

FINAL TECHNICAL REPORT

Submitted to Daryll Pope

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Iowa Department of Natural Resources
Ambient Groundwater Quality Monitoring Program

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Work Summary

The purpose of this project was to continue to ensure that up-to-date data was maintained on the NGWMN. To accomplish this objective, IDNR staff responsible for the ambient groundwater monitoring updated site data whenever new information is made available or when new data elements are required. These tasks included removing wells that are no longer active, and revising Subnetwork and Monitoring categories based on additional water quality data. The IDNR staff responsible for coordination of ambient groundwater monitoring data continued to collaborate with IDNR and IGS database managers and IT staff to ensure linkages to the Network were maintained.

Well Registry Maintenance

Two wells were removed from the Network because they were no longer available for sampling: Vail (1), 2 and Coon Rapids 1N. As of December 2021, IDNR has 113 groundwater quality monitoring points in the Network; 52 trend wells and 61 surveillance wells. No new wells have been added to the NGWMN.

Groundwater quality monitoring

In FY2020, 48 trend wells in the Network were sampled once and analyzed for lab pH, TDS, specific conductivity, total alkalinity, chloride, sulfate, iron, manganese, magnesium, calcium, potassium, sodium, ammonia-nitrogen as N, nitrate + nitrite as N, and orthophosphate as P. In FY2021, 52 trend wells in the Network were sampled once and analyzed for lab pH, specific conductivity, chloride, sulfate, ammonia-nitrogen as N, and nitrate + nitrite as N. Also in FY2021, 11 surveillance wells were sampled and tested for the following parameters:

- Laboratory pH
- Specific Conductance
- Total Dissolved Solids
- Total Alkalinity
- Total Hardness
- Total Organic Carbon
- Sulfate
- Sulfide
- Ammonia nitrogen as N
- Nitrate + Nitrite nitrogen as N
- ortho-Phosphate as P
- Bromide
- Fluoride
- Chloride
- Silica as SiO₂
- Dissolved Arsenic
- Dissolved Barium
- Dissolved Copper
- Dissolved Lead
- Dissolved Molybdenum
- Dissolved Selenium
- Dissolved Thallium
- Dissolved Uranium
- Dissolved Zinc
- Dissolved Aluminum
- Dissolved Calcium
- Dissolved Chromium
- Dissolved Cobalt
- Dissolved Iron
- Dissolved Magnesium
- Dissolved Manganese
- Dissolved Potassium
- Dissolved Sodium
- Dissolved Strontium
- Dissolved Titanium
- Dissolved Vanadium
- Dissolved Boron
- Dissolved Lithium
- Uranium-234
- Uranium-238
- Polonium-210
- Lead-210
- Radium-226
- Radium-228
- Gross Alpha including Uranium
- Gross Beta

Quality control

Annual sampling efforts include a minimum of 2 field blanks and field duplicates of 10% of samples. Most samples in FY2020 and FY2021 were collected as grab samples by certified public water supply operators.

All field duplicates were obtained by Iowa DNR staff. Results of these quality control samples are evaluated and specific parameters that are outside of acceptable criteria are flagged prior to uploading to our water monitoring database and WQX.

[Data management and web services](#)

Work is ongoing to upload all of these data to WQX. To meet the requirement of sampling once every five years, IDNR plans to sample the remaining 50 surveillance wells in FY2023 or remove them from the Network.

No changes to the database or web services have been made or are planned at this time. No problems serving data to the NGWMN portal have been experienced.

[Acknowledgements](#)

IDNR greatly appreciated support for continuing to be a data provider. IDNR does not plan to apply for funding to continue participation in this program in 2022, but will continue to maintain the well list and include the Network wells in ambient groundwater monitoring efforts in the future.