

DRAFT MEMORANDUM



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TO: Region C Water Planning Group

FROM: Amy Kaarlela, P.H., Keeley Kirksey, P.E., and Lissa Gregg, P.E., Freese and Nichols, Inc.

SUBJECT: Draft 2021 Region C Population Projection Revisions

DATE: December 14, 2017

PROJECT: 2021 Region C Water Plan; TR116409

In December 2016, the Texas Water Development Board (TWDB) released draft population projections for the 2021 Regional Water Plans. Since no new Census data has been released since the publication of the 2016 Regional Water Plans, there are restrictions on adjusting the draft population projections for regional, county and individual water user group (WUG) totals.

Regional and County Total Projection Adjustments

Prior to the release of the draft projections, TWDB analyzed the most recent population estimates from the Texas Demographic Center (TDC) in comparison to the 2017 State Water Plan projections to determine the maximum region-wide population changes that may be considered by the Regional Water Planning Groups (RWPGs). TWDB officially recommended to either keep the regional totals as provided in the draft projections or to increase the total within the percentage difference calculated based on the 2015 State Demographer's estimate. The percentage difference for each county as well as for the total region was calculated in Table 1 below. For Region C, this equates to a maximum allowable percentage increase of 2.44% between the draft and revised projections.

Table 1: 2017 State Water Plan Projections vs. US Census Bureau for 2015

County	U.S. Census Bureau – 2015 Population	2017 State Water Plan – 2015 Population	Difference	% Difference
Collin	914,127	865,146	48,981	5.7%
Cooke	39,229	40,195	(966)	-2.4%
Dallas	2,553,385	2,465,149	88,236	3.6%
Denton	780,612	772,944	7,668	1.0%
Ellis	163,632	165,832	(2,200)	-1.3%
Fannin	33,693	36,063	(2,370)	-6.6%
Freestone	19,691	20,124	(433)	-2.2%
Grayson	125,467	127,642	(2,175)	-1.7%
Henderson	56,327	57,847	(1,520)	-2.6%
Jack	8,878	9,391	(513)	-5.5%
Kaufman	114,690	123,100	(8,410)	-6.8%

Navarro	48,323	50,082	(1,759)	-3.5%
Parker	126,042	152,906	(26,864)	-17.6%
Rockwall	90,861	90,645	216	0.2%
Tarrant	1,982,498	1,905,198	77,300	4.1%
Wise	62,953	68,725	(5,772)	-8.4%
Total	7,120,408	6,950,989	169,419	2.44%

As shown in Table 2, the proposed Region C regional total is within the percent difference specified.

Table 2: Region C Regional Population Totals

	2020	2030	2040	2050	2060	2070
TWDB Draft Projections	7,504,200	8,648,725	9,908,572	11,260,257	12,742,283	14,347,912
Revised Projections	7,632,764	8,854,600	10,150,077	11,533,432	13,051,602	14,684,790
Percent Difference	1.71%	2.38%	2.44%	2.43%	2.43%	2.35%

Water User Group Projection Adjustments

Individual WUG projection adjustments were made as needed based on currently available information. Where possible, adjustments between WUG population projections were made within the same county.

For a WUG to qualify for an adjustment one or more of the following criteria were met;

- 1) The 2010 permanent population-served estimate by a WUG is significantly different than the 2010 baseline population estimate used in the draft projections.
- 2) The population growth rate for a WUG over the most recent five years (2011-2015) is substantially different than the growth rate between 2010 and 2020 in the draft projections.
- 3) Identification of growth limitations or potential build-out conditions for a WUG that would result in an expected maximum population that is different than the draft projection.
- 4) Updated information regarding the utility or public water system service area, or anticipated near-term changes in service area.

A summary of the WUG adjustments proposed is attached.

Sources for Projection Adjustments

In the case of Region C, new data sources since the 2016 Region C Water Plan (RCWP) have been considered and changes to both the regional and county totals are warranted.

The consultant's population revisions are based on a review of the following data:

- **Input from Wholesale Water Providers (WWPs)** – FNI met with or surveyed all 41 WWPs to get their input on their customer's population and demands. In April, FNI met with the largest WWPs, followed by meetings or calls with mid-sized WWPs in May and June. In July, an email survey was sent to the remaining WWPs.
- **Water User Group Survey** – In July, FNI sent a survey to each municipal water user group with their draft projections and asked for input on the projections (245 surveys sent). To date, we have had a 55% response rate, 29 of which have requested changes.

- **State Data Center Estimates** – The Texas State Data Center releases annual population estimates by place. Currently, estimates from 2010-2016 are available. The Region C consultants reviewed these estimates of observed historical growth and compared it to the projected growth from 2020-2070. This was done for individual water user groups (WUG) and for county totals. If an entity has grown much faster or slower than originally projected, adjustments were made.
- **North Central Texas Council of Government (NCTCOG) Estimates** – 2010-2017 NCTCOG county estimates were reviewed and compared to the 2010 Census and TWDB projected growth from 2020-2070.
- **Individual Water and Wastewater Master Plans** – If population projections were available from a recently updated Water or Wastewater Master Plan that was available to Freese and Nichols, the projections were compared to the other available data and projections were updated for the time period in which they overlapped. Specifically, these were reviewed for:
 - Arlington
 - Benbrook
 - Cedar Hill
 - Frisco
 - Garland (Ongoing Population Update Study)
 - Irving
 - Kennedale
 - Sunnyvale
 - The Colony
 - Trinity River Authority Tarrant County Water Supply Project
 - Weatherford
- **Individual Impact Fee Reports** - If population projections were available from a recently updated Impact Fee Report that was available to Freese and Nichols, the projections were compared to the other available data and projections were updated for the time period in which they overlapped. Specifically, these were reviewed for:
 - Aledo
 - Cedar Hill
 - Coppell
 - Fort Worth
 - Grapevine
 - Hurst
 - Midlothian
 - Sunnyvale
 - Terrell
- **Individual Comprehensive Plans** – Population projections, especially build-out numbers based on future land use plans that were available to Freese and Nichols, were reviewed and compared to TWDB 2070 projections. Specifically, comprehensive plans were reviewed for:
 - Balch Springs
 - DeSoto
 - Farmers Branch
 - Fate
 - Ferris
 - Hudson Oaks

- Melissa
- Prosper
- Sunnyvale
- Watauga
- Waxahachie
- Willow Park
- **Collin County Mobility Study** – The Collin County Mobility Study (CCMS) was updated in August 2014, after the official adoption of population projections for the 2016 Region C Water Plan (RCWP) and was thus not incorporated into the previous plan. In the 2016 RCWP, Collin County had a 2070 population of about 2 million people. The CCMS projects potential build-out between 2.1 million and 3.4 million. Collin county is home to several rapidly growing cities, some of which are among the fastest growing in the nation. To better align with what has been observed historically and the CCMS, the draft revisions reflect a 2070 Collin County population of 2.37 million.
- **Denton County Thoroughfare Plan** – The January 2017 Draft Denton County Thoroughfare Plan projects a 2035 population of 1.05 million people in Denton County. The revised 2021 Region C projections estimate a 2030 population of 1.1 million people increasing to around 2.05 million by 2070.
- **Kaufman County Thoroughfare Plan** – The Kaufman County plan estimates the 2035 population to be 210,000. The current draft Region C adjustments place the Kaufman County 2035 population at roughly 218,000, which is in line with this study.

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TO: Region C Water Planning Group

FROM: Amy Kaarlela, P.H., Tom Gooch, P.E., Abigail Gardner, E.I.T., Freese and Nichols, Inc.

SUBJECT: Comparison of Historical GPCDs for Region C; Requested GPCD Changes

DATE: November 7th, 2017

PROJECT: 2021 Region C Water Plan; TR116409

The purpose of this memorandum is to summarize the conclusions from a quantitative assessment of the base dry year Gallons Per Capita Day (gpcd) estimates to be used in the 2021 Region C Water Plan. The TWDB provided updated estimates of 2010-2015 gpcds in July 2017.

To review this data, we compared the base dry year gpcds that were used in the 2016 Regional Plan with the updated historical gpcds from 2012 to 2015. Any WUGs that had a recent year of at least 20 gpcd higher than their base gpcd from the 2016 regional plan were identified. If the max gpcd was over 100 gpcd higher than the 2016 Plan, the other years were also analyzed. If the max gpcd was significantly higher than all other the other annual historical data, then it was marked as an outlier. If that max gpcd was consistent with the other historical data, the WUG was marked as requiring further analysis to determine if a revision to the base gpcd was needed. Additionally, the gpcds for Dallas County-Other and Tarrant County-Other have been revised to include demand for DFW International Airport. Supporting data for this revision is attached at the end of this memo.

According to the General Guidelines for the Fifth Cycle of Regional Water Plan Development, one or more of the following criteria must be met to qualify for an adjustment;

- 1) Evidence that per capita water use from a different year between 2012-2015 would be more appropriate because that year was more representative of dry-year conditions.
- 2) Evidence of errors identified in the historical water use for a utility or public water system, including evidence that volumes of reuse (treated effluent) water or brackish groundwater used for municipal purposes should be included in the draft projections.
- 3) Evidence that the dry year water use was abnormal due to temporary infrastructure constraints.
- 4) Trends indicating that per capita water use for a utility or rural area of a county have changed substantially since 2011 and evidence that these trends will continue to rise in the short-term future.
- 5) Evidence that the number of installations of water-efficient fixtures and appliances between 2010 and 2015 is substantially different than the TWDB estimate.

Based on our review, we believe that several of the Region C WUGs meet one or more of the required criteria for a gpcd adjustment. The table on the following page summarizes the requested gpcd revisions as well as the required TWDB criteria code(s) that they fulfill. The gpcds highlighted in green are the requested changes.

Region C requested GPCD changes			2010	2011	2012	2013	2014	2015
Entity Name	County	Base GPCD 2016 Plan	Historical GPCD Estimates (provided by TWDB)					
ANNETTA	PARKER	90	143	113	115	123	121	121
BLACK ROCK WSC	DENTON	146	120	176	149	149	129	222
CULLEOKA WSC	COLLIN	75	101	107	106	104	115	90
HUDSON OAKS	PARKER	164	248	318	290	256	330	246
JOSEPHINE	COLLIN/HUNT	145	130	203	167	139	132	116
LADONIA	FANNIN	82	149	154	137	158	160	336
LAKE KIOWA SUD	COOKE	330	264	374	377	380	321	273
RICE WATER SUPPLY AND SEWER	ELLIS/NAVARRO	93	95	116	119	109	101	101
RUNAWAY BAY	WISE	224	191	334	267	245	187	232
SOUTHMAYD	GRAYSON	88	53	109	208	161	84	60
SPRINGTOWN	PARKER	137	110	209	167	196	142	170
KAUFMAN COUNTY MUD 11	KAUFMAN	126	-	-	-	-	-	157
HUTCHINS	DALLAS	102	173	152	159	143	173	207
ALVORD	WISE	65	89	112	130	121	165	89
KAUFMAN	KAUFMAN	121	132	126	145	158	140	131
SOUTH ELLIS COUNTY WSC	ELLIS/NAVARRO	143	143	143	149	228	238	196
LAKESIDE	TARRANT	158	148	200	298	253	221	205
BLUE RIDGE	COLLIN	97	87	87	161	140	119	93
TEAGUE	FREESTONE	100	99	99	118	161	130	150

Entity Name	County	2020	2030	2040	2050	2060	2070
COUNTY OTHER	DALLAS	1,822	2,425	2,258	2,133	1,540	1,289
COUNTY OTHER	TARRANT	206	206	208	176	165	158

TWDB Criteria Code (1-5)*	Additional Comments
2	Updated 2011 gpcd from TWDB is 20+ gpcd greater than previous 2011 gpcd (used in 2016 Plan)
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2	Updated 2011 gpcd from TWDB is 20+ gpcd greater than previous 2011 gpcd (used in 2016 Plan)
2	Updated 2011 gpcd from TWDB is 20+ gpcd greater than previous 2011 gpcd (used in 2016 Plan)
2	Updated 2011 gpcd from TWDB is 20+ gpcd greater than previous 2011 gpcd (used in 2016 Plan); in addition, historical population data seems to be in error for 2012-2015
2	Updated 2011 gpcd from TWDB is 20+ gpcd greater than previous 2011 gpcd (used in 2016 Plan)
2	Not a WUG in 2016 plan (no basis for 126 shown as being in 2016 Plan); Only historical record is 2015, use 2015.
4	Hutchins has experienced significant commercial/retail development in the past several years. http://www.elliscountypress.com/2017/news/hutchins-continues-development/
3, 4	Multiple recent years show substantially higher gpcd than 2011, indicating 2011 was not representative of a dry year. (Removed outlier year of 2014; 35 gpcd above next highest year)
3, 4	Multiple recent years show substantially higher gpcd than 2011, indicating 2011 was not representative of a dry year.
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2	Historical data does not include all of DFWIA; Added demand for DFW Intern'l Airport; see separate file for detail
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***TWDB Criteria for Adjustment: One or more of the following criteria must be verified by the RWPG and the EA for consideration of revising the municipal water demand projections: (From Exhibit C Guidelines, pages 17-18)**

- Evidence that per capita water use from a different year between 2012-2015 would be more appropriate because that year was more representative of dry-year conditions.
- Evidence of errors identified in the historical water use for a utility or public water system, including evidence that volumes of reuse (treated effluent) water or brackish groundwater used for municipal purposes should be included in the draft projections.
- Evidence that the dry year water use was abnormal due to temporary infrastructure constraints.
- Trends indicating that per capita water use for a utility or rural area of a county have changed substantially since 2011 and evidence that these trends will continue to rise in the short-term future.
- Evidence that the number of installations of water-efficient fixtures and appliances between 2010 and 2015 is substantially different than the TWDB estimate.

