPP provides no information about the criteria used by the planning group in determining that no springs in the region are major for water supply or natural resource protection purposes. Also, no information is provided regarding the potential impacts of proposed increased groundwater withdrawals on springs.
(Page 1-10) 1.4 Identified Threats to Agricultural and Natural Resources
This section should provide far more information about groundwater resources, their current states and projected rates of depletion. The IPP simply states, "In the 2001 plan,

the CBRWPG identified continuing groundwater depletion as a threat to agricultural and natural resources." No more information is given. Presumably, the planning group continues to recognize that threat. Additional discussion about the nature of the threat and the locations affected is needed.

The bullet items are unclear. For example, the first item states: "Shortage of freshwater and economically accessible groundwater attributable to increased irrigation demands." Is this being identified as a threat to agricultural resources or natural resources or both? The issue should be stated more clearly, with more information about the nature of the threat.

(Page 1-11) 1.5 Resource Aspects and Threatened, Endangered, and Rare Species of the Coastal Bend Region

This section should provide information about significant wetlands associated with seeps or springs and with rivers, streams, and estuaries. Such information would provide a baseline against which to assess proposed water management strategies that would be located within the boundaries of the Region. This information is needed to assess the implications of the plan for long-term protection of natural resources and to provide a meaningful quantitative evaluation of potential water management strategies.

The information on endangered or threatened species would be much more useful if it highlighted and discussed species, including key species not listed as threatened or endangered, occurring in habitats dependent on seeps and springs or rivers and streams and estuaries. Those are the habitats and the species most likely to be affected by water management decisions.

(Pages 1-22 and 1-23) Assessment of Water Conservation and Drought Preparation

Although we acknowledge the timing issues that make it difficult for the initially prepared plans to include the new quantified target goals for water conservation and drought contingency plans, in this instance more information should be provided. For the Coastal Bend Regional Planning Area, the City of Corpus Christi's plans dominate water use in the area. Whether through direct sales or via wholesale contracts, the City's plans apply to most water use in the area. It should be possible to include basic information from the City's plans.

SECTION 2

(Page 2-13) Section 2.3.2 Manufacturing Water Demand

The information provided here about water use for petroleum refining (46 gallons of water per barrel of crude oil refined) is inconsistent with the information provided at page 4C.5-17 (35 gallons per barrel). That inconsistency should be corrected and the calculated water demands should be verified using the correct figure.

(Page 2-15) Section 2.3.3 Steam Electric Water Demand

This demand appears to be potentially overstated. Water demand for steam electric power generation is projected to increase 214% during the planning period. By contrast, water demand for municipal use is projected to increase only about 52% and for manufacturing water use only about 62%. Given the likelihood that these are the primary categories of

use that would drive demand for electrical power, some additional explanation of the projected water demand is needed.

We recognize that these projections are noted as coming from the Board. The planning group may not be able to change them, but it could, and should, provide further explanation for this seemingly anomalous projected growth in water demand. We also note that the TWDB projections, as we understand them, include a projected .5% increase per year in per capita energy demand. Given advances in energy efficiency and escalating fuel prices, we question the reasonableness of the assumption of such continued escalation in per person use of electricity.

SECTION 3
(Page 3-3) Although the information about environmental conditions in water rights is reasonably accurate, it would be more informative to note that most water rights issued prior to 1985 do not include such conditions. Certificate of Adjudication 21-3214 is an important exception to that general rule. Environmental flow conditions are one mechanism for providing water to meet environmental water needs. Environmental water needs are important not just for supporting fish and wildlife resources but the large-scale economic activities, such as commercial and recreational fishing businesses and nature tourism activities along with the hotels, stores and restaurants that benefit from those activities, that are dependent on those resources.

SECTION 4
(Page 4A-2) Section 4A.2.1 Surface Water Allocation.
Here the IPP lists the safe yield of the LCC-CCR/Texana system as 200,000 acft/yr in 2060. By contrast, the figure of 205,000 acft/yr, the year 2010 yield, is used in Table 3-3 (page 3-16) and at page ES-10. However, in Table 3-3, footnote 1 refers to 2050 sediment conditions while footnote 3 refers to 2010 conditions and both footnotes appear to apply to the same yield figure. This is quite confusing.

(Page 4C.1-1) Section 4C. 1. Municipal Water Conservation
In the last sentence of the first paragraph, the discussion of Drought Contingency and Water Conservation Plans required to be submitted to TCEQ acknowledges only the drought contingency portion of the plans. Those plans also must include water conservation measures that apply at all times, not just drought contingency measures designed to achieve additional short-term savings during times of serious shortage.

In the first sentence of the second paragraph, the text is slightly inconsistent with the changes made to Water Code concerning water conservation and water planning. The Water Code (Section 16.053 (h)(7)(B)) requires that regional water plans must **include** water conservation and drought management provisions that are at least as stringent as those required pursuant to Sections 11.1271 and 11.272 of the Water Code. In addition, regional groups must include **consideration** of more stringent water conservation and drought management measures, but, with adequate explanation, may choose not to include those more stringent measures. See § 357.7 (a)(7)(A)(ii) of the Board's rules.

We appreciate the clear presentation of information about per capita municipal water use in Table 4C.1-1 and the accompanying text.

We commend the City of Corpus Christi for its past efforts and successes with water conservation. However, 165 gallons per capita per day (gpcd) is not an acceptable target for the year 2060. It simply is not reasonable to assume that we will not make significant progress in water efficiency over the next 50 years. For example, federal requirements for improved energy efficiency in clothes washers will result in water savings not presently accounted for in Table 4C.1-1 or elsewhere in the IPP. The Region B IPP notes, in accounting for the effect of those federal clothes washer efficiency requirements that will go into effect in 2007, there will be a projected reduction in water use of 5.6 gallons per person per day as a result of purchasing new more-efficient washing machines (see Region B IPP at page 4-18). We urge the planning group both to adopt stronger water conservation recommendations and to account for the automatic savings that will result from the federal washing machine efficiency standards.

Basic measures such as a prohibition on wasting water, water conservation pricing, and water-wise landscape design are not included in the recommended conservation techniques. These are extremely low-cost conservation techniques that can be implemented relatively easily and we encourage the planning group to include them in its recommendations.

The IPP states, at page 4C.1-4, that "[t]he City of Corpus Christi currently uses less water than comparable cities in the central Region of Texas and is currently among the lowest in the state, for all climatological regions." No citation is given for that statement and the basis for it is not clear. In the 2002 State Water Plan, the water use rate for the City of Corpus Christi falls in the upper end of the "intermediate use" category for the 40 largest cities in Texas (see Table 5-4 in Water for Texas-2002 (TWDB 2002). Fourteen cities are shown with higher year 2000 use rates and 25 are shown with lower year 2000 use rates.

We know, from example, that significantly lower municipal per capita water use rates are feasible even today in South Texas. The City of San Antonio has already reduced its municipal water use to about 132 gpcd from a use level of about 213 gpcd in a period of around 20 years. This reduction was achieved through water efficiency measures without accounting for reuse.

(Page 4C.1-5) Section 4C. 1-2
We commend the RWPG for recommending water conservation for all groups, regardless of need. However, the actual targets set by the group should be much stronger.

Region N should consider adopting a water efficiency goal similar to the one adopted by Region L, which is as follows:

> "For municipal water user groups (WUGs) with water use of 140 gpcd and greater, reduction of per capita water use by 1 percent per year until the level of 140 gpcd is reached, after which, the rate of reduction of per

> capita water use is one-fourth percent (0.25) per year for the remainder of the planning period; and
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> For municipal WUGs having year 2000 water use of less than 140 gpcd, reduction of per capita water use by one-fourth percent per year."

These excerpts are from Initially Prepared 2006 South Central Texas Regional Water Plan (SCTR Plan) at p. 6-1.

The planning group, to its credit, is proposing water efficiency savings of up to approximately 2,415 ac-ft/yr by 2060. However, there is potential for much more water efficiency savings. The Table "IPP, N - Comment 1" below, illustrates the potential savings if just six WUGs with water use greater than 140 gpcd, were to implement water efficiency measures to reduce demand to a low but quite achievable target level of 140 gpcd.

Table IPP, N Comment 1 – Calculation of additional savings through municipal water efficiency measures for the six most populous Water User Groups with net water use >140 gpcd at the 2060 time frame.

Water User Group (WUG) name	Population[1]	Region N IPP net water use rate with proposed additional efficiency measures[2] (gpcd)	target demand per person (gpcd)	revised Total Demand of WUG[3] (ac-ft/yr)	additional savings (ac-ft/yr)
CORPUS CHRISTI	470,523	165	140	73,787	13,175
KINGSVILLE	29,248	141	140	4,587	32
NUECES COUNTY WCID #4	28,521	165	140	4,473	798
ALICE	22,524	211	140	3,532	1,787
BEEVILLE	14,885	157	140	2,334	284
PORT ARANSAS	14,348	361	140	2,250	3,544
totals	580,049			90,963	17,808

Note: 1) there are other WUGs with populations greater than some entries here (eg. Ingleside and Portland), but their net water use rates are proposed to be less than 140 gpcd; 2) these net gpcd values reflect the basic use rates with savings due to Plumbing Code embedded (original Region N/TWDB demand) plus savings from additional conservation as summarized in Table 4C.1-4 of the Initially Prepared Plan. 3) revised demand based on target demand per person and population.

In fact, if all Coastal Bend Region municipal water user groups were to achieve a 140 gpcd level through water efficiency measures by 2060, it would represent savings of 24,347 acre-feet per year. This alone would meet roughly half of the region's projected deficit of 46,000 acre-feet and generally at reasonable costs. In particular, some of this conserved water could be used to offset the predicted 2060 shortage of 37,893 ac-ft/yr in the manufacturing sector (section 4C.3). This reallocation of conserved water is similar to

that underlying the statement in section 4C.3 (pg 4C.3-1) that conserved manufacturing water could be used for "other beneficial purposes."[5]

The Coastal Bend Region plan apparently lists at least one new interbasin transfer, referred to as Stage II of Lake Texana, as a recommended water management strategy.[6] That strategy would provide water for a variety of water user groups. For an interbasin transfer to be authorized, the users of the water must be shown to be implementing water conservation plans resulting in "the highest practicable level of water conservation and efficiency achievable." *See* Texas Water Code §11.085 (l)(2). Without including additional conservation measures resulting in a municipal per capita use rate of 140 gpcd or lower, that test is not met. TWDB's rules, recognizing this prerequisite for authorization of an interbasin transfer, require that the regional plan also include that requisite level of water conservation for water management strategies involving new interbasin transfers. 31 TAC § 357.7(a)(7)((A)(iii). Thus, because the IPP does not include the requisite levels of water conservation, the IPP does not comply with the requirements for approval.

(Page 4C.1-11) Section 4C.1.3. Environmental Issues
Our organizations support municipal water conservation as the best and most efficient way to meet the water needs of a growing population without causing undue harm to the environment. It is true that treated municipal wastewater is a significant source of freshwater for the Nueces Estuary. However, that does not mean that increased municipal water conservation would necessarily have a negative impact on the bay, as this section states. The ultimate impact on inflows is a function of many factors.

If the region uses water in a significantly more efficient manner, then less water would be diverted to begin with. As a result, the reservoirs would remain fuller more of the time and pass-throughs would be available to be sent to the bay more frequently which could offset the reduction in return flows. Water conservation could also obviate the need for various new water supply projects that could adversely affect inflows. Additionally, much potential for water conservation lies in increasing the efficiency of, or reducing, outdoor water use. Water used outside the home, for example to maintain landscaping, does not generally end up as treated wastewater.

Therefore, the statement "many of the conservation measures recommended will reduce inflows to the Nueces Bay and Estuary" is too broad. It would be more accurate to say, "Some of the indoor conservation measures recommended could reduce the amount of treated wastewater available to send to the Nueces Bay and Estuary during low flow times."

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[5] Although we did not locate a clear list of recommended strategies, the IPP at pp. 4B.11-13 and 4B.12-7_ does include the possibility of such voluntary transfers as a possible strategy for meeting the shortages for mining and manufacturing demands.

[6] See IPP at pages 4B.11-12 and 4B.12-7 including Stage II of Lake Texana in listing of "one potential plan" to meet needs.

Similarly, in the environmental factors section of Table 4C.1-8, it would be more accurate to say "possible negative impact due to potential for decreased return flows which could be offset by possible positive impact resulting from higher reservoir levels."

(Page 4C.1-12) Section 4C.1.5 Implementation Issues
The text notes that retrofit programs can be expensive and may not be priorities. Although it is true that retrofit programs are often more expensive than other conservation programs, they are very cost-competitive with many other water management strategies included in the IPP.

(Page 4C.3-1) Section 4C.3 Manufacturing Water Conservation and Nueces River Water Quality
Although packaged as one strategy, this section addresses numerous highly variable approaches. Only by using an extremely broad definition can all of those approaches be considered to constitute water conservation. The various approaches have dramatically differing costs and potential impacts.

And, although the cost issues are treated separately, the impact evaluations are all lumped into Table 4C.3-5. As a result, those evaluations are not particularly meaningful and certainly do not constitute the type of quantitative analyses required by Section 357.7 (a)(8)(A)(ii). It generally is not possible to identify which potential impact relates to which potential approach. This is a significant problem because the types and extent of impacts vary dramatically between the different options. For example, a pipeline from Lake Corpus Christi to the Calallen Pool would have dramatically different impacts than blending of Lake Texana water. Unit costs, by contrast, are presented separately and clearly for each option in Table 4C.3-6. That same type of presentation is required for the evaluation of impacts.

It also is unclear what strategy or combination of strategies is actually being recommended. All of the strategies are lumped under the "manufacturing water conservation" heading. Section 4B.12.12.3 summarizes the potential plan for meeting manufacturing needs in Nueces and San Patricio Counties as including "manufacturing water conservation." Unfortunately, the reader is left to guess what strategy or strategies are being evaluated, what strategy within that category is being considered or recommended, and in what amount (Table 4B.12-4 simply indicates the amount from manufacturing conservation would be up to 2,050 acre-feet). As a result, it is not possible to comment meaningfully on the evaluation.

Strikingly, none of the strategies considered involves the types of manufacturing conservation best management practices evaluated and recommended by the Water Conservation implementation task force. Those BMPs generally involve changes in the manufacturing process rather than changes in the water supply. Those BMPs should be evaluated and considered. Those BMPs are listed and considered under the Mining Water Conservation heading (Section 4C.4) even though almost all of them fit logically under the manufacturing conservation category and comparatively poorly under the mining conservation category.

In particular, the potential pipeline from Lake Corpus Christi to the O.N. Stevens WTP seems to be a poor fit for the manufacturing water conservation label. The main purpose of this project seems to be preventing channel losses (estimated at 16,500 acft/yr) and therefore increasing overall supply rather than increasing manufacturing water efficiency (estimated at up to 6,600 acft/yr in 2060).

The pipeline also could have a major impact on channel losses for freshwater inflow releases from Lake Corpus Christi and on the amount of freshwater reaching Upper Nueces Bay. The use of the pipeline likely would dramatically affect bank storage and, by extension, could greatly increase channel losses when freshwater inflow releases were made from the reservoir. That impact does not appear to have been considered. This project therefore should be listed, considered, and assessed independently from manufacturing water conservation.

Far more discussion of the environmental impacts of this project is needed. This project would be expected to have a significant impact on the river corridor between Lake Corpus Christi and the Calallen Pool. It also could dramatically affect the water quality of the amount of water that remained in the river bed.

(Page 4C.5-1) Section 4C.5 Reclaimed Wastewater Supplies
Our organizations believe that reuse can play an important water supply role. However, the amount of reuse appropriate in any particular location can only be determined through careful evaluation of the implications specific to that situation.

The discussion on page 4C.5-29 regarding water quality impairment due to levels of zinc raises the issue of the need to consider water quality issues in assessing the potential increased reliance on wastewater return flows to supply freshwater inflows for Upper Nueces Bay. Certainly as part of the TMDL process, levels of zinc in wastewater discharges into Nueces Bay must be considered, particularly for industrial discharges.

Section 4C.5 lumps together several entirely separate reuse strategies into one category. The planning process requires a meaningful, quantitative evaluation that is lacking here. If the project costs and potential yields are not available, then the project should not be listed as a potential water management strategy.

The wastewater release project described in Section 4C.5.6 is described as having environmental benefits, but these aren't documented quantitatively. There is simply not enough detail available on this project available to merit its inclusion as a potential supply strategy. As a result, the analysis provided in Table 4C.5-8 is not adequate to provide the quantitative evaluation required by 31 TAC § 357.7 (a)(8)(A)(ii) and needed to demonstrate compliance with the requirement for a showing of consistency with long-term protection of the state's natural resources.

(Page 4C.6-1) Section 4C.6 Carrizo-Wilcox Aquifer Supplies
The discussion of the impacts of Cambellton Wells should include discussion of how this project would affect the aquifer over the long term. The Evaluation Summary does

mention that this project "will result in lowering of groundwater levels over time" but gives no specifics. A quantitative evaluation is explicitly required by 31 TAC § 357.7 (a)(8)(A)(ii) and is needed to demonstrate compliance with the requirement for a showing of consistency with long-term protection of the state's water resources, agricultural resources, and natural resources.

Section 4C.7 Gulf Coast Aquifer Supplies
All the several subsections here and in Appendix D dealing with groundwater supplies that may be available from the Gulf Coast Aquifer fail to address an important groundwater-surface water interaction: discharge of freshwater into the coastal estuaries. Recent estimates are that up to 25% of recharge to the Gulf Coast Aquifer in nearby Wharton and Matagorda counties ends up as freshwater discharge to near-coast waters.[7]

Section 4C.7.1 Conjunctive Use of Groundwater Supplies from Refugio County
(Page 4C.7-4) Section 4C.7.1.3 Environmental Issues. This discussion does not acknowledge the potential for adverse impacts to surface streams that is acknowledged for other versions of pumping from the Gulf Coast Aquifer. Such impacts appear likely and should be acknowledged. The other discussions downplay the potential for adverse impacts by noting that "many streams are dry most of the time; thus no measurable impact to wildlife along the streams is expected" (see page 4C.7-22). However, that would only serve to make any streams that do flow more often that much more important to fish and wildlife resources and potentially to small livestock operations. No information is provided about stream impacts related to this project. Additional information about such streams and the potential loss of baseflow is needed. Section 357.7 (a)(8)(B) of the Board's rules requires consideration of "groundwater surface water interrelationships."

No substantive information is provided about potential impacts to agricultural users in the area. The Summary Sheet, on page 4C.7-8, indicates that there may be a slight increase in pumping costs for agricultural users. However, there does not seem to be any discussion of potential costs for other activities that might be required such as deepening wells.

More quantitative information is needed about the impact on levels in the Gulf Coast Aquifer. Information is included in Section 4C.7.3 about anticipated drawdowns (Fig. 4C.7-15) but that information is not referenced here and it is not clear exactly what is included in the analysis depicted in Figure 4C.7-15.

Section 4C.7.2. Groundwater Alternative for Small Municipal and Rural Water Systems and Irrigation, Mining, and Manufacturing Water Users for the Coastal Bend Region
(Page 4C.7-22) The discussion seeks to downplay the potential for adverse impacts by noting that "many streams are dry most of the time; thus no measurable impact to wildlife

[7] Dutton, A.R., and Richter, B.C., 1990 Regional geohydrology of the Gulf Coast Aquifer in Matagorda and Wharton Counties, Texas: Development of a numerical model to estimate the impact of water-management strategies: The University of Texas at Austin, Bureau of Economic Geology.

along the streams is expected." However, that would only serve to make any streams that do flow more often that much more important to fish and wildlife resources and potentially to small livestock operations.

No substantive information is provided about potential impacts to agricultural users in the area. The Summary Sheet, on page 4C.7-35, indicates that there may be a slight increase in pumping costs for agricultural users. However, there does not seem to be any discussion of potential costs for other activities that might be required such as deepening wells. The Summary Sheet also should be moved up one page so it appears before the first page of the next section.

More quantitative information is needed about the impact on levels in the Gulf Coast Aquifer. Information is included in Section 4C.7.3 about anticipated drawdowns (Fig. 4C.7-15) but that information is not referenced here and it is not clear exactly what is included in the analysis depicted in Figure 4C.7-15.

Section 4C.7.3. Central Gulf Coast GAM Analysis for Future Water Supply Projects in Bee, San Patricio, and Refugio Counties
(Page 4C.7-37) The discussion again seeks to downplay the potential for adverse impacts by noting that "many streams are dry most of the time; thus no measurable impact to wildlife along the streams is expected." However, that would only serve to make any streams that do flow more often that much more important to fish and wildlife resources and potentially to small livestock operations.

This analysis of the potential cumulative impacts of the various projects listed in Figure 4C.7-11 is very useful. We commend the planning group and its consultant for including it. However, in Figure 4C.7-13, the information would be easier to interpret if the various wellfields were identified to indicate which project they correspond to.

4C.9.3 CCR/LCC System Yield Recovery
4C.9.3 This concept involves diverting wastewater so that it would be discharged closer to the head of the Nueces Estuary in exchange for reducing the quantity of pass-throughs of freshwater from the LCC/CCR system. Although we agree that the concept is worthy of further consideration, it is not nearly well-enough developed to be included as an actual water management strategy. Much more study and analysis is required before an actual proposal can be developed. Certainly the increased reliance on relatively constant return flows and the corresponding reduction in seasonality of inflow patterns must be carefully considered. Similarly, the amount of actual productivity benefit that might be achieved and, by extension the amount of inflow credit that might be extended, is extremely unclear at this juncture. The predicted yield increase, as a result, is highly speculative.

It is not possible to determine how much of the predicted yield increase is due solely to the increased effluent discharge into Upper Nueces Bay as opposed to the change in trigger levels. The evaluations here consider a lower system storage "trigger" ranging from 40% to 60%, at which point pass-throughs of flows from the reservoir system to

Nueces Bay cease. As noted in the IPP, under the current TCEQ Order the corresponding trigger is 30%. Changes to these trigger levels are certain to be most controversial and, will face an uncertain prospect for approval. One particular issue that requires analysis is the potential for the change in trigger levels to allow the complete capture of moderately sized inflow events which might have the effect of significantly lengthening the duration between freshwater inflow events capable of "freshening" Nueces Bay.

(Page 4C.10-1) Section 4C.10 Pipeline between Choke Canyon Reservoir and Lake Corpus Christi (N-10)
This project has interesting potential for reducing channel losses between the reservoirs. However, the implications (for groundwater impacts, water quality, streambank vegetation, and other issues) of moving that amount of flow out of channel are potentially significant and largely unknown at this point. With respect to impact on inflows to the Nueces Estuary, the picture is a complicated one. As shown in Figure 4C.10-4, the frequency of larger inflow events would be decreased while the amount of inflow during the driest periods would be increased.

As previous studies have shown, the current reduction in some of these higher inflows has had a very significant impact on the estuary (see Irlbeck, M.J. and G. H. Ward, 2000. Analysis of the Historic Flow Regime of the Nueces River into the upper Nueces Delta and of the Potential Restoration Value of the Rincon Bayou Demonstration Project, in US Bureau of Reclamation, Rincon Bayou Demonstration Project: Concluding Report). Also, there is no mention of the significance of the location of the increased wastewater discharges. As exemplified by the proposed project in 4C.9.3, the location where inflows enter the system can be quite significant. Under current configurations, wastewater discharges likely would be returned in the lower portions of the estuary system where the potential benefits are reduced.

This strategy merits further consideration but additional analysis is needed before its impacts can be meaningfully assessed.

(Page 4C.11-1) Section 4C.11 Off-Channel Reservoir near Lake Corpus Christi
As stated previously, because of the scale of potential adverse impacts, new reservoirs should be considered only after existing sources of water, including improved water efficiency measures, are utilized to the maximum extent reasonable.

The freshwater inflow impacts of this project do not appear to have been adequately considered. It appears that a major potential impact from the project would be reductions in freshwater inflow delivered to the upper end of the estuary system. As is acknowledged in various other portions of the IPP, the location of freshwater inflows to the estuary system is very important. However, for this project analysis, it appears that the evaluation only looks at total inflows to the system without considering where the inflows would enter the system.

The analysis also appears to assume that no additional permit conditions for the purpose of protecting environmental flows would be required. The basis for that assumption is far

from clear. The analysis of total freshwater inflows (Figure 4C.11-4) indicates that the occurrence of moderately sized inflow events would be reduced. That figure does also indicate slightly increased total inflows to the estuary system during times of very low inflows. As the Agreed Order recognizes, both the timing and size of inflow events are critical. The chart of median inflows illustrates (Figure 4C.11-4) that this project would push the system even farther from a natural pattern of inflow events, with defined seasonal peaks, and towards a pattern relying more on relatively constant return flows. As part of the consideration of an application for new permit or permit amendment, consideration of appropriate conditions to protect environmental flows would be required. It appears that the yield analysis was done without taking into account such new requirements. That does not paint a realistic picture or comply with TWDB rules. In particular, additional analysis is needed regarding the expected impact on freshwater inflows into upper Nueces Bay.

We do not understand this to be a strategy recommended for implementation. More analysis of potential impacts is needed before it could be meaningfully assessed and considered.

(Page 4C.12-1) 4C.12 Voluntary Redistribution of Available Supplies and U.S. Army Corps of Engineers Nueces Feasibility Studies (N-12)

(Page 4C.12-1) Section 4C.12.2.1 Utilization of Unused City of Three Rivers' Supply
The proposed voluntary redistribution of the portions of supply that are not going to be used by the City of Three Rivers seems like a very appropriate approach. However, we believe the analysis of potential impacts is somewhat inaccurate. The use of water out of the Reservoir system that would not otherwise be used will have impacts on downstream flows. Those impacts likely would not be very significant, but they should be acknowledged.

(Page 4C.12-3) Section 4C.12.2.2 Use or Purchase of Underutilized Nueces County WCID #3 Water Right
The analysis of these proposed transactions is lacking in substance. Again, the approach may be worthwhile. However, there would be adverse impacts on instream flows as a result of the previously unused portion of the water right being used. Those impacts must be acknowledged and discussed.

(Page 4C.12-5) Section 4C.12.2.3 Trades/Transfers with South Central Texas Region
Most of these are highly speculative strategy concepts. Because of their speculative nature, it is not possible to provide a meaningful analysis of the impacts, costs, or potential yield as required by Section 357.7(a)(8) of the Board's rules. As a result, the strategy concepts that have not otherwise been adequately analyzed as stand-alone projects do not qualify for inclusion as water management strategies.

(Page 4C.13-1) Section 4C.13 Stage II of Lake Texana
Without a major commitment to improved water efficiency, a new interbasin transfer, such as this one, simply is not available to the region because the recommended levels of

water conservation will not result in "the highest practicable level of water conservation and efficiency achievable." That is a prerequisite to the authorization of a new interbasin transfer and it is a necessary prerequisite for including a new interbasin transfer as a recommended water management strategy in the regional water plan. Section 11.085 (l)(2) of the Water Code establishes the permitting standard and Section 357.7 (a)(7)(A)(iii) of the TWDB rules establishes the standard for planning. The IPP fails to include the requisite level of water efficiency and, thus, fails to meet applicable requirements for recommending the interbasin transfer as a water management strategy.

New reservoirs should be considered only after existing sources of water, including water efficiency and reuse, are utilized to the maximum extent reasonable.

Contrary to the asserted "negligible impact to Lavaca Bay" characterization (Table 4C.13-7 on page 4C.13-19), Lake Texana II has the potential to cause significant adverse impacts to the Lavaca-Matagorda Estuary System. There are many other supplies available to the region that should be explored before this one.

The IPP includes the following completely unfounded statement:
"Recent studies of Matagorda Bay[fn], indicate that releases made from Lake Texana exceed the mitigation requirements and in some cases enhance the productivity of certain species in the bay and estuary" (IPP at page 4C.13-2). The footnote references the December 1997 study by the Lower Colorado River Authority entitled *Freshwater Inflow Needs of the Matagorda Bay System*. We are unable to find any support in that document for the statements in the IPP. First, the "releases" from Lake Texana are actually limited pass-throughs of inflows. It is difficult to understand how the pass-throughs of inflows exceed mitigation requirements or, for that matter, what "mitigation requirements" are being referred to. To the extent that mitigation requirements exist, they require the pass-through of inflows.

Similarly, it is difficult to understand the contention that the releases "enhance productivity of certain species in the bay and estuary." Again, these simply are partial pass-throughs of naturally occurring inflows. It is difficult to understand just what is being enhanced. Perhaps this is an attempt to refer to analyses showing that different species are favored by different salinity regimes. However, any fair characterization must note that where some species might be favored, it happens at the expense of other species. The claim of enhancement is unfounded.

Finally, the conclusion that release requirements may be less restrictive than the Consensus Criteria also is without basis. In particular, the discussion should acknowledge that the assessment of Freshwater Inflow Needs for the Matagorda Bay System currently is undergoing a revision. The initial document reflecting the results of that assessment acknowledged that it was based on limited data. In addition, because there is already an existing reservoir that adversely affects inflows to Lavaca Bay, particularly during dry periods, there is a great likelihood that additional provisions, beyond the Consensus Criteria, will be needed to minimize the potential for the cumulative impacts of the reservoirs to deprive the estuary of needed inflows.

(Page 4C.14-1) Section 4C. 14 Garwood Pipeline

The IPP grossly understates the potential for adverse impacts on instream flows and freshwater inflows from this strategy. The Garwood Pipeline has the potential to negatively impact the river downstream of the diversion point as well as the Matagorda Bay System. The IPP characterizes the impacts to the Lavaca-Colorado Estuary as "negligible." IPP at p. 4C.14-19 (Table 4C.14-5). The IPP fails to provide any basis for that contention and, in fact, the contention is inaccurate.

The *Water Management Plan for the Lower Colorado River Basin* establishes target and critical flow levels, both for instream flows in the Colorado River and for freshwater inflows to the Lavaca-Colorado Estuary. However, that Management Plan does not ensure that the flows will be available. In fact, the vast majority of the environmental flows are to be met, if at all, through the availability of "interruptible water." Interruptible water consists primarily of flows available during wet periods and flows available because existing water rights are not fully used. As water demands within the Colorado basin increase over time, less and less interruptible water will be available. The Initially Prepared Lower Colorado River Water Planning Group Water Plan (LCRWPG) includes a table outlining the predicted availability of interruptible water over the planning horizon.

Table 4.28, on page 4-26 of the LCRWPG IPP, shows that the availability of interruptible water during drought periods goes from an annual average of about 240,000 acre-feet in 2010 to about 5,500 acre-feet in 2060. As a result, the Lavaca-Colorado Estuary would often not receive the needed target flows or the essential critical inflows. The critical inflows are intended to provide "a fishery sanctuary habitat during droughts" from which organisms could repopulate the bay during wetter conditions. *Water Management Plan for the Lower Colorado River Basin* (page 35) Lower Colorado River Authority. The loss of the 35,000 acre-feet/year that is proposed for diversion from Region N's Garwood project would have a significant adverse impact on freshwater inflows, particularly during dry conditions. Accordingly, that impact must be acknowledged and discussed.

The characterization about the impacts of the relocation of the mouth of the Colorado River (page 4C.14-11) is overstated. It also appears to consider only "average" inflow. Use of "average" flows for evaluations is of questionable utility because large flow events will skew the calculation. The cited reference predicting the increase in average inflow has little bearing upon the highly significant concerns about the amount of inflows in the low to medium range that currently are most critical to water management decisions on the Colorado River. *See* LCRA, Freshwater Inflow Needs of the Matagorda Bay System, 1997).

The diversion of the mouth of the Colorado River will not determine inflows to the bay. The actual amount of inflow into Matagorda Bay will be dependent on rainfall and on water management undertaken in the Colorado River basin. In fact, projected water demands and proposed diversions likely will result in a dramatic reduction of inflows from the Colorado River to Matagorda Bay rather than the increase predicted on page 4C.14-11. In addition, the reference cited for that contention is very outdated and consists

of predictions made before the fact about the likely impacts of diverting the mouth of the river. The diversion of the mouth of the river occurred years ago and actual data and predictions of future trends in inflows to the Bay are now available.

(Page 4C.15-1) Section 4C.15 Brush Management (N-15)
Land stewardship is a broader term that includes brush management as one of its components. Land stewardship is a concept that has been strongly championed by the Texas Wildlife Association. We encourage the group to examine that broader concept as a strategy worthy of consideration. In particular, given the referenced reduction in inflows into the reservoir system, a comprehensive review of the potential for land stewardship practices to reverse that yield decline may be merited.

(Page 4C.17-1) Section 4C.17 Seawater Desalination (N-17)
Seawater desalinization certainly is worthy of consideration as a potential water supply strategy for the state of Texas. However, there are many environmental and energy implications that need to be carefully considered. The sensitivity of this option to issues of the cost and availability of large quantities of electrical power is not discussed in any detail. That is a very significant issue for a large-scale desalination plant, particularly given recent trends in fossil fuel prices. For the seawater only option, the complications of constructing a concentrate disposal pipeline are not adequately discussed. The issue is acknowledged at page 4C.17-24, but without any elaboration on potential environmental impacts. For the combined seawater and brackish groundwater option, the issue of disposal of the concentrate in Oso Bay is not adequately discussed. Similarly, the impacts of pumping of large amounts of groundwater require further consideration.

(Page 6-1) Section 6 Water Conservation and Drought Management Recommendations
We applaud the planning group for including water conservation but, as noted above, we believe more can, and should, be done.

Drought management is a <u>required</u> water management strategy at least for those entities required, pursuant to Section 11.1272 of the Water Code, to develop drought contingency plans. *See* 31 TAC § 357.7 (a)(7)(B). In addition, more stringent drought management measures must be <u>considered</u>. Thus, water management strategies must be included at least equal to the levels required pursuant to Section 11.1272. If the planning group chooses not to include additional drought management measures beyond those levels, it must provide a valid reason for doing so. The initially prepared plan does not provide a valid basis for such a choice.

We urge the planning group to give further consideration to drought management as a water management strategy. The regional planning process is focused on water availability during critical drought conditions. Those conditions are extremely rare, but it is only prudent to plan for them. On the other hand, there is a serious question of whether developing new water supplies that would always be available but would be needed only during the recurrence of a critical drought is always the best approach. One alternative is to identify some water needs that are nonessential and not plan to meet those needs

during a recurrence of critical drought conditions. Thus, for example, a municipal drought contingency plan might call for cutting back on lawn watering (allowing watering only at a frequency adequate to keep plants alive rather than green and thriving), car washing, or filling of swimming pools. That reduced demand then can be calculated and accounted for as a water management strategy for meeting part of the "need" for water during drought periods.

The "dry-year option" is another type of drought management approach. An irrigator can enter into an agreement not to irrigate during identified drought conditions in exchange for a cash payment. The water not used for irrigation can be applied to another use, such as municipal or industrial, during that period. The money saved by not having to develop a new water supply source to meet both the irrigation need and the municipal need during critical drought years likely would be more than sufficient to compensate the irrigator for lost production.

Section 7 Consistency with Long-Term Protection of the State's Water Resources, Agricultural Resources, and Natural Resources

TWDB may not approve a regional plan unless it is able to make an affirmative finding that the regional plan is consistent with long-term protection of the state's water resources, agricultural resources, and natural resources. *See* Texas Water Code Section 16.053 (h)(7)(C). The initially prepared plan does not provide the level of information necessary to support such a finding. The necessary information is lacking for assessing the impact on natural resources located within the region and also for assessing the impact on resources located outside the region but affected by the proposed strategies in the initially prepared plan.

We believe the initially prepared plan for the South Central Region (Region L) contains a good example of an analysis of the issue of consistency. Although we believe some improvements are needed in that analysis and we are in discussions with that planning group about the potential to add an ecological aspect to the consideration of the freshwater inflows issue, it represents an excellent attempt to take a cumulative look at the impacts of the proposed plan.

We acknowledge the analyses contained in Appendix L entitled the "Cumulative Effects of Water Management Strategies." Those analyses do provide information about flow changes, but only by looking at changes from some future condition. We believe it is essential to evaluate changes from current conditions or some other identifiable baseline that the public can understand. If is difficult to appreciate the significance of a change from one potential future condition to some other potential future condition because none of us have experienced either. If the purpose is to understand the practical implications of the changes, the future condition needs to be compared against some condition we have experienced or against some established biological criteria.

Thus, we believe that different baseline conditions should be used to allow for a meaningful comparison. We also are confused about the selection of water management strategies described as being included in the Year 2060 analysis in Appendix L. From the

description on page L-2, it appears that the Lake Texana interruptible supply of 12,000 acft/yr was not included in the baseline analysis, although those supplies are otherwise described as currently being in place. The only new strategies, besides the 12,000 of interruptible supplies, listed as being included for the Year 2060 analysis are 35,000 acft/yr from the Garwood project, 11,000 acft/yr of groundwater from Refugio County, and increased effluent discharges. If these are the recommended water management strategies for the plan, the remainder of the document should indicate that. As discussed above, other portions of the document seem to indicate that additional projects are being recommended.

Impacts to freshwater inflows to the Nueces Estuary are of particular importance in the Coastal Bend Region. We believe more complete consideration, particularly of impacts to those inflows, is necessary in order to have a truly comprehensive regional water plan and to demonstrate compliance with applicable requirements.

Among the most pertinent of those requirements are the following:

- Water Code § 16.053(h)(7)(C), a new requirement for this round of planning. It requires the Texas Water Development Board (TWDB) to affirmatively determine, as a prerequisite to approving a regional water plan, that the plan is "consistent with long-term protection of the state's water resources, agricultural resources, and natural resources..."
- 31 TAC §§ 357.5(l) and 357.7(a)(1)(L), TWDB rules that direct planning groups to "consider environmental water needs *including instream flows and bay and estuary inflows*" and to identify threats to natural resources due to water quantity problems.
- 31 TAC § 357.7 (a)(8)(A)(ii), a new TWDB rule for this round of planning that requires RWPGs to include in their evaluation of water management strategies a *quantitative reporting* of environmental factors, including effects on environmental water needs.

In October of 2004, the National Wildlife Federation released a report called *Bays in Peril: A Forecast for Freshwater Inflows to Texas Estuaries.* It is, as the title suggests, a forecast of future conditions. The report used a standard TCEQ water availability model (WAM) run for the Nueces River to forecast inflows to the estuary if all the existing water permits were fully used and if reuse of wastewater were increased to 50%. The report then evaluated the predicted inflows against each of two ecologically significant criteria: a drought criterion and a freshwater pulse (or higher flows) productivity criterion. Both of those criteria were based on the results of the state's freshwater inflows studies.[8]

The NWF report, and a follow-up letter to Region N in March of this year, acknowledged that, particularly for the drought criterion, the future scenario should be refined. In

[8] See Pulich Jr., W., J. Tolan, W. Y. Lee, and W. Alvis, 2002. *Freshwater Inflow Recommendation for the Nueces Estuary*. Texas Parks and Wildlife Department.

particular, it is possible that the level of wastewater reuse assumed in the NWF analysis may not be pursued in the near future in Region N due to provisions in the TCEQ Administrative Order that governs freshwater inflow requirements to the Corpus Christi Bay system. Currently, pursuant to that Order, credits are given to the City of Corpus Christi for wastewater discharges as an offset to releases from the reservoir system. Other elements of the water management strategies included in the IPP may also affect freshwater inflows somewhat differently than the conditions assumed under the standard WAM scenario used in *Bays in Peril*.

NWF has proposed to work cooperatively with the Region and its consultants to devise an alternative representation of future inflows that reflects anticipated levels of water use and reuse and wastewater discharge with the regional water plan implemented. We acknowledge that discussions are under way to accomplish that result. The expectation is that, instead of the standard analysis used in *Bays in Peril* which assumes full use of existing permits and 50% reuse of wastewater, NWF and representatives of the planning group would jointly produce an analysis that looks at the water usage levels, including potential wastewater reuse or other new projects, the planning group considers most likely for 2060 conditions. Our belief is that the inclusion of such an analysis in the regional plan would substantially satisfy new requirements in this round of planning for "… quantitative assessments of environmental factors" as they relate to consideration of impacts to freshwater inflows and would provide information needed for a meaningful assessment of consistency of the regional plan with long-term protection of the state's natural resources.

An outline of NWF's proposed approach for accomplishing the joint evaluation is attached to this comment letter.

(Page 8-1) Section 8 Legislative Recommendations, Unique Stream Segments, and Reservoir Sites

General Policy Statement: The general policy stated here seems reasonable. We would request that the planning group consider a minor revision to the language relating to reuse. As drafted, it provides "water re-use should be promoted, wherever practical, taking into account permit requirements for return flows for environmental needs." We would suggest that the provision be reworded to read similarly to the following: "water re-use should be promoted, wherever practical, taking into account appropriate provision for protection of downstream water rights, domestic and livestock uses, and environmental flows." Although the protection of downstream water rights and domestic and livestock uses likely is viewed as inherent in the statement, we believe it should be made explicit. In addition, because most permits, having been issued before 1985, do not directly address environmental needs, we suggest that the narrow reference to "permit requirements" be changed to a broad reference to "appropriate provision for protection of environmental flows."

Interbasin Transfers: We believe that many of the protections contained in Section 11.085 and related to interbasin transfers are critically important and should be maintained. The broad reference to the repeal of all of the "additional application requirements for

interbasin transfers that were included in Senate Bill 1" cuts too broadly. Many of those additional protections would be even more important in the absence of the junior priority provision. We urge the planning group to consider a narrower statement.

Section 8.2 Identification of River and Stream Segments Meeting Criteria for Unique Ecological Value

We are disappointed the planning group again declined to recommend stream and river segments for designation. We request that the planning group at least provide some information about the basis for that decision.

Appendix D – Projected Groundwater Availability through 2060 using the Central Gulf Coast Groundwater Availability Model

The analysis approach portrayed here is generally well-founded and thorough. For instance, we support the explicit recognition that predicting effects on the aquifer requires integrating the probable effects of projects in several regional plans. Also, combining the outputs from two distinct groundwater models and including separate descriptions of impacts from local supply pumping versus the major project pumping is helpful. Another positive feature is the explicit recognition of the need to reduce recharge assumptions during drought conditions (page D-4).

However, there are a still several major issues which are either unclear or potentially faulty and thus undermine the value of the information for assessing the plan's consistency with long-term protection of water resources and natural resources. These issues are separate and distinct from the previously discussed concern over the planning group's selection of acceptable water level declines.

1) Failure to include clear <u>portrayal of effects</u> - While other sections of the plan state that the results of the simulations here conform with the permissible water level declines the planning group has adopted (page 3-20 or 4C.7-13), there is no portrayal of those results here. Figure D-3, which is schematic and illustrative, would lead the reader to believe that a net drawdown map is to follow. But, no such map is included. We urge the planning group to include here the same type of map that is included at page 4C.7-15 (Figures 4C.7-4 and 4C.7-5). From the description accompanying Figures 4C.7-4 and 4C.7-5, it appears they may reflect only the impacts of local pumping. In the interest of informed decision-making, we urge the planning group to portray the expected results of the various strategies fully and clearly. It appears that the analysis already has been done.

2) <u>Missing itemization or possible omission of some local pumping</u>. In the section discussing Local Supply Pumping, there is no itemization or discussion of assumed local pumping that will occur in Refugio, Goliad or other Region L counties. This pumping could be substantial. For instance, the tallied Local Supply Pumping for Bee and San Patricio Counties totals about 8,500 ac-ft/yr in 2060. This is in the same ballpark as the proposed major project pumping of 11,000 ac-ft/yr proposed for these same counties (page D-13). It is unclear if there was an assumption of no local pumping in the Region L counties for modeling purposes, or whether the amount of that pumping was just omitted from the discussion.

3) Possible under-prediction of pumping effects and potential water level declines. As shown on Figure D-17 and in accompanying text, the pumping from the LGWSP is anticipated to be highly variable. However, there is no explanation of how the year-by-year pumping schedule of Table D-2 is derived. The schedule appears to be synched with an assumed drought occurring in the 2020-2023 period in which the maximum groundwater withdrawals occur with annual maximums (=41,400 ac-ft) and the maximum 4-year cumulative total (=142,512 ac-ft). Thus, this maximum pumping is portrayed as occurring relatively early in the planning period, starting in 2020. This is only 10 years after the proposed Region N wellfields (page D-13) begin withdrawing an additional 11,000 ac-ft/yr.

It is impossible to know when the next drought of record will occur. As a result, unless the effects of the drought will be the same regardless of when it is assumed to occur, multiple portrayals are needed to assess the potential effects of pumping during such a drought period. For this project, it does not seem plausible to assume that the effects would be the same regardless of when drought conditions occurred. Pumping is predicted to result in increasing groundwater declines over time, with the maximum decline equaling 250ft. When assessing the transient effects of water level declines associated with temporary drought conditions, the assumed period when those maximum pumping levels occur is critical in predicting the extent of the water level declines. Specifically, the water level declines will be different (greater) if the maximum 4-year total (142,512 ac-ft) is withdrawn later in the simulation, for instance in the 2056-2060 time period, especially since the proposed Corpus Christi wellfield pumping 7,000 ac-ft/yr (page D-13) could also be active. Thus, the potential effects on the water levels of the Gulf Coast Aquifer due to the combined pumping for the local supply and the proposed major projects appear to be under-predicted.

Appendix E
The model water conservation plan and drought contingency plans are not included. We urge the planning group to include model plans that incorporate at least the water conservation measures recommended by the planning group and to include recommended minimum levels of water savings to be achieved through both water conservation and drought management measures.

Appendix E.1
The City of Corpus Christi plan for water conservation and drought contingency included in this Appendix does not appear to be current. New requirements that went into effect in May of this year require specific, quantified target goals for water conservation plans and drought management plans. We urge the planning group to include a version of the plan that demonstrates compliance with current requirements.

Appendix E.2
The San Patricio Municipal Water District water conservation plan and drought contingency plan included in this Appendix do not appear to be current. New requirements that went into effect in May of this year require specific, quantified target goals for water conservation plans and drought management plans. We urge the planning

group to include a version of the plans that demonstrates compliance with current requirements.

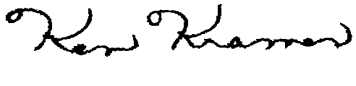
Appendix E.3
The South Texas Water Authority plan for water conservation and drought contingency included in this Appendix does appear to be current. Although stated somewhat ambiguously, page 4 of the document includes a statement of quantified 5-year and 10-year targets, at least for municipal water use. We were not able to locate specific, quantified targets in the drought contingency portion of the document. New requirements that went into effect in May of this year require specific, quantified target goals for water conservation plans and drought management plans. We urge the planning group to include a version of the plan that demonstrates compliance with current requirements.

Appendix L Cumulative Effects of Water Management Strategies
The cumulative effects analysis for surface water flows is a good start. As discussed above, some additional analyses should be added. In addition, discussion of cumulative effects of all recommended groundwater based water management strategies should be included. The information presented in Appendix D indicates that such an analysis has been performed, but as noted earlier, the results are not clearly portrayed. In particular, we encourage the presentation of a map(s) of drawdowns and time series plots of drawdowns at representative points. That information is needed to allow potentially affected persons to understand the implications of the proposed strategies and to support a determination of consistency with long-term protection of the state's agricultural resources, water resources, and natural resources.

Thank you for your consideration of these comments and please feel free to contact us if you have any questions. We look forward to a continuing positive dialogue with the planning group during this and future planning cycles.

Sincerely,





Myron Hess
National Wildlife Federation

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Environmental Defense

Ken Kramer
Sierra Club, Lone Star Chapter

cc: Carolyn Brittin, TWDB
Bill Mullican, TWDB
Kevin Ward, TWDB
Cindy Loeffler, TPWD
Ken Choffel, HDR

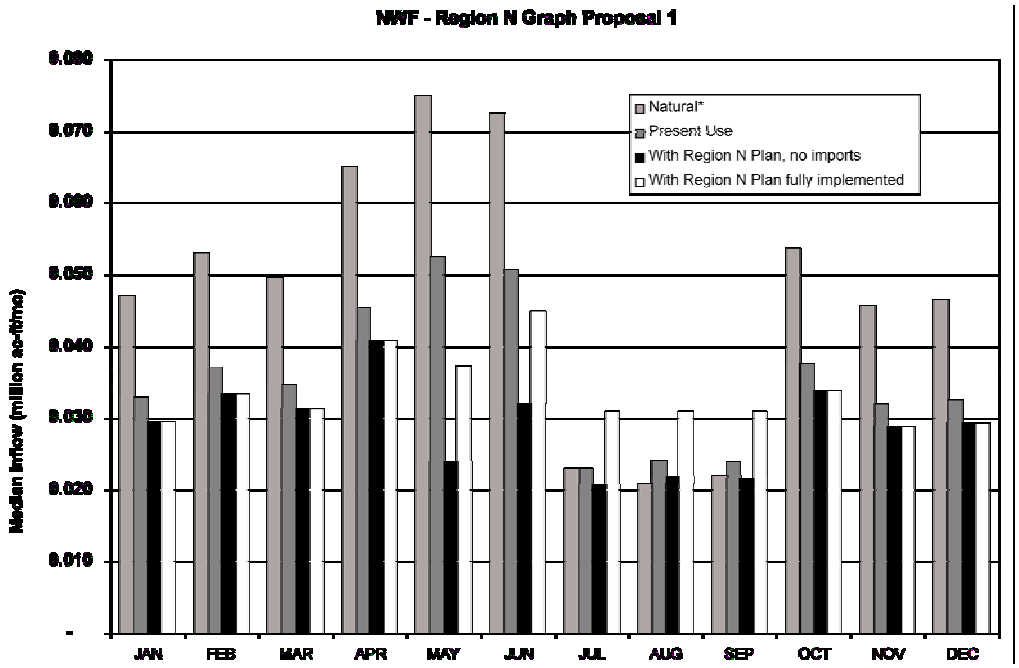
ATTACHMENT I
SUMMARY OF PROPOSAL BY NATIONAL WILDLIFE FEDERATION FOR PROCESS FOR JOINT EVALUATION OF FRESHWATER INFLOW IMPACTS

NWF proposes a three-step process as outlined below.

Step 1 –Predict Freshwater Inflows for Baseline(s) and with Regional Plan Using WAMs

Using the Nueces River WAM, we would jointly predict monthly inflows to the Nueces estuary for 'baseline' conditions and for future conditions with the regional water plan in place. Proposed baselines for comparative purposes are: a) the WAM's "Natural" inflows, representing conditions prior to significant alteration and b) "present use" conditions. Proposed future condition scenarios are c) future conditions with the regional water plan fully implemented except for surface water imports from river basins affecting other estuary(ies); and d) future conditions with the regional water plan fully implemented in all regards. We recommend using two future scenarios, one "with imports" and one "without imports," because such imports likely are detrimental to the estuary system of the import source and are more uncertain in terms of permitting issues. An evaluation of the effects on the source water estuary should be undertaken also, but may prove to be beyond the scope of what can be accomplished in the available time period.

Below is an example graphic depicting flow changes, in this case the median monthly inflows to the Nueces estuary, that would be illustrative of this step. The numerical values here are not significant and are provided only for illustrative purposes.



Step 2 – Perform Ecologically-Based Freshwater Inflow Assessments

For the freshwater inflows calculated for each scenario above, we would perform tabulations for the two ecologically-based assessments as used in the *Bays in Peril* report. The two ecologically-based assessments rely, in part, upon the freshwater inflow recommendations of the Texas Parks & Wildlife Department (TPWD) and the TWDB[1] . The first assessment focuses upon spring / early summer freshwater inflow pulses. The second assessment is focused on six-month periods of continuous low flows falling within the months of March through October (which represent a time of significant biological activity in the estuary).

Step 3 – Present the Results in Final Regional Water Plan

Finally, a summary of the two ecologically-based assessments for the each of the four scenarios would be developed for inclusion in the regional water plan. This would include appropriate graphics and / or tables to summarize the key findings. The preferred approach, if those analyses showed troubling results, would be to consider different combinations of water management strategies in an attempt to meet water needs while avoiding large-scale impacts to inflows. However, given the current timing constraints, the regional water planning group may not be able to consider such alternatives during this round of planning. In that event, we would hope subsequent action would be taken to modify the plan to minimize such impacts. If the analyses do not predict problems then the information would be used to demonstrate a careful consideration of impacts and of consistency with long-term protection of natural resources.

[1] TPWD & TWDB, "Freshwater Inflow Recommendation for the Nueces Estuary of Texas" Sept. 2002.