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MEMORANDUM

DATE:	5/10/2024
TO:	Ed James
FROM:	Chelsea Cluff, P.E.
CC:	Tim Russell, P.E., WRS; Jonathan Lesperance, P.E.
SUBJECT:	Town of Minden Purveyor Data

1.0 Background Information

Lumos & Associates (Lumos) was contracted by the Carson Water Subconservancy District (CWSD) to assist the United States Geological Survey (USGS) with the data collection and analysis of the projected water use by 13 water purveyors within the Carson River Watershed for the Carson River Watershed 30-Year Regional Drought and Water Sustainability Plan. The intended purpose of this document is to identify potential deficiencies in water supply (both quantity and/or quality) over a 30-year planning horizon with a focus on: existing and future well production, water quality, and water rights for the Town of Minden (Minden) purveyor. Where deficiencies are noted or anticipated, potential mitigation measures will be provided for future consideration. Existing and future pumping rates and well locations will be provided to USGS for use in modeling groundwater and surface water impacts across the watershed. Tabulated data including monthly production for each well over the current 5-year (2017-2021) period of record, will be made available to USGS, CWSD, and the water purveyor.

The Town of Minden (Minden) is located within Douglas County, Nevada and is 15 miles south of Carson City along US Highway 395. Minden is approximately 3.75 square miles and has approximately 2,036 service connections, the majority of which are residential. Based on 2020 Census information, Minden has a population of approximately 3,400 people. The Town of Minden manages the water supply and distribution for their community and provides water to the regional interties within Douglas County, Indian Hills General Improvement District (IHGID), and Carson City. The physical intertie is located on Heybourne Road where the water transferred to Douglas County, IHGID, or Carson City leaves the Minden system and can be directed to any of the three systems from there.

2.0 Existing and Future Consumption

2.1 Existing Production

The residents of Minden and the intertie are primarily supplied water from eight (8) active municipal wells. The well production was analyzed using data from 2017 through 2021. Individual monthly well production varies from 0.06 to 33.2 million gallons, with the highest production observed in July as it is typically the hottest month and therefore has the highest residential and commercial irrigation and use demands. Wells 2 and 10 are the highest producing wells with a pumping capacity of 2,400 and 2,000 gpm respectively. For a breakdown of each well with pumping capacity and max daily production capacity see Table 1 below. The

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existing locations and associated permit numbers for each well are listed within Table 7 in the Supplemental Information.

Table 1: Historical Monthly Average Production Per Well

Well Name	Well Pumping Capacity (gpm)[1]	Max Daily Production Capacity (gpd)[2]
Well 2	2,400	2,304,000
Well 3	2,000	1,920,000
Well 4	1,850	1,776,000
Well 5	1,450	1,392,000
Well 6[3]	---	---
Well 7[4]	---	---
Well 8	1,100	1,056,000
Well 9	1,750	1,680,000
Well 10	2,000	1,920,000
Well 11	1,700	1,632,000
Total	14,250	13,680,000

Notes:
[1] Well pumping capacity was analyzed based on deliverables from the 2022 Minden Wholesale Water Annual Meeting
[2] Maximum daily production was estimated by using a sixteen (16) hour pumping cycle. The 16-hour pumping cycle is being used for the purpose of long-term drought and sustainability planning and does not actually reflect well capacity if pumping at 24 hours a day.
[3] Well 6 is used for irrigation of the Winhaven HOA and is not a part of the domestic system or included in the pumping capacity analysis.
[4] Well 7 has elevated levels of arsenic – it is only used in extreme emergencies in accordance with the State approved blending protocol to ensure municipal water supplied to service connections is under the MCL and complies with all Federal and state drinking water requirements.

Combined, the eight wells have a total pumping capacity of 14,250 gpm and a max daily production of 13,680,000 gpd assuming a sixteen (16) hour a day pumping cycle. Overall, the production capacity of a system as identified in this report is the summer-time capacity since water production for Minden increases seven (7) to nine (9) times compared to wintertime demands. The large swings in monthly production are due to smaller deliveries to the regional intertie system in winter. Therefore, the capacity analysis is focused on the high production months. The maximum monthly production for all five (5) years analyzed occurred between June and August with the overall highest production month being June of 2021 at 162.7 million gallons (MG). The average day max month (ADMM) can be calculated by dividing the absolute maximum month for each year throughout the five years of data and dividing by the number of days within that month.

The ADMM for Minden usage, for intertie usage, and a combined ADMM was used along with the maximum pumping capacity (based on a sixteen (16) hour a day pumping cycle) to evaluate production deficiencies in the system. On Figure 1 the ADMM for the four (4) summer months is compared to the available production capacity. As seen within Figure 1 the current maximum well production exceeds the ADMM for peak summer months for the combined Minden and intertie usage. For a breakdown of the production of all the wells

through the summer period separated by Minden, regional, and combined usage see Table 2, and for the yearly production of all wells broken down by month, reference Table 8 in the Supplemental Information section.

Table 2: Historical Total Monthly Well Production

Month	Monthly Well Production (gallons) for Town of Minden					
	2017	2018	2019	2020	2021	2017-2021 Average
Jun	57,782,000	74,885,000	40,410,000	77,524,000	162,780,000	82,676,200
Jul	134,679,000	68,440,000	80,900,000	85,441,000	119,781,000	97,848,200
Aug	5,294,000	111,786,000	80,860,000	74,592,000	75,283,000	69,563,000
Sep	58,153,000	29,574,000	39,820,000	81,111,000	51,628,000	52,057,200
Month	**Monthly Well Production (gallons) for Regional Interties**					
	2017	2018	2019	2020	2021	2017-2021 Average
Jun	238,945,000	231,635,000	253,000,000	224,000,000	221,000,000	233,716,000
Jul	204,594,000	272,090,000	252,000,000	243,000,000	237,000,000	241,736,800
Aug	319,817,000	226,894,000	245,000,000	246,000,000	246,000,000	256,742,200
Sep	177,244,000	230,916,000	215,000,000	206,000,000	229,000,000	211,632,000
Month	**Monthly Well Production (gallons) for Combined Minden and Regional Interties**					
	2017	2018	2019	2020	2021	2017-2021 Average
Jun	296,727,000	306,520,000	293,410,000	301,524,000	383,780,000	316,392,200
Jul	339,273,000	340,530,000	332,900,000	328,441,000	356,781,000	339,585,000
Aug	325,111,000	338,680,000	325,860,000	320,592,000	321,283,000	326,305,200
Sep	235,397,000	260,490,000	254,820,000	287,111,000	280,628,000	263,689,200

Notes:
[1] The combined monthly well production and regional intertie production includes the contractual amount of a minimum 7,500 gpm to be delivered to the regional system.

= Maximum Month of the five years of data

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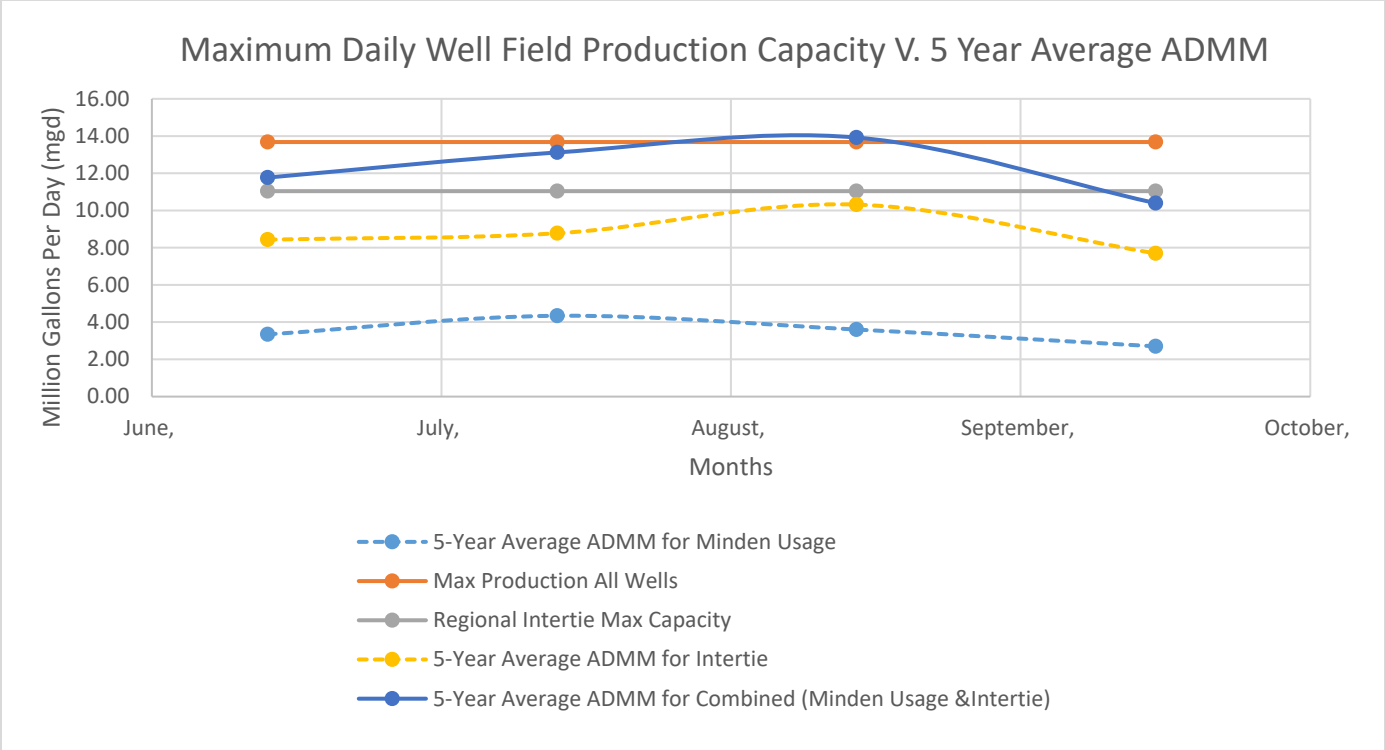


Figure 1: Maximum Well Field Production Capacity

2.2 Growth Projections

To estimate the growth in water production for Minden, a planning period from 2021 through 2051 (30 years) was analyzed using a compounding growth rate of 0.54% for Minden's internal usage. The 0.54% compounding growth rate is based on population data from 2010 to 2023 and was provided by Douglas County for the whole planning area and is applied to well production by proxy. It is unknown if developable land (receiving area), planned developments, and land use classifications were taken into consideration in the growth analysis as this is a county provided estimate of production growth.

The compounding growth rates applied to the Minden intertie are a compilation of the individual growth rates for Carson City, Douglas County, and IHGID's for their respective use of the intertie. Carson City is currently drawing their intertie consumption at the maximum rate and therefore will have a zero-percent growth rate applied to the portion of intertie water sent to Carson City. Indian Hills will see minimal growth therefore using the State Demographer's estimate for growth in the region. Douglas County is broken into three systems that use Minden intertie water: West Valley (State Demographer), North County (State Demographer), and East Valley (0.54%). East Valley is the only system estimated to see significant growth in intertie consumption. Therefore, has a higher growth rate applied (0.54%) to the portion of intertie that is sent to the East Valley system. The growth rates were applied to each intertie users based on the approximate allocated flow to each user highlighted in Table 3. The production from each intertie with the respective compounding growth rate was combined to find the total intertie production each year through the 30-year planning period. Figure 2 illustrates the annual well production required for Minden's internal usage and the regional intertie over the 30-year planning horizon. Table 9 and Table 10, in the Supplemental Information section, provides an in-depth breakdown of the growth rate provided by Douglas County over the 30-year planning horizon along with the individual growth factors for the intertie users.

Alongside the assumed growth projections, the regional intertie is limited by the contractual amount that can be delivered by Minden. This is equivalent to 7,500 gpm, which is divided into 2,600 gpm for Douglas County, 1,400 gpm to IHGID, and 3,500 gpm to Carson City. This is summarized in Table 3 below.

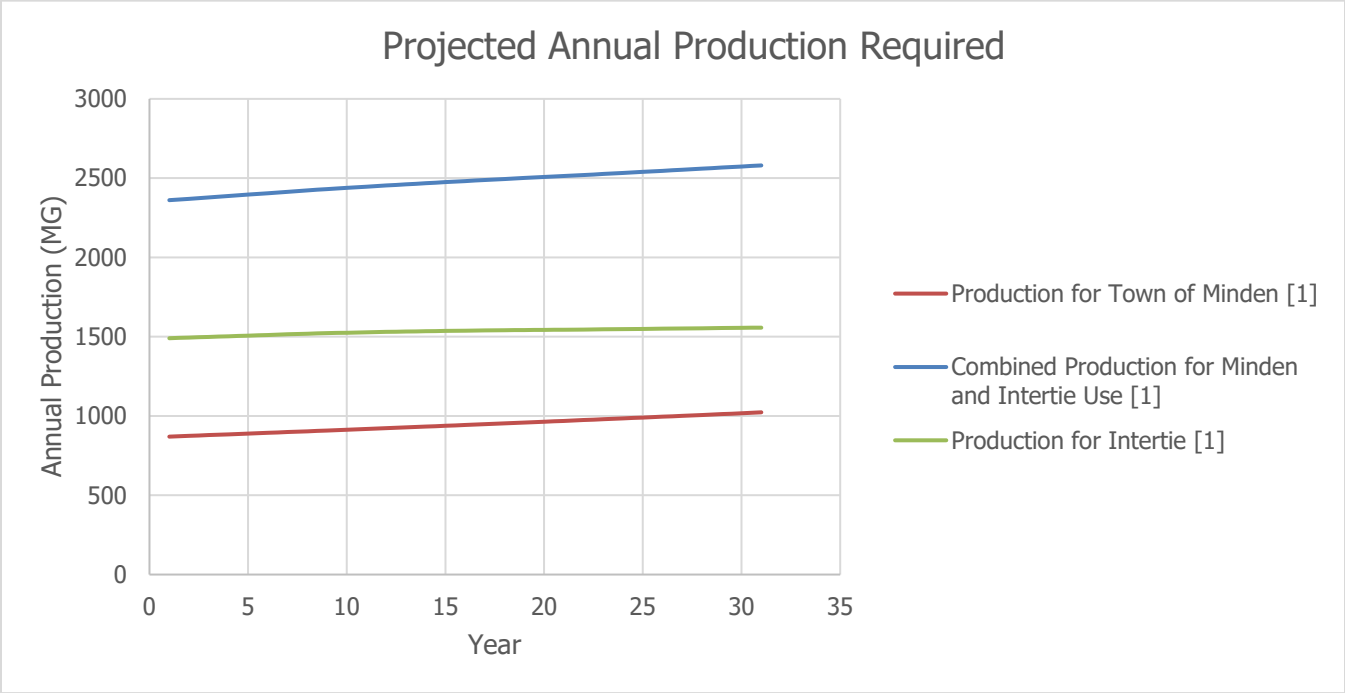


Figure 2: Projected Annual Production

Notes:
[1] All production is in million gallons and based on the Douglas County-provided growth rate and combined intertie growth rate as described in Section 2.2. All growth rates are applied in a compounding nature.

Table 3: Minden Regional Intertie Minimum Annual Delivery

Regional Intertie Connections	Min Annual Intertie Delivery (gpm)
Carson City	3,500
IHGID	1,400
Douglas County	2,600
Total	7,500

2.3 Estimated Future Well Production

To estimate future well production necessary to meet anticipated water demand, the growth projection discussed in Section 2.2 was used to project the maximum daily demand required for Minden and the regional intertie. The calculated demand for Minden in 2051 was approximately 583 MG (496 MG as the five year average, 2017-2021) and 1,608 MG (1,505 MG as the five year average, 2017-2021) for regional interties based off Douglas County's growth rate and the combined intertie growth rate, as described in Section 2.2. On Figure 3, the future estimated ADMM for Douglas County's provided growth rate for Minden's internal usage and the combined intertie growth rate for the intertie usage is compared against current available production capacity. With all wells operating, there is not sufficient capacity to meet the required production for Minden's internal use as well as the required production for the intertie agreement. Under both the Douglas County growth rate and combined intertie growth rate, additional capacity will be required. This will be supplemented by a new well being constructed that has an approximate active date of 2025. For projected annual total production, see Table 10 in the Supplemental Information section.

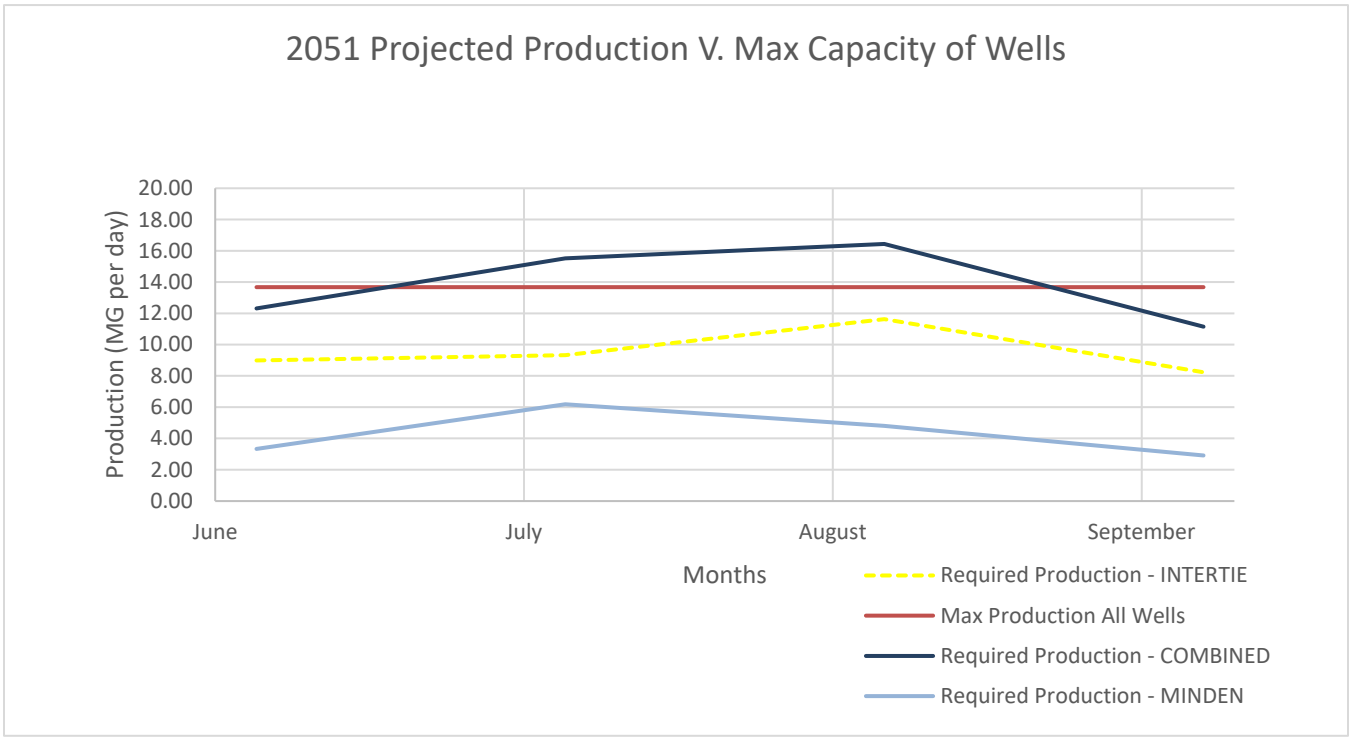


Figure 3: Projected 2051 Production versus Max Capacity of Wells

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3.0 Water Quality

Water quality was analyzed using historical purveyor provided data from 1992 through 2013. The data provided analyzes existing water quality per well for arsenic. This data does not include water quality records for Well#6, Well#7, Well#9, Well#10, and Well#11. Three (3) wells (Well#8, Well#4 and Well#2) have had spot samples of arsenic concentrations above the maximum concentration limit (MCL) of 10 parts per billion (ppb). However, these spot samples are accounted to low activity at the well and as pumping continues arsenic levels appear to trend downward. Overall, it is recommended to continue the monitoring of Wells #8, #4, and #2. The remaining Minden wells have low or non-detectable contaminant levels for arsenic. The yearly concentrations are shown in Table 4.

Table 4: Contaminants Concentration

	CONTAMINANT MCL	Arsenic 10(ppb)
Well 1	2009	4
	2010	7
	2011	7
	2012	7
	2013	7
Well 2	2009	10
	2010	10
	2011	7
	2012	8
	2013	8
Well 3	2009	4
	2010	7
	2011	4
	2012	4
	2013	4
Well 4	2009	8
	2010	4
	2011	8
	2012	7
	2013	10
Well 5	2009	9
	2010	7
	2011	7
	2012	9
	2013	7
Well 8	2009	10
	2010	12
	2011	8
	2012	10
	2013	9

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4.0 Water Rights

The current annual production for the base year (2021) is 7,226 acre-feet per year (AFA) (2,663 AFA Minden, 4,562 AFA Regional). Projected demand based on the growth rates established in Section 2.2 in 2051 is 8,057 AFA (3,130 AFA Minden, 4,926 AFA Regional). Within the 2022 Minden Wholesale Water Annual Meeting, Minden is noted to have a combined 17,613.87 AFA of water rights including those granted on behalf of Douglas County (2,733.57 AFA), Carson City (2,740 AFA), and IHGID (1,454.60 AFA). Based on this conservative projected future demand, the Minden system and regional intertie partners have sufficient water rights over the 30-year planning period.

5.0 Summary

For the beginning of the planning period (2021), Minden currently does not have adequate well production capacity (13.7 MG/day) to meet the demands of its community and regional partners (13.9 MG/day) and negligible water quality issues impacting their system besides the already noted arsenic issues in Well #7. Based on the planning horizon of 30-years (2021 to 2051) and the growth rates used in the analysis, Minden and the regional partners have sufficient water rights (17,613.87 AFA) to account for future growth to 2051 (8,057 AFA) at a 0.54% growth rate. As development continues and the population grows within Minden and surrounding areas supplied via the intertie, the future required well production capacity will be 16.4 MG/day, above the current capacity of 13.7 MG/day from the eight (8) active wells. However, it is critical to reanalyze future water supply to ensure demands can be met in case growth is higher than defined in this report. For an in-depth look at all considerations and groundwater modeling scenarios, see Section 5.1 and Section 5.2. For a more detailed breakdown of projected well production required capacity and the surplus, see Table 5.

Table 5: Summarized Existing & Future Production

	MINDEN		REGIONAL [3]		COMBINED	
	MG/day	gal/min	MG/day	gal/min	MG/day	gal/min
Existing (2021) Water Supply Capacity [1]	13.7	14,250	11.0	11,500	13.7	14,250
Existing (2021) Water Demand	4.3	4,500	10.3	10,700	13.9	4,500
Existing (2021) Water Supply Deficit/ Surplus	9.3	9,700	0.7	700	-0.2	-300
Future (2051) Water Supply Demand [2]	6.2	6,400	12	12,100	16.4	17,100
Future (2051) Water Supply Deficit/Surplus	7.5	7,850	-1	-600	-2.8	-2,900

Notes:
[1] Existing water supply capacity includes production from the following wells: Well 2, Well 3, Well 4, Well 5, Well 8, Well 9, Well 10, and Well 11.
[2] The water demand in 2051 for Minden assumes the Douglas County growth rate and the water demand in 2051 for regional use is a combined growth factor of the regional partners, as discussed in Section 2.2.
[3] Capacity in the regional pipeline is a factor of the conveyance possible in the intertie pipeline – an estimate has been made by discussing with the various regional partners and Town of Minden. The approximate conveyance capacity is 11 MG/day or equivalent to 11,500 gpm for the noted 16-hour pumping cycle.

5.1 Future Water Supply Considerations

The current (13.9 MG/day) and projected demands in 2051 (16.4 MG/day) are above the maximum well capacities (13.7 MG/day), as shown in Figure 1 and Figure 3. Based on the current data and methodology used for the analysis, Minden's current water supply of eight (8) wells is not sufficient for the projected growth in the service area and will require additional wells to meet the projected water demand of 17,100 gpm. However, it is noted that a new proposed well 12 is scheduled to come online in 2025 which will alleviate the projected capacity deficiency in 2051. It is important to note that population growth in an area is dependent on many different factors that are not always able to be anticipated in a future growth analysis. Therefore, the population and expected community growth should be continually monitored in case an unanticipated population boom drives the water demand to be higher than the capacity of the existing water supply. For this reason, it is encouraged that all purveyors look at the benefits of water conservation.

1. Water Conservation
    - Pros: Reduce overall demand and production needs, inexpensive
    - Cons: Consumer buy in, does not fully accommodate long-term growth, loss of revenue

5.2 Modeling Options

The base condition that would be recommended for modeling purposes has been summarized below and in Table 6. A summary of the projected production and associated growth rates per year over the 30-year planning horizon can be found in Table 9 and Table 10. This is not a recommendation to the purveyor and purely an assumed option for modeling purposes.

Base Condition: Run existing wells with existing capacities for all eight (8) active wells and one (1) proposed well.

Table 6: Proposed Required Well Capacities in 2051

Options	Well 2 (gpm)	Well 3 (gpm)	Well 4 (gpm)	Well 5 (gpm)	Well 8 (gpm)
Base	2,400	2,000	1,850	1,450	1,100
Notes: [1] Max well production was assumed that wells could run 16 hours of the day during the peak months of June through September.					

Options	Well 9 (gpm)	Well 10 (gpm)	Well 11 (gpm)	Proposed Well 12[2]	Total (gpm)
Base	1,750	2,000	1,700	2,000	16,250
Notes: [1] Max well production was assumed that wells could run 16 hours of the day during the peak months of June through September. [2] The capacity for the proposed well #12 was approximated based off discussions with Town of Minden and has an approximate installation date of January 2025.					

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6.0 Supplemental Information

Table 7: Existing Well Locations & Depths

Parameter	Well 2	Well 3	Well 4	Well 5	Well 6 [1]	Well 7 [3]	Well 8	Well 9	Well 10	Well 11	Well 12
Well Depth (ft)	520	310	400	340	200	500	300	369	310	300	--
Screened Interval from (ft)	150	190	200	150	140	--	180	180	158	140	--
Screened Interval to (ft)	490	305	360	330	200	--	260	370	285	300	--
Latitude	38.95	38.95	38.96	38.96	38.96	38.96	38.96	38.96	38.97	38.96	38.56
Longitude [2]	119.76	119.77	119.78	119.76	119.76	119.72	119.73	119.74	119.76	119.76	119.75
Surface Elevation (ft)	4734	4700	4700	4724	4727	4809	4802	4771	4718	4724	4740
Application Number	81147	79140	60638	81148	82284	81149	82315	81145	83703	60635	--

Notes:
[1] Well 6 is not a part of the Town of Minden municipal system.
[2] All longitudes displayed are negative.
[3] Well 7 is only used in case of emergency.
[4] The location of Well 12 was approximated based off discussions with the Town of Minden.

Table 8: Historical Total Monthly Well Production

Month	Monthly Well Production (gallons) for Town of Minden					
	2017	2018	2019	2020	2021	2017-2021 Average
Jan	12,045,000	11,984,000	12,630,000	11,743,000	21,476,000	13,975,600
Feb	13,516,000	11,713,000	10,370,000	9,863,000	26,497,000	14,391,800
Mar	15,264,000	13,434,000	7,710,000	15,760,000	44,381,000	19,309,800
Apr	23,005,000	26,999,000	25,030,000	25,866,000	109,646,000	42,109,200
May	48,141,000	37,756,000	51,740,000	53,583,000	137,150,000	65,674,000
Jun	57,782,000	74,885,000	40,410,000	77,524,000	162,780,000	82,676,200
Jul	134,679,000	68,440,000	80,900,000	85,441,000	119,781,000	97,848,200
Aug	5,294,000	111,786,000	80,860,000	74,592,000	75,283,000	69,563,000
Sep	58,153,000	29,574,000	39,820,000	81,111,000	51,628,000	52,057,200
Oct	26,027,000	21,967,000	22,420,000	40,110,000	70,428,000	36,190,400
Nov	13,707,000	15,123,000	10,000,000	32,711,000	26,693,000	19,646,800
Dec	15,620,000	14,160,000	16,780,000	32,827,000	24,629,000	20,803,200
Total	423,233,000	437,821,000	398,670,000	541,131,000	870,372,000	534,245,400
Average Day (gpd)	1,159,542	1,199,510	1,092,247	1,478,500	2,384,581	1,463,686
Max Month (gallons)	134,679,000	111,786,000	80,900,000	85,441,000	162,780,000	97,848,200
ADMM (gpd)	4,344,484	3,606,000	2,609,677	2,756,161	5,250,968	3,156,394
Month	**Monthly Well Production (gallons) for Regional Intertie**					
	2017	**2018**	**2019**	**2020**	**2021**	**2017-2021 Average**
Jan	26,911,000	26,196,000	27,000,000	28,000,000	27,000,000	27,021,400
Feb	22,042,000	24,157,000	25,000,000	31,000,000	23,000,000	25,039,800
Mar	26,537,000	24,126,000	30,000,000	30,000,000	52,000,000	32,532,600
Apr	32,859,000	66,251,000	78,000,000	89,000,000	112,000,000	75,622,000
May	170,529,000	186,744,000	196,000,000	235,000,000	212,000,000	200,054,600
Jun	238,945,000	231,635,000	253,000,000	224,000,000	221,000,000	233,716,000
Jul	204,594,000	272,090,000	252,000,000	243,000,000	237,000,000	241,736,800
Aug	319,817,000	226,894,000	245,000,000	246,000,000	246,000,000	256,742,200
Sep	177,244,000	230,916,000	215,000,000	206,000,000	229,000,000	211,632,000
Oct	135,665,000	153,543,000	134,000,000	128,000,000	82,000,000	126,641,600
Nov	46,944,000	46,447,000	39,000,000	26,000,000	29,000,000	37,478,200
Dec	23,955,000	25,000,000	23,000,000	26,000,000	21,000,000	23,791,000
Total	1,426,042,000	1,513,999,000	1,517,000,000	1,512,000,000	1,491,000,000	1,492,008,200
Average Day (gpd)	3,906,964	4,147,942	4,156,164	4,131,148	4,084,932	4,087,694
Max Month (gallons)	319,817,000	272,090,000	253,000,000	246,000,000	246,000,000	256,742,200
ADMM (gpd)	10,316,677	8,777,097	8,161,290	7,935,484	7,935,484	8,282,006

Month	Monthly Well Production (gallons) for Minden and Regional Interties					
	2017	2018	2019	2020	2021	2017-2021 Average
Jan	38,956,000	38,180,000	39,630,000	39,743,000	48,476,000	40,997,000
Feb	35,558,000	35,870,000	35,370,000	40,863,000	49,497,000	39,431,600
Mar	41,801,000	37,560,000	37,710,000	45,760,000	96,381,000	51,842,400
Apr	55,864,000	93,250,000	103,030,000	114,866,000	221,646,000	117,731,200
May	218,670,000	224,500,000	247,740,000	288,583,000	349,150,000	265,728,600
Jun	296,727,000	306,520,000	293,410,000	301,524,000	383,780,000	316,392,200
Jul	339,273,000	340,530,000	332,900,000	328,441,000	356,781,000	339,585,000
Aug	325,111,000	338,680,000	325,860,000	320,592,000	321,283,000	326,305,200
Sep	235,397,000	260,490,000	254,820,000	287,111,000	280,628,000	263,689,200
Oct	161,692,000	175,510,000	156,420,000	168,110,000	152,428,000	162,832,000
Nov	60,651,000	61,570,000	49,000,000	58,711,000	55,693,000	57,125,000
Dec	39,575,000	39,160,000	39,780,000	58,827,000	45,629,000	44,594,200
Total	1,849,275,000	1,951,820,000	1,915,670,000	2,053,131,000	2,361,372,000	2,026,253,600
Average Day (gpd)	5,066,507	5,347,452	5,248,411	5,609,648	6,469,512	5,551,380
Max Month (gallons)	339,273,000	340,530,000	332,900,000	328,441,000	383,780,000	339,585,000
ADMM (gpd)	10,944,290	10,984,839	10,738,710	10,594,871	12,380,000	10,954,355

Note:
[1] Monthly well production includes intertie consumption for Douglas County, Indian Hills, and Carson City along with Minden's Usage

= Maximum Month

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Table 9: Future Well Production for Intertie Use

Year	Douglas County - Max Growth [1]	Carson City Growth Rate [3]	State Demographer Growth Rate [2]	Future Production (MG)				
				IHGID [2]	Carson City [3]	DC – East [1]	DC – West [2]	DC – North [2]
2021 (base)				213	918	221	69	69
2022	0.54%	0.0%	0.8%	215	918	222	70	70
2023	0.54%	0.0%	0.8%	217	918	224	70	70
2024	0.54%	0.0%	0.8%	218	918	225	71	71
2025	0.54%	0.0%	0.8%	220	918	226	71	71
2026	0.54%	0.0%	0.8%	222	918	227	72	72
2027	0.54%	0.0%	0.8%	224	918	229	73	73
2028	0.54%	0.0%	0.7%	225	918	230	73	73
2029	0.54%	0.0%	0.6%	227	918	231	73	73
2030	0.54%	0.0%	0.4%	227	918	232	74	74
2031	0.54%	0.0%	0.4%	228	918	234	74	74
2032	0.54%	0.0%	0.3%	229	918	235	74	74
2033	0.54%	0.0%	0.2%	229	918	236	74	74
2034	0.54%	0.0%	0.2%	230	918	237	75	75
2035	0.54%	0.0%	0.2%	230	918	239	75	75
2036	0.54%	0.0%	0.1%	231	918	240	75	75
2037	0.54%	0.0%	0.1%	231	918	241	75	75
2038	0.54%	0.0%	0.0%	231	918	242	75	75
2039	0.54%	0.0%	0.0%	231	918	244	75	75
2040	0.54%	0.0%	-0.1%	231	918	245	75	75
2041	0.54%	0.0%	-0.2%	230	918	246	75	75
2042	0.54%	0.0%	0.0%	230	918	248	75	75
2043	0.54%	0.0%	0.0%	230	918	249	75	75
2044	0.54%	0.0%	0.0%	230	918	250	75	75
2045	0.54%	0.0%	0.0%	230	918	252	75	75
2046	0.54%	0.0%	0.0%	230	918	253	75	75
2047	0.54%	0.0%	0.0%	230	918	255	75	75
2048	0.54%	0.0%	0.0%	230	918	256	75	75
2049	0.54%	0.0%	0.0%	230	918	257	75	75
2050	0.54%	0.0%	0.0%	230	918	259	75	75
2051	0.54%	0.0%	0.0%	230	918	260	75	75

Notes:
[1] The Douglas County max growth rate is applied to East Valley intertie use.
[2] The State Demographer growth rate is applied to IHGID, DC-West, and DC-North intertie use.
[3] The Carson City growth rate is applied to Carson City intertie use only and assumes intertie consumption cannot exceed current demands. This does not suggest Carson City's water usage will have a zero-growth rate.

Table 10: Future Well Production for Minden & Intertie

Year	Douglas County - Max Growth	Future Production (MG)		
		Minden	Regional Intertie	Combined
2021 (base)		496	1,506	2,002
2022	0.54%	499	1,540	2,039
2023	0.54%	502	1,544	2,046
2024	0.54%	504	1,549	2,053
2025	0.54%	507	1,553	2,060
2026	0.54%	510	1,558	2,068
2027	0.54%	513	1,562	2,075
2028	0.54%	515	1,566	2,082
2029	0.54%	518	1,570	2,088
2030	0.54%	521	1,573	2,094
2031	0.54%	524	1,576	2,100
2032	0.54%	527	1,578	2,105
2033	0.54%	530	1,581	2,110
2034	0.54%	532	1,583	2,115
2035	0.54%	535	1,585	2,120
2036	0.54%	538	1,587	2,125
2037	0.54%	541	1,589	2,130
2038	0.54%	544	1,590	2,134
2039	0.54%	547	1,592	2,138
2040	0.54%	550	1,593	2,142
2041	0.54%	553	1,593	2,146
2042	0.54%	556	1,595	2,151
2043	0.54%	559	1,596	2,155
2044	0.54%	562	1,598	2,159
2045	0.54%	565	1,599	2,164
2046	0.54%	568	1,601	2,169
2047	0.54%	571	1,602	2,173
2048	0.54%	574	1,604	2,178
2049	0.54%	577	1,605	2,182
2050	0.54%	580	1,607	2,187
2051	0.54%	583	1,608	2,192

Notes:
[1] The Douglas County max growth rate is applied to Minden's internal usage only, for the growth rates applied to Intertie usage reference Table 9.



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WELL LOCATIONS
TOWN OF MINDEN

CWSD

30-YEAR REGIONAL DROUGHT PLAN

1 OF 1

LEGEND

- Minden Wells

Paper Size: 8.5" x 11"

0 1,500 3,000
Feet

Projection: Transverse Mercator
Grid: NAD 1983 UTM Zone 11N
Datum: North American 1983
Created by: dmarinrios

Date:	05/10/2024
Project #:	10974.000
Revision:	2