Exploring Working Lands Watershed Restoration Opportunities

FINAL REPORT

June 29, 2018

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Project paid for by the Minnesota Board of Water and Soil Resources as required and empowered by Laws of Minnesota 2016, Chapter 189, Article 3, Section 4 and empowered through Minn. Stat. §§15.061, 103B.101

Environmental INITIATIVE

Powerful Partnerships, Effective Solutions

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Powerful Partnerships, Effective Solutions

Executive Summary

Environmental Initiative produced a report for the Minnesota Board of Water and Soil Resources (BWSR) in 2017 as a component of the legislatively-directed Working Lands Watershed Restoration Program (WLWRP) planning process. That report identified shared conservation priorities across a range of Minnesota stakeholders related to programs in the federal Farm Bill that demonstrate high-potential to support water quality through working lands. In 2018, Environmental Initiative received an extension and expansion of this scope of work to continue exploring, and maintain or build stakeholder interest and engagement around, opportunities identified in the Working Lands Watershed Restoration Feasibility Study and Program Plan report.

Specifically, Environmental Initiative's work in 2018 was designed to:

1) Explore how delivery of incentives for the establishment and maintenance of perennial and cover crops (or other soil health practices) could increase adoption of conservation practices while building a stronger base of knowledge about the relationship between these practices and risk of crop loss or yield reduction;
2) Identify vulnerable drinking water supply management areas or other areas of high concern related to water quality where the social and economic context might be most conducive to increasing the production of underutilized crops (particularly alfalfa).

With regard to connecting incentives for establishment and maintenance of perennial and cover crops to crop insurance or risk reduction, this report documents conversations with the United States Department of Agriculture Risk Management Agency (RMA), the Iowa Department of Agriculture and Land Stewardship (IDALS), Practical Farmers of Iowa (PFI), and the Natural Resources Defense Council (NRDC). The purpose of those conversations was to explore the details of the Iowa Cover Crop – Crop Insurance Demonstration Project (which pairs state-funded incentives for cover crops with Federal crop insurance subsidies) and how key elements of the program fit within the Minnesota context. Meeting notes and information on how funds are currently allocated to incentives for cover crops in Minnesota are contained below.

This report also documents an exploration of what areas of the state might present the greatest opportunities for piloting a WLWRP project, including developing initial criteria (environmental, agricultural, social, and political considerations) and applying those criteria to areas suggested by BWSR staff and other stakeholders. It contains both a narrative summary of this analysis and maps that overlay some of the key criteria. It includes questions for further investigation in the next phase of work around identifying pilot locations.

While these two areas of exploration were largely separate, they speak to an inherent tension between the ideal scale of a program designed to maximize measurable direct impacts on water quality and the ideal scale of a program designed to impact the systems that influence water quality, including crop markets. Refining and prioritizing between these goals will be an important step in deciding the scale of the pilot area and the development of a WLWRP moving forward.

Potential Pilot Areas

Various environmental, agricultural, social, and political factors should be considered when determining the most effective locations to site one or more pilot initiatives to increase the implementation of living cover on agricultural landscapes. What may seem like an appropriate area for living cover establishment based solely on environmental factors may not have the appropriate type of agriculture to cost-effectively incorporate practices, or it may not have the institutional capacity for successful implementation.

To identify areas of the state where a targeted intervention involving perennials or cover crops would have the greatest chance of success, Environmental Initiative identified and overlaid information about various factors that could predict the suitability of a particular location. This comparison, along with several follow-up conversations with stakeholders in areas of the state identified as potentially promising, informed the analysis that follows. The reader should keep in mind that this is not intended to be a comprehensive analysis of all areas in the state, rather it represents a starting point for decision makers to identify areas where a pilot project might be most successful. An important next step would be to work with local experts, such as Soil and Water Conservation District leaders, to understand local dynamics and needs and to target efforts to an appropriate scale based on the ultimate goals of a pilot program.

Criteria for Identifying Potential Pilot Areas

Environmental: Are there identified water problems in the area?

Metrics

- Drinking Water Supply Management Areas (DWSMA) and vulnerability of those areas: A highly vulnerable DWSMA indicates the need to protect drinking water at its source
- Percentage of wells within townships in the county over the nitrate limit: A higher percentage indicates greater or more widespread nitrate contamination
- Impaired surface waters: Impacts the quality of life of a community and local habitat

Agricultural: Is there a prevalent agricultural system that can more easily or profitably incorporate cover crops or perennial crops if a mechanism to incentivize adoption were in place?[1]

Metrics

- Number of cattle and calves in the county: A proxy for the ability of the local agricultural system to absorb additional feed and forage generated by living cover practices

[1] For agricultural systems, the Working Lands Watershed Restoration Program scoping process identified forage, in particular, as a potentially profitable living cover practice that could be implemented on agricultural lands. Animal agriculture like dairy and beef cattle, could potentially serve as a ready-built market for this living cover. This stands in contrast to other perennial crops or marketable cover crops, where new markets would need to be established. To estimate where perennial crops, or marketable cover crops, could be feasibly incorporated into existing agricultural systems is beyond the scope of this report.

- Number of dairy cows in the county: A proxy for the ability of the local agricultural system to absorb additional feed and forage generated by living cover practices

Social: Where might a higher percentage of households be affected by drinking water problems and/or fewer local resources be available to solve the problem compared to the state average?
Metrics

- Percentage of people (all ages) in poverty for the county: A proxy for whether a higher proportion of the county's residents would struggle to pay for their own water treatment to remove nitrate or other drinking water contaminants. A state intervention could address a greater need for assistance in high-poverty areas.
- Median household income for the county: A lower median household income is related to lower tax receipts for local governments and therefore less capacity to address water quality problems.

Political: Is there political will and institutional capacity to design and implement a pilot project?
Metrics

- One Watershed One Plan in effect: This indicates existing mechanisms for cooperation amongst local governments and higher levels of overall institutional capacity.
- Other qualitative measures of capacity and political will as determined from conversations with local stakeholders.

Suggested Regions for Further Exploration

Based on the information gathered through conversations with experts in various state government agencies and elsewhere, Environmental Initiative compiled the following list of regions and specific locations that might be particularly suitable for a Working Lands Watershed Restoration pilot.

Central

- Cold Spring (Stearns County)
- Community water system near Rice (Benton County)
- Sunsruds Court (Hubbard County)
- Clitherall (Otter Tail County)

South Central

- Fairmont (Martin County)
- St. Peter (Nicollet County)

Southeast

- Olmsted County
- Winona County
- Fillmore County

Southwest

- Ellsworth (Nobles County)
- Rock County Rural Water (Rock County)
- Edgerton (Pipestone County)

Regions/Counties Selected for Further Exploration

Environmental Initiative compared the suggested counties[2] against the criteria listed above through a table and maps that can be found in the appendices. Based on this comparison, four regions/counties were selected for further exploration. The following section details the rationale behind each selection, as well as suggestions for further inquiry as the process to select pilot areas proceeds.

Cold Spring and Stearns County

- The Sauk River watershed has a One Watershed One Plan and others are in process in the region
- There are a large number of highly vulnerable DWSMAs in the county
- The percentage of people living in poverty is above the state average
- The area has an agricultural system with livestock that could provide a market for perennials and cover crops

Cold Spring, and Stearns County in general, has an interesting mix of groundwater and surface water quality problems, the highest concentration of dairy and cattle operations in Minnesota, and a high-performing Soil and Water Conservation District. In addition to these factors, the Working Lands Watershed Restoration Program already analyzed one of the HUC12 watersheds in Stearns County, so there is data available on what types of living cover could be profitable.

The political driver in the county relates to surface water impairments, particularly in the lake country running along Minnesota State Highway 23 south from I-94 to Willmar and Spicer in Kandiyohi County. Groundwater impairments are also a driving factor for change, as multiple DWSMAs in the county are rated as highly vulnerable and cover large swaths of the county.

An emerging environmental issue in Stearns County is the increasing use of irrigation to improve crop yields. In response to this increased pressure on groundwater quantity, the Minnesota Department of Natural Resources is implementing a Groundwater Management Plan for the Bonanza Valley, which covers a large portion of Stearns County. Switching from irrigated row crops to perennials or increasing the water infiltration and holding capacity of the soil through cover crops could help alleviate some of the pressure on groundwater resources.

[2] Data was compiled and compared at the county level, as this is the level at which many of the data sets exist for selected metrics, thus providing the ability to compare across criteria. Counties also provide relevant boundaries related to institutional capacity for pilot program implementation, particularly Soil and Water Conservation Districts.

Dairy is an extremely important industry in Stearns County, with roughly 70,000 dairy cows in this county alone. For comparison's sake, the Minnesota county with the second highest amount of milk cows is Winona County, with 29,000. This high concentration of dairy operations means there could be more opportunities to integrate perennial or cover crops into a dairy's feed. This is especially the case when a dairy farmer is also a crop farmer and is using their land to produce crops for dairy feed, as explained in greater detail in the section detailing opportunities in Otter Tail County.

The Stearns County Soil and Water Conservation District (SWCD) is one of the most active and well-staffed in the state, with a reputation for trying new and innovative approaches to conservation. Currently, this SWCD is engaged in a trial of planting Kernza® intermediate wheatgrass in a DWSMA to see if this perennial crop can be both profitable and positively affect water quality. The SWCD was also responsible for one of the early pilots of the Minnesota Agricultural Water Quality Certification Program and the area has the greatest concentration of certified farmers in the state.

The combination of a high concentration of dairy located in an area with productive crop acres, growing conditions conducive to cover crop establishment, widely recognized and myriad water issues, and an active, innovative, and empowered Soil and Water Conservation District makes Stearns County a natural place to pilot an effort to make cover crops and living cover more prevalent on the agriculture landscape.

Questions for Further Investigation

- Are farmers who have integrated livestock and row crop operations interested in using cover crops for forage or grazing?
- Is there an opportunity to establish perennial cover that can be harvested or grazed on Conservation Reserve Program land that is coming out of that federal program?
- How is marginal agricultural land distributed, both across the county, and on a representative Stearns County crop farm? Are parcels of marginal land large enough to allow for economical grazing or harvesting for forage?

Clitherall and Otter Tail County

- There are several One Watershed One Plans in process in the county
- The area includes several highly vulnerable DWSMAs near Henning, Perham, and Pelican Rapids
- The median household income is lower than the state average
- The area has an agricultural system with livestock that could provide a market for perennials and cover crops

Otter Tail County is an unusual example of a county with a strong agricultural land base coupled with an economy reliant on outdoor recreation driven by surface water. There are over 1,000 lakes in this county alone. Unlike many agricultural counties, there are rolling hills and elevation changes that can lead to higher erosion of sensitive lands if conservation practices are not in place. Also, though relying on surface water quality to drive a tourism economy, stakeholders in

Otter Tail County are attuned to groundwater issues as there are elevated levels of nitrate in both municipal and private wells.

The Otter Tail County Local Water Management Plan of 2014 identifies the loss of Conservation Reserve Program acres as a factor impacting groundwater quality—an indication that the County is aware of the potential benefit of increasing the amount of living cover on the landscape. A recent report released by the East Otter Tail SWCD and titled "Groundwater and Agriculture: A report on local solutions to protect both" finds that there is interest in adopting cover crops amongst farmers, but there are significant barriers to adoption, including a lack of service providers, equipment, and familiarity with the practice. Despite a lower than average median income (61st by county in Minnesota), there is a very robust and active Soil and Water Conservation District that is focused on the intersection of groundwater and agricultural practices. Finally, a portion of a HUC12 watershed assessed by the WLWRP report is located in the county.

It should be noted that Otter Tail County is a large and diverse geography, with forested areas, marginal agricultural land used for pasture, lake regions, and productive cropland. To be effective, any effort in this county would likely need to be tailored to a particular sub-county geography, as an intervention that works in one area of the county may not work in another.

An effort by the state to get additional living cover on the ground is likely to be more successful if it targets dairy operations that are growing their own feed, such as corn silage. This is an easier path to increasing living cover, because it eliminates an external transaction, keeping the practice change in the hands of a single operator. Though the county includes a great deal of beef cattle, those are mostly being raised on pasture, typically marginal land that is not in crop production. To run that same beef cattle on productive row crop land with cover crops would take a contract between farmers, transport for the cattle, and fencing for fields. This level of complexity makes for significant barriers to the adoption of an unfamiliar practice with uncertain economics.

Focusing on dairy farmers who also farm for feed allows cover crops to be harvested for forage and used on farm so that cover crops do not violate crop insurance rules that dictate what is classified as a conservation practice versus a second crop. It also makes the economics of transport better, as it fits into an existing system, and it allows for starting cover crops on a trial basis and ramping up the practice as it is proved profitable for dairy forage.

Cover crops are a very new, very rare practice in Otter Tail County. Few farmers have adopted this conservation practice and there is uncertainty among farmers about whether it will work in their operations. However, according to conservation professionals in the area, this is a practice that can work if the necessary services and infrastructure are established. A state intervention in this area could create the critical mass necessary for cover crop service providers, for example companies with aerial seeding equipment, processors that can harvest, clean and sell cover crops locally, and agronomists familiar with the practice. Like for most agricultural practices, the service infrastructure needs to be in place for farmers to try cover crops, and lack of this type of infrastructure is the biggest impediment to cover crop implementation in this area.

Questions for Further Investigation:

- What sub-county geographies in Otter Tail County are most suitable for establishment of perennial cover and cover crops? How does this align with the environmental drivers in the county, such as impaired lakes and vulnerable DWSMAs?
- Are there enough dairy/cattle farmers who are also crop farmers that targeting this particular type of operation is viable and makes economic sense?
- What, if any, service infrastructure is in place to assist farmers in adopting cover crops? Will growers be able to access necessary services for incorporating cover crops into their operations if a pilot project is implemented?

Winona and Fillmore Counties

- There is an approved One Watershed One Plan that covers all of Fillmore County and the southern part of Winona County
- Winona has several highly vulnerable DWSMAs near Winona, Fremont, and Lewiston
- Both counties have several townships where 10 percent or more of the wells tested have ≥10 mg/L Nitrate-N
- The percentage of people living in poverty is above the state average
- Both counties have an agricultural system with livestock that could provide a market for perennials and cover crops

This area of Minnesota is very susceptible to drinking water contamination by nitrate because of the close connection between groundwater, which is the area's drinking water source, and surface water with high levels of nitrate. In many townships in this area, nitrate levels in more than 10 percent of private wells exceed the nitrate standard for drinking water. This is also a problem for public water supplies that rely on groundwater. For many towns with nitrate contamination of public wells, one solution is to source their drinking water from deeper wells with lower nitrate levels. Unfortunately, sourcing drinking water from deeper wells in this area can introduce radium, another regulated drinking water contaminant, into the water supply. This problem can be addressed by installing radium treatment systems or by establishing new wells to blend water supplies, both expensive options for smaller cities. This is of particular concern due to the fact that the percentage of people living in poverty in Winona and Fillmore Counties is above the state average (11.5 and 12.3 percent respectively). A state intervention to increase living cover could help address the nitrate problem at its source, mitigating the need for costly treatment systems in a high poverty area.

Another factor that lends Winona and Fillmore Counties to further exploration as potential pilot areas is the high concentration of cattle and dairy operations, plus a longer growing season, which increases the odds that cover crops would be more easily adopted by county farmers. In addition, there are already relevant research initiatives in place, including the Southeastern Minnesota Cover Crop and Soil Health Initiatives project, led by BWSR and the University of Minnesota. Running July 2015 through June 2018, this initiative included activities in 11 counties in Southeast Minnesota, including Winona and Fillmore counties. The project included providing technical training, education, and outreach about cover crops to soil and water

conservation districts, agronomists, and NRCS offices in the area as well as investigating the economics of cover crop practices in the region. This, and other activities in the region, are laying a foundation for adoption by farmers and could be built upon by a Working Lands Watershed Restoration Pilot. Fillmore also contains a HUC12 watershed that was used as a case study in the recent Working Lands Watershed Restoration Program report to the legislature, so there has already been some modeling done to look at the potential profitability of different practices that would increase living cover.

Questions for Further Investigation:

- Are there enough dairy/cattle farmers that are also crop farmers in this region so that transaction costs can be minimized for realizing marketable value from perennial and cover crops?
- Can an intervention be significant and timely enough to help communities that currently or may face nitrate contamination of their drinking water?
- Would a pilot program in this region be able to overcome any barriers identified by recently completed initiatives?

Nobles and Rock Counties

- There is an approved One Watershed One Plan that covers a majority of Nobles County and all of Rock County
- There are several highly vulnerable DWSMAs along the Rock River
- Ten percent or more of the wells tested with ≥10 mg/L Nitrate-N for all townships tested in the counties
- The percentage of people living in poverty is above the state average in both counties
- Both counties have agricultural systems with cattle that could provide a market for perennials and cover crops

Nobles County and Rock County briefly became the subject of discussion and media coverage related to impaired surface waters when the MPCA released a report in 2016 showing that, of the 93 assessed stream sections in the Missouri River Basin in Southwest Minnesota, only three fully supported aquatic life and only one fully supported aquatic recreation. None of the lakes met the aquatic recreation standard. At the same time, all tested townships had 10 percent or more of the wells exceeding the nitrate standard. Clearly, there are significant surface and groundwater drivers for action in this region.

There are other factors that would indicate that Nobles and Rock Counties may be a good location for a WLWRP pilot. Both counties have agricultural systems with a strong cattle-calf presence, though not to the same level as Stearns County, and without the strong dairy presence. In terms of institutional capacity, a completed One Watershed One Plan for the Rock River suggests a high level of organization and local cooperation in this region.

At the same time, there is a massive engineering and infrastructure effort underway in this region that would bypass the need for addressing nitrate contamination at the farm level. The Lewis and Clark Regional Water System would deliver treated drinking water to cities in Rock County and Nobles County and has been in the making since 1990. Construction is ongoing to extend service

to the City of Worthington. This water system would eliminate the need for cities and towns connected to it to make upgrades to their drinking water systems to treat nitrate and would significantly decrease their incentive to invest in any effort to increase living cover for the sake of drinking water protection.

In addition, as in Otter Tail County, it may not be economically feasible to use cover crops for forage for beef cattle unless there are significant numbers of operators raising both crops and beef cattle in the same farming operation or already transporting cattle to crop fields to harvest residues. Unfortunately, there are not a large number of dairies in the area, limiting opportunities to tap into existing forage markets. Further discussions with local stakeholders would be important in determining whether capacity and motivation are sufficient in this region to support a WLWRP pilot program.

Questions for Further Investigation:

- Are most cattle operations in this region feedlot or pasture raised?
- Is drinking water protection still a driver as the Lewis and Clark water system is nearing completion?

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Incentives Delivery Through Crop Insurance Rebates

May 4, 2018

Background on establishment of the Iowa program

- NRDC idea and funding (from Walton)
- Championed by Practical Farmers of Iowa, Iowa Farmers Union, and Iowa Environmental Council
- IDALS looking at it as a way to *maintain* land in cover crops (traditional cost share is still preferred as main mechanism to add acres)—this is different for advocates, who are hoping that program will result in *adding* to total acres in cover crops
- A line item for the program incentive will show up on all crop insurance invoices in coming year (whether or not the policy holder is participating)
- Repurposed existing cost share money *that was already going to incentivize cover crops*
- Challenges with location data and processing applications
- State responsible for verification, but less work than verification for existing cost share would be
- Over 600 participating producers and goal of 200,000 acres
- Illinois already actively exploring options and NRDC soliciting partners in Minnesota

Targeting funds

- RMA has suggested that county-level targeting might be possible
- Pros and cons based on goals and assumptions:
    - Targeting would better support short-term and measurable water quality gains
    - If the main goal is introducing a new policy lever to change how crop insurance impacts cropping decisions and practices and/or how new producers are introduced to conservation practices it would be more effective to cast the net wide and minimize administrative burdens (less targeted)
- Might be able to offer incentives for other cropping practices (e.g., growing forage), but would need to be at field-level and in conjunction with growing an insurable crop—this would significantly complicate the administration and verification process
- Cost effectiveness of cover crops as N reduction strategy varies considerably across the state and is an evolving area of research
- Relationships with insurance providers could still make this difficult

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Current State Funding Streams for Cover Crops

May 4, 2018

Clean Water Fund

The Clean Water Fund (CWF) is currently the major source of funding for incentives for cover crops. Projects are supported by the CWF through (at least) three mechanisms:

1. Direct funding to Soil and Water Conservation Districts and watershed districts for projects that include cover crops (generally within a suite of practices). The projects that have been funded that explicitly included cover crop implementation in their goals are listed below. They ranged in size from less than $50,000 to approximately $375,000.

2. Funding for Soil and Water Conservation Districts and watershed districts that is administered by BWSR through the Clean Water Fund Implementation Program. Over the past several years between three and eight percent of these grants have explicitly included implementation of cover crops (based on project descriptions), although numerous others have included cover cops in the suite of practices implemented. These projects have ranged in size from $50,000 to just over $440,000, with most in the range of $200,000 to $400,000.

Year	Project	Grant Recipient	Amount
2017	Little Rock Lake TMDL Implementation Plan	Benton SWCD	$200,000
2016	Crystal Lake Watershed Phosphorus Reduction Project	Blue Earth County SWCD	$374,500
2016	Otter Tail River Restoration	Wilkin SWCD	$203,000
2015	St. Croix River Watershed Agricultural Runoff Reduction Project	Pine SWCD	$48,800
2014	SE MN Soil Health Providing Accelerated Technical Assistance	Area 7 - Southeast SWCD Technical Support	$250,000
2014	Nitrogen reduction using irrigation scheduling and cover crops	Sherburne SWCD	$150,400
2013	Upper South Branch BMP Strategic Implementation Plan - Part 2	Buffalo-Red River Watershed District	$336,860
2012	Improving the Water Quality along Connelly Ditch	Wilkin SWCD	$294,506

3. The AgBMP Loan Program and Minnesota Agricultural Water Quality Certification Program are funded through the CWF.

LCCMR Grants

A small number of LCCMR grants have funded demonstration projects related to cropping practices, including perennials and cover crops (listed below).

Year	Project	Grant Recipient	Amount
2016	Establishment of Permanent Habitat Strips Within Row Crops	Science Museum of Minnesota	$179,000
2015	Southeast Minnesota Cover Crop and Soil Health Initiatives	Board of Water and Soil Resources	$253,000
1993	Cover Crops in a Corn and Soybean Rotation	University of MN	$150,000

State Conservation Cost-Share Program

The Erosion Control and Water Management Program, commonly known as the State Cost-Share Program, was created in 1977 to provide funds to Soil and Water Conservation Districts to share the cost of systems or practices for erosion control, sedimentation control, or water quality improvements that are designed to protect and improve soil and water resources. Through the State Cost-Share Program, land occupiers can request financial and technical assistance from their local District for the implementation of conservation practices.

As of fiscal year 2017, payments can be made for "nonstructural land management practices," including cover crops, residue management, and nutrient management, if they have erosion control or water quality improvement benefits and are incorporated into a farm management plan and BWSR-approved and locally adopted Nonstructural Land Management Plan.

Minnesota Department of Agriculture Programs

Agricultural Best Management Practices (AgBMP) Loan Program – Cover Crops Loan

In counties where Cover Crops qualify for AgBMP Loans and funds are available, the loan has a three percent interest rate and helps finance the purchase of supplies and services needed to establish Cover Crops, including the purchase or rental of specialized equipment. AgBMP loans may be combined with incentive or cost share payments from other programs. AgBMP loan applications are typically accepted year-round.

AGRI Sustainable Agriculture Demonstration Grant Program

Applications from farmers receive priority, but the program also funds Minnesota nonprofit and educational organizations as long as Minnesota farmers are meaningfully involved in the project. Projects can last from two to three years, and applicants may receive up to $25,000 for their projects, although many request less. Grantees must be willing to share what they learn with others.

The program objectives are to explore the profitability, energy efficiency, and benefits of sustainable agriculture practices and systems from production through marketing. Grants are available to fund on-farm research and demonstrations and may include, but are not limited to:

- Farm diversification using traditional and non-traditional crops and livestock
- Cover crops and crop rotations

- Conservation tillage
- Input reduction strategies, including nutrient and pesticide management
- On-farm energy production, such as wind, methane, or biomass
- Developing/refining marketing opportunities, season extension, and post-harvest storage and handling
- Other creative ideas that focus on conservation, energy, profitability, and/or farmers' quality of life

The program does not fund projects that duplicate previously funded projects. It may, however, fund similar projects in parts of the state where the practice or system is still considered new or innovative.

Minnesota Agricultural Water Quality Certification Program
The Minnesota Agricultural Water Quality Certification Program (MAWQCP) is a voluntary opportunity for farmers and agricultural landowners to take the lead in implementing conservation practices that protect our water. Those who implement and maintain approved farm management practices will be certified and in turn obtain regulatory certainty for a period of ten years. Through this program, certified producers receive:

- Regulatory certainty: certified producers are deemed to be in compliance with any new water quality rules or laws during the period of certification
- Recognition: certified producers may use their status to promote their business as protective of water quality
- Priority for technical assistance: producers seeking certification can obtain specially designated technical and financial assistance to implement practices that promote water quality

Funds Administered by the Minnesota Pollution Control Agency
Clean Water Partnership Loans
The Clean Water Partnership (CWP) Program offers zero percent interest loans to eligible applicants. These loans are available for implementing nonpoint source best management practices (BMPs) and other activities that target the restoration and protection of a water resource (i.e., lake, stream, or groundwater aquifer). The loans are available to local units of government sponsoring CWP projects. A local government can use the funds itself (first-tier BMP) to implement BMPs, or it can re-loan the funds to private parties (second-tier BMPs) for further activities to implement the practices.

As of September 2017, 310 projects have constructed $50.5M of BMPs:
$41.4M - Individual septic treatment systems
$4.0M - Feedlots
$1.8M - Permanent structures
$1.6M - In-lake chemical treatments
$0.8M - Equipment
$0.5M - Land use practices/erosion control activities
$0.4M - Administration/education and training

Clean Water Act Section 319 (Section 319) Programs
Section 319 funds are being used for total maximum daily load (TMDL) and implementation projects for watershed restoration and protection strategies (WRAPS).

EI-PFI/NRDC Call Notes

March 28, 2018

Project Inception and Building the Partnership

- Original idea came from NRDC, which was looking at how cover crops could improve producers' risk ratings for crop insurance—realized that more data is needed
    - Sees "end game" as gathering data connecting cover crop use, soil health, and risk
- NRDC saw that states could offer insurance premium subsidies on top of federal subsidy
- Reached out to Practical Farmers of Iowa (PFI), who then worked to bring IDALS on board with idea
- NRDC funded PFI, Iowa Farmers Union, and Iowa Environmental Council to champion idea, host field days, etc.
- Once state interest was secured, RMA was brought into discussion
- RMA handled the engagement with accredited insurance providers (but this is something to consider—when and how to engage accredited insurance providers (AIPs))

Pilot Results

- Have had fantastic subscription rate—633 farmers so far
- Have not been able to meet the March 15 cutoff date for sign-ups because of high level of interest
- All crop insurance invoices next year will have a line item for the cover crop incentive rebate, and anyone not participating will have "$0." They expect that this will drive even further interest.

Data Collection and Use

- The State of Iowa is not focused on "mining the data" for the relationship between practices and risk, but NGOs would like to see that happen.

Exporting Model to Other States

- Looking at doing something similar in IL
- NRDC is interested in seeing other states try this as soon as the coming growing season
- Have reached out to Minnesota Farmers Union and to Brad Redlin at the Minnesota Department of Agriculture
- Congressman Nolan has introduced a bill that would introduce a similar program in six different states
- If more states do it, it is more likely to be included in a future Farm Bill

- PFI has farmer contacts in Minnesota that they would be happy to reach out to about supporting something politically (including acting as an author of an op-ed if there were interest in pursuing that strategy here)

EI-IDALS Call Notes

April 5, 2018

We spoke with Matt Lechtenberg, Water Quality Initiative Coordinator, and Will Myers, Water Quality Initiative Projects Coordinator, with the Iowa Department of Agriculture and Land Stewardship (IDALS).

Goals and Structure

- Pilot is part of Iowa's existing Water Quality Initiative, through which they administer state cost share.
- Had to confirm that existing appropriations language for state cost share did not need to be changed. They decided that it was already aligned with the goals and requirements of a pilot with RMA.
- $4.8 million total state funding for cover crops in 2017
- Goal was 200,000 acres of cover crops
- See the crop insurance incentive as a "layered approach" that will drive longer-term adoption, given that it is smaller payment level
    - From state's perspective, best if new "users" still come through traditional cost share (which is a one-year contract/payment) so that they can provide technical assistance
    - On the other hand, could get more producers comfortable with participating in state/federal programs and get them into programs that offer technical assistance
    - Iowa State will be helping with some analysis to understand who is participating and how those producers are otherwise engaging with programs
- See a lot of value in collecting the data on soil health outcomes and associated risk to crops, but they feel that the data is "best kept in [RMA's] realm" and are not collecting or analyzing that information. Focus right now is on "getting it to work."

Program Administration

- There is lower administrative burden for the state with the incentives delivered through RMA compared to traditional cost share, including verification process.
- IDALS takes the lead in handling program applications and verification.
    - Make sure that acres do not overlap with other state or federal cost share
    - Will go through a subset of participants and ask follow-up questions
    - Will do field verification for even smaller subset, piggybacking on other verification activities where possible (but timing for this program is off from traditional cost share, so this will not always be possible)
- Timing

  - Want to open the sign-up process earlier in the second year
  - Reason to have people apply after they have seeded is so that insurance agreements do not have to be amended if people did not do what they said they would
  - Now that people know about the incentive ahead of planting, the State will get a better sense of whether it is driving decision making
- Biggest issue has been consistency in applications
  - They need location information by field for RMA, and an individual may need to enter information for 40–50 fields separately (this location information is private, so RMA cannot give the info to IDALS—the producers have to enter it).
  - There is a lack of consistency from county to county related to some of the location information.

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Appendix A: Potential Pilot Areas Table

Suggested Location	County	Region	Watershed	1W1P	DWSMA	Weighted Township Testing	County % All Ages in Poverty	County Median Household Income	Cattle-Calves	Milk Cows
Cold Spring	Stearns	Central	Sauk River 07010202	Recipient 2017 and Pilot	Near a very highly / highly vulnerable DWSMA; many throughout county	1.50	11.7	$57,881	240,000	70,000
Community system near Rice	Benton	Central	Platte-Spunk Watershed 07010201	none	Near or in a highly vulnerable DWSMA; some throughout county	2.00	8.5	$53,675	35,000	11,100
Sundsruds Court, Todd Township (near Park Rapids)	Hubbard	Central	Crow Wing Watershed 07010106	Nearby	Near or in a highly vulnerable DWSMA; not many others	2.33	13.1	$49,129	6,100	400
Clitherall	Otter Tail	Central	Otter Tail Watershed 09020103 Pomme De Terre Watershed 07020002 Chippewa Watershed 07020005	Recipient 2016 and 2017	Near a very highly / highly vulnerable DWSMA; many throughout county	1.33	10.5	$51,252	93,000	16,500
Fairmont	Martin	South Central	Blue Earth Watershed 07020009	Nearby	No vulnerable DWSMAs, though there are several DWSMAs in the county	not tested yet	12.1	$48,326	13,000	500
St. Peter	Nicollet	South Central	Minnesota River Mankato 07020007	None	Near or in a highly vulnerable DWSMA; some moderately vulnerable throughout cunty	not tested yet	8	$66,868	29,500	11,200

Suggested Location	County	Region	Watershed	1W1P	DWSMA	Weighted Township Testing	County % All Ages in Poverty	County Median Household Income	Cattle-Calves	Milk Cows
	Olmsted	Southeast	Zumbro River 07040004 Buffalo-Whitewater 07040003 Root River 07040008	Approved plan	Highly vulnerable DWSMAs near Rochester; broad part of county is highly vulnerable	1.18	8.6	$72,511	43,000	9,800
	Winona	Southeast	La Crosse-Pine, La Crescent 07040006 Root River 07040008 Buffalo-Whitewater 07040003	Approved plan	A few highly vulnerable DWSMAs throughout county	2.54	11.5	$56,499	82,000	28,500
	Fillmore	Southeast	Root River 07040008 Upper Iowa River 07060002	Approved plan (whole county)	Highly vulnerable DWSMA near Chatfield, several other moderately vulnerable in county	2.71	12.3	$60,575	76,000	12,300
Ellsworth	Nobles	Southwest	Rock Watershed 10170204	Recipient 2016	In highly vulnerable DWSMA; some moderately vulnerable throughout county	3.00	11.6	$56,069	79,000	6,000
Rock County Rural Water	Rock	Southwest	Lower Big Sioux Watershed 10170203 Rock Watershed 10170204	Recipient 2016 (whole county)	Several highly vulnerable DWSMAs in the county, along the Rock River	3.00	9.4	$57,518	71,000	2,900
Edgerton	Pipestone	Southwest	Lower Big Sioux Watershed 10170203 Rock Watershed 10170204	Recipient 2016 (most of county)	In highly vulnerable DWSMA; only a few other vulnerable DWSMAs	not tested yet	10.9	$51,050	54,000	4,800

Data sources can be found in the "Appendix: Data and Shapefile Sources" section.

Coding Explanation

Color coding generally:

- Dark green best meets identified criteria for a pilot area
- Light green is next best fit for a pilot area based on identified criteria (only used for final ranking of locations)
- Yellow is medium fit for a pilot area based on identified criteria
- Orange is least good fit for a pilot area based on identified criteria
- No color means there is not enough data to make a decision

Coding for specific criteria:

- Suggested location, county, and region columns are all coded the same way in a respective row and are based on a qualitative judgement of the other columns and their coded colors, weighting agriculture and environmental factors more than demographics.
- Watershed column:
  - Lists the watersheds near the town or within the county
    - If the same watershed shows up on another row that watershed is listed in red text
    - If the watershed does not show up on another row it is listed in black text
  - Having overlap (watersheds contained in the county show up in other suggested counties) led to valuing those counties more highly
- 1W1P column:
  - Dark green if there is a plan that covers most or all of a county
  - Yellow if there is a plan that covers part of the county
  - Orange if there is a plan in a nearby county
  - No color if there is no plan
- DWSMA column:
  - Dark green if that location is in or near a highly vulnerable DWSMA or if there are many vulnerable DWSMAs throughout the county
  - Yellow if there are only a few vulnerable DWSMAs in the county
  - Orange if there are no vulnerable DWSMAs in the county
- Weighed Township Testing column (weighting explained in Appendix C):
  - Dark green if over 2.6 for weighted average
  - Yellow if between 2.0 to 2.55 for weighted average
  - Orange if under 2.0 for weighted average
  - No color if no townships have had testing
- County % All Ages in Poverty column:
  - Dark green if the poverty rate (for all ages) is 11.5 percent or higher
  - Yellow if the poverty rate (for all ages) is between 9 and 11.49 percent
  - Orange if the poverty rate (for all ages) is under 9 percent
- County Median Household Income column:
  - Dark green if median household income is under $53,700

  - Yellow if median household income is between $53,701 and $57,900
  - Orange if median household income is over $57,901
- Cattle-Calves column:
  - Dark green if over 71,000 head of cattle
  - Yellow if between 43,000 and 70,999 head of cattle
  - Orange if under 42,999 head of cattle
- Milk Cows column:
  - Dark green if over 25,001 cows
  - Yellow if between 11,001 and 25,000 cows
  - Orange if under 11,000 cows

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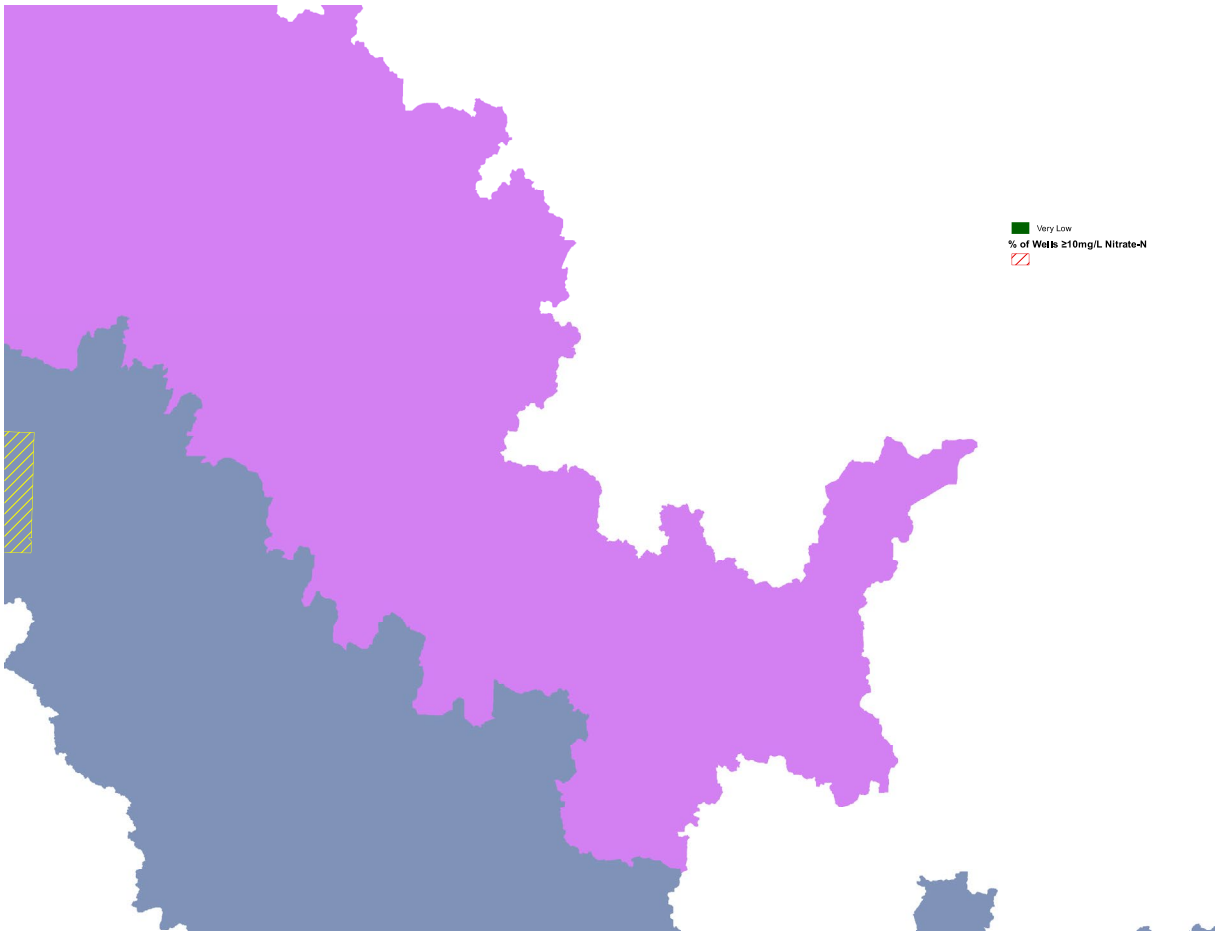
Appendix B: Potential Pilot Areas Maps

Stearns County



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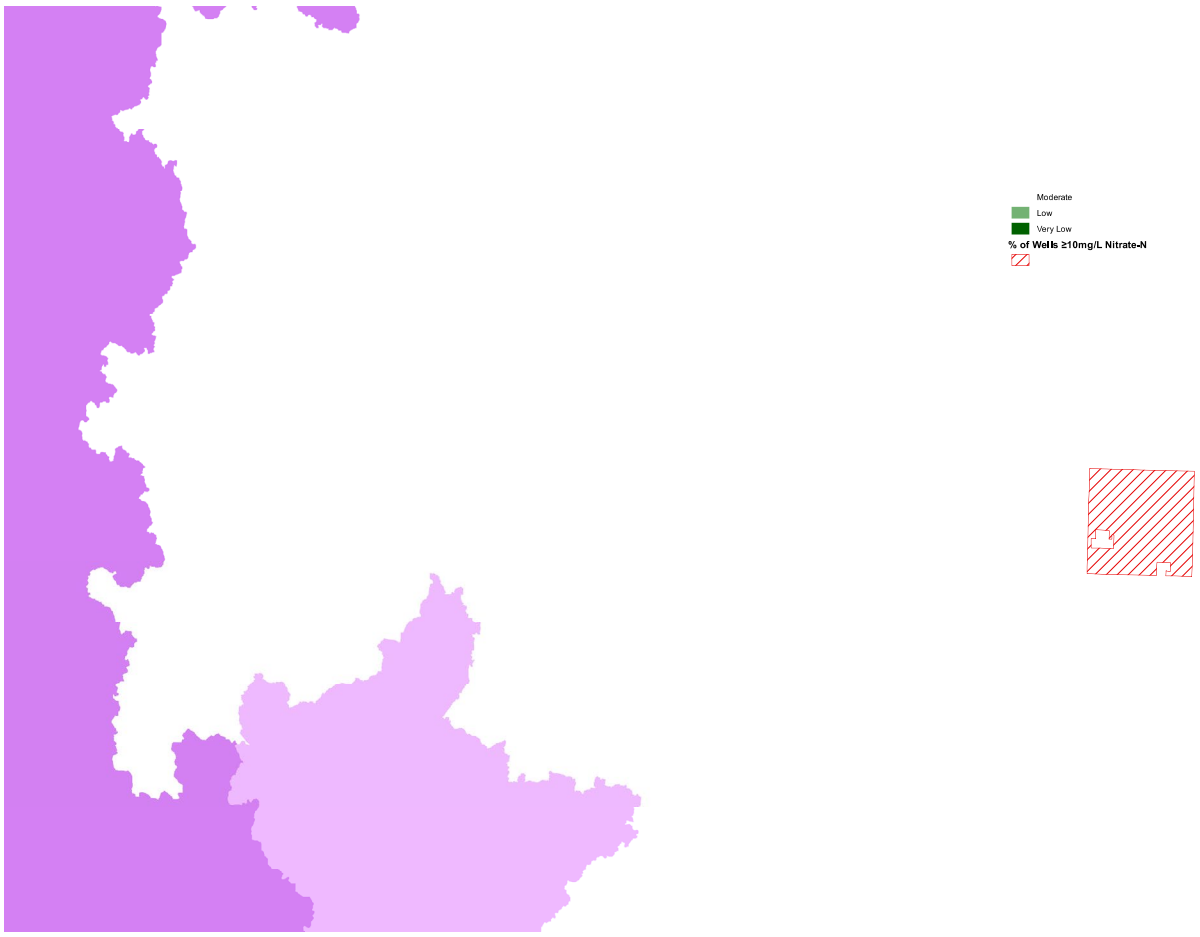
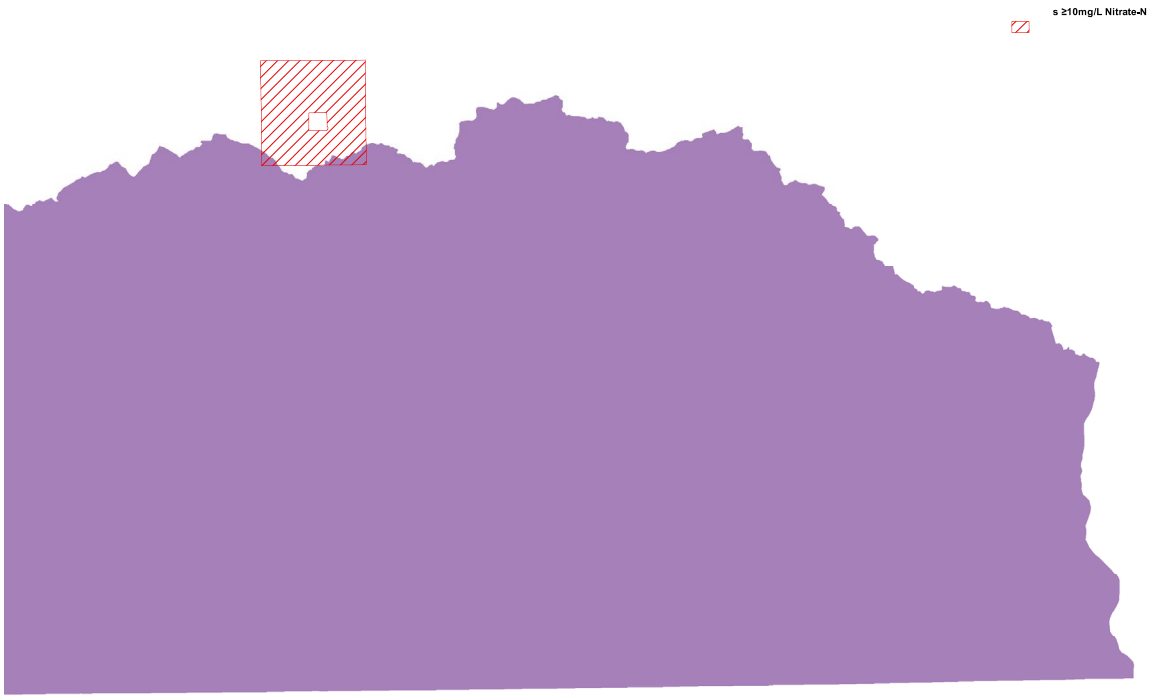
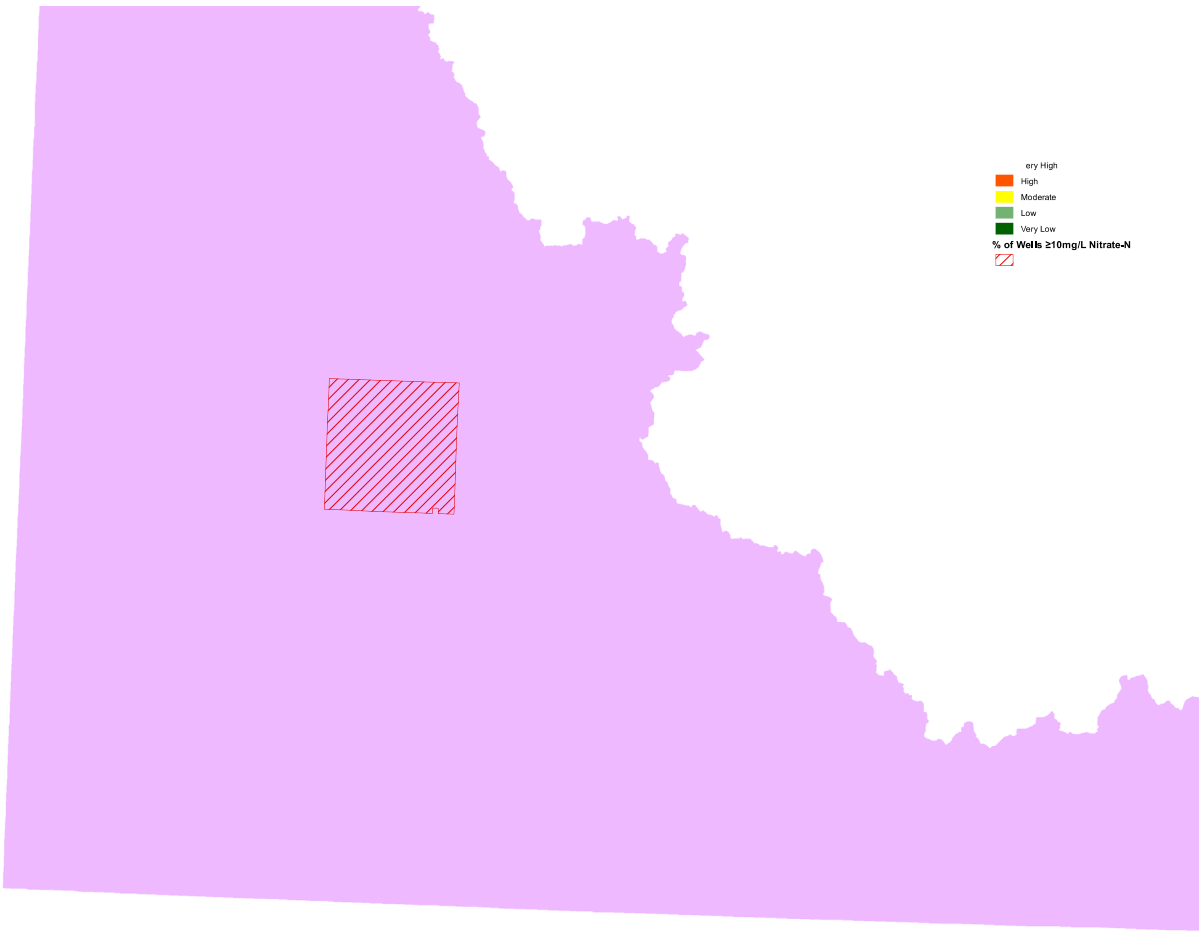
Otter Tail County



Winona and Fillmore Counties



Nobles and Rock Counties



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Appendix C: Data and Shapefile Sources

Base

County Boundaries: From the Minnesota Department of Natural Resources Lands and Minerals Division.
https://gisdata.mn.gov/dataset/bdry-counties-in-minnesota
Shapefile accessed from the Minnesota Geospatial Commons

City Boundaries: From the Minnesota Department of Transportation and Minnesota Geospatial Information Office. The city boundaries used in all maps are from the cities, townships, and unorganized territories data set.
https://gisdata.mn.gov/dataset/bdry-mn-city-township-unorg
Added information from the Minnesota Department of Health's drinking water query to the shapefile. Pulled records the query for 2015 nitrate concerns and added a field to map cities with mean nitrate levels of over 5 mg/L.
https://data.web.health.state.mn.us/drinkingwater_query
Shapefile accessed from the Minnesota Geospatial Commons and turned into city boundaries only shapefile with a field on nitrate levels over 5 mg/L by Erin Niehoff

Water

% of Wells ≥10mg/L Nitrate-N Data: From the Minnesota Department of Agriculture. Nitrate Testing Results for Private Wells as of August 10, 2017.
http://www.mda.state.mn.us/~/media/Files/chemicals/nfmp/combinedttmapfsht.pdf; newer version is now available that includes Fillmore County
http://www.mda.state.mn.us/~/media/Files/chemicals/nfmp/allctyresults.pdf
Shapefile provided to Erin Niehoff by the Minnesota Department of Agriculture

In the table, this is indicated by a weighted average of the different townships within a county.

- Townships with <5% of wells with a health risk of ≥10mg/L Nitrate-N received a weight of 1
- Townships with 5-9% of wells with a health risk of ≥10mg/L Nitrate-N received a weight of 2
- Townships with 10% or more of wells with a health risk of ≥10mg/L Nitrate-N received a weight of 3

This was then averaged based on the number of townships in a county. For example, Winona has 13 townships that has been tested.

- Two have <5% of wells with a health risk of ≥10mg/L Nitrate-N
- Two have 5-9% of wells with a health risk of ≥10mg/L Nitrate-N
- Nine have 10% or more of wells with a health risk of ≥10mg/L Nitrate-N

This means that Winona has a score of [(2x1)+(2x2)+(9x3)]/13 = 2.54.
This calculation was done for all of the identified potential pilot areas with tested townships.

Wells Over 10 mg/L Nitrate: From the Minnesota Department of Health. The data come from the MDH WELLS database, which includes results of over 222,000 water samples called at the time of well construction for wells drilled since 1990. As this data comes from the Minnesota Department of Health and the township testing data comes from the Minnesota Department of Agriculture, it may not match succinctly.
Shapefile provided to Erin Niehoff by the Minnesota Department of Health and edited to only include wells with over 10 mg/L Nitrate.

Impaired Lakes, Rivers and Streams Data: From the Minnesota Pollution Control Agency. This is a draft set of impaired waters as determined by MPCA's surface water quality assessment process in 2014 and 2015 for the 2016 reporting cycling to US Environmental Protection Agency (EPA).
https://gisdata.mn.gov/dataset/env-impaired-proposed-water-2016
Shapefile accessed from the Minnesota Geospatial Commons and combined into a streams shapefile and a lakes shapefile by Erin Niehoff

Drinking Water Source Management Area (DWSMA) Data: From the Minnesota Department of Health – Environmental Health Division – Source Water Protection unit. Drinking water supply management area (DWSMA) is the Minnesota Department of Health (MDH) approved surface and subsurface area surrounding a public water supply well that completely contains the scientifically calculated wellhead protection area and is managed by the entity identified in a wellhead protection plan. The boundaries of the drinking water supply management area are delineated by identifiable physical features, landmarks or political and administrative boundaries.
https://gisdata.mn.gov/dataset/water-drinking-water-supply
Shapefile accessed from the Minnesota Geospatial Commons

One Watershed One Plan Data: From the Minnesota Department of Natural Resources and the Minnesota Board of Water and Soil Resources.
https://gisdata.mn.gov/dataset/geos-dnr-watersheds
Planning areas identified in the following map:
http://www.bwsr.state.mn.us/planning/1W1P/1W1P_Participating_Watersheds_Map.pdf
Shapefile accessed and altered by Erin Niehoff based on the BWSR map

Agriculture

Cattle, Cow, and Calf Data: From the U.S. Department of Agriculture National Agricultural Statistics Service Quick Stats Database. Accessed by searching for Animals & Products – Livestock – Cattle – Inventory and selecting: 1) Cattle, Cows; 2) Cattle, Cows, Beef; 3) Cattle, Cows, Milk; and 4) Cattle, Incl Calves. The data used is 2017 data. The Cattle Inventory surveys provide basic inventory data that describe the nation=s cattle herd. The reports provide estimates of the number of breeding animals for beef and milk production as well as the number of heifers being held for breeding herd replacement. Estimates of cattle and calves being raised for meat production are also included. The number of calves born during the previous year is also measured.

https://quickstats.nass.usda.gov/00FF2742-1FEC-3049-8043-31EFC1167EE6?long_desc__LIKE=cattle#8E13C222-D58C-3C06-B678-9E727D057832
Numbers were added to the County shapefile by Erin Niehoff and included in the "Appendix: Potential Pilot Areas Table"

Demographic and Population

Median Household Income and Poverty Data: From the U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates "2016 Median Household Income" and "2016 All Ages in Poverty" https://www.census.gov/data-tools/demo/saipe/saipe.html?s_appName=saipe&map_yearSelector=2016&map_geoSelector=aa_c&menu=grid_proxy&s_state=27
Numbers were added to the County shapefile by Erin Niehoff and included in the "Appendix: Potential Pilot Areas Table"