

ATTACHMENT 1

TWDB Contract No. 0704830688

Region C Region-Specific Studies

Study 1: Further Implementation of Water Conservation and Reuse Strategies

Study 2: Interregional Study of Toledo Bend Reservoir

Study 3: Further Implementation of Direct and Indirect Reuse (Two separate reports)

Study 4 Task 1: Water Supply Study for Ellis County, Southwest Dallas County, Southeast Tarrant County and Johnson County

TWDB Comments on Draft Region-Specific Study Reports

1. Further Implementation of Water Conservation and Reuse Strategies

- a. Please consider including definitions for both conservation and reuse in the beginning of the report for the general reader.
- b. Please consider including a map of the Region C Water Planning Area in the beginning of the report.
- c. Page 3 paragraph two of the Executive Summary states that the 2006 Region C Water Plan reported that existing reuse is over 50,000 acre-feet per year. This amount is almost 100,000 acre-feet per year as correctly referenced in Chapter 4, page 23. Please correct the statement in the Executive Summary of the final report.
- d. Scope of Work Task 3, Item G states that the study will “provide a detailed discussion about the criteria being used by different entities to implement certain strategies and identify opportunities to coordinate the criteria to provide consistency across the region.” The report does not appear to address this requirement. Please address this in the final report.
- e. For Figure 4.1 and Tables 4.2 and 4.4, please use a consistent name for each of the BMPs. For example, In Table 4.2 and Figure 4.1 one of the BMPs is listed as “coin-operated clothes washer rebate”, while in Table 4.4, the same BMP is named as “Rebate program for residential water efficient washing machine” and in Figure 4.1, the reuse BMP is listed as “Reuse”, while the same BMP is named “Reuse of treated wastewater effluent” in Table 4.2 and 4.4.
- f. On page 18, last paragraph, the “Federal Residential Clothes Washer Standards” is not listed as one of the highest effective rated BMPs but according to the Table 4.4, this BMP received 73% of the effectiveness ratings. Please reconcile the text with the data in Table 4.4.
- g. Please include, either within the report or as an appendix, a list of all WUGs and Providers surveyed along with a summary of which Best Management Practices are being

implemented by each entity. Scope of Work Task 4, Item A requires that an update of all recommended water conservation strategies, including reuse, be included in the report.

- h. Scope of Work Task 4, Item C requires that up to two meetings be held with Region H consultants regarding the planning effort for environmental flows considerations. Please summarize these meetings and their results in the body of the final report or include meeting memoranda as an appendix in the final report.
- i. Scope of Work Task 4, Item F requires coordination with Region H consultants to review the TWDB instream flow model and requires that Region C consultants provide their findings to Region H consultants after running the instream flow model. Please summarize these activities in the body of the final report or include the summary as an appendix in the final report
- j. The Report skips Section 5.5 -- Section 5.6 is listed after Section 5.4.3. Please consider revising the section numbers in the report.
- k. On page 87, please footnote the definition of “RF” in RF Factor in Table 8.1.
- l. In Appendix A (References) please include Texas Water Development Board Report number 362, “Water Conservation Implementation Task Force Water Conservation Best Management Practices Guide” as a reference.

2. Interregional Study of Toledo Bend Reservoir

- a. Thank you for submitting your comments on the Region I draft report. However, the Region C Scope of work requires that written meeting reports and/or technical memoranda for each coordination meeting or issue be submitted in lieu of a full report. Please submit this information when submitting the other final reports.

3. TWDB Further Implementation of Direct and Indirect Reuse

Athens Pilot Project Report – Indirect Reuse

- a. In addition to submitting an electronic copy of the final report, please submit electronic copies of all appendices as well as all figures in the report, as required by the contract between TWDB and Region C.
- b. Blank pages are present throughout the report. Please remove the blank pages in the final report.
- c. Scope of Work Task 1, Item F requires a planning level analysis of the detention time in Lake Athens that would be associated with two discharge quantities being discharged into Lake Athens at up to three discharge locations. It does not appear that the draft report addresses this requirement. Please include this analysis in the final report.

- d. Scope of Work Task 2, Item P states that the study will achieve coordination between Athens Municipal Water Authority and City of Athens to develop a consensus about the recommended options and the implementation plan. The report does not discuss this coordination. Please include a discussion of the coordination between the entities in the final report.
- e. Page ES-1 of the Executive Summary and Page 1-1 of the Introduction state that the 2006 Region C Water Plan projects that reuse of reclaimed water will supply 874,417 acre-feet/year in 2060. However, the Region C Water Plan states on page 4B.20 that the volume of reuse recommended in Region C is 795,466 acre-feet/year in 2060. Please clarify this discrepancy in the final report.
- f. Chapter 5, Figures 5-4 to 5-6 are not clear. Please consider an alternative way to present this information or include additional information in the final report to clarify these figures.
- g. Chapter 6, Page 6-16 states that membrane filtration involves size exclusion as a mechanism. However, membrane filtration is also achieved by a combination of different mechanisms, including sieving, hindered transport through the narrow membrane pores and other specific interactions between the components and the membrane material (such as adsorption or electrical interactions). Please consider including this information in the final report.
- h. Appendix B, Figures B-3 and B-6 are confusing because the figures list the 'West WWTP Maximum Permit Limit', 'North WWTP Maximum Permit Limit', and 'West WWTP Reported' in the legend; however, there are no values present in the figure for these parameters. If the values of these parameters are zero, please indicate so in the Figures.

Fort Worth Pilot Project Report - Direct Reuse

- a. In addition to submitting an electronic copy of the final report, please submit electronic copies of all appendices as well as all figures in the report, as required by the contract between TWDB and Region C.
- b. Blank pages are present throughout the report. Please remove the blank pages in the final report.
- c. Scope of Work Task 2 Item D states that the study will gather and analyze data required to determine the cost avoidance/deferment associated with each of the benefits identified for the selected Water Reuse projects. The report did not appear to address this requirement. Please include this analysis in the final report.
- d. Page ES-1 of the Executive Summary and Page 1-1 of the Introduction state that the 2006 Region C Water Plan projects that reuse of reclaimed water will supply 874,417 acre-feet/year in 2060. However, the Region C Water Plan states on page 4B.20 that the

volume of reuse recommended in Region C is 795,466 acre-feet/year in 2060. Please clarify this discrepancy in the final report.

- e. In Chapter 4 on Page 4-7 and 4-8, the most common unit used for expressing hardness and alkalinity is mg/L as CaCO₃. However, instead of reporting the hardness values in mg/L as CaCO₃, the report expressed the values in mg/L. Please clarify the constituent being reported for total hardness.
- f. In Chapter 4, according to Figure 4-4, the values of hardness were greater than 150 mg/L from Jun-05 to Jun-06. However, for Jul-06 and Aug-06, the values of hardness were zero. Please review the figure to confirm the results shown or clarify the results in the text.
- g. In Chapter 7, beginning on Page 7-2, within the discussion and comparison of the different advanced treatment technologies and conventional treatment technologies, it is important to know whether the advanced technologies and conventional technologies have the same treatment capacities. During the discussion of BAF, IFAS, MBBR, SBRs, MBRs, and UV light disinfection, please consider including a comparison of the capacities of these technologies with the capacities of conventional technologies.
- h. In Chapter 7, beginning on Page 7-2, the report compares the cost of BAFs, MBRs, and UV light disinfection with the cost of conventional treatment technologies. However, the cost of IFAs, MBBRs, and SBRs were not compared with the cost of conventional treatment technologies. Please consider including a comparison of the costs of IFAs, MBBRs, and SBRs with the cost of conventional treatment technologies in the final report.
- i. Table 7-1 has a table heading titled, "Insert into Conventional Facilities". The Title is confusing. Please clarify or reconsider the title of this heading.
- j. In Chapter 7, it would be useful to include a table that summarizes the advantages and disadvantages of the different advanced treatment technologies. Please consider adding a Table in Section 7.4 with this information in the final report.

4. Water Supply Study for Ellis County, Southwest Dallas County, Southeast Tarrant County and Johnson County

- a. Please note that TWDB's acceptance of a final report for this study does not constitute approval of any revised population or water demand projections contained therein. The formal procedure for requesting revised projections is stated in TAC 357.5 (d) (2): "Before requesting a revision to the population and water demand projections, the regional water planning group shall discuss the issue at a public meeting for which notice has been posted pursuant to the Open Meetings Act in addition to being published on the internet and mailed at least 14 days before the meeting to every person or entity that has requested notice of regional water planning group activities. The public will be able to submit oral or written comment at the meeting and written comments for 14 days

following the meeting. The regional water planning group will summarize the public comments received in its request for projection revisions. Within 45 days of receipt of a request from a regional water planning group for revision of population or water demand projections, the executive administrator shall consult with the requesting regional water planning group and respond to their request."

- b. In addition to submitting an electronic copy of the final report, please submit electronic copies of all appendices as well as all figures in the report, as required by the contract between TWDB and Region C.
- c. Please include a list of the names of the utilities and cities and personnel that attended each of the meetings in the appendix of the report or as an alternative, if there was a meeting memo report written for each meeting, please include that in the appendix.
- d. Scope of Work, Item C states that this study will include the review of specific publications. The draft report does not indicate that this review has taken place. Please summarize the findings of these publications in the final report. Also, please list these publications in Appendix A (References).
- e. Scope of Work, Item H states that the study will "Analyze alternative approaches to provide water to eastern and central Ellis County and develop a recommended system, including phasing and specific implementation plans". Scope of Work Item I states the study will "Develop a specific implementation plan for strategies" for eastern and central Ellis County. Although strategies were updated in the study including estimates of capital and operating costs and alternatives are listed for the Sokoll Water Treatment Plant, the report does not include evaluations of alternatives for any other entities in this part of the study area nor does it include the phasing and specific implementation plans as required by the scope of work. Please include the analysis of the alternative approaches as well as the phasing and implementation plans for the recommended approach in the final report.
- f. Scope of Work Item K states that up to six conceptual alternatives to supply water to Johnson County will be developed by this study. The draft report does not include this information. Please include this information in the final report or justify its omission.
- g. Scope of Work Item M states that the study will "Develop a recommended system, including phasing and specific implementation plans" for Johnson County. Although strategies were updated in the study including estimates of capital and operating cost, the report does not include phasing and specific implementation plans. Please include phasing and implementation plans in the final report or justify their omission.
- h. For Figure ES.1 on Page ES-2 (this figure is also in Section 1 as Figure 1.2), please consider adding the county and planning group names to the map.
- i. Figure 1.2 on Page 1-2 should be a map of Region C as indicated in the text on page 1-1.

- j. Chapter 4 gives a good summary of information for Ellis and Johnson counties but does not include as much summary information for the other portions of the study area -- Southwest Dallas and Southeast Tarrant Counties. Please summarize information and provide graphs and summary tables for all study areas in the final report.
- k. In Chapter 4, please include a more detailed explanation of the methodology used to determine the increases in population and demand that are recommended in the report. Also, please define the “low” and “high” projections and explain how they were selected.
- l. Although Chapter 4 discusses the different sources for population projections data including the US Census, North Central Texas Council of Government (NCTCOG), and the Texas State Data Center, none of these sources provide projections for non-city utilities. In the final report, please explain that for utilities, unlike cities, only limited projections data is available to develop updates. Please note this distinction in the memorandum in Appendix C as well.
- m. In Chapter 5, please include a county-level summary comparison of projected demand, current supply, and water management strategy volumes.
- n. In the Appendix C memo it states “...the recommended projection is typically based on information provided by the entities, which is usually more than the regional water plan projections and less than the NCTCOG projection.” However, the recommended values for the individual entities in Table 1 show that in the vast majority of cases, the recommended value is equal to both the “high” and “low” value or the recommended value is the “high” projection. Only the county level sums for the Ellis, Johnson, and Southern Tarrant counties are between the low and high values. Please clarify this statement and provide more quantitative narration for the recommended projections as compared to the 2006 Region C Water Plan.
- o. In Appendix C Table 1, please annotate the table with the source of the recommended projections (NCTCOG, 2006 Region C Water Plan, Revised Projections from Survey, Freese & Nichols’s Study, etc.). Although the figures in Appendix D present the source of the recommended projections for some water user groups, Appendix D does not include all entities that were a part of this study.
- p. In Appendix D, please include summary graphs for all entities that were a part of this study.
- q. In Appendix D, please consistently note the source of the recommended value. Some of the graphs list the source and some just show “recommended projection.”
- r. In Appendix D, please show the NCTCOG’s projection on all graphs.
- s. Please consider adding a brief text introduction to Appendix F that describes what the tables and figures represent.