

Project update: Brine contamination to aquatic resources from oil and gas development in the Williston Basin, U.S.A.

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The Prairie Pothole Region (PPR), which overlies the northeastern portion of the Williston Basin, is characterized by a high density of closed-basin, depressional wetlands that provide critical habitats for a majority of North America's migratory waterfowl and other wildlife. Aquatic resources (wetlands and shallow groundwater) in parts of the PPR have been affected by unintentional releases of saline water (brine) produced with oil and gas using conventional drilling methods, and there are concerns over potential ecological effects associated with the recent rapid development by unconventional oilfield operations.

A recent assessment by the U.S. Geological Survey summarizes the overall issue and identifies potential ecological effects of oil and gas production on aquatic resources, demonstrates brine contamination to aquatic resources at field study sites using geophysical survey methods and water-quality data, identifies key geologic factors that regulate brine migration in the shallow groundwater, provides a spatial characterization of the Williston Basin in terms of oil and gas wells and aquatic resources, and identifies areas with greater potential for brine contamination based on the proximity of wells and aquatic resources (<http://steppe.cr.usgs.gov/>). This information can be used to make informed decisions about land use and ecosystem management. The project has identified key data gaps and research needs for future work.