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To: Gunderson, Larry (MDA)
Cc: Wolf, Katie (MDA)
Subject: Draft Nitrogen Fertilizer Rule Comment
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The following information has been submitted through the Draft Nitrogen Fertilizer Rule Comment Form.

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Comment: I am disturbed by the scope and severity of the restrictions in western MN regarding fall nitrogen fertilizer application. In North Dakota, we have no formal numbered document regarding the application of fall N, but we have distributed the following guidelines for a couple decades based on previous work, our knowledge of nitrate movement, the frozen soil in our region from the southern ND border to Canada during winter, and the properties of N fertilizers and their soil products. Here are the guidelines: Sandy soils (sands, loamy sands) with leaching problems and soils that often flood in the spring should not have N fertilizer applied in the fall. A preplant N application is recommended, and in the case of the sandy soils, a base preplant N application is recommended, followed by a side-dress application (for corn, that would be somewhere between V4 and V8, for beets, about V6). For other soils, no fall N should be applied before October 1, ever. For anhydrous ammonia applications, the date of application should be when the soil temperature at the 4 inch depth reaches 50 degrees F between 6AM and 8AM. The date for fall application of banded urea (such as with an airseeder or drill) should be one week following the OK date for anhydrous ammonia. The date for fall application of broadcast urea should be two weeks following the OK date for fall application of anhydrous ammonia. Anhydrous ammonia and urea may be treated with a nitrification inhibitor to further delay ammonia fertilizer transformation to nitrate, but should not be used to move the date of application earlier than the previously stated date restrictions. Other considerations that I do not think were considered in the rules were that some fields contain 'leaky' soils, but whole fields are not 'leaky' in general. If a whole quarter of land had loamy sand soils to great depths to water table, below any crop rooting zone, then that whole quarter should be restricted, if the farmers were not savvy enough to do it on their own already. However, if a ridge of sandy soil runs through the quarter, only that sandy ridge should be restricted, not the entire field. Restricting application on a whole field or section of land based on properties of only some soils within is not reasonable, considering that precision agriculture sampling and application is commonly available to both apply fertilizer to non-problem soils and also document the application for any future audit. Also, sugar beet is a common crop in this region. It has a unique ability to recycle deep nitrate from depths greater than 8 feet, and bring that N to the surface, where the greeness of the canopy at harvest is used as a 'previous crop N credit' in our recommendations

to reduce N rates in the subsequent year. There is no greater soil cleaning crop in our region than a sugar beet crop. Growers are highly cognizant of the relationship between just enough N for yield to produce high sugar concentration, and that over-application of N results in low sugar and lower profits. Also, in NW MN, soil sampling in the fall to a depth of 2 feet is extremely common, with well over 90% of sugar beet producers obtaining soil samples, most of which are zone sampled and those that aren't are screening for variability as a rule. The past 2 years, I have conducted research into fall applied ammonia on sandy loam and loam soils in the Red River Valley, and just west of the RRV on glacial ridges. The results showed that fall N in 2013, 2014, and 2015 resulted in similar yield and early summer nitrate compared to spring application. Use of N-Serve (nitrapyrin- a nitrification inhibitor for anhydrous ammonia) helped to retain more of the N as ammonia rather than nitrate in all years, but the effect on corn yield was minimal. The years of this study tended to be wet in the spring, however, little loss of N was noted in these soils, probably because of the frozen nature of the soils from early December until almost April in most years. I hope these comments are helpful to your reconsideration of major points within your proposed rules.