DEPARTMENT of AGRICULTURE and NATURAL RESOURCES
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RECOMMENDATION OF ACTING CHIEF ENGINEER FOR FUTURE USE WATER PERMIT APPLICATION NO. 8990-3, City of Milbank

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Acting Chief Engineer, Water Rights Program, Department of Agriculture and Natural Resources concerning Future Use Water Permit Application No. 8990-3, City of Milbank, 1001 East 4th Avenue, Suite 301, Milbank SD 57252-2657.

The Chief Engineer is recommending APPROVAL of Application No. 8990-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the City of Milbank has demonstrated a reasonable need for the water reserved, 3) the proposed use is a beneficial use and 4) it is in the public interest with the following qualifications:

1. Future Use Permit No. 8990-3 reserves 1,120 acre-feet of water annually from the Antelope Valley Aquifer.

2. Future Use Permit No. 8990-3 is approved with the stipulation that this Permit is subject to review by the Water Management Board as to accomplishment in developing reserved water upon expiration of seven (7) years. This Permit shall be subject to cancellation if the Water Management Board determines during the review that the holder cannot demonstrate a reasonable need for the Permit.

3. The future use area approved under this Permit encompasses other wells which obtain water from the same aquifer. Any future water withdrawals from this reservation shall be controlled so there is not a reduction of needed water supplies in adequate domestic wells or in adequate existing wells for other water rights in place at the time an application to construct and place reserved water is filed.

4. At such time as definite plans are made to construct works and put the water reserved by this Permit to beneficial use, specific application for all or any part of the reserved water must be submitted prior to construction of facilities pursuant to SDCL 46-5-38.1.

See report on application for additional information.

Mark Mayer, PE
Director of Office of Water
January 20, 2026

NOTE: Approval of Future Use Permit No. 8990-3 does not preclude approval of subsequent appropriations by other persons within the future use area identified on No. 8990-3. Approval of any such appropriations will have a priority date junior to No. 8990-3. However, future siting of wells by the City of Milbank to place water to beneficial use within the future use area will be subject to review during the application process regarding the likelihood of well interference between proposed city wells and existing wells of other users within the future use area.

Report to the Chief Engineer on
Water Permit Application No. 8990-3
City of Milbank
7 January, 2026

Water Permit Application No. 8990-3 proposes to reserve for future use 1,120 acre-feet of water annually (ac-ft/yr) from the Antelope Valley aquifer. The area of the future use reservation is Sections 21 and 22 in T120N-R51W. The water is to be reserved as a future water supply for municipal and water distribution system use by the City of Milbank in Grant County. Approval of this application would not authorize construction of works or application of water to beneficial use. This site is located approximately 15 miles southwest of Milbank, South Dakota, surrounding Myers Lake.

Aquifer: Antelope Valley (AV)

Hydrogeologic Characteristics

The Antelope Valley aquifer is a shallow, Quaternary-aged sand and gravel outwash aquifer underlying portions of Grant, Deuel, and Codington Counties. It underlies the divide between the Big Sioux River watershed to the west and the Minnesota River watershed to the east. Hedges, et al. [1] delineated an area of 28,700 acres and estimated the amount of recoverable water stored in the aquifer was approximately 64,580 acre-feet. Using aquifer materials maps [2] [3] [4], county studies released after the Hedges, et al [1] study [5] [6], sand and gravel resource studies [7] [8], lithologic logs [9], observation wells [10], and well completion report data [11], Water Rights Staff delineated a new area for the Antelope Valley aquifer (shown in Figure 1 on page 2), with an area of approximately 35,000 acres. The Antelope Valley aquifer is generally under unconfined conditions, meaning water levels in the aquifer do not rise above the top of the formation. There are also areas where sand and gravel outwash is encountered below the elevation of the surficial outwash [9] [11], which could be described as an intermediate layer. Some water right permits [12] and observation wells [10] are completed into that layer of sand and gravel and are on file as completed into the Antelope Valley aquifer, although the extent of the intermediate layer and area of aquifer under confined conditions are unknown.

Applicable South Dakota Codified Law (SDCL)

Pursuant to SDCL 46-2A-10 a reservation of water for future use may be approved only if there is a reasonable probability that unappropriated water is available for this application, that the quantity of water will be needed by the entity, and that the proposed use will be a beneficial use and in the public interest. The applicant has submitted documents that supply reasoning for the quantity of water requested. This report will address the availability of unappropriated water only.

Pursuant to SDCL 46-6-3.1, no application to appropriate groundwater may be approved if, according to the best information reasonably available, it is probable that the quantity of water withdrawn annually from a groundwater source will exceed the quantity of the average estimated annual recharge of the water to the groundwater source. An exception allows water distribution systems to withdraw from groundwater sources older or stratigraphically lower than the Greenhorn Formation regardless of the results of a hydrologic budget. The applicant is a water

distribution system as defined in SDCL 46-1-6(17), but the Antelope Valley aquifer is younger and stratigraphically higher than the Greenhorn Formation. Therefore, the Water Management Board must find that recharge to the aquifer exceeds withdrawals to approve this application.

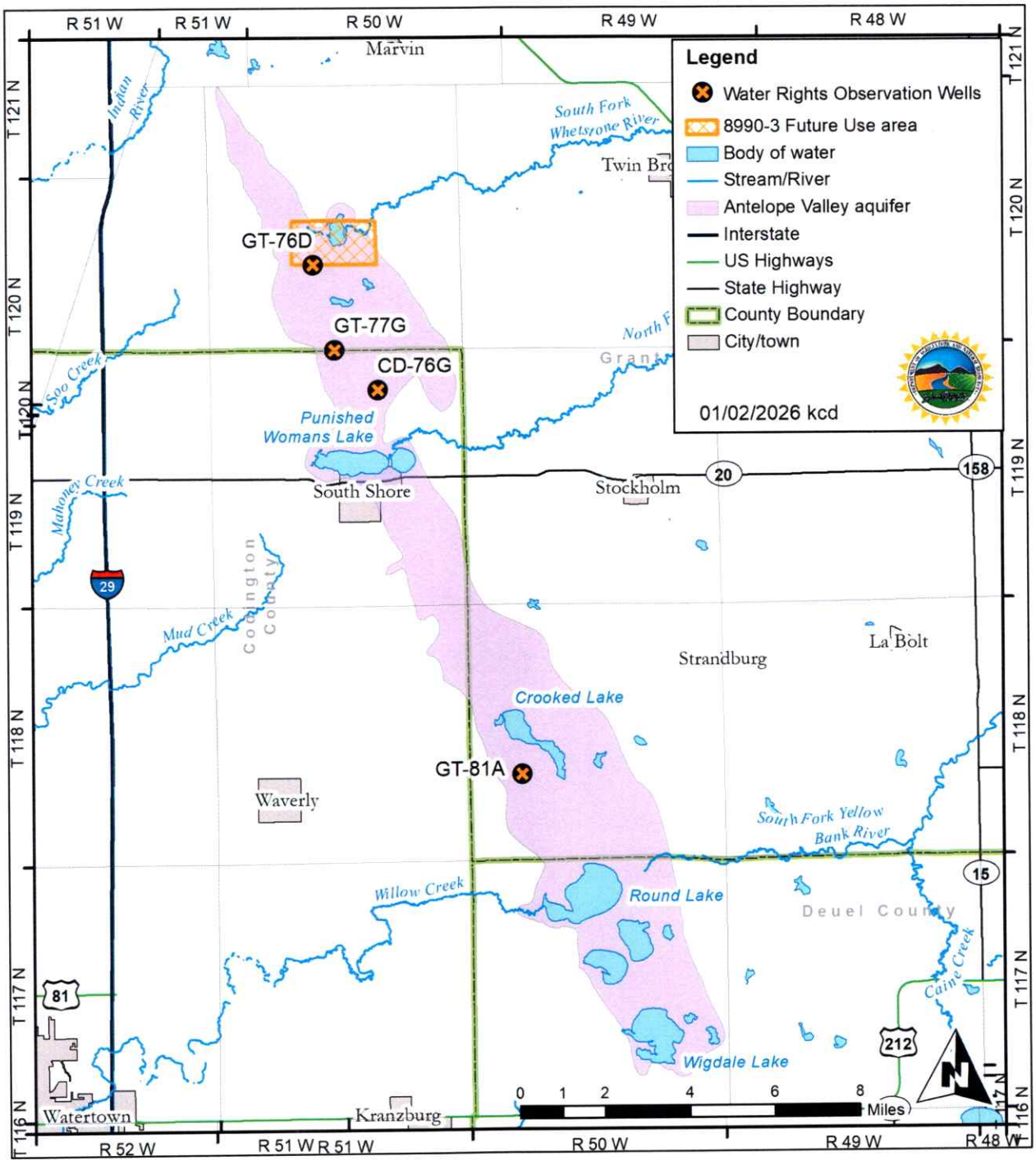

Figure 1: Antelope Valley aquifer, Observation Well locations, and proposed Future Use area [2-11]

Availability of Water

Hydrologic Budget

Recharge

Recharge to the Antelope Valley aquifer is mainly by infiltration of precipitation and groundwater inflow from surface water features where the surface water features contact the aquifer [6]. Hedges, Allen, and Holly [13] used observation well analysis to estimate recharge to the Antelope Valley aquifer was approximately 2.3 inches per year. Applied over the approximately 35,000 acres of aquifer, the estimated average annual recharge to the aquifer is 6,700 ac-ft/yr.

Discharge

Natural discharge from the Antelope Valley aquifer is by evapotranspiration where the aquifer is near land surface and may be by outflow to surface water features when the stage of the surface water is below the water table of the aquifer [6]. Artificial discharge from the aquifer is by appropriative withdrawals [12] and domestic self-supply. Given the prevalence of rural water systems and other water distribution systems, domestic self-supply is likely to be a negligible portion of the hydrologic budget. There are 16 water right permits on file as currently authorized to withdraw water from the Antelope Valley aquifer [12]. Of those, 13 are for irrigation, 2 for municipal use for the Town of South Shore, and one for Grant-Roberts Rural Water System. Figure 2 shows the irrigation reported from the Antelope Valley aquifer from the period of record of 1979 through 2024 [14]. The average irrigation reported over the entire period of record was 1,118 ac-ft/yr. The average reported over the last ten years of record (2015 through 2024) was 1,348 ac-ft/yr. There is one irrigation permit withdrawing from the Antelope Valley aquifer which is too new to have reported any withdrawals. That permit is for irrigation of 160 acres. Assuming they apply 10 inches of water per acre, their estimated average annual use is 133 ac-ft/yr. This estimate is likely to be higher than the actual average annual use, based on Water Rights Staff experience for irrigation permits east of the Missouri River. Figure 3 shows non-irrigation withdrawals from the Antelope Valley aquifer reported to the Water Rights Program [15]. The average withdrawal reported by Grant-Roberts Rural Water System over the period of record of 2003 through 2024 was 948 ac-ft/yr. Their average reported withdrawal over the last 10 years of record was 1,069 ac-ft/yr. The Town of South Shore is not required to report its withdrawals to the Water Rights Program, but their semi-annual Drinking Water System report indicates they withdraw on average 13,500 gallons per day [16], or approximately 15 acre-feet per year. For both the irrigation water rights and Grant-Roberts Rural Water System, the average from the last 10 years of record will be considered the best available estimate of average annual withdrawals. There are also three Future Use permits reserving a combined total of 959 ac-ft/yr from the Antelope Valley aquifer [12].

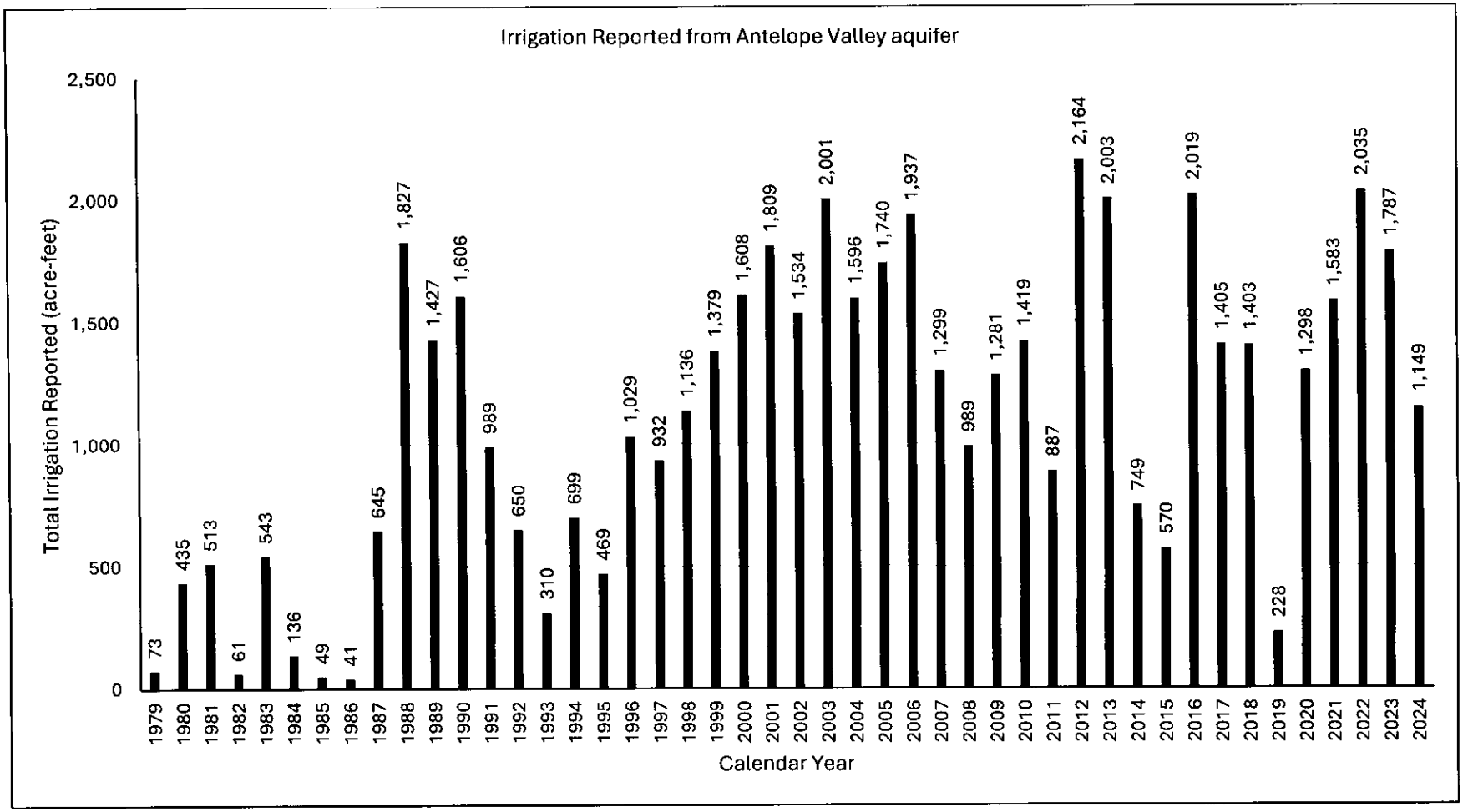

Figure 2: Irrigation reported from the Antelope Valley aquifer [14]

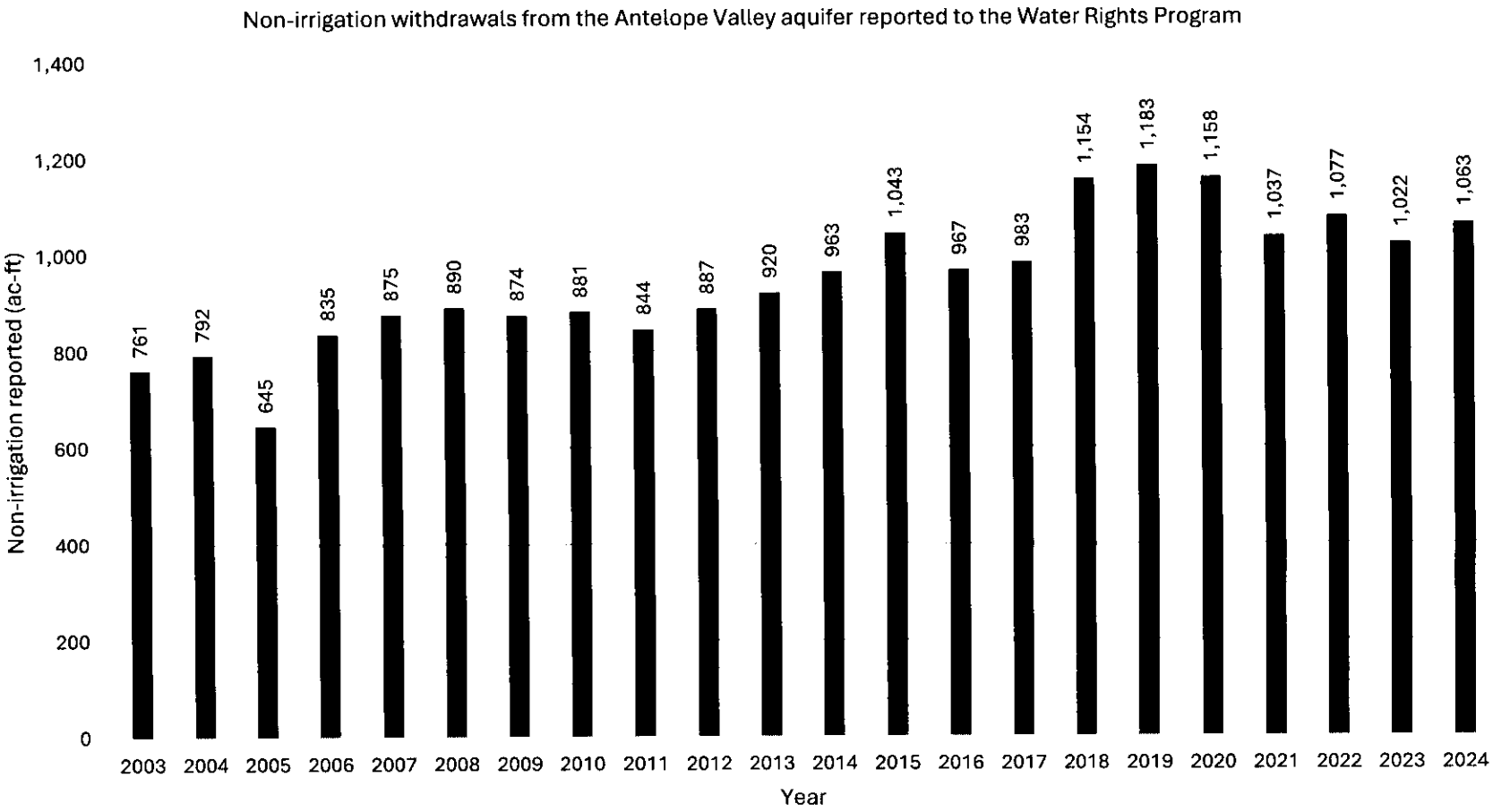

Figure 3: Non-irrigation withdrawals from the Antelope Valley aquifer reported to the Water Rights Program [15]

Summary of Hydrologic Budget

The estimated average annual recharge to the Antelope Valley aquifer is approximately 6,700 ac-ft/yr. The estimated withdrawals from the aquifer are shown in Table 1 below. The estimated average annual withdrawal of water right permits authorized to withdraw is 2,565 ac-ft/yr. Including the existing reservations for future use, the total estimated appropriation from the aquifer is 3,524 ac-ft/yr. This application proposes to appropriate 1,120 ac-ft/yr. Therefore, based on the hydrologic budget, unappropriated water is available for this application.

Table 1: Summary of estimated withdrawals and appropriations from the Antelope Valley aquifer

Estimation Method	Number	Est. Avg. Withdrawal (ac-ft/yr)
Irrigation	12	1,348
Irrigation, too new to report	1	133
Report to Chief Engineer	1	1,069
Report to Drinking Water Program	2	15
Subtotal, authorized to withdraw	*16*	*2,565*
Future Use	3	959
Grand Total	**19**	**3,524**

Observation Wells

Administrative Rule of South Dakota 74:02:05:07 requires that the Water Management Board rely upon the record of observation wells, in addition to other information, to determine that recharge exceeds withdrawals. The Water Rights Program maintains four observation wells completed into the Antelope Valley aquifer [10]. Figure 4 shows the water level elevations in the four observation wells. Three of the observation wells, GT-81A, GT-76D, and GT-77G, are under unconfined conditions. The other observation well, CD-76G, is under confined conditions. In general, water levels in all four wells rise during periods of higher-than-average precipitation and decline during periods of lower-than-average precipitation [17]. Observation Well CD-76G also shows seasonal declines during the summer when irrigation is most intense, but water levels recover each spring. The three unconfined observation wells show a slight increasing trend over the period of record, while the one confined well shows a slight decreasing trend over the period of record. Declines in water levels in confined wells indicate decreases in average pressure in the aquifer, and not significant decreases in storage. Increases in water levels in unconfined wells indicate increases in storage in the aquifer. Additionally, the fluctuation of observation well water levels reflective of the climactic fluctuations indicates water is naturally discharging from the aquifer. The Water Management Board considers natural discharge available for capture. Therefore, there is reasonable probability unappropriated water is available for this application.

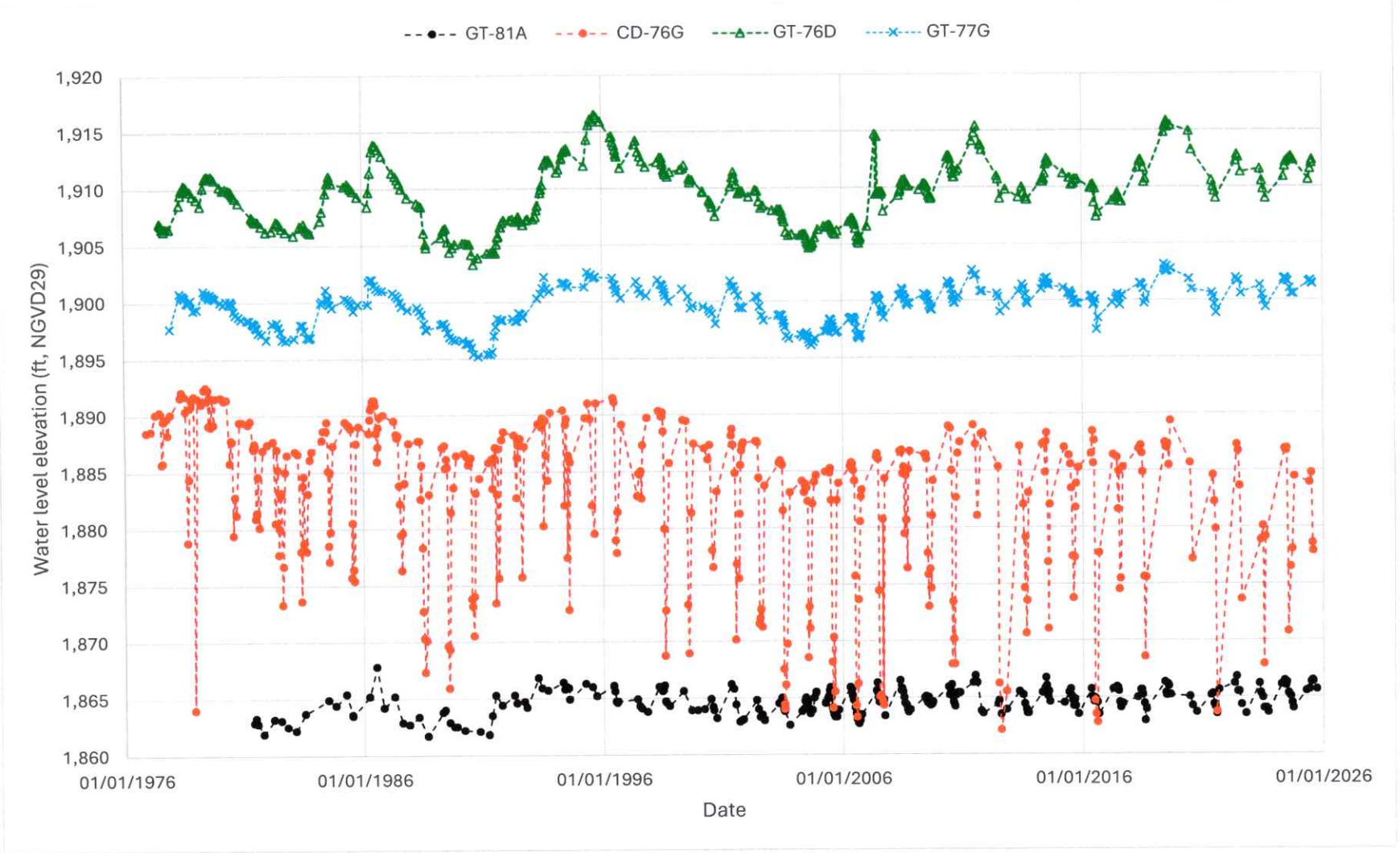

Figure 4: Water levels in Antelope Valley aquifer observation wells [10]

Nearby Water Right Permits

The proposed future use area overlies Water Right No. 5173A-3 and is within a mile of several other water rights in the Antelope Valley aquifer. Figure 5 shows water rights within and near the area for this application, as well as DANR Observation Well GT-76D in relation to the area. Table 2 lists the water rights shown in Figure 5. If this application is approved, a more specific review of the possibility of unlawful impairment of existing water rights based on the proposed well location(s) must be performed when the applicant requests to place the reserved water to beneficial use.

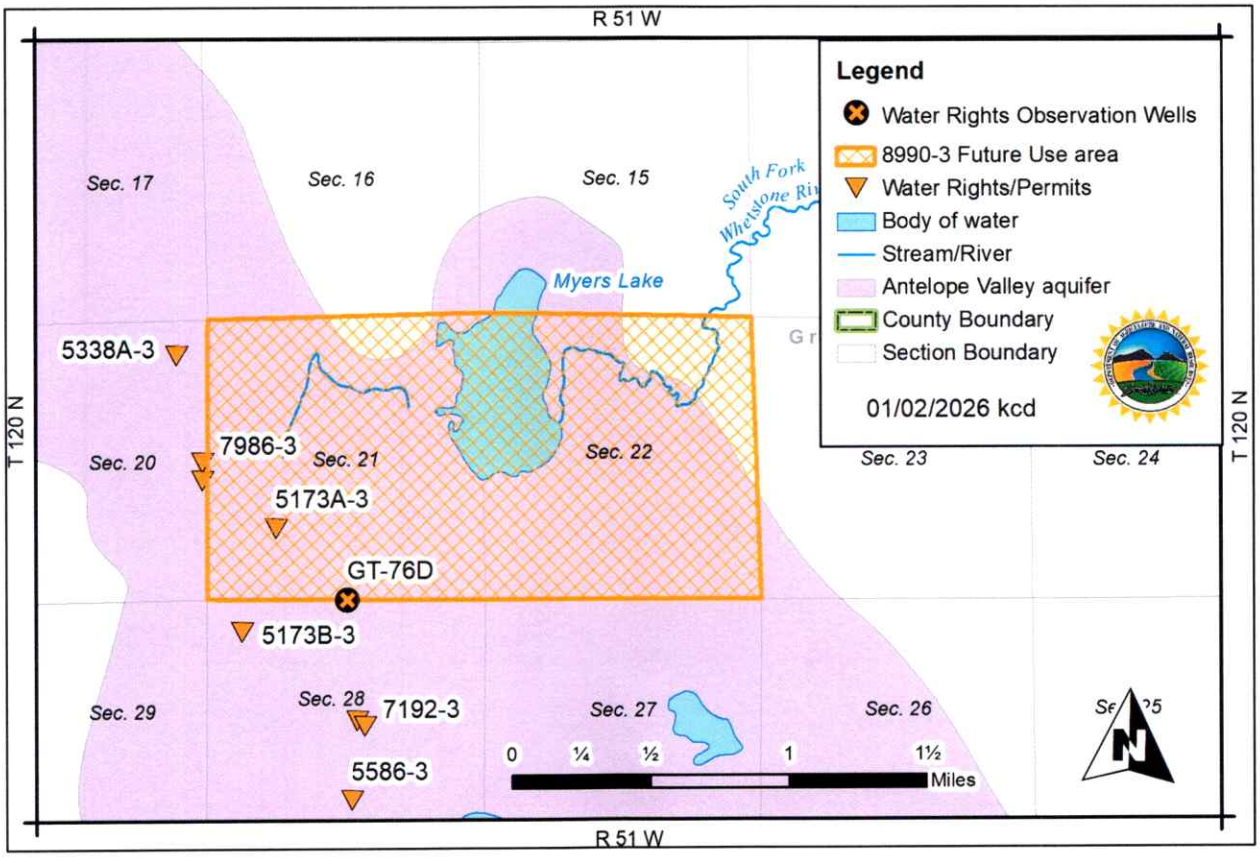

Figure 5: Water right permits near the proposed future use area [12] [10]

Table 2: Water right permits shown in figure above [12]

Permit No.	Name/Business	Priority	Status	Use Type	Licensed CFS	Licensed Acres
5173A-3	Willow Run Farms FLP	03/03/1987	License	Irrigation	2.44	166
5173B-3	Willow Run Farms FLP	03/03/1987	License	Irrigation	1.78	136
5338A-3	Willow Run Farms FLP	07/03/1989	License	Irrigation	1.78	130
5586-3	Willow Run Farms FLP	02/18/1975	License	Irrigation	6.00	420
7192-3	Willow Run Farms FLP	04/05/2010	License	Irrigation	1.00	49
7986-3	Paul Fehr	03/27/2014	Permit*	Irrigation	1.93	135
Total	--	--	--	--	14.93	1,036
* As of 1/16/2026, this is in the database as License, but licensing documentation is not in the file						

Conclusions

1. Water Permit Application No. 8990-3 proposes to reserve 1,120 ac-ft/yr from the Antelope Valley aquifer. The area of the future use reservation is Sections 21 and 22 T120N-R51W. The water is to be reserved as a future water supply for municipal and water distribution system use by the City of Milbank in Grant County.
2. Based on the hydrologic budget and observation well analysis, there is reasonable probability unappropriated water is available for this application.
3. This application does not authorize construction of works or application of water to beneficial use.

Kimberly C. Drennon, E.I.
Engineer III – DANR Water Rights Program

References

[1] L. S. Hedges, S. L. Burch, D. L. Iles, R. A. Barari and R. A. Schoon, "Evaluation of Ground-Water Resources Eastern South Dakota and Upper Big Sioux River, South Dakota and Iowa Tasks 1-4," US Army Corps of Engineers, Omaha, Nebraska, 1982.

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[4] A. R. Jensen, "First Occurrence of Aquifer Materials in Grant County, South Dakota," SD DANR Geological Survey Program, Vermillion, South Dakota, 2004.

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[9] SD DANR Geological Survey Program, "Lithologic Logs," Vermillion, South Dakota, 2025.

[10] SD DANR Water Rights Program, "Observation Wells," SD DANR Water Rights Program, Pierre, South Dakota, 2025.

[11] Water Rights Program, "Well Completion Reports," S.D. Dept. of Ag. and Nat. Resources, Pierre, South Dakota, 2025.

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[13] L. S. Hedges, J. Allen and D. E. Holly, "Evaluation of ground-water resources eastern South Dakota and upper Big Sioux River South Dakota and Iowa," U.S. Army Corps of Engineers, Omaha, Nebraska, 1985.

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[15] Water Rights Program, "Non-Irrigation Yearly Questionnaires," S.D. Dept. of Ag. and Nat. Resources, Joe Foss Bldg., Pierre, South Dakota, 2025.

[16] Drinking Water Program, "Drinking Water Reports," SD DANR, Joe Foss Bldg. Pierre, South Dakota, 2024.

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