



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

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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 the TWDB and incorporated into the 2017 State Water Plan. The purpose of this technical memorandum is to document information related to historical mining usage and provide information supporting recommended modifications to the draft mining demands.

BACKGROUND

Mining water use is defined by the TWDB as water used in the production process of mined products, including water used by employees for drinking and sanitation purposes. The TWDB publishes historical mining water use estimates. Since the year 2000, the region-wide mining water use estimates have ranged from 9,930 to 33,297 acre-feet (see Figure 1 for usage information by year). As of April 2012, historical data estimates were available through the year 2009.

Draft State Water Plan Projections

TWDB's draft non-municipal mining demand projections for the 2017 State Water Plan were originally developed through a TWDB-contracted study with the Bureau of Economic Geology (BEG).¹ The study was updated in September 2012 following (1) a major shift of the oil and gas industry from gas to oil production, displacing production centers across the state and impacting county-level projections and (2) rapid development of technology advances, resulting in more common reuse and in the ability to use more brackish water.² This memorandum, originally published in Spring 2012, was updated in March 2013 to incorporate changes in Freestone and Tarrant counties using information from the updated BEG Study.

The BEG study estimates current mining water use and projects use across the planning horizon using data collected from trade organizations, government agencies, and other industry representatives. The projections include information from four mining categories: oil and gas, aggregates, coal and lignite, and other. The BEG study projects the overall state-wide mining use to peak between 2020-2030 (primarily influenced by oil and gas production). The coal and aggregate mining industry will continue to increase throughout the planning period. The pattern in Figure 1 indicates that the primary driver for mining water use in Region C is the oil and gas categories. However, mining water use in several Region C counties appears to be driven by the coal/aggregate mining industries.

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

- A mining facility which has recently located in a county and may not have been included in the Board's database. Documentation and analysis must be provided that justify that the new mining facility will increase the future mining water use for the county above the mining water use projections.
- A mining facility has recently closed its operation in a county.
- Plans for the construction of a mining facility in a county at some future date.

¹ Bureau of Economic Geology, *Current and Projected Water Use in the Texas Mining and Oil and Gas Industry*, prepared for Texas Water Development Board, June 2011.

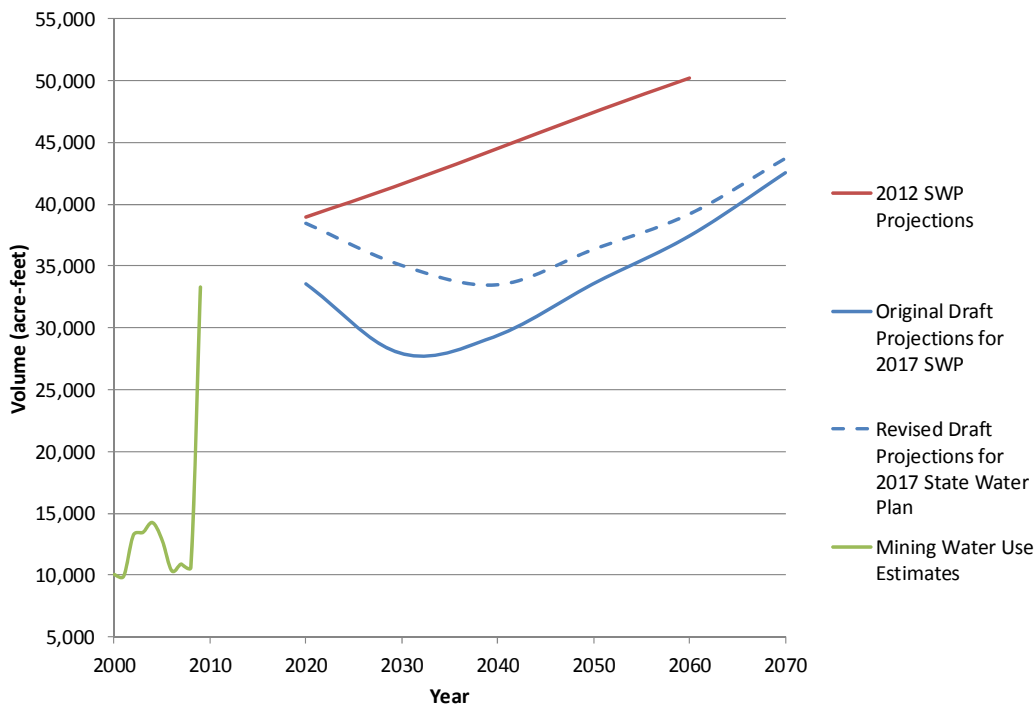
² Bureau of Economic Geology, *Oil and Gas Water Use in Texas: Update to the 2011 Mining Water Use Report*, prepared for Texas Water Development Board, September 2012.

TECHNICAL MEMORANDUM
Region C Water Planning Group
Non-Municipal Demand Projections, Mining

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

- The quantity of water used on an annual basis by a mining facility that has recently located in a county and was not included in the Board's database.
- The North American Industrial Classification (NAIC) of the mining facility that has recently located in a county. The NAIC is the numerical code for identifying the classification of establishments by type of activity in which they are engaged as defined by the U.S. Office of Management and Budget and is a successor of the Standard Industrial Classification (SIC).
- Documentation of plans for a mining facility to locate in a county at some future date will include the following data:
 - Confirmation of land purchased for the facility or lease arrangements for the facility.
 - The quantity of water required by the planned facility on an annual basis.
 - The proposed construction schedule for the facility including the date the facility will become operational.
 - The NAIC for the planned facility.

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



Source: Texas Water Development Board

PROPOSED MINING 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. The majority of the proposed RCWPG county-level projections are identical to the draft projections for the 2017 SWP. Deviations from the draft projections are explained below:

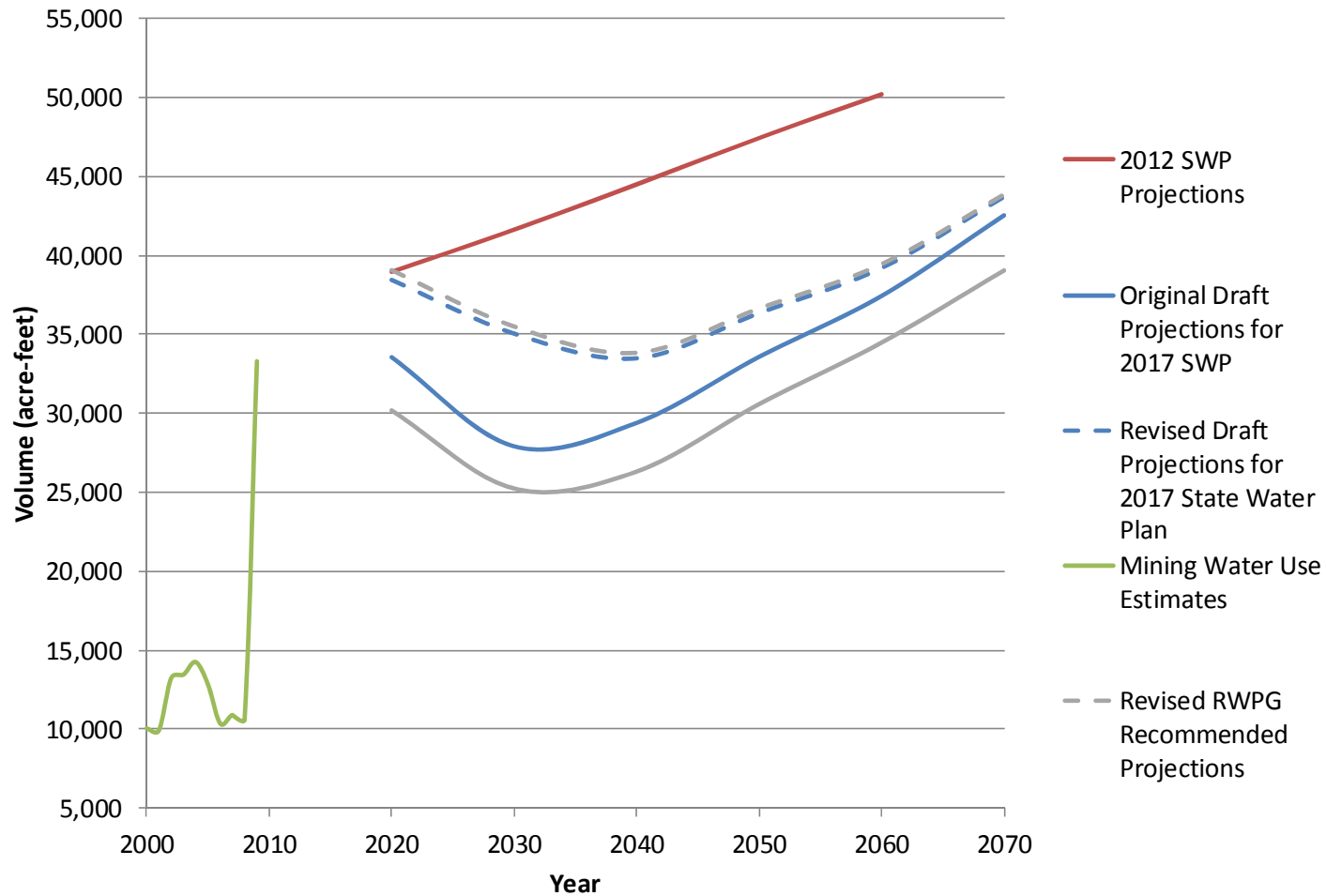
- Collin County – The BEG Study projects 0 acre-feet/year of use over the course of the planning period for Collin County. However, there has been historical mining water use in this county, as recently as 2005. In order to incorporate this demand, it is recommended that the projections include an average of the historical usage from 2005-2009 (39 acre-feet/year). The average value is recommended rather than the peak value since usage in this county is declining.
- Fannin County – The BEG Study projects that the mining water use in Fannin County will increase from 11 to 40 acre-feet/year over the course of the planning period. However, from 2005-2009, the historical water use has been estimated between 1 and 128 acre-feet/year (no discernable trend). Therefore, in order to provide for a more conservative projection, it is recommended that the peak usage value be utilized as the projection throughout the planning period.
- Grayson County – The BEG Study projects that the mining water use in Grayson County will increase from 79 to 163 acre-feet/year over the course of the planning period. However, from 2005-2009, the historical water use has been estimated between 19 and 1,058 acre-feet/year (decreasing trend). It is recommended that the projections be adjusted to the average of the historical usage from 2005-2009 (234 acre-feet/year) to provide for a more conservative estimate. The average value is recommended rather than the peak value since usage in this county is declining.
- Henderson County - The BEG Study projects that the mining water use in Henderson County will increase from 313 to 658 acre-feet/year over the course of the planning period. However, from 2005-2009, the historical water use has been estimated between 163 and 607 acre-feet/year (no discernable trend). Therefore, in order to provide for a more conservative projection, it is recommended that the peak usage value be utilized as the projection throughout the planning period.
- Rockwall County – The BEG Study projects 0 acre-feet/year of use over the course of the planning period for Rockwall County. However, there has been historical mining water use in this county, as recently as 2005. In order to incorporate this demand, it is recommended that the projections include an average of the historical usage from 2005-2009 (7 acre-feet/year). The average value is recommended rather than the peak value since usage in this county is declining.

Table 1. Comparison of Mining Demand Projections

County Name	Original TWDB Draft Projections for 2017 SWP						Revised TWDB Draft Projections for 2017 SWP						2012 SWP Projections					RWPG Revisions					
	2020	2030	2040	2050	2060	2070	2020	2030	2040	2050	2060	2070	2020	2030	2040	2050	2060	2020	2030	2040	2050	2060	2070
Collin	0	0	0	0	0	0	0	0	0	0	0	0	341	341	341	341	341	39	39	39	39	39	39
Cooke	553	424	363	433	500	577	1,583	900	378	446	511	586	484	421	428	435	441	1,583	900	378	446	511	586
Dallas	2,786	2,245	1,940	1,930	1,922	1,916	3,038	2,656	2,279	1,930	1,922	1,916	3,040	3,030	3,030	3,030	3,030	3,038	2,656	2,279	1,930	1,922	1,916
Denton	2,802	2,722	3,345	4,306	5,204	6,291	4,326	2,729	3,345	4,306	5,204	6,291	751	751	751	751	751	4,326	2,729	3,345	4,306	5,204	6,291
Ellis	254	69	0	0	0	0	147	213	164	123	82	55	140	140	140	140	140	147	213	164	123	82	55
Fannin	11	16	23	27	33	40	11	16	23	27	33	40	12	12	12	12	12	128	128	128	128	128	128
Freestone	5,388	4,947	4,989	4,862	4,794	5,209	5,347	5,115	5,251	5,286	5,356	5,582	126	132	138	144	149	5,347	5,115	5,251	5,286	5,356	5,582
Grayson	75	87	102	120	138	160	79	91	107	123	142	163	1,050	1,049	1,048	1,047	1,046	234	234	234	234	234	234
Henderson	412	492	483	497	503	589	313	457	535	571	598	658	302	327	352	378	399	607	607	607	607	607	607
Jack	3,396	1,821	1,212	1,366	1,524	1,702	1,555	1,745	1,698	1,731	1,768	1,862	983	973	973	973	973	1,555	1,745	1,698	1,731	1,768	1,862
Kaufman	296	386	491	646	783	951	296	386	491	646	783	951	80	81	82	83	84	296	386	491	646	783	951
Navarro	874	1,062	1,274	1,565	1,800	2,071	883	1,071	1,282	1,572	1,806	2,076	89	89	89	89	89	883	1,071	1,282	1,572	1,806	2,076
Parker	3,702	2,254	2,474	2,924	3,357	3,855	3,182	4,029	4,006	4,073	4,124	4,364	1,702	1,692	1,702	1,712	1,720	3,182	4,029	4,006	4,073	4,124	4,364
Rockwall	0	0	0	0	0	0	0	0	0	0	0	0	33	33	33	33	33	7	7	7	7	7	7
Tarrant	2,991	1,736	1,589	1,537	1,497	1,464	7,367	4,482	1,589	1,537	1,497	1,464	904	939	974	1,009	1,036	7,367	4,482	1,589	1,537	1,497	1,464
Wise	10,014	9,646	11,113	13,363	15,377	17,707	10,320	11,159	12,337	13,975	15,378	17,694	28,924	31,620	34,393	37,258	39,956	10,320	11,159	12,337	13,975	15,378	17,694
Total	33,554	27,907	29,398	33,576	37,432	42,532	38,447	35,049	33,485	36,346	39,204	43,702	38,961	41,630	44,486	47,435	50,200	39,059	35,500	33,835	36,640	39,446	43,856

Shading indicates no changes are proposed from TWDB's revised draft projections for the 2017 SWP.

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



Attachment A
Mining Demand by County
Historical Usage and Projections Comparison

Figure 1. Collin County Mining Comparison

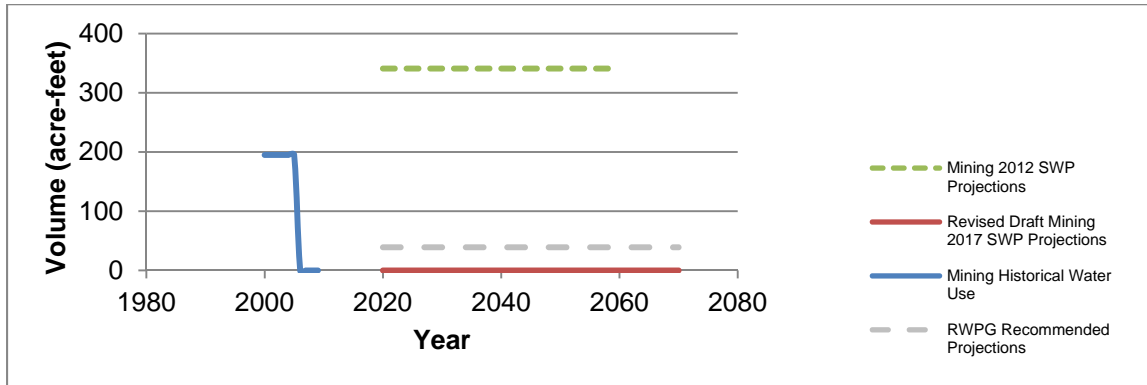


Figure 2. Cooke County Mining Comparison

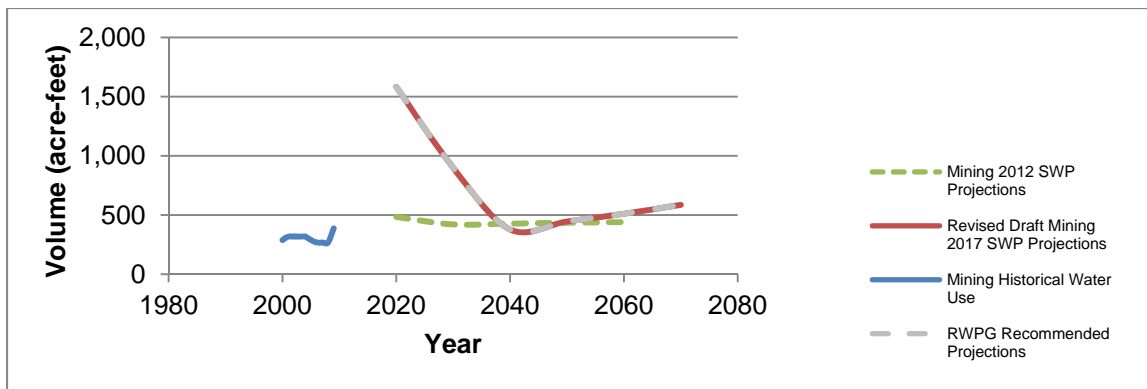


Figure 3. Dallas County Mining Comparison

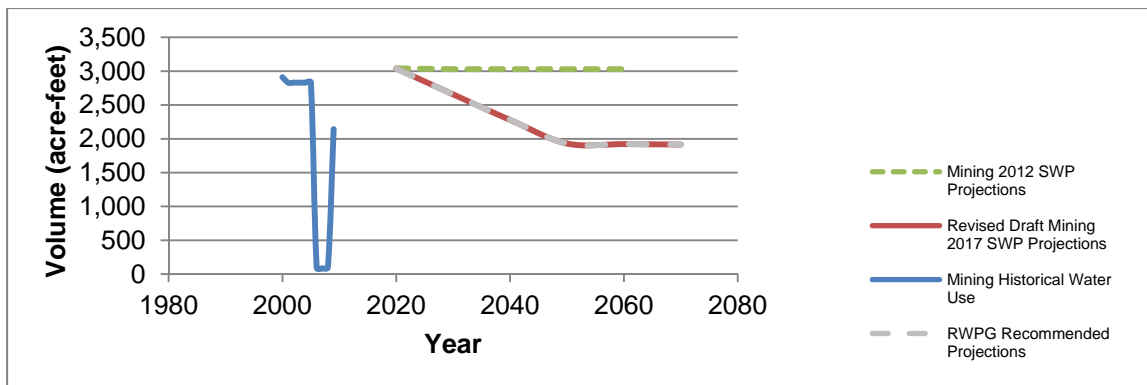


Figure 4. Denton County Mining Comparison

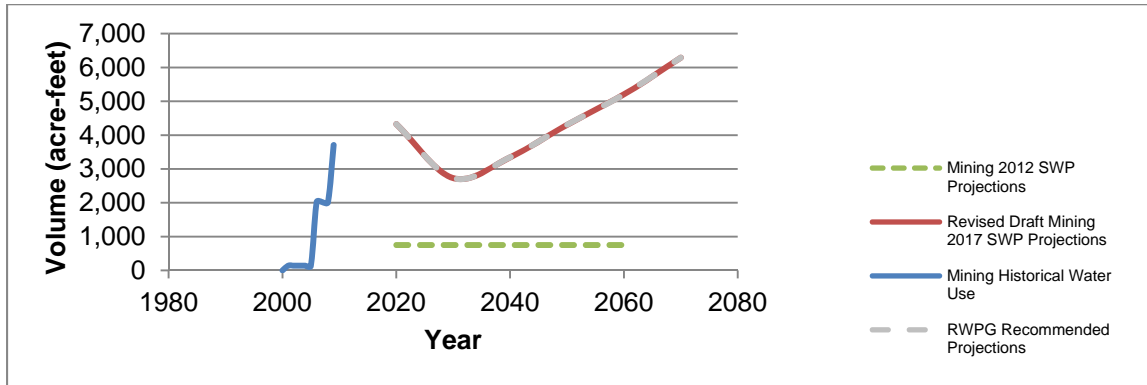


Figure 5. Ellis County Mining Comparison

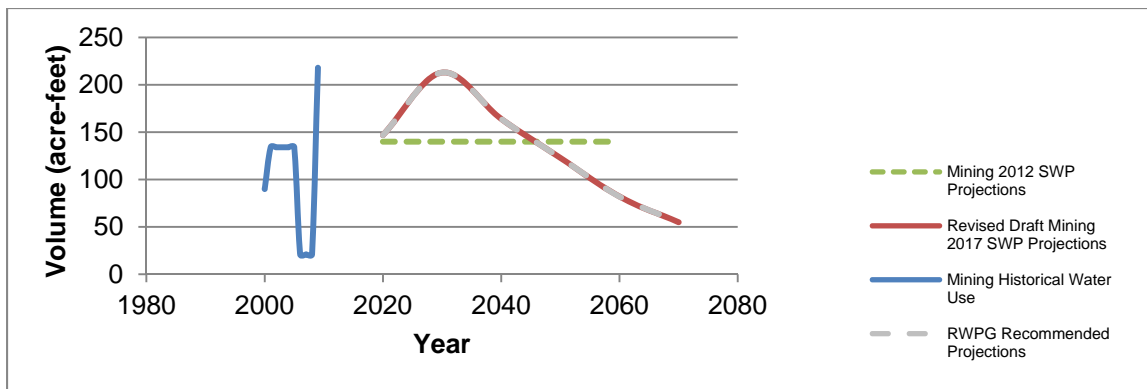


Figure 6. Fannin County Mining Comparison

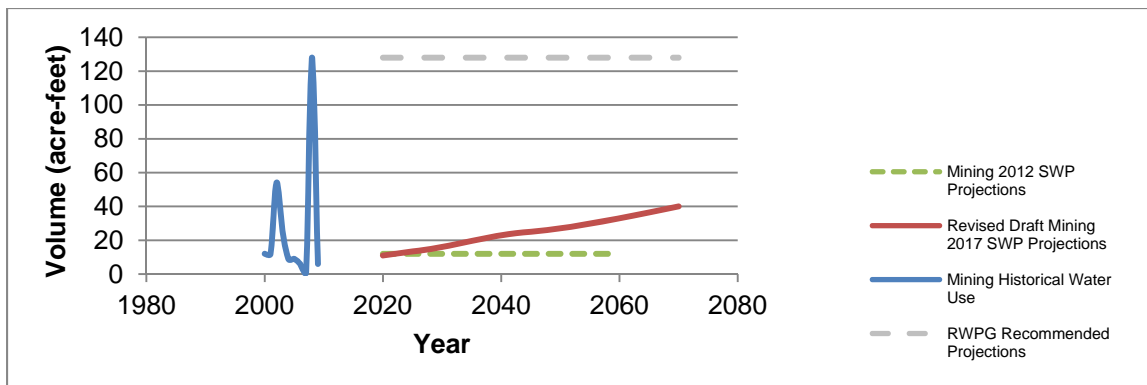


Figure 7. Freestone County Mining Comparison

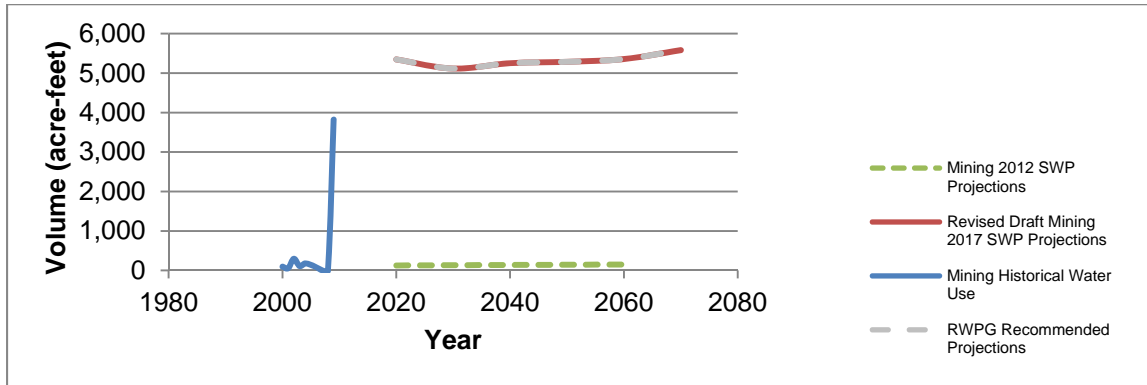


Figure 8. Grayson County Mining Comparison

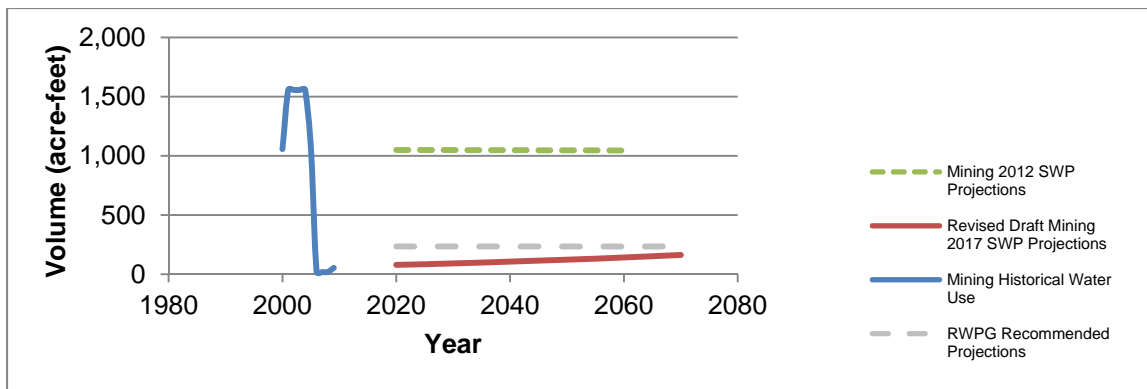


Figure 9. Henderson County Mining Comparison

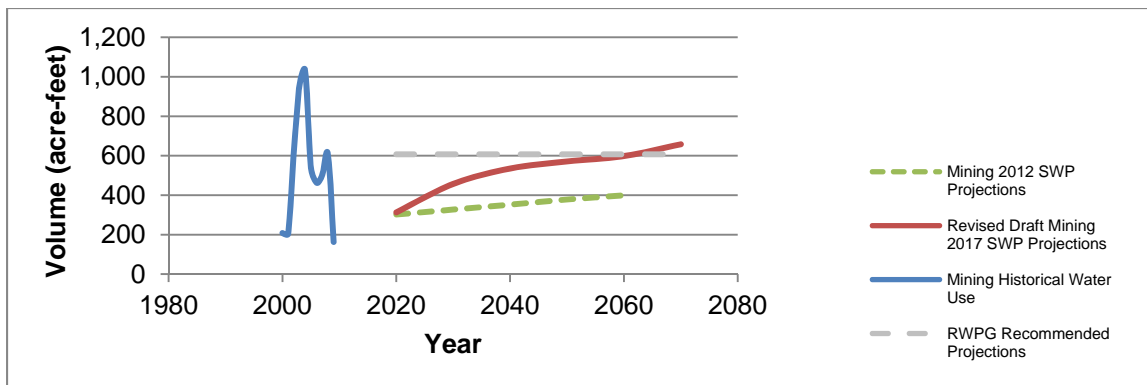


Figure 10. Jack County Mining Comparison

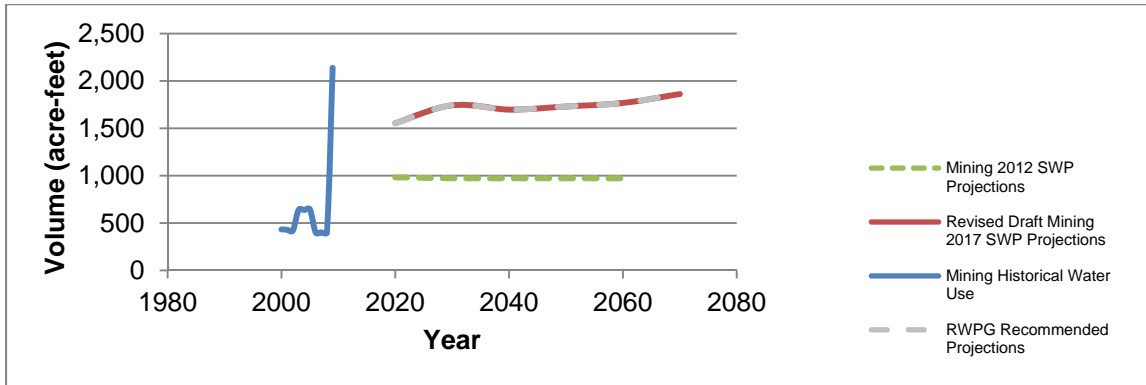


Figure 11. Kaufman County Mining Comparison

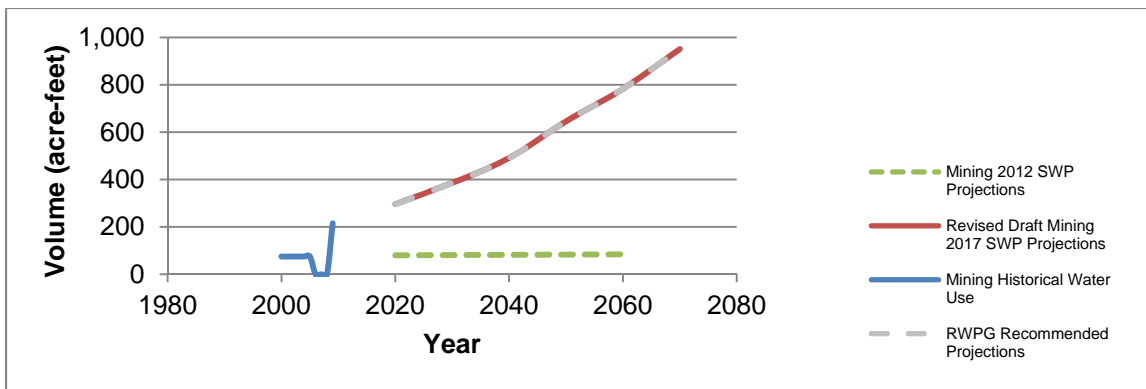


Figure 12. Navarro County Mining Comparison

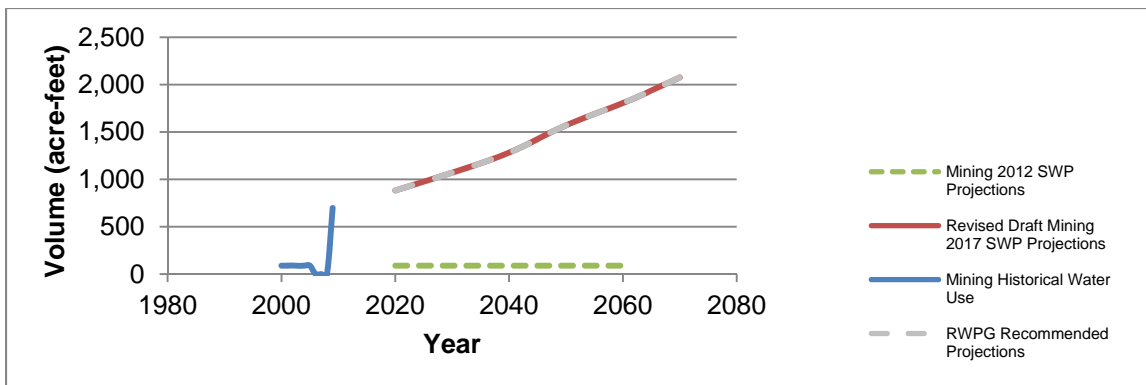


Figure 13. Parker County Mining Comparison

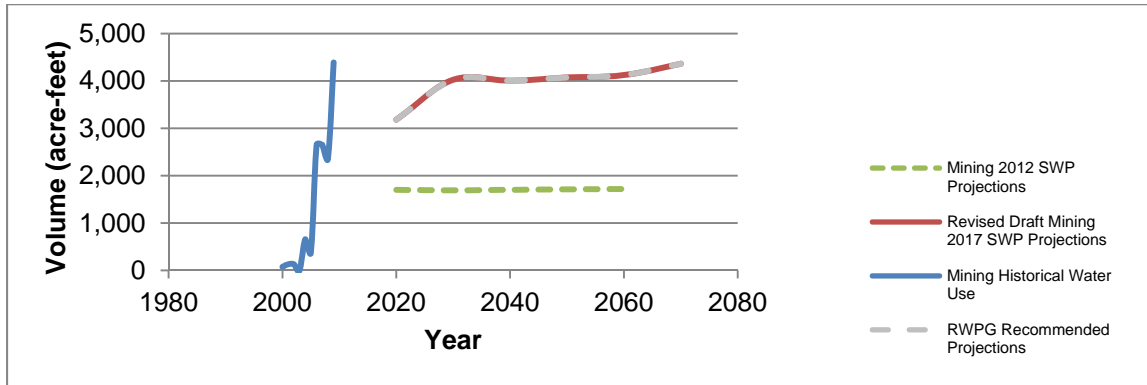


Figure 14. Rockwall County Mining Comparison

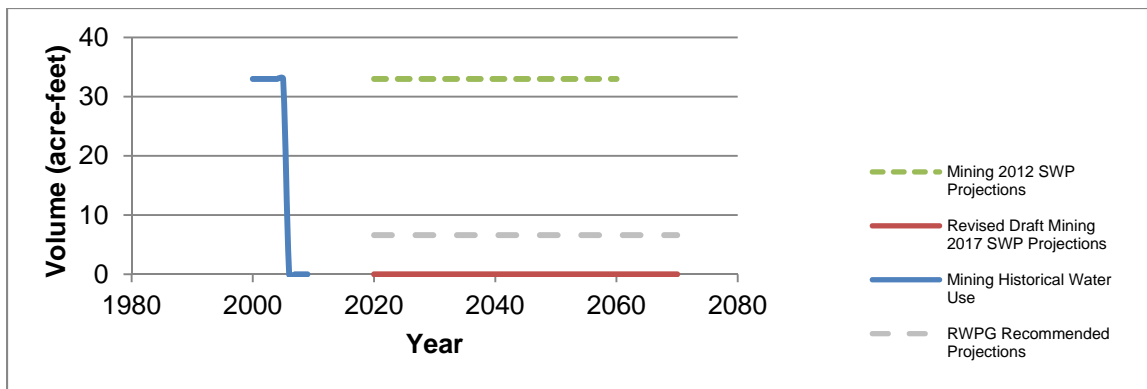


Figure 15. Tarrant County Mining Comparison

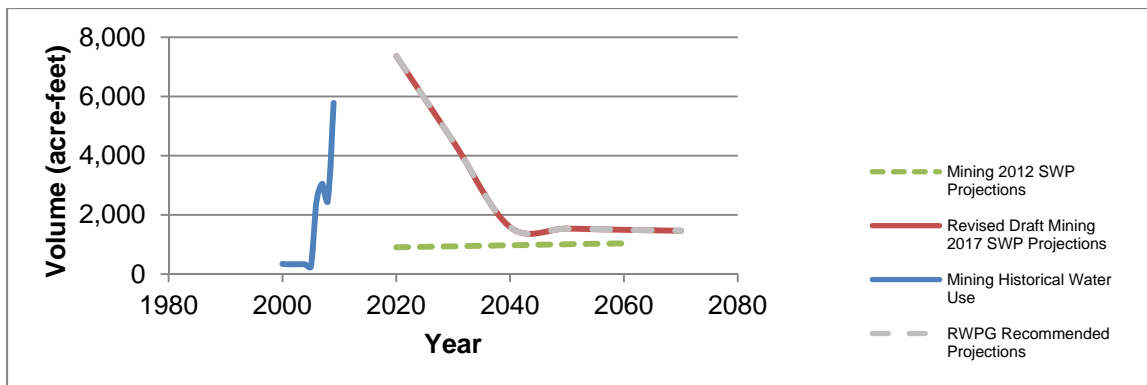


Figure 16. Wise County Mining Comparison

