



October 17, 2005

Mr. Michael Morrison
Chairman, Brazos G Regional Water Planning Group
c/o Brazos River Authority
P.O. Box 7555
Waco, Texas 76714-7555

Attention: Teresa Clark, Administrative Agent

Re: Comments on Initially Prepared 2006 Brazos G Regional Water Plan

Dear Mr. Morrison:

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 Region G Water Plan. We consider the development of comprehensive water plans to be a high priority for ensuring a healthy and prosperous future for Texas. We recognize and appreciate the contributions that 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 Brazos River region and for all Texans.

We do 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. Our organizations appreciate the amount of effort that has gone into developing the draft Plan for the Brazos G Region. Your consideration of these comments will be appreciated.

We also would like to recognize that the Region has made considerable improvement in some areas as compared to the previous 2001 Brazos G Regional Water Plan. In particular the de-emphasis of large reservoirs on the mainstem of the region's rivers is a significant plus. There are also improved portrayals of potential effects of these and other "feasible" strategies on natural resources. We also feel there has been some progress in the arena of water conservation although as we point out more can and should be accomplished.

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 potential, water plans must provide sufficient information to ensure that the likely impacts and costs of each reasonable potential water management strategy are described and considered in a way accessible and understandable to the public. Only with that information can regional planning groups and the public whom they

represent 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 true 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 do 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 numbered comments keyed to different aspects of the initially prepared plan.

A. 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. Damaging and expensive new supply sources simply should not be considered unless, and until, all reasonable efforts to improve efficiency have been exhausted. In fact, that approach is now mandated. 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 do 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.

The Texas Water Code, as amended by SB1 and SB2, along with the TWDB guidelines, establish 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 law¹. 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. 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)

¹ This is a common-sense requirement. We certainly should not be basing planning on an assumption of less water conservation than the law already requires. TWDB guidelines also recognize the water conservation requirements of Section 11.085 for interbasin transfers and require the inclusion of the “highest practicable levels of water conservation and efficiency achievable” for entities for which interbasin transfers are recommended as a water management strategy.

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).

While some improvements are made over the last regional plan, we find that there is substantial need for improved incorporation of water efficiency in the Brazos G Initially Prepared Plan.

B. 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 during rare drought periods.

We believe the IPP is sorely lacking in inclusion of this approach, as detailed below.

C. Plan to Ensure Environmental Flows

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. Accordingly, environmental flows should be recognized as a water demand and plans should seek to provide reasonable levels of environmental flows. Although critically important, designing and selecting new water management strategies that minimize adverse impacts on environmental flows is only one aspect of planning to meet environmental flow needs.

New rules applicable to this round of planning require a quantitative analysis of environmental impacts of water management strategies² in order to ensure a more careful consideration of those additional impacts. However, 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. We point out below some deficiencies in the evaluations of impacts on environmental flows, but we would like to acknowledge that the information presented is a vast improvement over that of the last round of planning.

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 Region (Region K) does include such recognition of environmental flows as a water demand.

² 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).

D. Minimize New Reservoirs

Because of the associated adverse impacts, 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 reservoir site must be minimized. Regardless of whether the proposed reservoir is located inside or outside the boundaries of the region, reservoir development must be shown to be consistent with long-term protection of the state's water, agricultural, and natural resources.

We are very pleased that the several major reservoirs (e.g. Millican, Little River, Double Mountain Fork) proposed in the 2001 Brazos G Regional water plan are not on the recommended list of water management strategies in Table ES-3. As we show below, the smaller Brushy Creek Reservoir is probably also avoidable or could be delayed by decades.

E. Manage Groundwater Sustainably

Wherever possible, groundwater resources should be managed on a sustainable basis. 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. We see Region G's apparent decision to allow for up to 200 to 250 feet of water level decline in the Carrizo-Wilcox Aquifer over the planning horizon as conflicting with this planning directive.

II. PAGE-SPECIFIC COMMENTS

[1] Section. 2 - Current and Projected Population and Water Demand Data for the Region

We urge the planning group to acknowledge environmental flows as a category of water demand. There is precedent for such action: the initially prepared plan for the Lower Colorado River Basin (Region K) does include such recognition of environmental flows as a water demand. While we recognize limitations on the availability of information needed to quantify this water demand, the category could be acknowledged qualitatively during this round of planning with additional effort devoted to quantitative analysis in the future.

[2] Section 2.3.1 & Table 2-4, Municipal Water Demand

We laud the Region and its consultant for including this extensive listing of municipal water use rates (measured in gallons per capita per day). They are a starting point and a very basic measure of a city's or region's water use. As acknowledged by the Texas Legislature and the Water Conservation Implementation Task Force, it is an important measure of water use efficiency. However, in fairness to the Brazos G RWPG and for the public it would probably be informative to state in the title or a note that these are the use rates before any additional water efficiency measures are proposed and that there are additional savings proposed.

[3] Section 2.3.1 & Table 2-4, Municipal Water Demand

There is some confusion on the part of the Region about the water use rates shown in this Table. As the text on page 2-13 states, these are expected to occur as a result of implementation of the 1991 State Water Efficient Plumbing Fixtures Act. However, the last column of the table indicates that some portion of the reduction is attributable to the Plumbing Fixtures Act. Based

on our communications with personnel from the TWDB, we feel that this is an erroneous interpretation of the underlying basis for the TWDB supplied demands.

[4] Section 2.3.1 Municipal Water Demand, City of Abilene

In Table 2-5 in the entries for Jones and Taylor counties, the projected municipal demand for the City of Abilene is detailed by decade. These are striking in that the total demand for the City of Abilene declines by about 17,600 ac-ft/yr (-45%) through the planning horizon. This decline occurs in spite of a projected population growth of nearly 11,000 persons (+9.4%) over the same time frame (from Table 2-1). In the last round of planning the demands for the City of Abilene grew by 12,000 ac-ft/yr (+43%)³. We note that these new projections are consistent with the great drop in per person demand itemized in Table 2-4 for Abilene, from 304 gpcd in 2000 to just 154 gpcd in 2060. However, the magnitude of these changes are far beyond what would be expected for savings due to automatic implementation of the 1991 State Water Efficient Plumbing Fixtures Act, the savings which are embedded in the TWDB-furnished demands. If the values in Table 2-5 are correct, then we believe the Region should explain the origin of these declining demands more thoroughly.

It would appear that such a large decline is due to a water management strategy that is being subtracted from the “demand side.” While this may be due to a pre-existing strategy and thus not part of this planning process for new measures, it seems to present unnecessary confusion to treat it this way. Generally, the practice for other pre-existing strategies, such as the numerous contracts and other measures, is to treat them as expected supplies (e.g. contract renewals, or existing source yields) and fully list the demands.

5] Section 2.3.3 Projections of Steam Electric Water Demand

The water needs for steam-electric power generation seem to incorporate an unduly high demand projection with a projected increase of about 135% in water demand. By contrast, a projected population increase of around 105% (page 2-1) is expected to result in about an 88% increase (page 2-20) in municipal water demand along with a projected 88% increase in manufacturing water demand. Thus, the projected increase in water demand for steam-electric power generation seems to be disproportionate to the sectors that are most likely to drive that demand.

We acknowledge that the steam electric demands result from the document: "Texas Water Development Board: Power Generation Water Use in Texas for the Years 2000 through 2060 Final Report, prepared for the Texas Water Development Board by Representatives of Investor-Owned Utility Companies of Texas, January 2003." From a review of that document, we understand it to include an assumption of a continuing increase in per-capita electrical power usage through 2060 at a rate of .5% per year. It does assume that new power plant capacity will be more efficient in its use of water. As energy costs continue to rise, progress in energy efficiency measures likely will result in reduced per capita usage of electricity and in demands below the projected levels. The projected 2060 demand of 242,344 acre-feet of water for steam-electric power production seems excessive.

³ From Table 2-3 in Brazos G Regional Water Plan, January 2001.

Section 3 - Evaluation of Current Water Supplies in the Region

[6] **Section 3.2.1 Modified TCEQ WAM of the Brazos River Basin (Brazos G WAM)** In the text of this section, and reflected in Table 3.2-1, there are reduced volumes of projected wastewater discharges for certain wastewater facilities to reflect “aggressive plan[s] for future reuse.” Some of these reductions may reflect water management strategies that are not evaluated as required by TWDB rules.

For example in Table 3.2-1, the City of Abilene shows a net loss of 11.36 MGD (=12,730 ac-ft/yr) for such reuse. However, there is no proposed water management strategy involving reuse, either direct or indirect, for this WUG in Section 4B.3. As noted in our comment above, the total municipal “demand” for Abilene is reduced by approximately 17,000 ac-ft/yr over the 60 yr planning horizon (Table 2-5). It appears that this reduction may be due to a reuse water management strategy⁴, but it is embedded on the demand side instead of portrayed and evaluated consistent with the other reuse strategies for 8 other WUGs in Section 4B.3. The net effect is that the apparent large reuse plan is not evaluated in the IPP. We note that the City of Abilene has a pending permit for indirect reuse (Application 12-4161C) for 24,000 ac-ft/yr before the TCEQ. If the reduction in demand for this WUG is anticipated to be met from reuse, either direct or indirect, it should be stated and evaluated.

Section 3.4 Groundwater Availability

[7] Section 3.4.1 Method of Analysis

There are several instances in this Section and the associated Appendix B where reference is made to the 2001 Region G Water Plan or in a few cases to the 1997 State Water Plan. While such reference is entirely appropriate for comparative purposes, such as that given on page B-9 in the appendix, it is not appropriate if the reader must go to that secondary document for critical information. For instance, Table 3.4-3 says that “acceptable drawdowns” were used to determine availability from the Carrizo-Wilcox aquifer and others, but the definition of “acceptable” is not stated. The reader is referred to Appendix B⁵ for details on the description of the Carrizo-Wilcox aquifer and the availability determination. But Appendix B only compares the current estimate (251,000 ac-ft/yr) to other availability estimates. There is no statement of what management goals (= level of acceptable drawdown.) were utilized in the availability determination. The net result of this is that the IPP does not state how groundwater availability was determined for this aquifer. It would appear by inspecting Figure B-2 that the Brazos G RPG has defined “acceptable” drawdowns to be somewhere in the vicinity of 200 feet for the Carrizo Aquifer and 250 feet for the Simsboro unit of the Carrizo-Wilcox. These management plans and definitions, only inferred in the IPP, should be explicitly stated.

⁴ whereas in the 2001 Region Guadalupe plan Abilene’s demands increased by about 12,000 ac-ft/yr over the 50 yr planning horizon.

⁵ The text on page 3-45 incorrectly refers the reader to Appendix C for more details.

Section 4B - Identification, Evaluation, and Selection of Water Management Strategies

[8] Drought Management Measures.

Drought management does not appear as a specific water management strategy in the IPP. Although the text states that drought management was considered as a water management strategy in Section 7, we see no evidence of this here. We see no tabulations of water supply (short term reduced demand), cost, implementation issues, or other fundamental measures in the IPP. As required by 357.7 (a)(7)(B) of TWDB's rules, drought management is a water management strategy that must be evaluated. That provision, along with Section 16.053 (h)(7)(B) also requires that drought management be included as a water management strategy for each entity required to prepare a drought management plan pursuant to Section 11.1272 of the Water Code. Although the planning group may decide, provided it documents the basis for that decision, not to include drought management as a water management strategy beyond those measures specifically required by Section 11.1272, it must include at least the Section 11.1272 level of drought management as a water management strategy. SB2 made inclusion of drought management measures at least at the level required by Section 11.1272 a mandatory prerequisite for approval by TWDB of a regional water plan. See Tex. Water Code Ann. § 16.053 (h)(7)(B). The initially prepared plan does not comply with that requirement.

[9] Section 4B.2.1 Municipal Water Conservation

We find the Brazos G method of tracking savings due to water conservation very confusing, internally inconsistent, and likely in conflict with TWDB rules. On page 4B.2-1 the text relates that the TWDB municipal demand projections have embedded in them the anticipated savings due to the 1991 State Water Efficient Plumbing Fixtures Act. The section goes on to correctly state that any additional proposed savings "must be listed as a separate water management strategy." Unfortunately, this was not the method employed throughout the remainder of the IPP. Savings from the 1991 State Water Efficient Plumbing Fixtures Act were lumped together with those from proposed additional water conservation practices resulting in the average savings of 21 gpcd detailed in Table 4B.2-1.

The rationale for such a treatment is given as a way to avoid potential double counting of savings if a WUG decided to accelerate adoption of efficient plumbing fixtures as a part of their strategy. However, the text on page 4B.2-2 also says that "specific conservation measures are not recommended for each WUG." The lumped method employed in the IPP makes it difficult to quantify the amount of savings proposed as truly due to pro-active water conservation programs.

[10] Section 4B.2.1 Municipal Water Conservation

Although the Brazos G IPP lumps water savings from the 1991 State Water Efficient Plumbing Fixtures Act together with those from proposed advanced water conservation practices, it is still possible to make some analyses of these proposed savings and how they compare to potential actions that the Group could take in this arena. In our attached Table G-IPP-1 we show that just the top ten population centers, representing about 46% of the regional population at the 2060 time frame, could save an additional 59,181 ac-ft/yr. These calculations are based upon the recommendations of the Water Conservation Implementation Task Force. Among other things, the Task Force proposed that all municipal WUGs should strive to achieve an eventual water use rate of no more than 140 gallons per person per day (gpcd). The second goal to guide water conservation efforts is that, in the near-term, municipal WUGs with water use above 140 gpcd

should strive to achieve a one percent reduction in per capita municipal water use per year. We have used these recommendations in our calculations on how much water could be saved in Region G.

We know that this suggested municipal water use rate of 140 gpcd is not unreasonable for Texas. San Antonio provides a real world example of the potential of improved water efficiency. Through a concerted effort, San Antonio has 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.

The South Central Texas Regional Water Planning Group (Region L), in its initially prepared plan, has established water efficiency goals 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

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 at p. 6-1.

[11] **Section 4B.2.1 Municipal Water Conservation**

We laud the Brazos G Group for recognizing in Table 4B.2-2 that saving water due to efficiency measures can result in benefits for the environment, primarily through potential greater streamflow than would be otherwise expected without the conservation measures.

As noted above, however, we believe the region could have been more aggressive in its water-conservation goals. As the following table illustrates, the water savings that could be achieved by adopting the water-efficiency goals recommended by the Water Conservation Implementation Task Force would significantly reduce, and in some instances eliminate, the need for new water supplies for some WUGs. For example, the city of College Station’s water supply plan includes the development (by 2060) of an additional 12,000 acre-feet per year of groundwater from the Carrizo-Wilcox aquifer. More than three-quarters of that demand (9,462 acre feet/year) could be eliminated if the City were to achieve the water-use efficiency rate recommended by the Task Force. For the cities of Killeen and Georgetown, demands for new water supplies could be eliminated altogether.

**Table G-IPP - 2 Comparison of Selected WUG Water Supply Strategies
with Potential Water Conservation Savings**

Water Use Group	Potential Water Conservation Savings* (ac-ft/yr)	Region G IPP Recommended Water Supply Strategy				
		water supply from Reuse	water supply from Existing Surface Water Supplies	water supply from Lower Colorado Region K	water supply from groundwater development	water supply from systems approaches
Round Rock	13,128	7,443		20,928		15,000
Cedar Park	5,054			25,000		
Killeen	5,140		2,500			
Waco	7,356	31,779				
Georgetown	4,878					4,000
College Station	9,462	137			12,000	
Johnson Co. Rural WSC	4,776	20,000				

note: * from attached Table G-IPP-1

[12] Section 4B.2.1 Municipal Water Conservation

Another concern we have with the Initially Prepared Plan regarding water conservation is its pattern of planning for a WUG’s water needs as though the amount supplied through water conservation were not real. In nearly every instance where water conservation is among the supply strategies, the plan includes other water supplies at a level sufficient to meet WUG’s projected 2060 shortfall. The city of College Station is a good example. The IPP shows the city having a 2060 shortfall of 11,166 acre-feet per year, of which 1,183 acre-feet will be supplied by conservation and 137 acre-feet by reuse. The plan then shows the development of 12,000 acre-feet of new groundwater supplies (from the Carrizo-Wilcox aquifer), which costs slightly more than the supplies from water conservation. The idea of including water conservation, and indeed the requirement that it be considered first among all water-supply strategies, is that it should reduce the need for the development of new water supplies. But the IPP consistently “backs up” the supply anticipated from water conservation with other sources, sometimes at more than double the cost. A review of water supply plans for 67 WUGs in Region G (all of those whose plans include water conservation and some other strategy) shows that in 55 instances, supplies attributed to water conservation are made redundant by other sources. We believe the final plan should reflect a confidence and an expectation that water conservation will actually be employed to meet WUGs’ future water needs by reducing the amount projected from other sources. This is particularly important where the alternative source is groundwater.

[13] Section 4B.2.1 Municipal Water Conservation

One other item regarding municipal water conservation is that the IPP fails to address the fact that federal requirements for improved energy efficiency in clothes washers will result in additional water savings. For reference we would steer Region G to examine the Region B IPP which 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 (see Region B IPP at page 4-18). We urge the Brazos G 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.

[14] Section 4B.3.1.1 Wastewater Reuse, Table 4B.3-12

In this table there are several unsupported claims of “none or low impact” expected from wastewater reuse. This is inconsistent with the more accurate, albeit still very general, impact statements of Table 4B.3-3 a few pages earlier.

[15] Sections 4B.3.1.2 through 4B.3.1.10 Wastewater Reuse, Various WUGs

In each of these sections there are respective tables (e.g., 4B.3-24) that have unsupported claims of “none or low impact” expected from wastewater reuse in the Environmental Factors portion of table. These statements are at odds with other statements in the text and other tables (e.g., 4B.3-21) that impacts would be “possibly high” or “variable.”

[16] Sections 4B.3.1.1 through 4B.3.1.10 Wastewater Reuse, Various WUGs

In our view, all of these subsections fail to provide the required *quantitative reporting* of environmental factors, including effects on environmental water needs of this water management strategy [31 TAC § 357.7 (a)(8)(A)(ii)]. This is a new TWDB rule for this round of planning. There are no predictions of changes in streamflow that would be expected from the proposed loss of return flows to the respective receiving streams.

[17] Section 4B.4.7 System Operation of the Brazos River Authority Reservoirs, Environmental and Implementation Issues

While the possibility of increasing overall yield of the existing reservoir system holds promise, we feel that the environmental analysis presented here should be improved. First, as explained on page 4B.4-2 the evaluations only examined yield and flow alterations expected due to a theoretical diversion point at the Gulf of Mexico. While this is perhaps appropriate to find the upper bound of incremental yield improvements it would not appear to be an appropriate point of diversion to evaluate flow impacts. As stated on page 4B.4-23 “streamflows would be greater up to the point of diversion” – in this case at the mouth of the river. However, such an extreme downstream point is at odds with the likely diversion points shown in Figure 4B.4-1. The IPP should make a similar effort to evaluate changes in flows above and below other more likely diversion points, including on principal tributaries with the reservoirs subject to altered operational regimes.

[18] Section 4B.12 New Reservoirs

We also note that many of the studied reservoirs have no specific demand that they would satisfy; “the water would have its greatest usefulness as part of the BRA System (page 4B.12-21). However, in the end only 65,000 ac-ft/yr of the maximum of 395,000 to be gained from the BRA Systems Operation strategy is actually allotted to Region G WUGs and an additional 120,000 is allotted to Region H.

[19] Section 4B.12.1 through 4B.12.7 New Reservoirs, Engineering and Costing

TWDB Guidance for preparation of regional water plans⁶ states that “each potentially feasible WMS evaluation conducted by Planning Groups to meet needs will include the cost of water that is *delivered and treated* for end user requirements” (emphasis added). We note that the cost for water from the reservoirs tabulated in this section is only for raw water at the reservoir.

⁶ Officially known as Exhibit, Guidelines for Regional Water Plan Development, available at <http://www.twdb.state.tx.us/RWPG/twdb-docs/Data%20Guidance%20072302-modified.pdf>

Sometimes this is mentioned in the text for each reservoir. However this is not mentioned in the summary of this section and in Table 4B.12-1. This should be made clear to prevent a reader from inadvertently comparing these costs to other water management strategies providing or saving fully delivered and treated water. While we understand that it is not possible to fully detail delivery and treatment cost without a specific WUG demand identified, it would be possible to make some reasonable estimates of such cost assuming delivery of the firm yield over a specified distance with treatment and distribution cost added in per the formulas and techniques detailed in Section 4B.1.4. As the text of this section alludes to, new reservoirs as a water management strategy are among the most contentious of options. Decisions over the long-term about such supply strategies will be greatly influenced by issues related to their cost and benefits; this section should make a fuller attempt to portray more accurately the likely cost of water from these sources.

[20] Section 4B.12.1 through 4B.12.7 New Reservoirs, Environmental Issues

With regard to analyzing impacts of potential reservoirs on river and/or stream flows, we acknowledge the great improvements in the methods included in the IPP compared to the 2001 Region G Water Plan. The IPP includes an analysis of change in variability of streamflow with and without the projects, in addition to the typical tabulations of changes in median streamflow and frequency plots. We also acknowledge the often frank assessments such as that for the proposed Double Mountain Fork reservoir “these reductions in flow would have substantial impacts on the instream biological community...”(page 4B.12-59).

However, we continue to urge the Brazos G Planning Group to move towards an analysis that more fully explores changes in flows, such as changes in low flow duration, that statistical measure like changes in medians and variance can not capture⁷. Also, there is a need to attach biological significance to the anticipated changes in flow. We believe new rules adopted since the first round of planning require such a step in order to demonstrate compliance with the requirement for showing of “consistency with long-term protection of the state’s natural resources.” Specifically, 31 TAC § 357.7 (a)(8)(A)(ii) requires an evaluation 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.” This evaluation is needed to ensure that the implications of various potential water management strategies have been fully considered. As laid out in our letter and summary of options to evaluate environmental flows distributed to you in June 2004⁸, the Texas Parks and Wildlife Department (TPWD) proposed a method providing information about flow changes *and* about their biological significance by assessing how well ecologically based flow targets for streams and rivers are met⁹. We urge you to revisit that document and the advice it contained.

⁷ A great body of research on instream flows emphasizes that magnitude, frequency, and timing of key ecologically significant flow events, such as a springtime pulse, are the appropriate measures for evaluation. For example, see discussion in Richter, B. D., R. Mathews, D. L. Harrison, and R. Wigington. 2003. *Ecologically Sustainable Water Management: Managing River Flows for Ecological Integrity*. Ecological Applications, Vol 13, pgs. 206-224

⁸ National Wildlife Federation, Sierra Club, Environmental Defense, white paper titled “Environmental Flows and Natural Resource Protection in Regional Water Planning”

⁹ presented by TPWD representative to the Brazos G Group at meeting on March 3, 2004.

[21] Section 4B.12.6 Little River Reservoirs, Environmental Issues

With regard to the evaluation of changes in streamflows for both the 310' or 330' options, the text states that based on anticipated reductions in median flows, these "should not have substantial impacts on the biological community...." These conclusions are basically unsupported given the simplicity of the analyses. As detailed in the comment above, we urge the Brazos G RWPG to consider a more complete analysis of the potential impacts of this reservoir.

[22] Section 4B.15.1.5 & 4B.15.2.5 Carrizo-Wilcox Aquifer Development, Implementation Issues

These sections fail to provide acceptable quantitative assessments of environmental factors. There is no evaluation of the anticipated drawdowns that the proposed two projects would lead to in the aquifer, although based on the discussion of GAM for this aquifer in Section 3.4 and Appendix B this seems entirely possible to accomplish.

[23] Section 4B.15.1.3 & 4B.15.2.3 Carrizo-Wilcox Aquifer Development, Environmental Issues

There are very general and unsupported statements in these sections that impacts on nearby streams' environmental water needs would be low. There is no description of whether streams in the area of the anticipated projects are "losing" or "gaining" with regard to the aquifer, the most fundamental level of knowledge required to justify such a statement. Furthermore there are additional bullet points regarding beneficial increases in return flows. While return flows would likely increase, this list gives the unbalanced appearance that water is being created. Again such statements should be placed in context regarding the possible countervailing loss of baseflows in streams due to declining aquifer levels.

[24] Section 4C - Water Supply Plans, City of Round Rock (as example)

We believe that many or all of the water supply plans for individual WUGs in this section share a common error. It stems from the previously mentioned problematic lumped treatment of water efficiency savings stemming from both the 1991 State Water Efficient Plumbing Fixtures Act and additional conservation measures.

For example, in Table 4C.36-13 the shortage for the City of Round Rock in 2060 is shown as 42,548 ac-ft/yr. This was transferred from Table 4A-18 where the City of Round Rock's demand in 2060 of 62,680 ac-ft/yr formed the basis of the calculation of the shortage. However, that demand is based on the TWDB projected per person use of 191 gpcd of Table 2-4 and the population found in Section 2. Thus, the 2060 demand already has plumbing code savings deducted from it which amounted to 11 gpcd from 2000 to 2060 (Table 2-4). The problem is that in Table 4C.36-13 the savings from water conservation are based on the Region G- type lumped savings due to a total 21 gpcd reduction. Unfortunately, this also includes the 1991 State Water Efficient Plumbing Fixtures Act as explained in Section 4B.2. We believe, only the savings to accrue from measures over and above the Plumbing Fixtures Act savings, in this case those from the 10 gpcd additional reduction, should be counted to be on consistent basis with the indicated shortage.

[25] Section 4C.1.10, Bell County, City of Killen

Apparently, no additional conservation was proposed for this WUG because the per person use rate (gpcd) in 2000 was less than 140. However, as shown in the Table 2-4, the demands for this

WUG do go up above 140 later. For instance, in 2010, the per person demand goes up to 154 and then 179 gpcd in 2010 and 2020, respectively. Thus additional conservation should have been proposed for this WUG. The TWDB’s guidelines require the consideration of more stringent conservation measures for all water user groups with water needs. If additional measures are not included then the decisions not to include them must be explained. See 31 TAC § 357.7 (a)(7)(A)(ii).

[26] Section 4C.10.2 Falls County, City of Marlin

Apparently, no additional conservation was proposed for this WUG because there was no shortage projected through 2060. However, this section and the Executive Summary recommend the Brushy Creek Reservoir to supply 2000 ac-ft/yr to the City of Marlin so that the City could curtail use of water from another source. This project could be avoided or delayed by several decades if the City of Marlin would implement water conservation measures. Based on the population and water demand figures in Section 2, we find that the City has extremely high per person water use. In the following Table we calculate the per-person demands for the City and illustrate the potential savings the City could gain from a 1% per year reduction as recommended by the Water Conservation Implementation Task Force.

Table G-IPP- 3 City of Marlin, Calculation of water use rates and illustration of potential water conservation savings.

	2000	2010	2020	2030	2040	2050	2060
Population	6,628	6,862	7,155	7,455	7,718	7,927	8,173
Water Demand (ac-ft/yr)	2,599	2,660	2,749	2,839	2,913	2,983	3,076
per person demand (gpcd)	350	346	343	340	337	336	336
per person demand with 1% reduction per year*	350	317	286	259	234	212	192
savings with 1% reduction (ac-ft/yr)	0	227	455	677	889	1,103	1,323

note: * gpcd is based on 1% annual reduction starting with the year 2000 demand.

Section 6 Water Conservation and Drought Management Recommendations

[27] Section 6.2.1 Municipal Water Conservation

This section should at least summarize the total of proposed savings from water efficiency measures and should break out the default savings from the 1991 State Water Efficient Plumbing Fixtures Act and other explicit water efficiency measures. This total is only presented in the Executive Summary Table ES-3 and at the end of Section 4.

[28] Section 6.2 Drought Management

Although the text states that drought management was considered as a water management strategy we see no evidence of this. We see no tabulations of water supply (short term reduced demand), cost, implementation issue, or other fundamental measures in the IPP. The inclusion of the drought management plans for two example cities in an appendix, while illustrative, does not constitute a water management strategy evaluation. Further, we take issue with statements made by the Region G consultants during the plan’s development that they do not consider drought management to be an appropriate tool for long-term water planning. The consultants have told

planning group members they believe that planning to not meet certain water needs during a time of drought contradicts the very purpose of water supply planning. Both the governing statutes and TWDB rules require regions to address drought management. We believe that implementing temporary changes in water use during time of severe drought are far preferable to constructing expensive, environmentally damaging pipelines or reservoirs or drawing down aquifers in unsustainable ways. Drought management need not be economically harmful (another objection raised by the consultants during planning group meetings.) If a city pays area farmers to exercise a dry-year option on irrigation water, the farmers are not harmed economically and the city avoids the cost of overbuilding its water infrastructure to meet a level of demand that occurs only rarely. The idea that the state's overall economy is harmed by a temporary reduction in farm outputs is highly speculative.

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

One of the key changes that SB 2 made to the water planning process was to create a specific statutory criterion mandating that a regional water plan may not be approved by TWDB unless it is shown to be consistent with long-term protection of the state's water resources, agricultural resources, and natural resources. The initially prepared plan devotes a reasonable amount of effort to this, but we feel that several shortcomings still exist.

[29] Section 7.1.1 Cumulative Hydrologic Effects of the Regional Water Plan Implementation, Surface Water

We laud the region for the basic tenet of this section: to assess cumulative impacts of all recommended surface water based water management strategies. However, we feel that a glaring deficiency is that there is no tangible baseline that a reader can use to appreciate the magnitude of the anticipated flow changes. As this section of the IPP is currently formulated the reader must try to grasp the incremental flow changes of the plan's suite of strategies against another theoretical scenario, namely the full water rights, aggressive reuse baseline detailed on page 7-3 through 7-4. As we have communicated in the past, it would be quite easy for the Region to include a more useful baseline such as the current conditions (WAM Run8), or historical values from the US Geological survey stream gauges. We're not advocating that the baseline the region used be dropped; it is useful and should be retained because it does essentially indicate the incremental changes of the IPP over and above what is already authorized.

With regard to how this section complies with rule requirements, we feel it is quite lacking. If existing water rights, when used fully, would cause serious disruption of environmental flows resulting in harm to natural resources, merely minimizing additional incremental 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. Thus, we feel that this analysis simply comparing changes from a theoretical baseline does not demonstrate long-term protection of the state's natural resources.

[30] Section 7.1.1 Cumulative Hydrologic Effects of the Regional Water Plan Implementation, Surface Water

There is another important facet of this evaluation that is also potentially misleading. As stated on page 7-6 the remaining portion of the BRA Systems Operation not assigned to a specific WUG was assumed to be diverted at the downstream end of Region G. Only some 65,000 ac-ft

of the potential 395,000 ac-ft/yr (Table 4B.4-1) supply from this water management strategy is used in Region G for specific WUGs (Table ES-3 and Section 4). Thus, in the analysis of this section over 83% of this theoretical diversion takes place at a fictional diverter far downstream. The effect of this is that releases from reservoirs under this water management strategy bolster streamflows and raise medians as shown in some locations compared to the other theoretical baseline. While we have problems with the baseline as discussed above, the problem here is that there are no effects shown for other potential diversion points in a more mid-region location.

[31] Section 7.1.1 Cumulative Hydrologic Effects of the Regional Water Plan Implementation, Surface Water

As we pointed out above in comments on Section 4B, we also believe it is necessary to attach biologic significance to the forecast changes in streamflows in order to evaluate consistency with long-term protection of natural resources. There is no such level of evaluation in this section.

[32] Section 7.1.2 Cumulative Hydrologic Effects of the Regional Water Plan Implementation, Groundwater

This section should more fully divulge the expected drawdowns from the actual suite of proposed water management strategies. More fundamentally, we do not feel that the statements that drawdowns will be less than the 250 foot declines presented in other portions of the IPP (Appendix B) provide assurance of long-term protection of the states natural resources.

[33] Section 8, Recommendations for Unique Stream Segments

It is disappointing to see that the Planning Group has again declined to recommend any stream segments for designation as unique stream segments. The Texas Legislature acted definitively in expressly limiting the legal effect of such designations: "This designation solely means that a state agency or political subdivision of the state may not finance the actual construction of a reservoir in a specific river or stream segment designated by the legislature under this subsection." Tex. Water Code Ann. § 16.053 (f). It is difficult to imagine how that language could be made more clear.

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

Sincerely,



Susan Kaderka
National Wildlife Federation

Mary Kelly
Environmental Defense

Ken Kramer
Sierra Club, Lone Star Chapter

cc: David Meeseey, Region G Liaison, TWDB
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Cindy Loeffler, TPWD
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Table G-IPP-1 – Region G, Calculation of additional savings through municipal water efficiency measures for Water User Groups with net water use >140 gpcd at the 2060 time frame

Water User Group (WUG) name	Year 2000 use rate (gpcd)	Region G IPP proposed water use and water efficiency data, Year 2060						environmental community proposed savings, Year 2060		
		Population	Portion of region (%)	IPP total demand of WUG (ac-ft/yr)	TWDB base use rate (gpcd) [includes plumbing code]	total savings proposed by Brazos G* (ac-ft/yr)	net water use rate with plumbing code and other efficiency measures (gpcd)	use rate** (gpcd)	revised total demand (ac-ft/yr)	addtl. savings (ac-ft/yr)
1 ROUND ROCK	201	292,970	8.8%	62,680	191	3,610	180	140	45,942	13,128
2 CEDAR PARK	185	187,931	5.6%	37,892	180	3,368	164	140	29,470	5,054
3 KILLEEN	120	169,937	5.1%	31,789	167	-	167	140	26,649	5,140
4 WACO	183	152,715	4.6%	31,304	183	-	183	140	23,948	7,356
5 GEORGETOWN	193	136,082	4.1%	27,895	183	1,677	172	140	21,340	4,878
6 COLLEGE STATION	225	131,981	4.0%	31,342	212	1,183	204	140	20,697	9,462
7 ABILENE	304	126,835	3.8%	21,879	154	995	147	140	19,890	994
8 BRYAN	147	109,881	3.3%	16,493	134	-	134	134	16,493	0
9 JOHNSON CO. RURAL WSC	171	106,657	3.2%	22,699	190	1,198	180	140	16,725	4,776
10 TEMPLE	224	105,519	3.2%	24,939	211	-	211	140	16,547	8,392
Totals		1,520,508	45.6%	308,912		12,031			237,700	59,181

notes:*Reg G IPP proposed savings from Tables in Section 4C for each WUG. ** proposed water use rate is based on 1% per year reduction from year 2000 water use, but no less than 140 gpcd unless the WUG was already at that level in year 2000.