From:	Gunderson, Larry (MDA)
To:	Wolf, Katie (MDA)
Subject:	FW: Public comment on draft vulnerable groundwater area map
Date:	Tuesday, September 12, 2017 11:50:58 AM
Attachments:	MN DNR groundwater contamination susceptibility.png

---

Larry Gunderson, Supervisor
Fertilizer Technical Unit
Minnesota Department of Agriculture
625 Robert Street North
St. Paul, Minnesota 55155
651-201-6168
Larry.Gunderson@state.mn.us

From: Rob Proulx [mailto:robproulx50@gmail.com]
Sent: Tuesday, July 25, 2017 1:31 PM
To: Gunderson, Larry (MDA) <larry.gunderson@state.mn.us>
Subject: Re: Public comment on draft vulnerable groundwater area map

Dear Mr. Gunderson:

My first email was accidentally submitted before it was completed. This is my completed message. I apologize for any confusion.

I submit for your consideration my comment on MDA's Draft Vulnerable Groundwater Area Map (hereafter 'the MDA map'). I have a number of concerns regarding your methodology:

1) With the exception of areas in southeastern and southwestern MN, virtually all agricultural soils identified in the MDA map were identified based on an analysis of SSURGO values for saturated conductivity from 0 - 5 feet. As a part of my PhD studies, I am familiar with the SSURGO data for 28 counties in western MN. Most soils in this area are surveyed only to a depth of 5 feet, while no soils are surveyed to a depth greater than 7 feet. I assume that most soils in other portions of the state are surveyed to a similar depth. In its analyses of groundwater pollution sensitivity, the MN DNR assumes that groundwater begins at a depth of 10 feet (source). Thus, exclusive use of the SSURGO dataset is problematic, as it does not provide measurements of soil conductivity to groundwater. This is especially true when it is known that soils throughout most of the northwest, southwest, and south-central parts of MN are characterized by underlying clayey deposits, thus making unconsolidated aquifers less common (source).

2) The methodology utilized in making your map is inconsistent with methodologies used by other state agencies for similar purposes. The MN Department of Health has estimated hydrogeologic sensitivity of the water table aquifer for 30 counties in southeast MN, where areas were ranked as low, moderate, high, or very high hydrogeologic sensitivity based on permeability of near-surface bedrock or unconsolidated geologic materials, estimated depth to water, and land slope (source). Your analysis does not consider land slope, contains many soils without near-surface bedrock, and utilizes data that inadequately measures the permeability of unconsolidated geologic materials (as outlined above). It would be helpful to directly compare the outcomes of their analysis to the MDA map, but this cannot be done on a statewide basis.

The MN DNR conducted a statewide assessment of groundwater contamination susceptibility in 1991 (source), and has followed this effort with site-specific assessments within selected counties (source). Their statewide assessment considered aquifer materials, recharge potential, soil materials, and vadose zone materials in assessing risk. As outlined above, your assessment only considers one of those factors (soil materials) for the vast majority of agricultural soils throughout MN.

3) Your assessment seems to identify a greater number of soils than the MN DNR assessment described above. Although I could not map these datasets together, due to the unavailability of the MDA map for download, I have attached a map of areas the MN DNR identified as having 'high susceptibility' and 'highest susceptibility' to groundwater contamination in their statewide assessment. This is consistent with your agency's approach of identifying soils with "high and very high" water movement. Although there are agreements between the MDA map and the attached map I've provided, the MDA map seems to identify a substantially greater number of susceptible soils. Given my concerns regarding your methodology, I find this problematic.

In conclusion, I realize the importance of protecting our groundwater resources from nitrate pollution. However, these decisions should be based on sound scientific principles as to not impose an unreasonable burden on Minnesota's farmers. For reasons outlined in this letter, I think the MDA map fails in this regard.

Respectfully,

Rob Proulx
robproulx50@gmail.com
651.341.9389

On Tue, Jul 25, 2017 at 1:21 PM, Rob Proulx <robproulx50@gmail.com> wrote:

> Dear Mr. Gunderson:
>
> I submit for your consideration my comment on MDA's Draft Vulnerable Groundwater Area Map (hereafter 'the map'). I have a number of concerns regarding your methodology:
>
> 1) With the exception of areas in southeastern and southwestern MN, virtually all agricultural soils identified in the map were created based on an analysis of SSURGO values for saturated conductivity from 0 - 5 feet. As a part of my PhD studies, I am familiar with the SSURGO data for 28 counties in western MN. Most soils in this area are surveyed only to a depth of 5 feet, while no soils are surveyed to a depth greater than 7 feet. I assume that most soils in other portions of the state are surveyed to a similar depth. In its analyses of groundwater pollution sensitivity, the MN DNR assumes that groundwater begins at a depth of 10 feet (source). Thus, exclusive use of the SSURGO dataset is problematic, as it does not provide measurements of soil conductivity to groundwater. This is especially true when it is known that soils throughout most of the northwest, southwest, and south-central parts of MN are characterized by underlying clayey deposits, thus making unconsolidated aquifers less common (source).
>
> 2) The methodology utilized in making your map is inconsistent with methodologies used by other state agencies for similar purposes. The MN Department of Health has estimated hydrogeologic sensitivity of the water table aquifer for 30 counties in southeast MN, where areas were ranked as low, moderate, high, or very high hydrogeologic sensitivity based on permeability of near-surface bedrock or unconsolidated geologic materials, estimated depth to water, and land slope (source). Your analysis does not consider land slope, contains many soils without near-surface bedrock, and utilizes data that inadequately measures the permeability of unconsolidated geologic materials (as outlined above). It would be helpful to directly compare the outcomes of their analysis to the map, but this cannot be done on a statewide basis.
>
> The MN DNR conducted a statewide assessment of groundwater contamination

susceptibility in 1991 (source), and has followed this effort with site-specific assessments within selected counties (source). Their statewide assessment considered aquifer materials, recharge potential, soil materials, and vadose zone materials in assessing risk. As outlined above, your assessment only considers one of those factors (soil materials) for the vast majority of agricultural soils throughout MN.

3) Your assessment seems to identify a greater number of soils than the MN DNR assessment described above. Although I could not map these datasets together, due to the unavailability of the map for download, I have included a map of areas the MN DNR identified as having 'high susceptibility' and 'highest susceptibility' to groundwater contamination in their statewide assessment. This is consistent with your agency's approach of identifying soils with "high and very high" water movement. Although there is agreement between the map and the attached map I've provided,

Respectfully,

Rob Proulx
robproulx50@gmail.com
651.341.9389