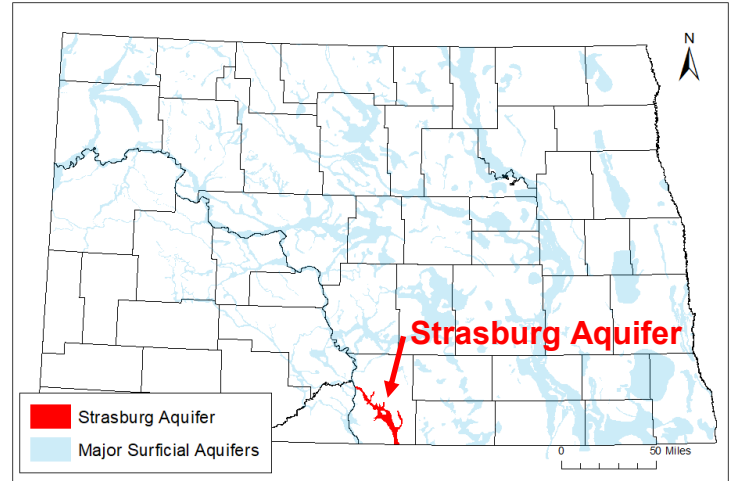


Strasburg Aquifer

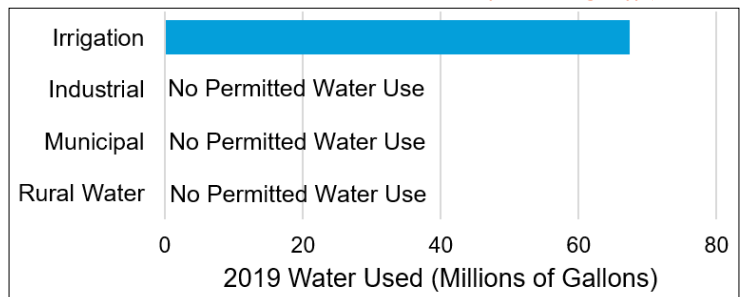
Emmons County

Aquifer At-a-Glance	
Area	124.0 square miles
Aquifer Type	Unconfined and Confined Surficial
Major Land Uses over Aquifer (percentage of aquifer area covered in 2017) ¹	Crops (53%) Grassland/Pasture (36%)
Depth to Water (2020)*	15-45 feet
Total Unique Wells Sampled	18
Wells Sampled in 2020	3
Samples Collected in 2020	3
Years Sampled	1995, 2000, 2005, 2010, 2015, 2020

*Depths to water may vary seasonally, year to year, and across the aquifer



2019 Strasburg aquifer permitted water use (from North Dakota State Water Commission (swc.nd.gov))↓



- Aquifer materials consist of sands and gravels deposited in an ancient valley by streams carrying meltwater away from glaciers. The aquifer consists of up to three layers separated by glacially-deposited silts and clays.²
- The aquifer ranges from 0-275 feet thick and averages about 60 feet thick.²
- Domestic and stock wells are common in the aquifer. Several irrigation wells are also installed in the aquifer.
- In North Dakota, permits are required to withdraw large quantities of groundwater. In 2019, 67 million gallons of permitted water were drawn from the aquifer; irrigation use consumed the largest quantity of water. For more information on water use and permits, contact the North Dakota State Water Commission (swc.nd.gov).

About the Agricultural Groundwater Monitoring Program

- The North Dakota Department of Environmental Quality monitors a network of wells in approximately 50 surficial aquifers that are at elevated risk of agricultural contamination.
- Aquifers are sampled on a 5-year rotation.
- Monitoring began in 1992.
- The vast majority of these aquifers are located in central and eastern North Dakota.
- Water is tested for 21 general chemistry parameters, eight trace metals, and 64 pesticides.

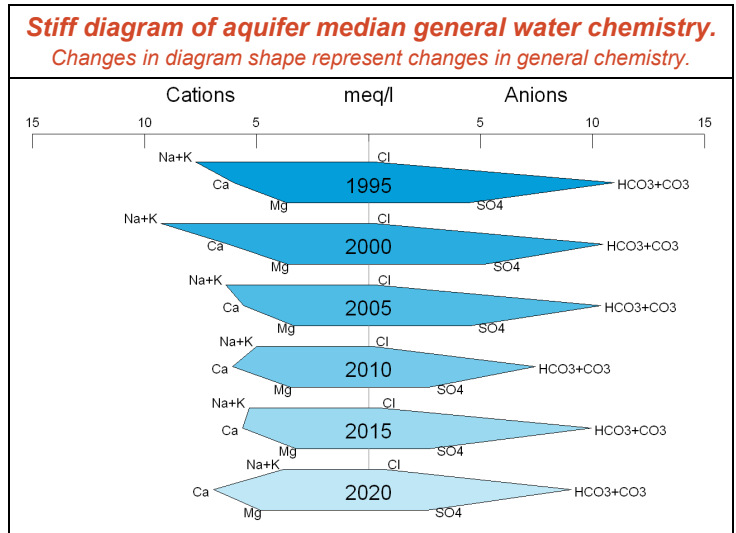
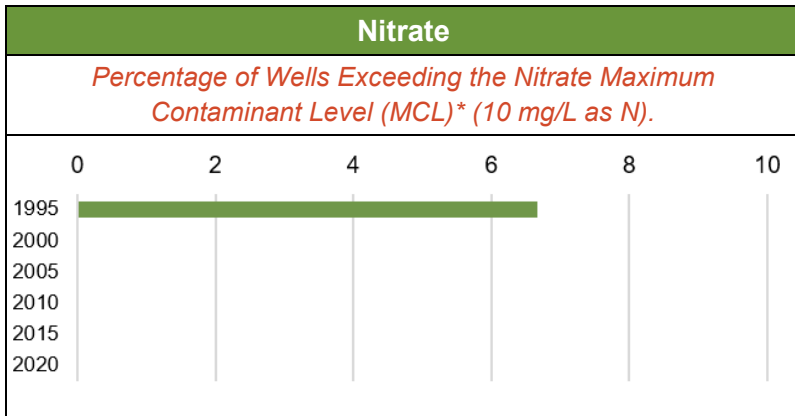
References

- (1) US Department of Agriculture, 2017, National Agricultural Statistics Service Cropland Data Layer.
- (2) Armstrong, C.A., 1978, Geology and Ground-Water Resources of Emmons County, North Dakota, North Dakota State Water Commission County Ground-Water Studies 23-Part 3, North Dakota Geological Survey Bulletin 66.

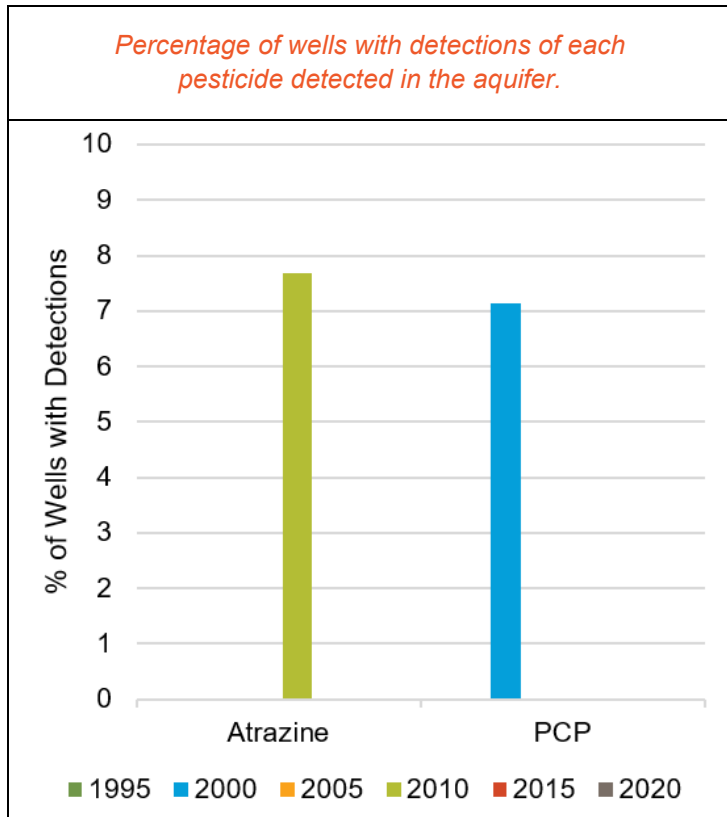
Water Chemistry

Is Aquifer Water High in...?	Analyte	Result	2020 Median Concentration	Potential Effects
	Arsenic	Locally	0.008 mg/L	Skin or circulatory system damage, increased cancer risk
	Iron	YES	5.24 mg/L	Metallic taste/odor, discoloration of surfaces
	Manganese	YES	0.86 mg/L	
	Sodium	NO	82.6 mg/L	Taste, people with certain health conditions may need to limit intake
	Sulfate	NO	125 mg/L	Taste/odor, laxative effect for people not used to the water
For more information about Maximum Contaminant Levels (MCLs), health effects, and treatment options for these contaminants and more, see the NDDEQ's fact sheets (deq.nd.gov/wq/1_Groundwater) or visit the US EPA website (epa.gov/ground-water-and-drinking-water).				

Dominant Water Type	Water Hardness
Calcium-Bicarbonate	Very Hard



Pesticides



State Pesticide Management Plan	
Agricultural Groundwater Monitoring Program aquifers are monitored as a part of the State Pesticide Management Plan. A Prevention Action Level (PAL) threshold of 25% of the pesticide's Maximum Contaminant Level (MCL)* or Health Advisory Level (HAL) is used to identify whether action is needed to prevent further contamination.	
Prevention Action Level Exceedances	PCP in 2000 at 74% of MCL, did not exceed PAL in later samples
MCL or HAL Exceedances	None

Number of Unique Wells with Pesticide Detections since 1995	1
of 18 Total Wells	

2020 Pesticide Detections
No Pesticide Detections

*Note that MCLs are for public drinking water systems; private wells are not regulated in North Dakota. MCLs still provide guidelines for drinking groundwater.

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