

# REGION C WATER PLANNING GROUP

Senate Bill One Fourth Round of Regional Water Planning - Texas Water Development Board

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September 6, 2012

Ms. Carolyn Brittin  
Texas Water Development Board  
1700 N. Congress Avenue  
Austin, Texas 78701

Dear Ms. Brittin:

The Region C Water Planning Group would like to formally submit a memorandum regarding errata in the 2011 *Region C Water Plan*. There was an error in Appendix I, which has been corrected in the revised Appendix I included herein. Based on discussions with the Texas Water Development Board staff, the attached memorandum and data therein shall be made part of the 2011 *Region C Water Plan*.

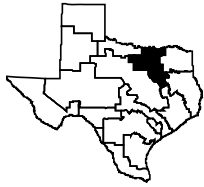
If you have any questions regarding this matter, please contact my office at 972/442-5405.

Sincerely,



JAMES M. PARKS  
Chairman/Administrator

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Region C  
Water Planning Group

Freese and Nichols, Inc.  
Alan Plummer Associates, Inc.  
CP&Y, Inc.  
Cooksey Communications, Inc.

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**MEMORANDUM**

**To:** Ms. Carolyn Brittin  
**From:** Thomas C. Gooch, Freese and Nichols, Inc.  
**Re:** Errata in the *2011 Region C Water Plan*  
**Date:** September 6, 2012

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During the process to request approval of modifications to the Texas Commission on Environmental Quality (TCEQ) Water Availability Models (WAMs) for the fourth cycle of Region C water planning, some errata in Appendix I of the *2011 Region C Water Plan* (Plan) came to our attention. We edited Appendix I to correct these errata and to further clarify some of the assumptions. A revised Appendix I is attached. Changes were made to pages I.3 and I.4, specifically:

- Bullets under the “Trinity River Basin WAM” section were modified.
- Bullets under the “Red River Basin WAM” section were modified.

**APPENDIX I**  
**WATER SUPPLY AVAILABLE TO REGION C**

**APPENDIX I  
WATER SUPPLY AVAILABLE TO REGION C**

Table I.1 shows the overall water supply available to Region C. Table I.2 shows the overall water supply available to Region C that was reported in the *2006 Region C Water Plan* <sup>(1)</sup>. The rest of the appendix explains the sources of the data in Table I.1. The table represents the water supply that might be available to the region, whether it is currently connected to a water user group or not. The table is based on:

- Existing water rights <sup>(2)</sup>
- Available supply for reservoirs
- Reliable supplies from run-of-the-river diversions
- Available supply from groundwater
- Estimated local supplies for mining and livestock
- Existing and permitted reuse supplies

Limits to water supply due to current water transmission facilities and wells are not considered in the development of Table I.1. They are considered in Appendix J, Current Supplies by Water User Group.

**Table I.1  
Overall Water Supply Availability in Region C  
(acre-feet per year)**

<b>SUMMARY</b>	<b>2010</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>
Reservoirs in Region C	1,342,326	1,335,224	1,327,817	1,320,283	1,312,749	1,305,213
Local Irrigation	20,205	20,205	20,205	20,205	20,205	20,205
Other Local Supply	23,701	23,701	23,701	23,701	23,701	23,701
Surface Water Imports	598,775	576,120	552,672	549,222	545,782	542,352
Groundwater	146,152	146,152	146,152	146,152	146,152	146,152
Reuse	203,974	246,510	289,995	312,972	321,405	336,082
<b>REGION C TOTAL</b>	<b>2,335,133</b>	<b>2,347,912</b>	<b>2,360,542</b>	<b>2,374,535</b>	<b>2,369,994</b>	<b>2,373,705</b>

**Table I.2**  
**2006 Plan <sup>(1)</sup> – Overall Water Supply Availability in Region C**  
**(acre-feet per year)**

<b>SUMMARY</b>	<b>2010</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>
Reservoirs in Region C	1,165,080	1,155,771	1,146,113	1,135,964	1,125,705	1,111,096
Local Irrigation	20,205	20,205	20,205	20,205	20,205	20,205
Other Local Supply	23,701	23,701	23,701	23,701	23,701	23,701
Surface Water Imports	564,302	560,292	555,492	550,689	545,898	541,117
Groundwater	106,460	106,460	106,460	106,460	106,460	106,460
Reuse	99,979	105,810	104,800	104,175	103,697	103,429
<b>REGION C TOTAL</b>	<b>1,979,727</b>	<b>1,972,240</b>	<b>1,956,770</b>	<b>1,941,194</b>	<b>1,925,666</b>	<b>1,906,007</b>
<b>Change from 2006 Plan to 2011 Plan</b>	<b>335,406</b>	<b>375,672</b>	<b>403,772</b>	<b>433,341</b>	<b>444,328</b>	<b>467,698</b>

### ***Water Supply Systems and Reservoirs***

Table I.3 presents the water availability for water supply systems and reservoirs in Region C. The table also shows the water availability that was presented in the *2006 Region C Water Plan* <sup>(1)</sup>. In accordance with the Texas Water Development Board's (TWDB) established procedures <sup>(3)</sup>, these surface water supplies are determined using the TCEQ-approved Water Availability Models (WAM). WAMs have been completed for each of the major river basins in Texas. The WAM models were developed for the purpose of reviewing and granting new surface water rights permits. The assumptions in the WAM models are based on the legal interpretation of water rights, and in some cases do not accurately reflect current operations. Availabilities for each water right are analyzed in priority date order, with water rights with the earliest permit date diverting first. WAM Run 3, which is the version used for planning, assumes full permitted diversions by all water rights and no return flows unless return flows are specifically required in the water right. Run 3 also does not include agreements or operations that are not reflected in the water right permits and does not account for reductions in reservoir capacities due to sediment accumulation. For planning purposes, adjustments were made to the WAMs to better reflect current and future surface water conditions in the region. Generally, changes to the WAMs included:

- Assessment of reservoir sedimentation rates and calculation of area-capacity conditions for 2000 and 2060 conditions.
- Inclusion of subordination agreements not already included in the TCEQ WAM
- Inclusion of system operation where appropriate
- Other corrections

The reliable supply from run-of-the-river diversions was assumed equal to the permitted diversion for water rights located on the main stem of the river and 75 percent of the permitted diversion for water rights located on tributaries.

Specific adjustments to the WAMs to more accurately reflect the water rights and agreements for water supply sources in Region C are:

### **Trinity River Basin WAM**

- Modeling of Lake Jacksboro and Lost Creek Reservoir as a system.
- Modeling of Tarrant Regional Water District's West Fork reservoirs (Bridgeport, Eagle Mountain, and Worth) as a system.
- Inclusion of a minimum elevation for Lake Fairfield (305.0 ft. msl). This is the minimum operating elevation for the intake to the power plant according to the 1999 *Volumetric Survey of Fairfield Lake* prepared by the Texas Water Development Board.
- Modeling of Dallas' water rights in the Elm Fork of the Trinity River as a system with Lake Lewisville and Ray Roberts.

### **Red River Basin WAM**

- Modeling of Lake Randell and Valley Lake as stand-alone reservoirs without Lake Texoma backups for the firm yield calculation of these two reservoirs. Backup supply for these reservoirs from Lake Texoma is included in the supplies from Lake Texoma. This prevents double counting of the makeup water from Lake Texoma. For firm yield calculations for reservoirs other than Lake Randell, Valley Lake and Lake Texoma, the backups for Lake Randell and Valley Lake were retained.
- Use of water from Lake Texoma is authorized by multiple Texas water rights and Oklahoma water rights, as well as authorizations by the US Congress and contracts with the Corps. In the TCEQ Red River WAM, each Texas water right is given its own "evaporation allocation" pool. Oklahoma's share of the lake, storage reserved for hydropower and dead storage in the reservoir are given their own pools as well. This type of modeling facilitates water availability modeling of the individual water rights but does not allow a meaningful calculation of the firm yield of the entire reservoir. To enable calculation of the overall firm yield of Lake Texoma, FNI modeled Lake Texoma as a single reservoir with multiple priority dates for the conservation storage and diversion, plus inactive storage corresponding to the

dead storage. For the firm yield calculation of other reservoirs, multiple storage pools were retained in Lake Texoma.

- Currently the U.S. Congress has allocated 450,000 acre-feet of storage in Lake Texoma for water supply use - the original 150,000 acre-feet for Texas, 150,000 acre-feet for Oklahoma, plus the 150,000 acre-feet reallocated from hydropower storage currently contracted to NTMWD and GTUA. In the TCEQ WAM, an additional 100,000 acre-feet of new storage plus 113,000 acre-feet per year of diversion was added to the Oklahoma portion of the reservoir. The reason for this addition is not clear, but it does mirror NTMWD's most recent application for a new Texas water right in the reservoir. Since this portion of the model does not reflect any existing or proposed use by the State of Oklahoma, FNI removed this portion of the model. (TCEQ currently assumes a diversion of 168,000 acre-feet per year from the existing 150,000 acre-feet of storage reserved for Oklahoma. Currently there are less than 5,000 acre-feet per year of permitted Oklahoma diversions.)
- Addition of 50,000 acre-feet of storage and 56,500 acre-feet per year of diversion from Lake Texoma corresponding to the recent water right obtained by the Greater Texoma Utility Authority. This water right has been granted by TCEQ but was not included in the Red River WAM used as the basis for the Region C model.
- Removal of diversion backups of individual Texas water rights in Lake Texoma from the hydropower pool. All Texas water rights are 100% reliable in the WAM, so these backups are not invoked in the WAM. The code was removed because it made the modeling unnecessarily complicated.

### **Imports to Region C**

Supplies from Lake Chapman were determined using the Sulphur River Basin WAM.

Information obtained from Region D indicated that no adjustments were made to the Sabine River WAM that would impact the currently available water supplies for Region C. Therefore, the yields for Lake Fork and Lake Tawakoni were assumed to be the same as they were in the *2006 Region C Water Plan* <sup>(1)</sup>.

Region C has very few water supplies in the Brazos River Basin. Thus, the water availability information as determined by the Brazos G Regional Water Planning Group was adopted.

For Lake Palestine and Lake Athens, both in the Neches River Basin, the water availability information as determined by the Region I Water Planning Group was adopted. The available supply for Dallas Water Utilities from Lake Palestine was decreased based on a decreasing firm yield in the reservoir.