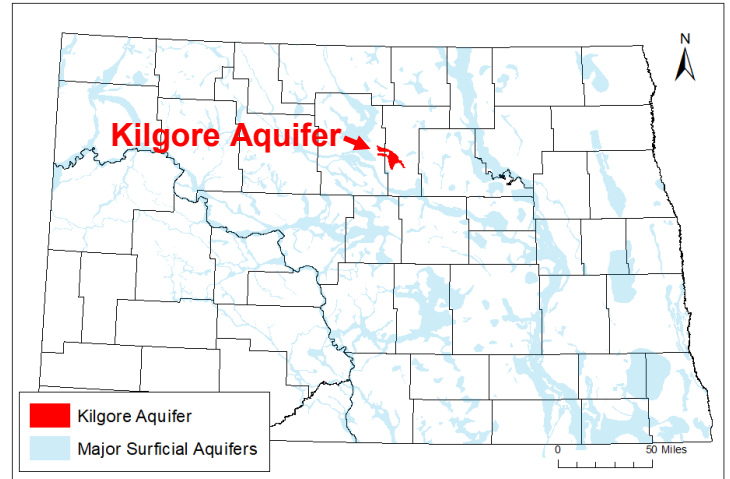


# Kilgore Aquifer

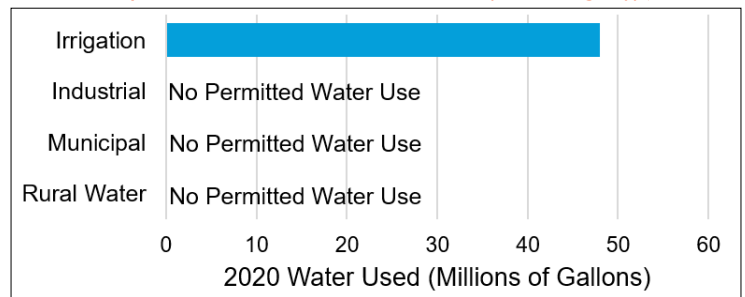
## McHenry and Pierce Counties

| Aquifer At-a-Glance  |  |
|--|--|
| Area   | 64.7 square miles                                    |
| Aquifer Type   | Unconfined Surficial                                 |
| Major Land Uses over Aquifer (percentage of aquifer area covered in 2017) <sup>1</sup> | Grassland/Pasture (51%)<br>Open Water/Wetlands (24%) |
| Depth to Water (2021)*   | 3-23 feet  |
| Total Unique Wells Sampled   | 10   |
| Wells Sampled in 2021  | 6  |
| Samples Collected in 2021  | 10   |
| Years Sampled  | 1996, 2001, 2006, 2011, 2016, 2021                   |

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



2020 Kilgore aquifer permitted water use (from North Dakota Department of Water Resources ([dwr.nd.gov](http://dwr.nd.gov)))↓



- Aquifer materials consist of sands and gravels that were deposited in an ancient valley by streams carrying water away from Glacial Lake Souris. The lake formed as meltwater pooled behind retreating glaciers during the last ice age.<sup>2,3</sup>
- The aquifer ranges from 0-200 feet thick and averages about 50 feet thick in McHenry County and 60 feet in Pierce County.<sup>2,3</sup>
- Domestic, irrigation, and stock wells are installed in the aquifer.
- In North Dakota, permits are required to withdraw large quantities of groundwater. In 2020, 48 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 Department of Water Resources ([dwr.nd.gov](http://dwr.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.

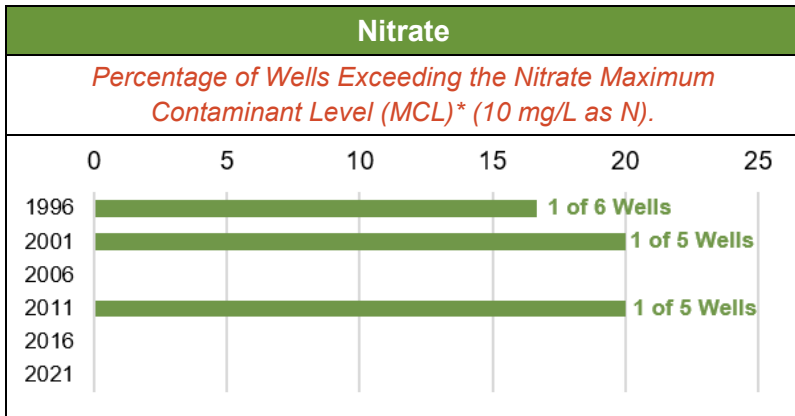
### References

- (1) US Department of Agriculture, 2017, National Agricultural Statistics Service Cropland Data Layer.
- (2) Randich, P.G., 1977, Ground-Water Resources of Benson and Pierce Counties, North Dakota, North Dakota State Water Commission County Ground-Water Studies 18-Part 3, North Dakota Geological Survey Bulletin 59.
- (3) Randich, P.G., 1981, Ground-Water Resources of McHenry County, North Dakota, North Dakota State Water Commission County Ground-Water Studies 33-Part 3, North Dakota Geological Survey Bulletin 74.

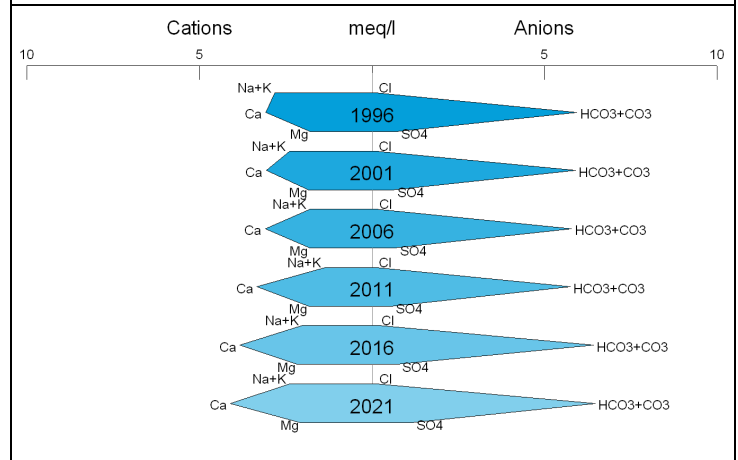
# Water Chemistry

| Is Aquifer Water High in...?  | Analyte   | Result  | 2021 Median Concentration | Potential Effects   |
|---|-----------|---------|---------------------------|---|
|   | Arsenic   | Locally | 0.007 mg/L                | Skin or circulatory system damage, increased cancer risk              |
|   | Iron      | YES     | 1.41 mg/L                 | Metallic taste/odor, discoloration of surfaces                        |
|   | Manganese | YES     | 0.27 mg/L                 |   |
|   | Sodium    | NO      | 51.8 mg/L                 | Taste, people with certain health conditions may need to limit intake |
|   | Sulfate   | NO      | 54.7 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 ( <a href="http://deq.nd.gov/wq/1_Groundwater">deq.nd.gov/wq/1_Groundwater</a> ) or visit the US EPA website ( <a href="http://epa.gov/ground-water-and-drinking-water">epa.gov/ground-water-and-drinking-water</a> ). |           |         |                           |   |

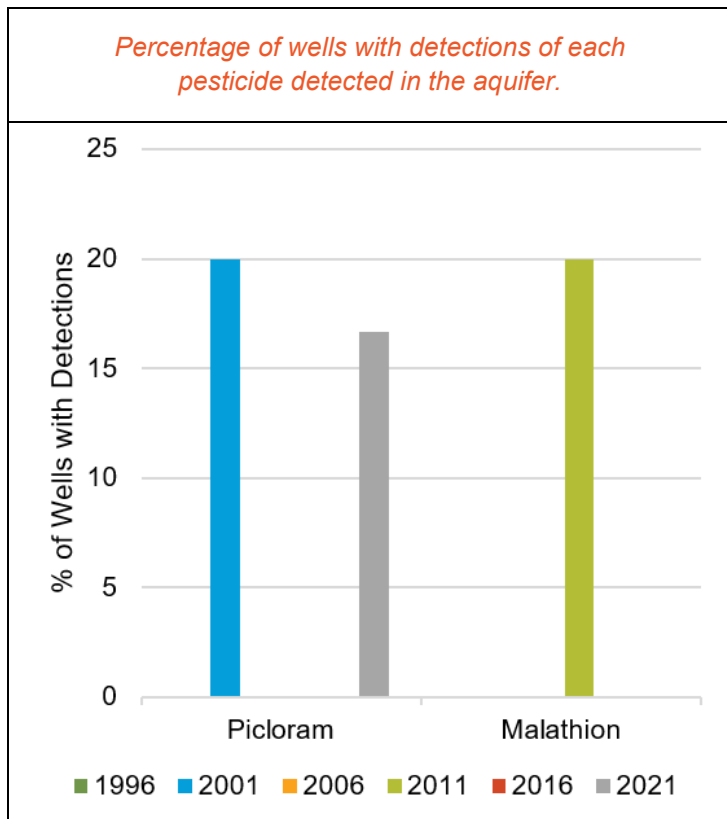
| Dominant Water Type | Water Hardness |
|---------------------|----------------|
| Calcium-Bicarbonate | Very Hard      |



**Stiff diagram of aquifer median general water chemistry.**  
Changes in diagram shape represent changes in general chemistry.



# 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 | None |
| MCL or HAL Exceedances              | None |

**Number of Unique Wells with Pesticide Detections since 1996** **2** of 10 Total Wells

## 2021 Pesticide Detections

|                 |        |  |
|-----------------|--------|--|
| <b>Picloram</b> | 1 Well | Herbicide applied to crops and roads/rights-of-way |
|-----------------|--------|--|

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

**Feel free to use this information, but please credit the North Dakota Department of Environmental Quality.**