



DRAFT TECHNICAL MEMORANDUM

Region C Water Planning Group 2016 Regional Water Planning Cycle Non-Municipal Demand Projections, Irrigation

Project No.: 0312-046-01

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The *2016 Region C Water Plan* (hereafter referred to as the 2016 Plan) will incorporate projections for municipal demands, as well as non-municipal demands for irrigation, livestock, manufacturing, mining, and steam-electric power. The Texas Water Development Board (TWDB) provided the planning groups with draft non-municipal demand projections. The draft non-municipal demand projections will be reviewed by the individual planning groups, and recommendations will be provided to the TWDB. The TWDB will consider the recommended changes from the planning groups, and the final projections will ultimately be adopted by the planning groups and TWDB and incorporated into the 2017 State Water Plan. The purpose of this technical memorandum is to document information related to historical irrigation usage and provide information supporting recommended modifications to the draft irrigation demands.

BACKGROUND

Irrigation water use is defined by the TWDB as irrigation of agricultural crops and golf courses. TWDB's draft non-municipal irrigation demand projections for the 2017 State Water Plan utilize an average of the 2005-2009 irrigation water use estimates as a base (2020 projection), and the rate of change for projections from the *2011 Region C Water Plan* is applied to the base for the years 2030-2070. At the time this memo was written, historical data estimates are available through the year 2009. The historical 2005-2009 use estimates are based on annual crop acreage from the Natural Resources Conservation Service (prior to 2001) and the Farm Service Administration (2001 and later). Irrigation rates per acre are estimated based on potential evapotranspiration and then applied to the calculated crop and golf course

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acreage. Since the year 2000, the region-wide irrigation water use estimates have ranged from 18,274 to 40,763 acre-feet (see Figure 1 for usage information by year).

Since some golf courses in Region C are served by municipal supply, the current method of calculating total irrigated golf course acreage without removing golf courses supplied by municipal supply may be counting the usage of some golf courses as part of both the municipal and irrigation demand. In order to more accurately account for golf course irrigation, it is recommended that future TWDB Annual Surveys of Water System ask utilities for golf course irrigation, so that the golf course irrigation that is supplied from municipal systems as treated water can be removed from historical irrigation use estimates (since it is included as municipal use).

One or more of the following criteria must be verified by the Planning Group and the Executive Administrator for consideration of revising the irrigation water use projections:

- Evidence that a different year between 2005-2009 would be more representative of typical irrigated acreage or below-normal rainfall than the designated dry year.
- Evidence that irrigation water use estimates for a county from another source are more accurate than those used by TWDB.
- Evidence that the expectation of conditions in the region are such that the projected annual rates of change for irrigation water use in the 2012 State Water Plan are no longer valid.

The Planning Group must provide the Executive Administrator the following data associated with the identified criteria for justifying any adjustments to the irrigation water demand projections:

- Acreage and water use data for irrigated crops grown in a region, as published by the Texas Agricultural Statistics Service, the Texas Agricultural Extension Service, or the Farm Service Agency (USDA), for the designated dry year and/or a different year that the Planning Group wishes to present for consideration.
- Any economic, technical, and/or water supply-related evidence that may show cause for adjustment in the future rate of change in irrigation water use.

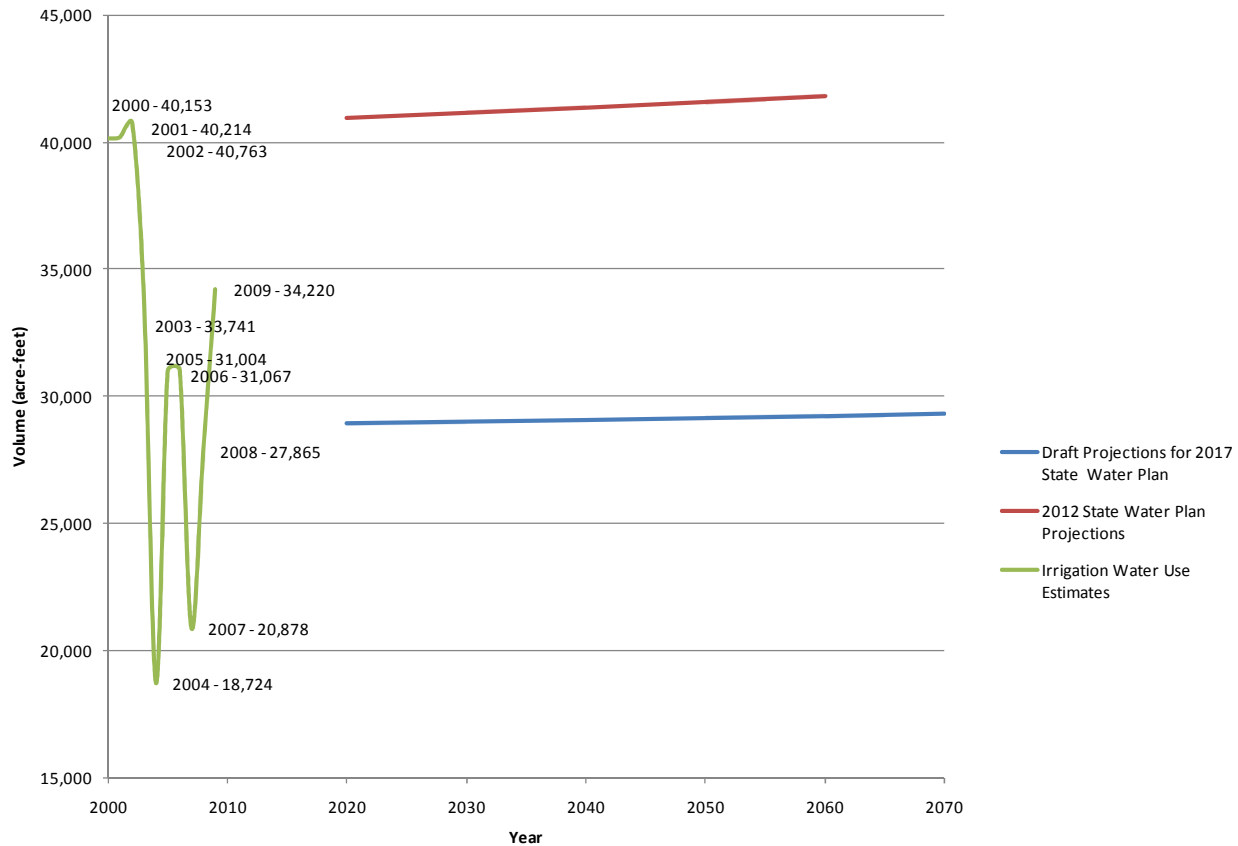
PROPOSED IRRIGATION WATER USE

A comparison of the draft projections for the 2017 SWP (provided by TWDB), the final 2012 SWP projections, and the proposed RCWPG revisions to the 2017 SWP projections is presented in Table 1 and Figure 2. Deviations from the draft projections for the 2017 State Water Plan are explained below:

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- Collin County – This county has several reuse projects with known supplies, and the associated demand for these projects is more than the 2017 projections. Therefore, it is recommended that the 2012 projections be used to more accurately reflect existing conditions.
- Cooke County – The historical use between 2005-2009 has varied from 115 to 300 acre-feet/year (average value of 205 acre-feet/year). Due to this variation in use, it is recommended that the

Figure 1. Region C Irrigation – Comparison of Water Use Estimates and Projections



Source: Texas Water Development Board

projections utilize the peak usage for the period (2007) as the base year for the projections to provide a more conservative dry year estimate.

- Grayson County – The historical use between 2005-2009 has varied from 394 to 2,222 acre-feet/year (average value of 1,275 acre-feet/year). Due to this variation in use, it is recommended that the projections utilize the peak usage for the period (2005) as the base year for the projections to provide a more conservative dry year estimate.
- Jack County – Recent usage data from the TCEQ water rights database indicates that consumption in 2005 was approximately 101 acre-feet/year. Therefore, it is recommended that the projections be raised to 101 acre-feet/year to more accurately reflect existing conditions.
- Kaufman County – The historical use between 2005-2009 has varied from 0 to 179 acre-feet/year (average value of 107 acre-feet/year). Due to this variation in use, it is recommended that the projections utilize the peak usage for the period (2006) as the base year for the projections to provide a more conservative dry year estimate.

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- Navarro County – Recent usage data from the TCEQ water rights database indicates that consumption in 2005 was approximately 58 acre-feet/year. Therefore, it is recommended that the projections be raised to 58 acre-feet/year to more accurately reflect existing conditions.
- Parker County – The historical use between 2005-2009 has varied from 80 to 490 acre-feet/year (average value of 258 acre-feet/year). Due to this variation in use, it is recommended that the projections utilize the peak usage for the period (2006) as the base year for the projections to provide a more conservative dry year estimate.
- Rockwall County – Recent usage data from the TCEQ water rights database combined with recent usage data from reuse providers indicates that consumption in 2006 was approximately 374 acre-feet/year. Therefore, it is recommended that the projections be raised to 374 acre-feet/year to more accurately reflect existing conditions.

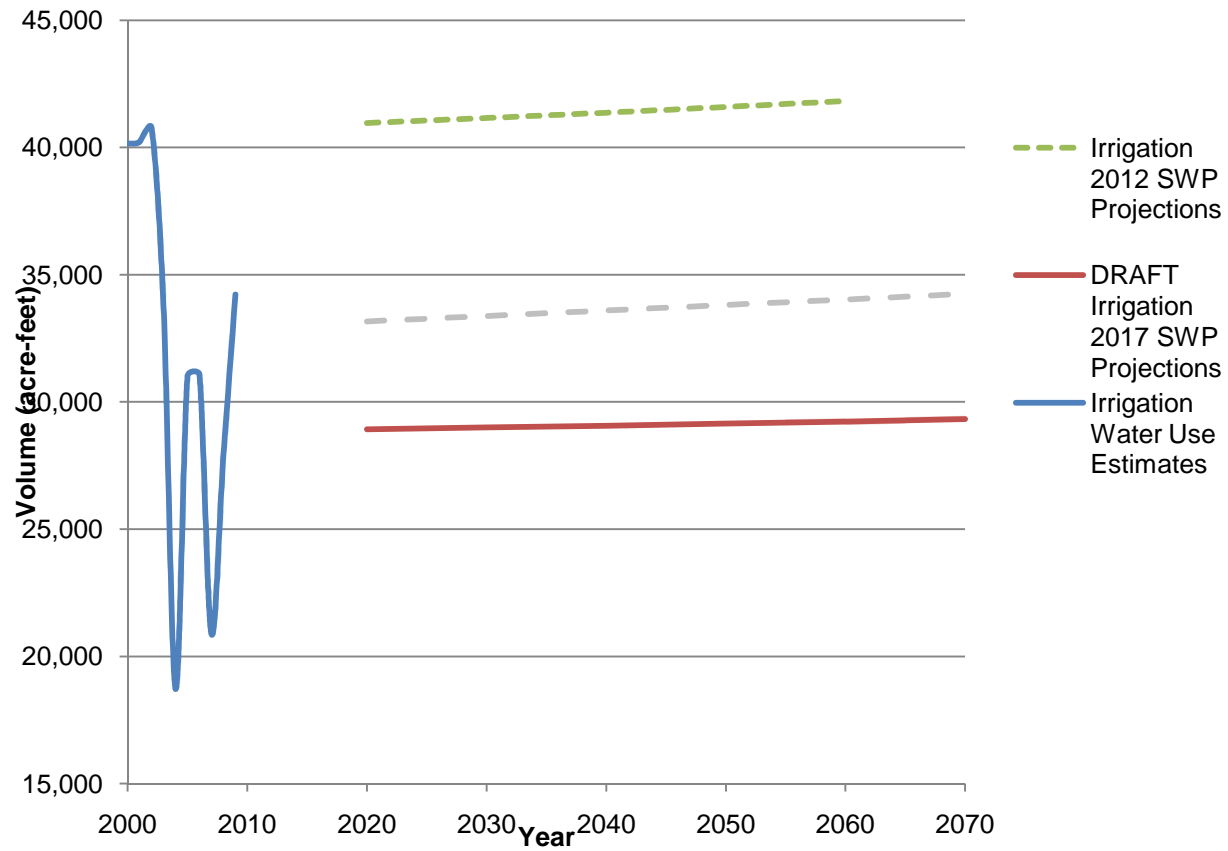
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Table 1. Comparison of Irrigation Demand Projections

County Name	Draft Projections for 2017 SWP						2012 SWP Projections					RWPG Revisions					
	2020	2030	2040	2050	2060	2070	2020	2030	2040	2050	2060	2020	2030	2040	2050	2060	2070
Collin	718	718	718	718	718	718	2,995	2,995	2,995	2,995	2,995	2,995	2,995	2,995	2,995	2,995	2,995
Cooke	205	205	205	205	205	205	444	444	444	444	444	300	300	300	300	300	300
Dallas	9,134	9,134	9,134	9,134	9,134	9,134	13,087	13,087	13,087	13,087	13,087	9,134	9,134	9,134	9,134	9,134	9,134
Denton	2,137	2,137	2,137	2,137	2,137	2,137	2,108	2,108	2,108	2,108	2,108	2,137	2,137	2,137	2,137	2,137	2,137
Ellis	572	572	572	572	572	572	583	583	583	583	583	572	572	572	572	572	572
Fannin	8,301	8,301	8,301	8,301	8,301	8,301	4,608	4,608	4,608	4,608	4,608	8,301	8,301	8,301	8,301	8,301	8,301
Freestone	298	298	298	298	298	298	8	8	8	8	8	298	298	298	298	298	298
Grayson	1,344	1,415	1,490	1,570	1,654	1,752	3,751	3,950	4,158	4,381	4,616	2,438	2,654	2,870	3,086	3,303	3,519
Henderson	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack	56	56	56	56	56	56	0	0	0	0	0	101	101	101	101	101	101
Kaufman	107	107	107	107	107	107	2,916	2,916	2,916	2,916	2,916	179	179	179	179	179	179
Navarro	0	0	0	0	0	0	0	0	0	0	0	58	58	58	58	58	58
Parker	258	258	258	258	258	258	422	422	422	422	422	490	490	490	490	490	490
Rockwall	0	0	0	0	0	0	1,125	1,125	1,125	1,125	1,125	374	374	374	374	374	374
Tarrant	4,466	4,466	4,466	4,466	4,466	4,466	8,417	8,417	8,417	8,417	8,417	4,466	4,466	4,466	4,466	4,466	4,466
Wise	1,324	1,324	1,324	1,324	1,324	1,324	502	502	502	502	502	1,324	1,324	1,324	1,324	1,324	1,324
Total	28,920	28,991	29,066	29,146	29,230	29,328	40,966	41,165	41,373	41,596	41,831	33,168	33,384	33,600	33,816	34,032	34,248

Indicates no changes are proposed from the draft projections for the 2017 SWP.

Figure 2. Region C Irrigation – Comparison of Water Use Estimates, 2012 State Water Plan Projection, Proposed Projections, and Revised Projections



Attachment A
Irrigation Demand by County
Historical Usage and Projections Comparison

Figure 1. Collin County Irrigation Comparison

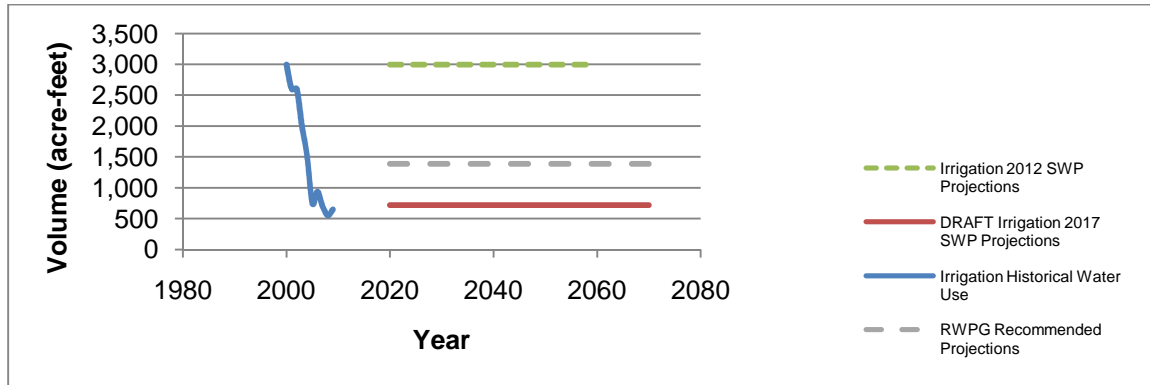


Figure 2. Cooke County Irrigation Comparison

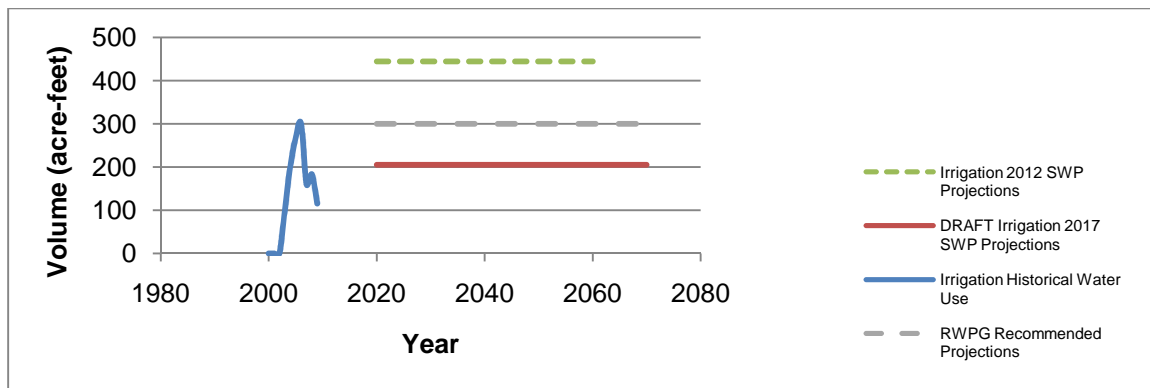


Figure 3. Dallas County Irrigation Comparison

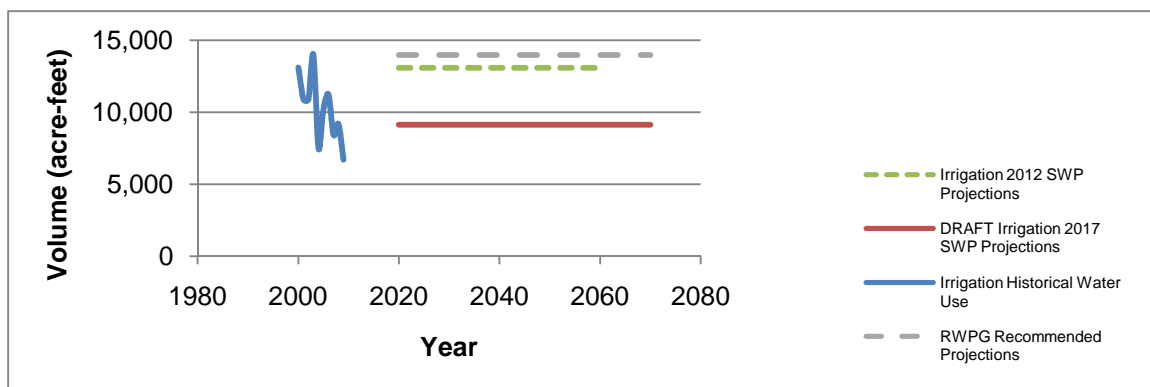


Figure 4. Denton County Irrigation Comparison

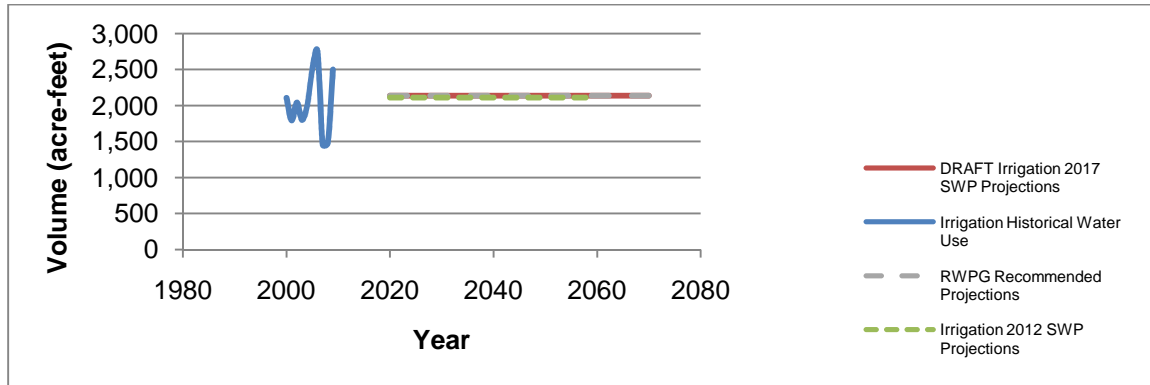


Figure 5. Ellis County Irrigation Comparison

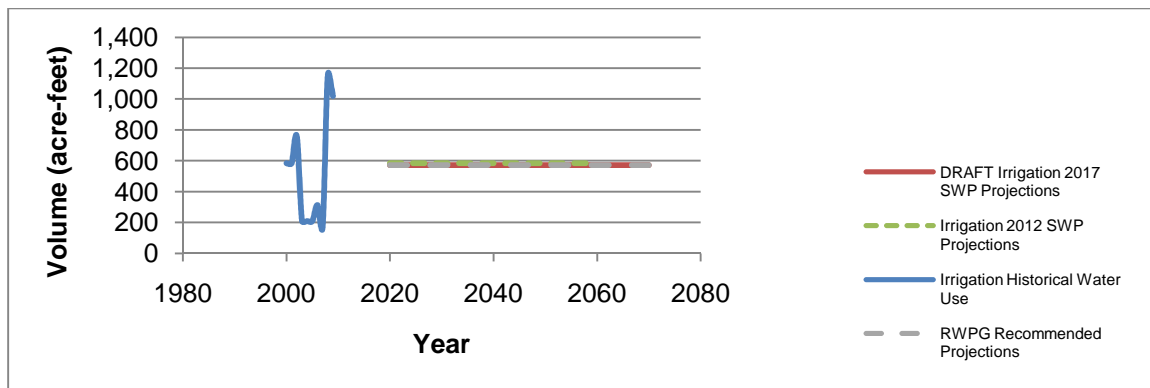


Figure 6. Fannin County Irrigation Comparison

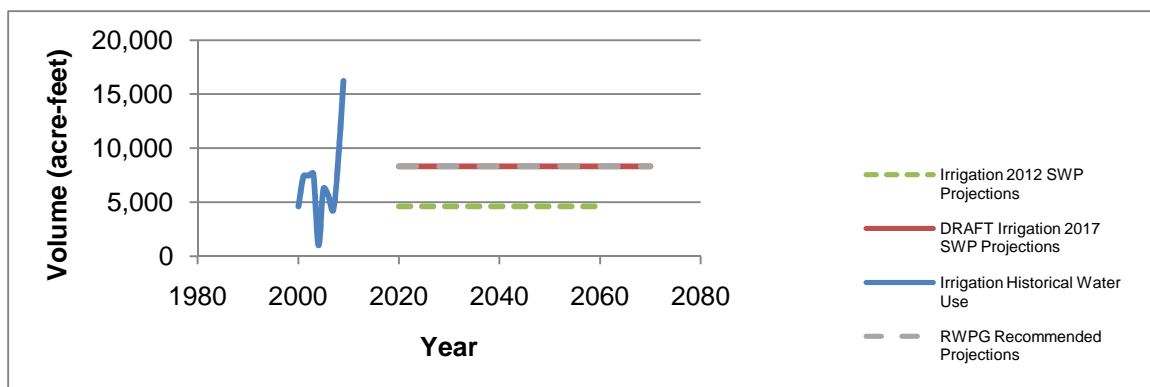


Figure 7. Freestone County Irrigation Comparison

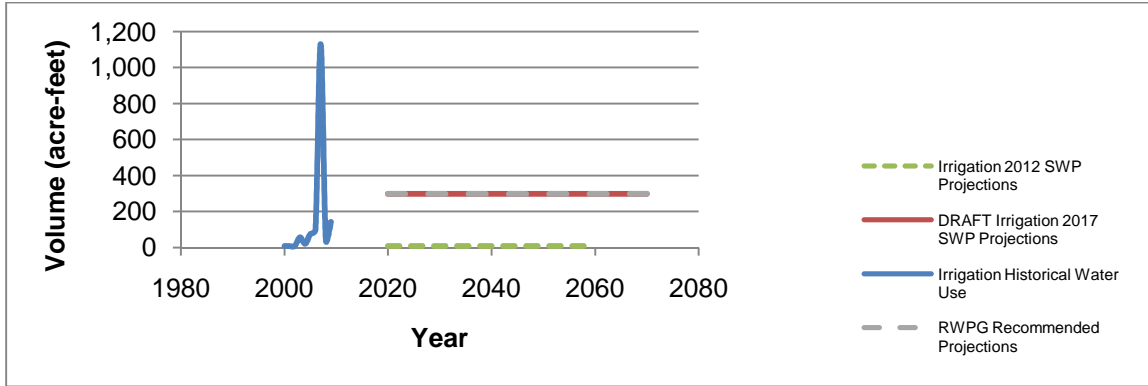


Figure 8. Grayson County Irrigation Comparison

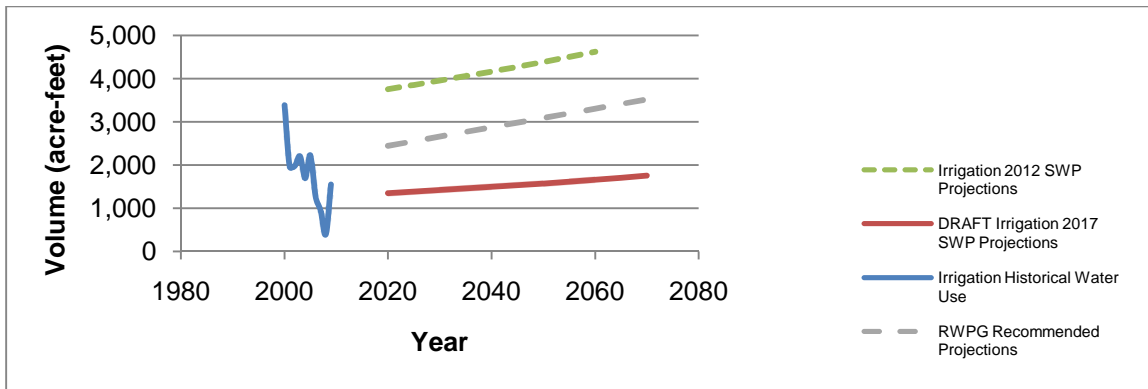


Figure 9. Henderson County Irrigation Comparison

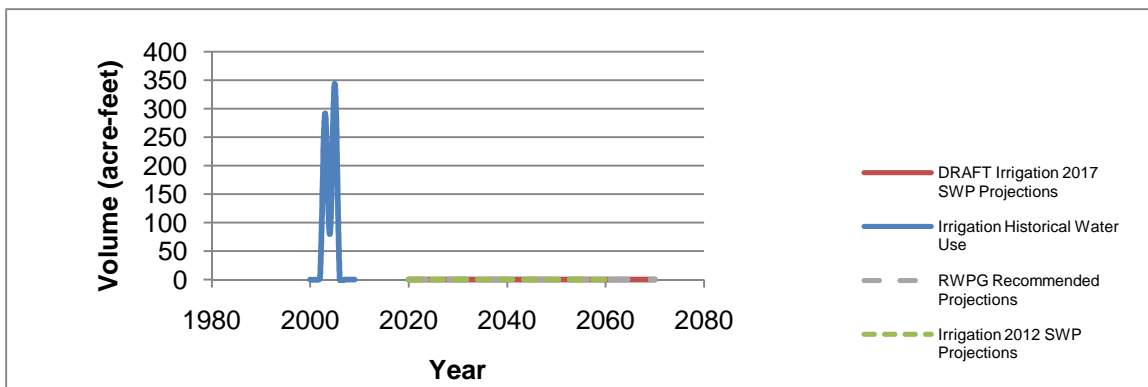


Figure 10. Jack County Irrigation Comparison

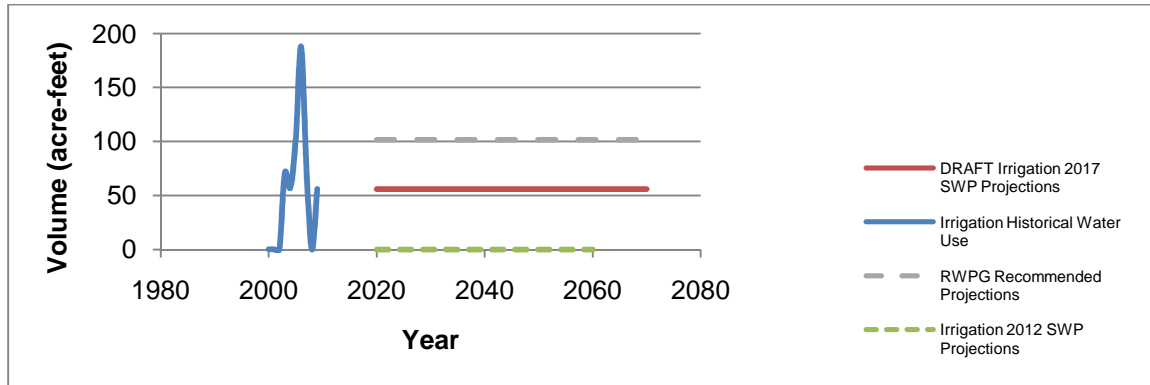


Figure 11. Kaufman County Irrigation Comparison

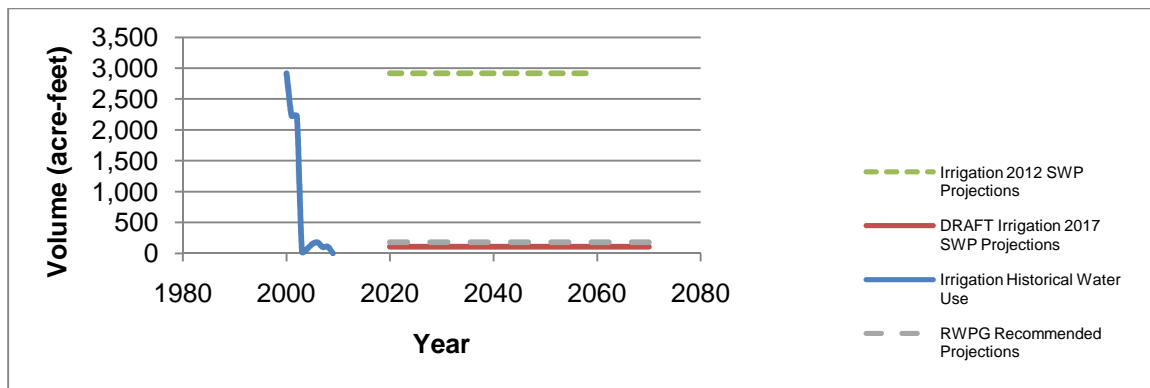


Figure 12. Navarro County Irrigation Comparison

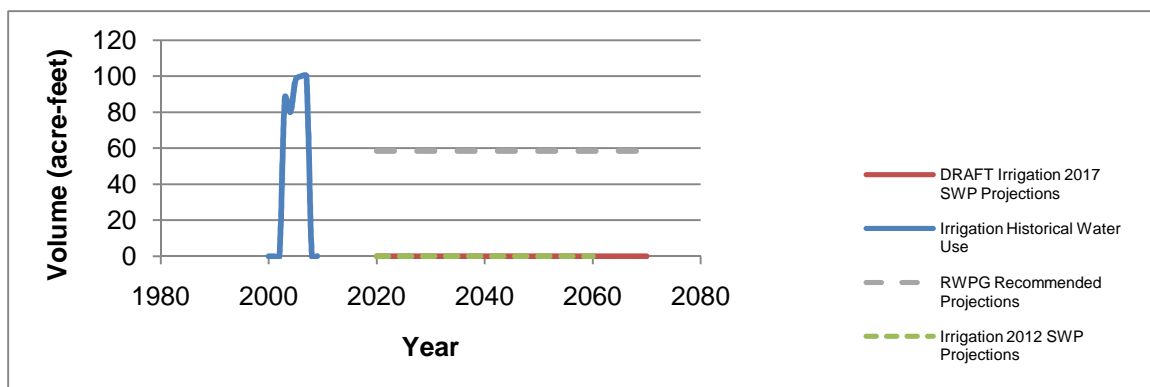


Figure 13. Parker County Irrigation Comparison

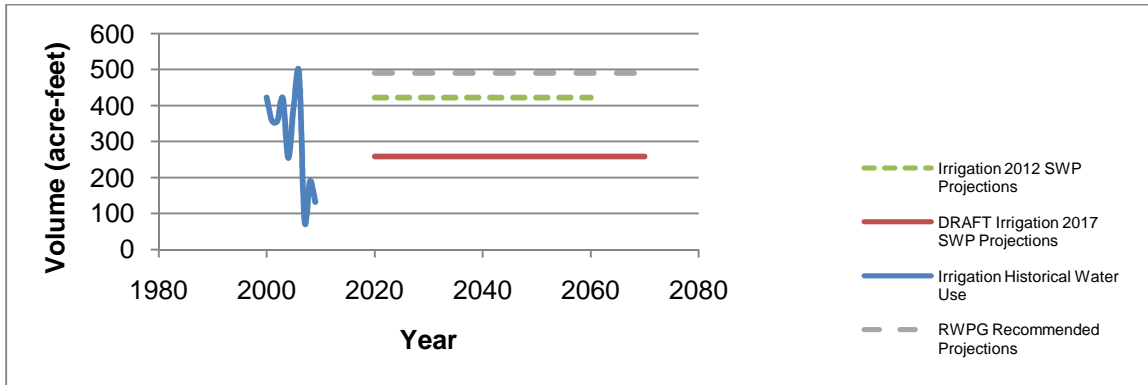


Figure 14. Rockwall County Irrigation Comparison

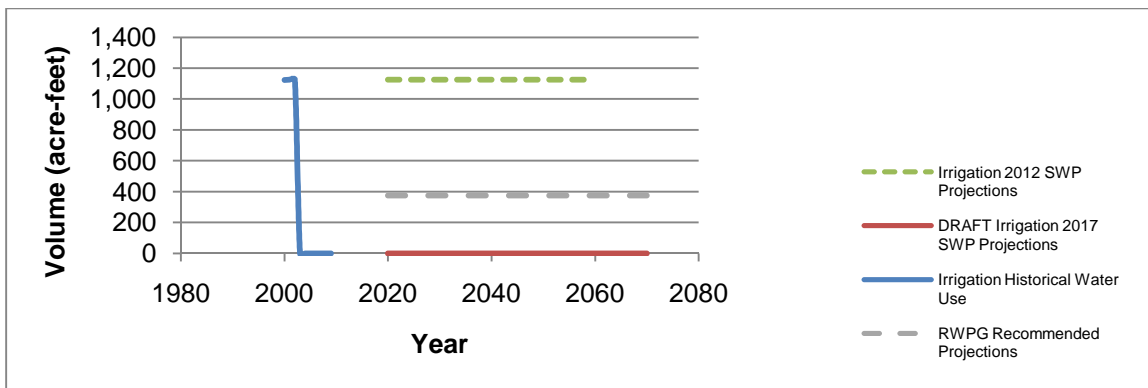


Figure 15. Tarrant County Irrigation Comparison

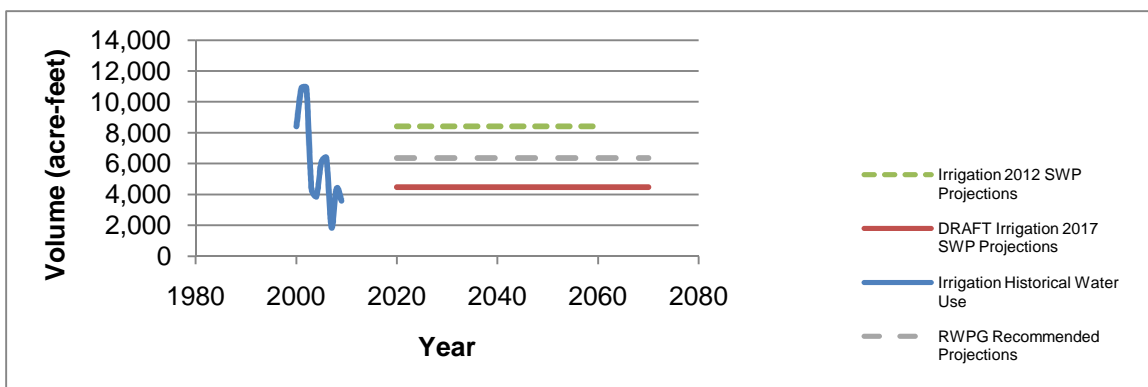


Figure 16. Wise County Irrigation Comparison

