A SOCIAL SCIENCE-BASED ASSESSMENT OF CONSERVATION PRACTICES IN THE LA CRESCENT AND RENO WATERSHEDS

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Center for Changing Landscapes
UNIVERSITY OF MINNESOTA
Driven to Discover℠

A SOCIAL SCIENCE-BASED ASSESSMENT OF CONSERVATION PRACTICES IN THE LA CRESCENT AND RENO WATERSHEDS

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County and the
Minnesota Pollution
Control Agency

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Executive Summary

This report describes a social science assessment of landowner conservation behavior in two Minnesota watersheds: Mississippi River-La Crescent and Reno watersheds. The study was conducted by the Center for Changing Landscapes, University of Minnesota, in collaboration with Winona County. The purpose of this study was to understand landowner values, beliefs, norms, and behaviors associated with water resource conservation. This study helps provide resource professionals with a better understanding of the drivers of and constraints to landowners' conservation action. Data were collected through a self-administered mail survey of a random sample of landowners in La Crescent and Reno watersheds. Data were analyzed using statistical and geospatial analysis methods.

Key Findings

- Landowners and farmers are influenced in their water-related decision-making by multiple groups including their family, farmers, local Soil and Water Conservation Districts, and state agencies.
- Landowner values and norms, perceived benefits of conservation practices, and access to financial resources drive conservation behavior.
- The biggest constraints to conservation action include lack of financial resources, equipment, and community leadership.
- There is a significant gap between individual (e.g., conservation practice adoption) and collective-level (e.g., civic engagement in water protection) norms and actions. While most landowners reported feeling a sense of personal obligation to use conservation practices, considerably fewer landowners feel obligated to engage in civic actions (e.g., talk to others about conservation practices).

Recommendations

We recommend a combination of strategies to promote conservation programming and offer four broad strategies:

- Appeal to landowners' values and norms, and emphasize benefits of conservation practices
- Address individual and community-level constraints to conservation behavior
- Tailor civic engagement programs to particular communities
- Support community-building around water

1. Project Background

This report describes a social science-based assessment of landowner conservation behavior in the La Crescent and Reno watersheds of Minnesota. The study was conducted by the Center for Changing Landscapes, University of Minnesota (UMN), in collaboration with Winona County.

The Mississippi River-La Crescent watershed stretches across Winona and Houston counties. Pine Creek is the largest stream in the watershed (Minnesota Pollution Control Agency, 2018a). The major land cover in the watershed is forest (47%), with 27% of the watershed in cropland (Minnesota Department of Natural Resources, 2015a). Major resource concerns in the watershed include soil erosion, total suspended solids, low dissolved oxygen, nitrate, and degradation of stream habitat (USDA Natural Resources Conservation Service (NRCS)[a], n.d.; MPCA, 2018b). Stretches of the Pine Creek and Mississippi River are listed as impaired due to *E. coli* and polychlorinated bipheyl (PCB) (MPCA, 2018c).

The Mississippi River-Reno watershed is located in Houston County. Crooked Creek and Winnebago Creek are the largest streams in the watershed (MPCA, 2018a). The major land cover in the watershed is cropland (42%), followed by forest (37%) (MNDNR, 2015b). Soil loss and oxygen depletion are major resource concerns in the watershed (USDA NRCS[b], n.d.). Stretches of Crooked creek and Winnebago creek are listed as impaired for *E.coli* and aquatic macroinvertebrate bioassessments (MPCA, 2018c).

Resource managers in the watershed are increasingly investing scarce resources in outreach and education programs to promote voluntary adoption of conservation practices and to engage community members in water resource protection. Efforts to promote adoption of conservation practices and engage landowners in conservation must be based on an understanding of the values and beliefs of landowners. The purpose of this study was to understand landowner values, beliefs, norms and behaviors associated with water resources and conservation. This study helps provide resource professionals with a better understanding of the drivers of, and constraints to, landowners' conservation action.

This project takes an interdisciplinary approach to understanding the complexities of landowner motivations and constraints to conservation practice adoption using social science survey methods and geospatial analysis.

Specific study objectives were to:

1. Examine landowner values, beliefs, norms, and behaviors associated with water resource conservation
2. Identify conservation opportunity areas that are socially suitable for future conservation through geospatial analysis of social data

The information provided in this report is intended to inform and enhance water resource management in the two study watersheds. Study findings will be useful in developing and enhancing conservation programs that respond to the needs and concerns of landowners and agricultural producers in the area. For policy makers, program designers, and local implementers, understanding the drivers of and constraints to conservation practice adoption will provide invaluable direction for future conservation funding, planning, and evaluation.

2. Methods

This project used a mail survey and geospatial analysis to assess landowner conservation action.

2.1 Landowner Mail Survey

Data were collected through a self-administered mail survey of a random sample of landowners who live within the La Crescent and Reno watersheds. A list of property owners within the study watersheds was obtained from Winona and Houston counties. The list was based on publicly available county tax records. A total of 3000 surveys (1500 in each watershed) were distributed by U.S. mail. The surveys were administered from March 2018 through July 2018.

Survey instruments were designed based on extensive literature review and feedback from project partners. The survey questionnaire included a variety of fixed-choice and scale questions. Several questions were adapted from survey instruments used in previous studies of attitudes, beliefs, and values of conservation behaviors in Minnesota (Pradhananga, Fellows, and Davenport, 2018; Davenport & Pradhananga, 2012; Davenport, Pradhananga, & Olson, 2014; Pradhananga, Perry, & Davenport, 2014; Pradhananga and Davenport, 2017; Prokopy et al., 2009). Each questionnaire was labeled with a unique identification number to track responses for subsequent mailings.

An adapted Dillman's (2014) Tailored Design Method was used to increase response rates. The survey was administered in three waves: (1) the questionnaire (Appendix A) with a cover letter (Appendix B), watershed map (Appendix C), and a self-addressed, business reply envelope; (2) a replacement questionnaire with a reminder letter (Appendix D), watershed map and envelope; and (3) a third replacement questionnaire with cover letter, watershed map and envelope. Survey protocol for this project was reviewed by the University's Institutional Review Board.

Returned questionnaires were logged into the respondent database. Response data were numerically coded and entered into a database using Microsoft Excel 2010. Statistical analyses were conducted using Statistical Package for Social Sciences (SPSS release 24.0). Basic descriptive statistics were conducted to determine frequency distributions and central tendency of individual variables.

To examine the factors that influence respondents' engagement in community activities, subgroup comparisons were conducted between respondents with varying levels of civic engagement (i.e., high engagement, low civic engagement). Subgroup comparisons were also conducted to assess differences between respondents in La Crescent and Reno watersheds. Respondent subgroups were compared for differences in their socio-demographic and property characteristics, social influences, awareness of water issues, perceived ability, social norms of conservation action, and community and water resource beliefs.

2.2 Geospatial Analysis

Survey data were synthesized using ArcGIS Pro to create geospatially referenced data visualizations and findings for water resource decision making. Survey data from the study watersheds was imported into ArcGIS Pro and attached to parcel data for spatial analysis. Various graphic strategies were tested within GIS

(geo-referencing, heat mapping and various interpolation methods) to find the best representation of the data while still protecting respondent confidentiality.

Inverse distance weighted interpolation (IDW) was determined to be the best method, given that individual survey responses and respondent locations were collected into and masked by a local value maintaining respondent privacy. Shaded polygons represent a calculated statistical average of responses in a cluster of parcels, not specific to individual responses or parcels. Each graphic model provides visual results of one dataset or survey question with consideration to the possible range of values.

3. Study Findings

Project findings are organized into two sections: landowner mail survey findings and findings from geospatial analysis. The survey findings are further organized into five sub-sections that respond to 14 unique research questions.

Overall, 597 landowners completed and returned the survey for a response rate of 23% (adjusted for 318 surveys returned undeliverable). Response rates of 23% and 21% were achieved in La Crescent (n = 286) and Reno (n = 304) watersheds, respectively. Complete statistics for all survey questions are presented in tabular form in Appendices E and F. Findings from subgroup comparisons are presented in tabular form in Appendix G.

3.1 Survey Findings

3.1.1 Respondent & Community Profile

Who are respondents and what are their property ownership characteristics?
Respondents were asked a series of questions about their socio-demographic background and property ownership characteristics.

La Crescent watershed:
A majority of respondents were male (77%). The respondents ranged in age from 21 to 98 with a median age of 65. A vast majority of respondents characterized their race and ethnicity as white (98%). Almost half of the respondents (42%) had attained at least a college bachelor's degree. A majority of respondents (59%) reported an annual household income of $75,000 or more (Appendix E, Table 1).

Most respondents (80%) reported that their property does not border a ditch, stream, lake, or river. A vast majority of respondents (82%) reported that they did not use their land for agricultural production. Almost three-fourths of respondents (72%) reported that less than 50% of their income is dependent on agricultural production. A vast majority of respondents (81%) own and manage their land, and most of the respondents (92%) make their own management decisions (Appendix E, Table 2). A vast majority of respondents (86%) own fewer than 100 acres of land. Among the respondents who rent their land to others, 84% rent out fewer than 100 acres. Among respondents who reported using their land for agricultural production (n = 63), a majority (70%) have fewer than 100 acres in agricultural production (Appendix F, Table 3).

Reno watershed:
A majority of respondents were male (80%). The respondents ranged in age from 27 to 98 with a median age of 64. A vast majority of respondents characterized their race and ethnicity as white (99%). About one-third of respondents (35%) had attained at least a college bachelor's degree. Almost half of the respondents (48%) reported an annual household income of $75,000 or more (Appendix F, Table 1).

Most respondents (80%) reported that their property does not border a ditch, stream, lake, or river. A vast majority of respondents (82%) reported that they did not use their land for agricultural production. Almost three-fourths of respondents (72%) reported that less than 50% of their income is dependent on agricultural production. A vast majority of respondents (81%) own and manage their land, and most of the respondents

(92%) make their own management decisions (Appendix J, Table 2). A vast majority of respondents (86%) own fewer than 100 acres of land. Among the respondents who rent their land to others, 84% rent out fewer than 100 acres. Among respondents who reported using their land for agricultural production (n = 63), a majority (70%) have fewer than 100 acres in agricultural production (Appendix F, Table 3).

How do respondents view their community?

Survey respondents were asked to identify what comes to mind first when they think of their community. Several choices were provided including neighborhood, county, city, and watershed. Respondents were also asked to rate the importance of several community qualities on a five-point scale from very unimportant (-2) to very important (+2).

La Crescent watershed:

One-third of respondents (33%) defined their community as their neighborhood. A small minority of respondents (4%) defined their community as their watershed (Appendix E, Table 4). Water appears to be highly valued amenity for respondents. A vast majority of respondents rated safe drinking water (82%) and clean streams, rivers, and lakes (81%) as somewhat to very important. A majority of respondents also rated good relationships among neighbors (80%) and opportunities for outdoor recreation (78%) as important qualities of a community (Appendix E, Table 6, Figure 1).

Reno watershed:

Almost one-third of respondents (30%) defined their community as their city. A small minority of respondents (5%) defined their community as their watershed (Appendix F, Table 4). A vast majority of respondents rated safe drinking water (78%) and clean streams, rivers, and lakes (78%) as somewhat to very important. A majority of respondents also rated good relationships among neighbors (73%) and opportunities for outdoor recreation (72%) as important qualities of a community (Appendix F, Table 6, Figure 1).

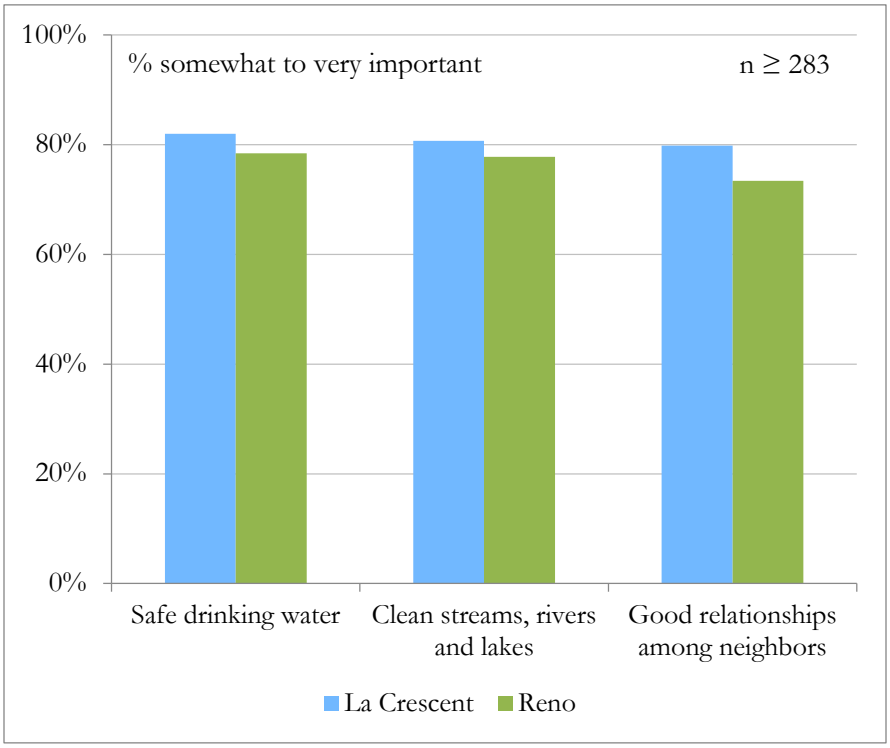

Figure 1. Respondents' perceived importance of the qualities of a community

3.1.2 **Perspectives on Water Resources**

What are respondents' beliefs about water resources?

Respondents were asked to report their familiarity with water issues in their watershed on a four-point scale from not at all familiar (1) to very familiar (4). Respondents were also asked to rate the quality of water in the stream, lake or river closest to them and in the Mississippi River on a five-point scale from very poor (1) to very good (5). Respondents were asked to rate a series of statements regarding their beliefs about water pollution, water resource protection, and conservation practices on a five-point scale from strongly disagree (-2) to strongly agree (+2). Respondents were asked to identify individuals or groups (e.g., landowners, farmers, urban residents) responsible for protecting water resources. Finally, respondents were also asked to rate statements about their personal responsibility for water resource protection on a five-point scale from strongly disagree (-2) to strongly agree (+2).

La Crescent watershed:

Almost half of the respondents (47%) reported that they are moderately to very familiar with water issues in their watershed (Appendix E, Table 7). A majority of respondents (53%) rated the quality of water in the stream, lake or river closest to them as good to very good. About a quarter of respondents (25%) rated the quality of water in the Mississippi River as good to very good (Appendix E, Table 8).

A vast majority of respondents agreed that water pollution affects human health (93%), and that excessive water runoff causes soil and nutrient loss (90%). A majority of respondents somewhat to strongly agreed that water resources in their community (60%) and in Minnesota (54%) are adequately protected. A vast majority of respondents agreed that conservation practices protect aquatic life (89%) and that conservation practices contribute to quality of life in their community (83%). (Appendix E, Table 9, Figure 2).

Respondents assigned responsibility for water protection to multiple actors in their community. While 19% of respondents reported that landowners should be responsible, 18% believed that local government should be responsible for water protection (Appendix E, Table 11). A vast majority of respondents somewhat to strongly agreed that it is their personal responsibility to make sure that what they do on their land doesn't contribute to water resource problems (90%) (Appendix E, Table 14).

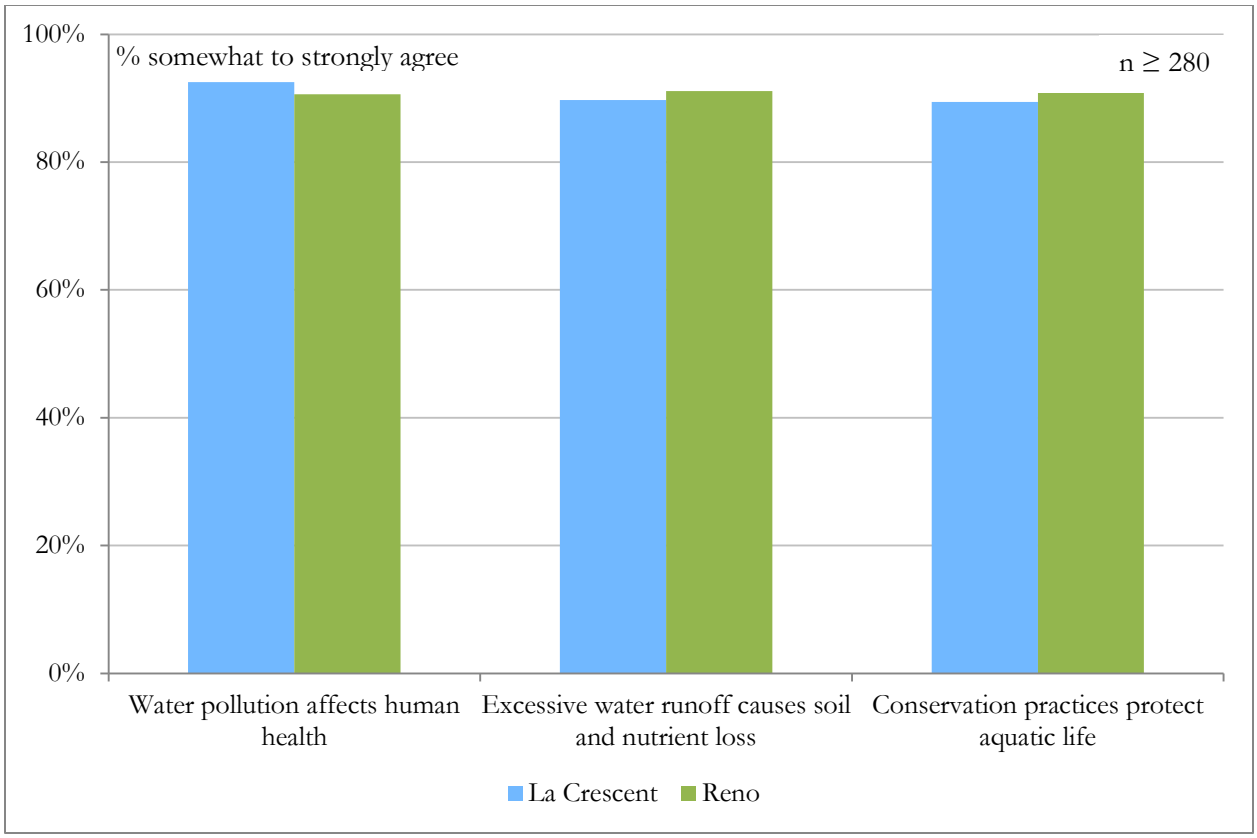

Figure 2. Respondents' beliefs about water pollution and conservation practices

Reno watershed:
More than half of the respondents (53%) reported that they are moderately to very familiar with water issues in their watershed (Appendix F, Table 7). A majority of respondents (65%) rated the quality of water in the stream, lake or river closest to them as good to very good. About a quarter of respondents (25%) rated the quality of water in the Mississippi River as good to very good (Appendix F, Table 8).

A vast majority of respondents agreed that water pollution affects human health (91%), and that excessive water runoff causes soil and nutrient loss (91%). A majority of respondents somewhat to strongly agreed that water resources in their community (60%) and in Minnesota (54%) are adequately protected. A vast majority of respondents agreed that conservation practices protect aquatic life (91%) and that conservation practices contribute to quality of life in their community (88%). (Appendix F, Table 9, Figure 2).

While 19% of respondents reported that landowners should be responsible, 18% believed that local government should be responsible for water protection (Appendix F, Table 11). A vast majority of respondents somewhat to strongly agreed that it is their personal responsibility to make sure that what they do on their land doesn't contribute to water resource problems (88%) (Appendix F, Table 14).

Are respondents concerned about the consequences of water pollution?
Respondents were asked to indicate the extent to which they perceive potential sources of water pollutants/issues as problems, on a four-point scale from not a problem (1) to severe problem (4). The survey

also inquired about respondents' concerns related to the consequences of water pollution for various uses or purposes. Response was on a five-point scale from strongly disagree (-2) to strongly agree (+2).

La Crescent watershed:
On average, respondents in La Crescent watershed rated fertilizer management for crop production, fertilizer management for lawn/turf care, pesticide/herbicide application, soil erosion from farmland, and stream bank erosion as the five biggest sources of pollutants/issues in their watershed (Appendix E, Table 12). A vast majority of respondents somewhat to strongly agreed that they are concerned about the consequences of water pollution for future generations (90%), aquatic life (88%), and their family's health (85%) (Appendix E, Table 13).

Reno watershed:
On average, respondents in Reno watershed rated soil erosion from farmland, pesticide/herbicide application, stream bank erosion, fertilizer management for crop production, and fertilizer management for lawn/turf care as the five biggest sources of pollutants/issues in their watershed (Appendix F, Table 12). A vast majority of respondents somewhat to strongly agreed that they are concerned about the consequences of water pollution for future generations (91%), aquatic life (85%), and their family's health (86%) (Appendix F, Table 13).

3.1.3 **Perspectives on Water Resource Protection**

Do respondents and their communities have the ability to protect water resources?
Respondents were asked to rate the extent to which they agreed with a series of statements about their own ability and their community's ability to protect water resources on a five-point scale from strongly disagree (-2) to strongly agree (+2). The survey also inquired about respondents' perceived capability to take actions to protect water resources. Respondents were asked to rate their capability to take actions to protect water resources on a four-point scale from not at all capable (1) to very capable (4).

La Crescent watershed:
Most respondents (92%) agreed that by taking an active part in conservation, people can keep water clean in Minnesota. Most respondents (80%) also agreed that their use of conservation practices contributes to healthy water resources. A majority of respondents (59%) also agreed that they have the knowledge and skills to use conservation practices on their land. However, more than two-thirds of respondents (68%) either disagreed with or were unsure about the statement that they have the money they need to use conservation practices on their land. A vast majority of respondents (79%) also disagreed or were unsure that they have the equipment to adopt a new conservation practice. While about two-thirds of respondents (64%) agreed that farmers in their community have the ability to work together to change land use practices, a majority of respondents either disagreed or were unsure that their community has the leadership (77%) and financial resources (81%) it needs to protect water resources (Appendix E, Table 14, Figure 3).

More than two-thirds of respondents (70%) reported that they are moderately to very capable of maintaining conservation practices on their land/farm. Most respondents also reported that they are moderately to very capable of using a new conservation practice (59%) and changing land use practices to reduce impacts on water resources (59%). However, a smaller proportion of respondents (42%) felt moderately to very capable of influencing decision making about water resources in their community (Appendix E, Table 15).

Reno watershed:

Most respondents (88%) agreed that by taking an active part in conservation, people can keep water clean in Minnesota. Most respondents (84%) also agreed that their use of conservation practices contributes to healthy water resources. About two-thirds of respondents (67%) also agreed that they have the knowledge and skills to use conservation practices on their land. However, more than two-thirds of respondents (70%) either disagreed or were unsure that they have the money they need to use conservation practices on their land. A vast majority of respondents (77%) also disagreed or were unsure that they have the equipment to adopt a new conservation practice. While almost three-fourths of respondents (73%) agreed that farmers in their community have the ability to work together to change land use practices, a majority of respondents either disagreed or were unsure that their community has the leadership (68%) and financial resources (78%) it needs to protect water resources (Appendix F, Table 14, Figure 3).

A majority of respondents reported that they are moderately to very capable of using a conservation practice (56%) and maintaining conservation practices (71%) on their land/farm. Most respondents (56%) also reported that they are moderately to very capable of influencing decision making about water resources in their community (Appendix F, Table 15).

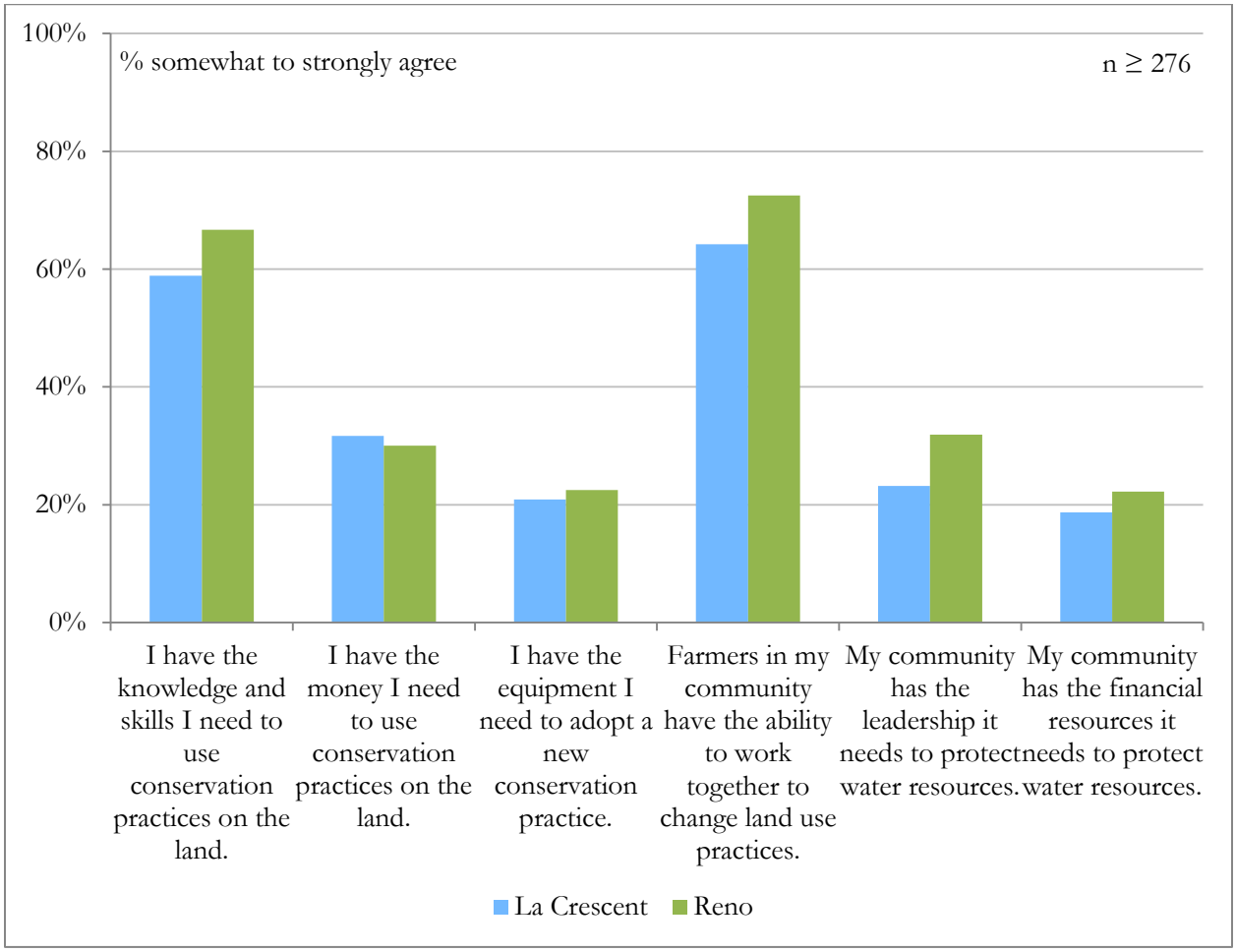

Figure 3. Respondents' beliefs about their and their community's ability to protect water resources

Do respondents feel personally obligated to protect water resources?

Respondents were asked to rate the extent to which they felt personal obligation to engage in various actions to protect water resources on a five-point scale from strongly disagree (-2) to strongly agree (+2). Respondents were also asked to rate a series of statements about whether they identify as environmental stewards on a five-point scale from strongly disagree (-2) to strongly agree (+2).

La Crescent watershed:

A vast majority of respondents reported feeling personal obligation to maintain their land/farm in a way that does not contribute to water resource problems (85%), do whatever they can to prevent water pollution (83%), and use conservation practices on their land/property (74%). However, fewer respondents felt personal obligation to work with other community members to protect water resources (39%), talk to others about conservation practices (37%), and attend meetings or public hearing about water (22%) (Appendix E, Table 16, Figure 4). A vast majority of respondents (79%) agreed that they think of themselves as someone who is very concerned with environmental issues. Most respondents (74%) also think of themselves as an environmental steward (Appendix E, Table 17)

Reno watershed:

A vast majority of respondents reported feeling personal obligation to maintain their land/farm in a way that does not contribute to water resource problems (84%), do whatever they can to prevent water pollution (84%), and use conservation practices on their land/property (78%). However, fewer respondents felt personal obligation to work with other community members to protect water resources (41%), talk to others about conservation practices (43%), and attend meetings or public hearing about water (28%) (Appendix F, Table 16, Figure 4). More than three-fourths of respondents (76%) agreed that they think of themselves as someone who is very concerned with environmental issues. Most respondents (74%) also think of themselves as an environmental steward (Appendix F, Table 17)

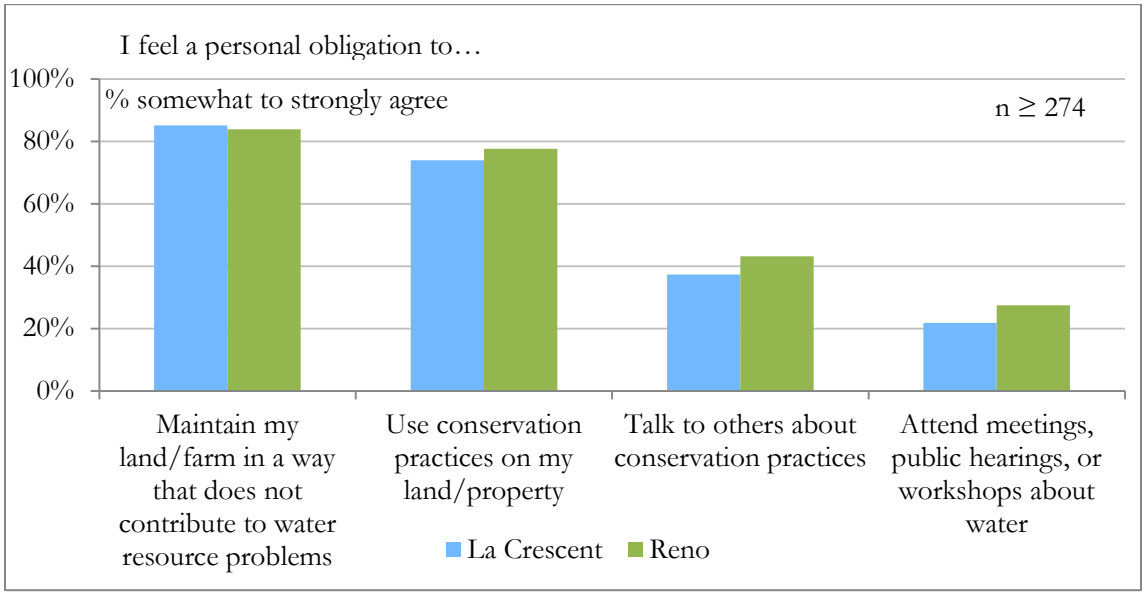

Figure 4. Respondents' feelings of personal obligation to protect water resources

3.1.4 **Conservation Practice Adoption**

What practices do respondents currently use and what practices are they likely to use in the future?
Respondents were asked to indicate if they currently use and intend to use 16 different practices on their property.

La Crescent watershed:
A majority of respondents reported that they currently use practices such as "fertilizers/pesticides on lawns and gardens at recommended rates" (80%), perennial crops (73%), "plant trees as a windbreak on the land/property" (72%), "protect wetlands on the land/property" (64%), and woodland management (56%). Smaller proportions of respondents reported that they use practices such as rain garden (15%), agriculture waste management facility or system (18%), and rain barrel or cistern to store water (25%) (Figure 5). Of the respondents who reported using their land for agricultural production (n = 49), 34% reported following a nutrient management plan on their farm (Appendix E, Table 18). Among agricultural producers, 47% reported moderate to heavy use of soil testing and other methods to determine optimal fertilizer rates. A majority of agricultural producers (59%) reported that they are not familiar with University of Minnesota's guidelines for nutrient application (Appendix E, Table 19). A majority of respondents reported that they intend to use "fertilizers/pesticides on lawns and gardens at recommended rates" (77%), perennial crops (83%), "plant trees as a windbreak on the land/property" (79%), "protect wetlands on the land/property" (71%), and woodland management (71%) in the future (Appendix E, Table 18).

Reno watershed:
A majority of respondents reported that they currently use practices such as "fertilizers/pesticides on lawns and gardens at recommended rates" (81%), perennial crops (77%), conservation tillage practices (75%), "plant trees as a windbreak on the land/property" (70%), and storage basins/ponds or water and sediment control basins (67%). Smaller proportions of respondents reported that they use practices such as rain garden (15%), agriculture waste management facility or system (34%), and rain barrel or cistern to store water (27%) (Figure 5). Of the respondents who reported using their land for agricultural production (n = 91), 43% reported following a nutrient management plan on their farm (Appendix F, Table 18). Among agricultural producers, most reported moderate to heavy use of soil testing and other methods to determine optimal fertilizer rates (64%), and spring application of nitrogen fertilizer (59%) (Appendix F, Table 19). A majority of respondents reported that they intend to use "fertilizers/pesticides on lawns and gardens at recommended rates" (76%), perennial crops (77%), conservation tillage practices (80%), "plant trees as a windbreak on the land/property" (73%), and storage basins/ponds or water and sediment control basins (71%) in the future (Appendix F, Table 18).

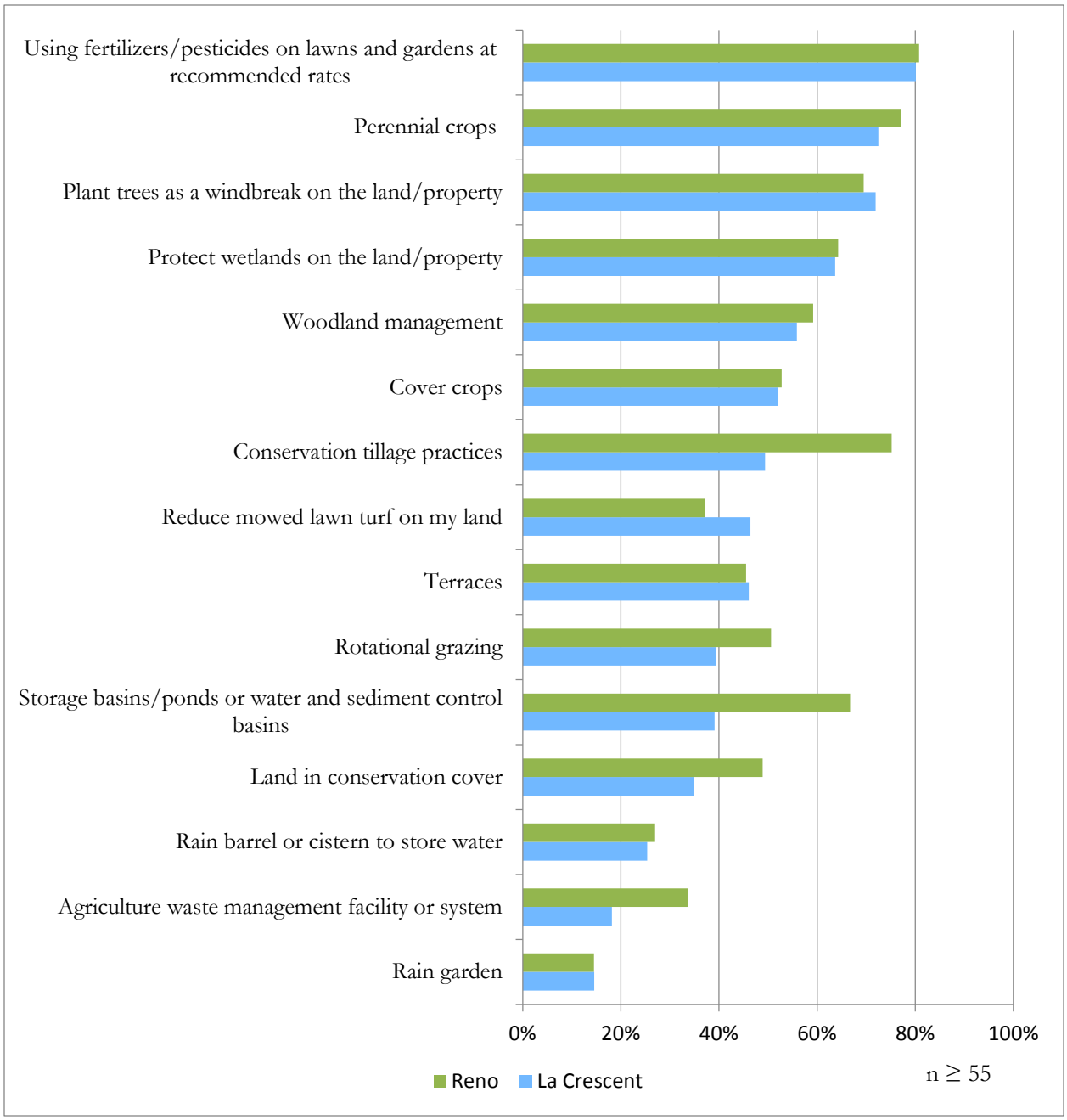

Figure 5. Respondents' current use of conservation practices

What factors influence respondents' decision making about conservation practices?

Respondents were asked to rate a series of factors that affect their decision making about conservation practices and structures on a five-point scale from not at all important (1) to extremely important (5).

La Crescent watershed:

On average, the top 5 factors that respondents rated as most important in their decision making about the use of conservation practices and structures were protecting groundwater, controlling erosion, protecting their investment on the land, protecting their land for the next generation, and protecting or improving water

resources. Factors such as increasing yield and long-term profitability of their farm were relatively less important when making decisions about the use of conservation practices and structures (Appendix E, Table 20, Figure 6).

Reno watershed:
Respondents in Reno watershed also rated protecting groundwater, controlling erosion, protecting their land for the next generation, protecting their investment on the land, and protecting or improving water resources as the top 5 most important factors in their decision making about the use of conservation practices and structures. Respondents in Reno watershed rated increasing yield, availability of financial assistance/cost share, and increasing long-term profitability of their farm as relatively less important factors in their decision making about the use of conservation practices and structures (Appendix F, Table 20, Figure 6).

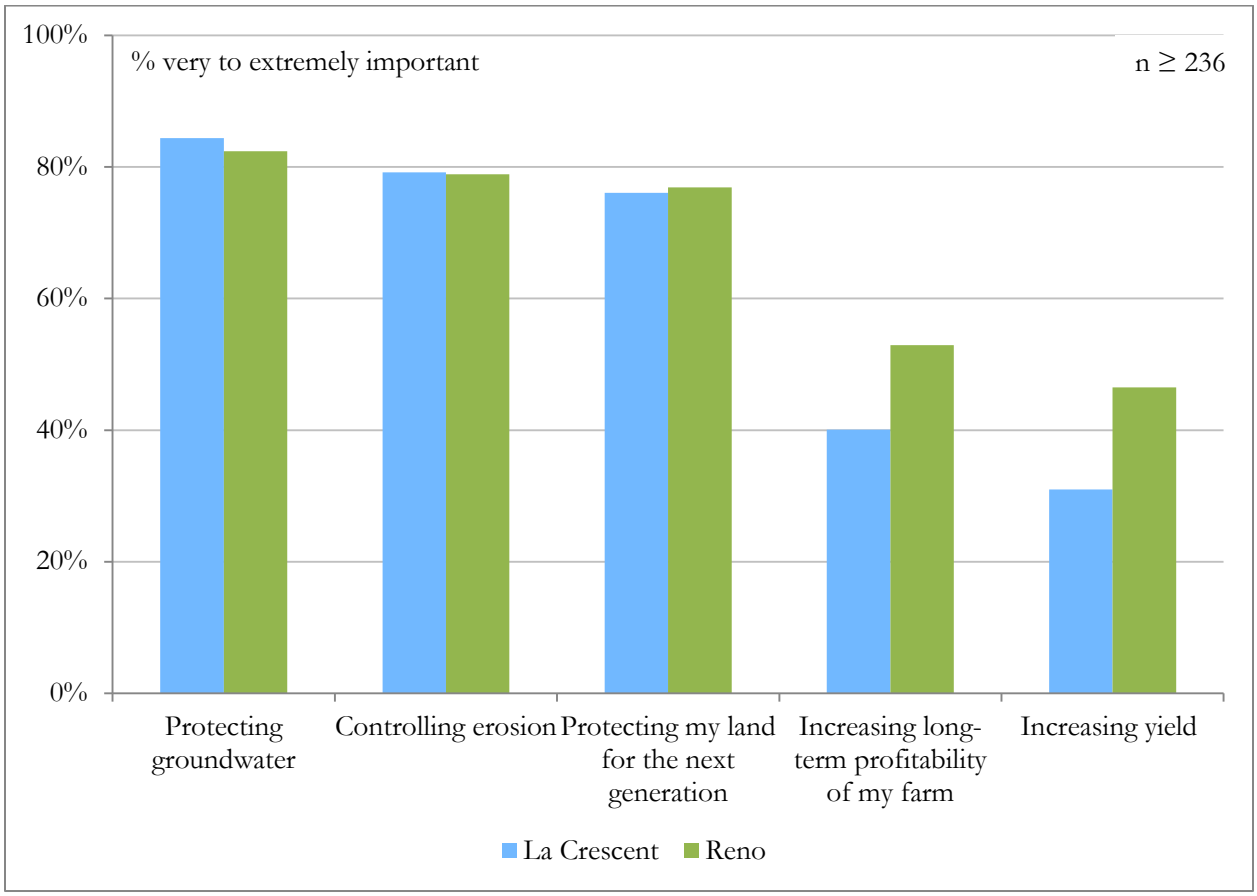

Figure 6. Factors that influence respondents' decisions to use conservation practices and structures on their land

What would increase the likelihood that respondents would adopt or maintain conservation practices?

Respondents were asked to rate a series of statements about conditions or actions that might influence their adoption or continued use of conservation practices on a five-point scale from strongly disagree (-2) to strongly agree (+2).

La Crescent watershed:

A majority of respondents (53%) reported that they would be more likely to adopt new conservation practices or continue to use practices if they had access to financial resources to help them adopt conservation practices. Almost half of the respondents (49%) agreed that they would be more likely to adopt new conservation practices or continue to use practices if they knew more about the wildlife benefits of conservation practices. While most respondents did not disagree with most of the statements about conditions or actions that might influence their adoption or continued use of conservation practices, respondents were generally unsure or neutral in their responses. For example, most respondents were unsure whether they would be more likely to adopt new conservation practices or continue to use practices if they could get equipment to adopt new conservation practices (52%), or if conservation program requirements were less complex (57%) (Appendix E, Table 21).

Reno watershed:

A majority of respondents in the Reno watershed (54%) also reported that they would be more likely to adopt new conservation practices or continue to use practices if they had access to financial resources to help them adopt conservation practices. Almost half of the respondents (47%) agreed that they would be more likely to adopt new conservation practices or continue to use practices if they had evidence that the conservation practice improved water resources. Similar to the findings in La Crescent watershed, respondents in Reno watersheds were generally unsure or neutral in their responses. For example, most respondents were unsure whether they would be more likely to adopt new conservation practices or continue to use practices if they could be enrolled in a program that recognizes local conservation stewards (Appendix F, Table 21).

3.1.5 Community Engagement & Action

How engaged are respondents in their community?

Respondents were asked to indicate the extent to which they had engaged in seven civic actions in the past 12 months on a five-point scale from never (1) to weekly or more (5).

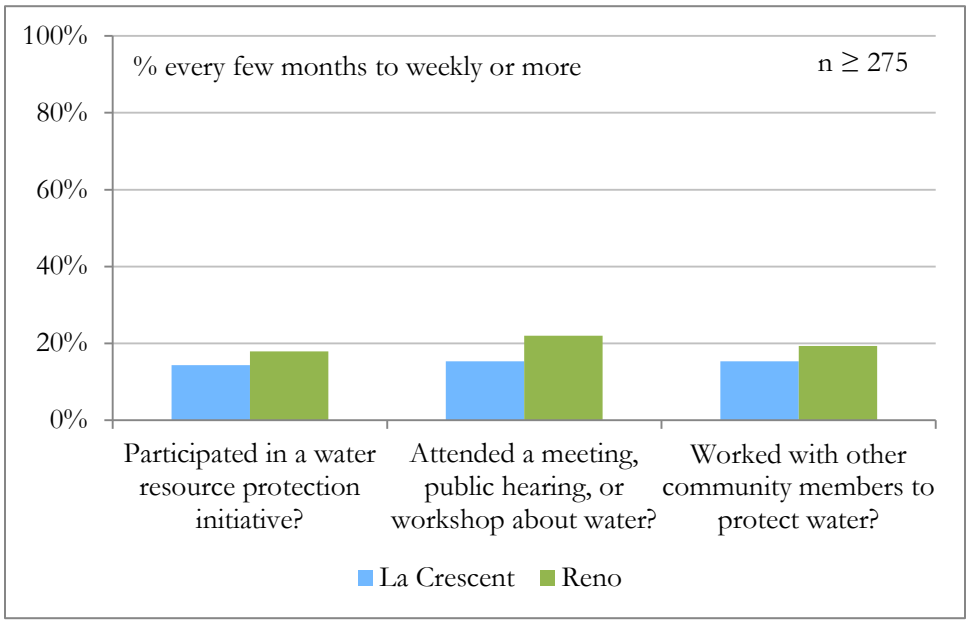

Figure 7. Respondents' current engagement in civic actions

La Crescent watershed:

Almost half of the respondents (48%) reported that they have volunteered for community organizations or events in the past 12 months. Most respondents reported that they have never talked to others about conservation practices (54%), participated in a water resource protection initiative (86%), and taken a leadership role around water resource conservation in the community (92%) (Appendix E, Table 22, Figure 7).

Reno watershed:

More than half of the respondents (53%) reported that they have volunteered for community organizations or events in the past 12 months. Most respondents reported that they have never talked to others about conservation practices (51%), participated in a water resource protection initiative (82%), and taken a leadership role around water resource conservation in the community (91%) (Appendix F, Table 22, Figure 7).

How likely are respondents to be engaged in civic actions in the future?

Respondents were asked to indicate the extent to which they intend to engage in seven civic actions in the next 12 months on a five-point scale from most certainly not (-2) to most certainly will (+2).

La Crescent watershed:

Most respondents were either unsure or did not intend to engage in civic actions such as talking to others about conservation practices (68%), working with other community members to protect water (83%), and attending a meeting, public hearing, or workshop about water (84%) (Appendix E, Table 23).

Reno watershed:

Most respondents were either unsure or did not intend to engage in civic actions such as talking to others about conservation practices (60%), working with other community members to protect water (77%), and attending a meeting, public hearing, or workshop about water (80%) (Appendix F, Table 23).

Who influences respondents' decisions about conservation?

Respondents were asked to rate the extent to which individuals or groups influence their decisions about conservation on a four-point scale from not at all (1) to a lot (4). Respondents were also asked to list their three most trusted sources of information regarding conservation on their land/farm.

La Crescent watershed:

On average, the five individuals or groups with the biggest influence on La Crescent respondents' conservation decision-making are family, neighbors, the MN Department of Natural Resources, county's Soil and Water Conservation District (SWCD), and the MN Pollution Control Agency. Seed/input dealer, farmer-led councils, and local farmers' union were least likely to have an influence on respondents' conservation decision-making (Appendix E, Table 24). Overall, respondents' three most trusted sources of information were MN Department of Natural Resources (35%), their family (28%), and their neighbors (24%) (Appendix F, Table 25).

Reno watershed:

On average, the five individuals or groups with the biggest influence on Reno respondents' conservation decision-making are family, county's Soil and Water Conservation District (SWCD), farmers, neighbors, and the Natural Resources Conservation Service. Farmer-led councils, certified crop advisors, and local farmers' union were least likely to have an influence on respondents' conservation decision-making (Appendix E, Table 24). Overall, respondents' three most trusted sources of information were county's Soil and Water Conservation District (28%), family (27%), and MN Department of Natural Resources (23%) (Appendix F, Table 25).

To what extent is there a perceived social norm of civic action?

Respondents were asked to rate a series of statements regarding social norms of conservation action on a five-point scale from strongly disagree (-2) to strongly agree (+2).

La Crescent watershed:

A majority of respondents agreed that people who are important to them expect them to maintain their land in a way that does not contribute to water resource problems (72%), and use conservation practices on their land (57%). Most respondents either disagreed or were unsure that people who are important to them work with other community members to protect water (66%), and talk with others about conservation practices (72%) (Appendix E, Table 26).

Reno watershed:

Almost three-fourths of respondents (73%) agreed that people who are important to them expect them to maintain their land in a way that does not contribute to water resource problems. Most respondents (63%) also agreed that people who are important to them expect them to use conservation practices on their land. A majority of respondents either disagreed or were unsure that people who are important to them work with other community members to protect water (54%), and talk with others about conservation practices (59%) (Appendix F, Table 26).

3.1.6 **Subgroup Comparison**

What are important differences between subgroups of respondents?

Watershed

There were no significant differences between respondents in La Crescent and Reno watersheds in their sociodemographic characteristics (e.g., age, gender) except in years lived in their community and level of formal education. On average, respondents in Reno watershed (Mean = 39 years) had lived in their community for longer than respondents in La Crescent watershed (Mean = 31 years) (Appendix G, Table 2). A greater proportion of respondents in La Crescent watershed had completed some graduate work or obtained a graduate degree than respondents in Reno watershed (Appendix G, Table 3). A greater proportion of respondents in Reno watershed reported using their land for agricultural production than La Crescent respondents (Appendix G, Table 4).

Some notable differences emerged between La Crescent and Reno respondents in their current and intended use of conservation practices, intentions to engage in civic actions, perceptions about potential sources of water pollutant/issues, importance of factors in conservation decision making, and facilitators of conservation practice adoption (Figure 8).

A greater proportion of respondents in Reno watershed reported using conservation practices including storage basins/ponds or water and sediment control basins, and conservation tillage than La Crescent respondents (Appendix G, Table 5). Respondents in Reno watersheds were more likely to take civic actions such as learning more about water resource issues in their watershed, contacting conservation assistance professionals about water resource initiatives, and learning more about conservation practices than La Crescent respondents (Appendix G, Table 6). Respondents in La Crescent believed that improperly sized/maintained septic systems are a greater problem than Reno respondents. Respondents in Reno watershed place greater importance on increasing yield than La Crescent respondents when making decisions about conservation on their land. Reno watershed respondents agreed to a greater extent than La Crescent watershed respondents that they would be more likely to adopt new conservation practices or continue to use practices if they could get higher payments for adopting conservation practices, and if conservation program requirements were less complex (Appendix G, Table 7).

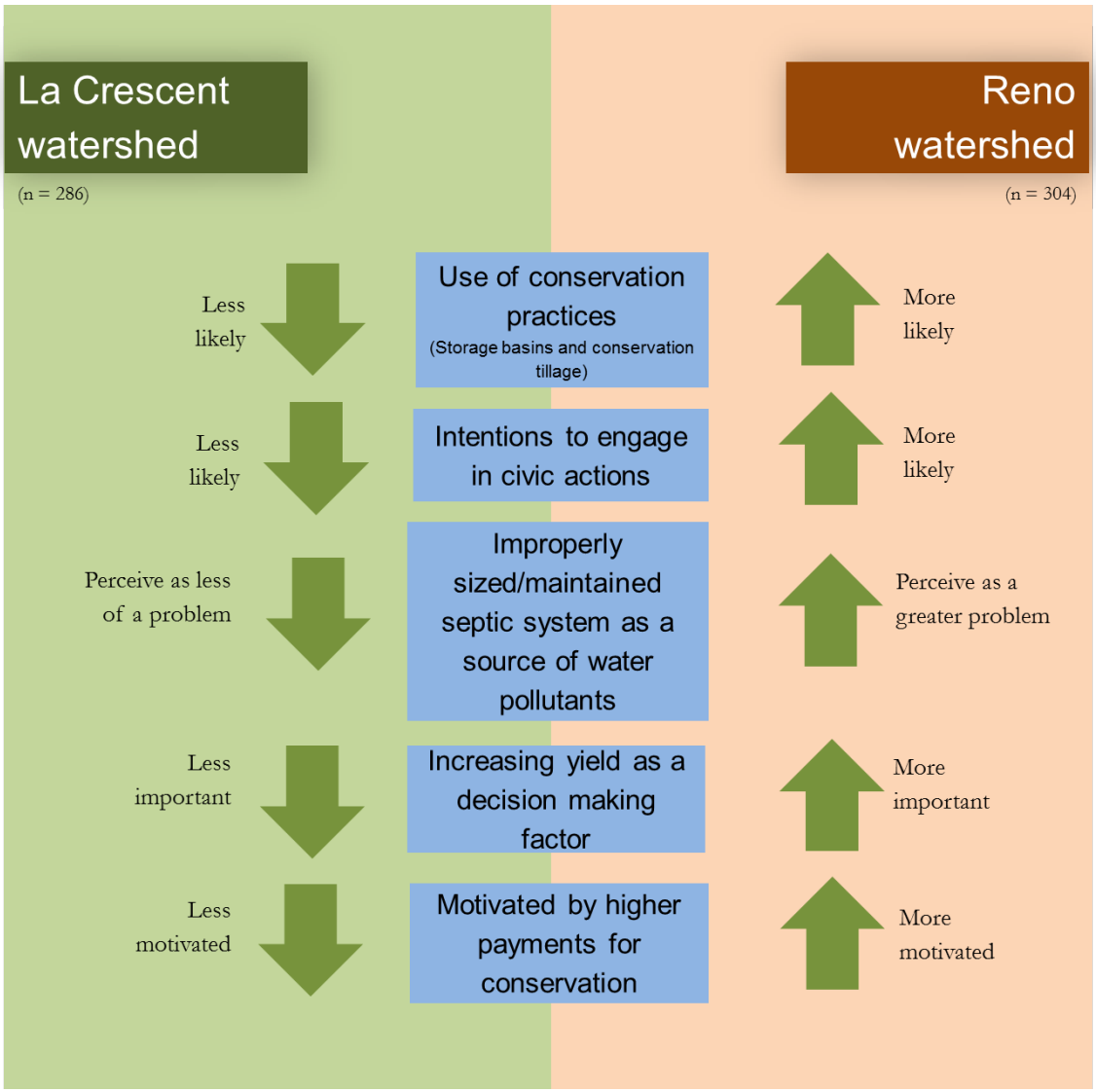

Figure 8. Differences between La Crescent and Reno watershed respondents

Levels of civic engagement

Survey respondents were placed into one of two categories based on their reported levels of engagement in civic actions in the past 12 months: high civic engagement (HCE) respondents (i.e., respondents who have participated in two or more of the seven community activities listed), and low civic engagement (LCE) respondents (i.e., respondents who have participated in fewer than two of the community activities listed).

There were no significant differences between HCE and LCE respondents in sociodemographic characteristics such as age and education. Some notable differences emerged between HCE and LCE respondents in their familiarity with water resources, beliefs about water resource protection, perceived ability and efficacy, personal responsibility, self-identity, personal and social norms, use of conservation practices, and social influences on conservation decision-making (Figure 9).

HCE respondents were more familiar with water resource issues in their watershed than LCE respondents. HCE respondents agreed to a greater extent than LCE respondents that water resources in their community are adequately protected and that excessive water runoff causes soil and nutrient loss. HCE respondents were also more likely to believe in their ability to use conservation practices than LCE respondents. HCE respondents believed to a greater extent than LCE respondents that they are capable of using a new conservation practice, maintaining conservation practices, changing land use practices to reduce impacts on water resources, and influencing decision making about water resources in their community. HCE respondents agreed to a greater extent than LCE respondents that they have the knowledge, skills, and equipment they need to use conservation practices. HCE respondents agreed to a greater extent than LCE respondents that it is their personal responsibility to help protect water (Appendix G, Table 9).

HCE and LCE respondents also differed in their self-identity as environmental stewards. HCE respondents agreed to a greater extent than LCE respondents that they think of themselves as an environmental steward. There were significant differences between HCE and LCE respondents in their feelings of personal obligation, or personal norms. HCE respondents agreed to a greater extent than LCE respondents that they feel a personal obligation to i) do whatever they can to prevent water pollution, ii) maintain their land/farm in a way that does not contribute to water resource problems, iii) use conservation practices on their land, iv) talk to others about conservation practices, v) work with other community members to protect water resources, and vi) attend meetings or public hearings about water (Appendix G, Table 10).

HCE respondents also reported feeling greater social pressures to engage in conservation actions than LCE respondents. HCE respondents agreed to a greater extent than LCE respondents that people who are important to them expect them to i) use conservation practices on their land, ii) maintain their land in a way that does not contribute to water resource problems, iii) attend meetings or public hearings about water, and iv) work with other community members to protect water. Further, HCE respondents agreed to a greater extent than LCE respondents that people who are important to them i) talk to others about conservation practices, ii) work with other community members to protect water, and iii) attend meetings or public hearings about water (Appendix G, Table 10).

There were significant differences between HCE and LCE respondents in their current and intended use of conservation practices. Overall, a greater proportion of HCE respondents use conservation practices such as storage basins/ponds or water and sediment control basins, conservation tillage practices, terraces, agriculture waste management facility or system, "protect wetlands on the land/property", and woodland management than LCE respondents (Appendix G, Table 12). A greater proportion of HCE respondents intend to use practices such as cover crops, rain barrel, and rain garden in the future than LCE respondents (Appendix G, Table 12).

Significant differences were also found between HCE and LCE respondents in the extent to which different groups influence their conservation decision-making. HCE respondents reported that they were influenced to a greater extent than LCE respondents by individuals and groups such as their family, farmers, neighbors, their county's SWCD, university researchers, state agencies (e.g., MNDNR, MPCA), the NRCS, local extension agent, and their agronomist/agricultural advisor (Appendix G, Table 13).

There were differences between HCE and LCE respondents in the factors that facilitate their adoption of conservation practices. For example, HCE respondents agreed to a greater extent that they are more likely to install new conservation practices or continue to use practices if they i) had help with the physical labor of

implementing and maintaining conservation practices, ii) had access to financial resources to help them adopt conservation practices, iii) could attend a workshop or field day on conservation practices, iv) enrolled in a program that recognizes local conservation stewards, and v) had evidence that conservation practice improved water resources (Appendix G, Table 14).

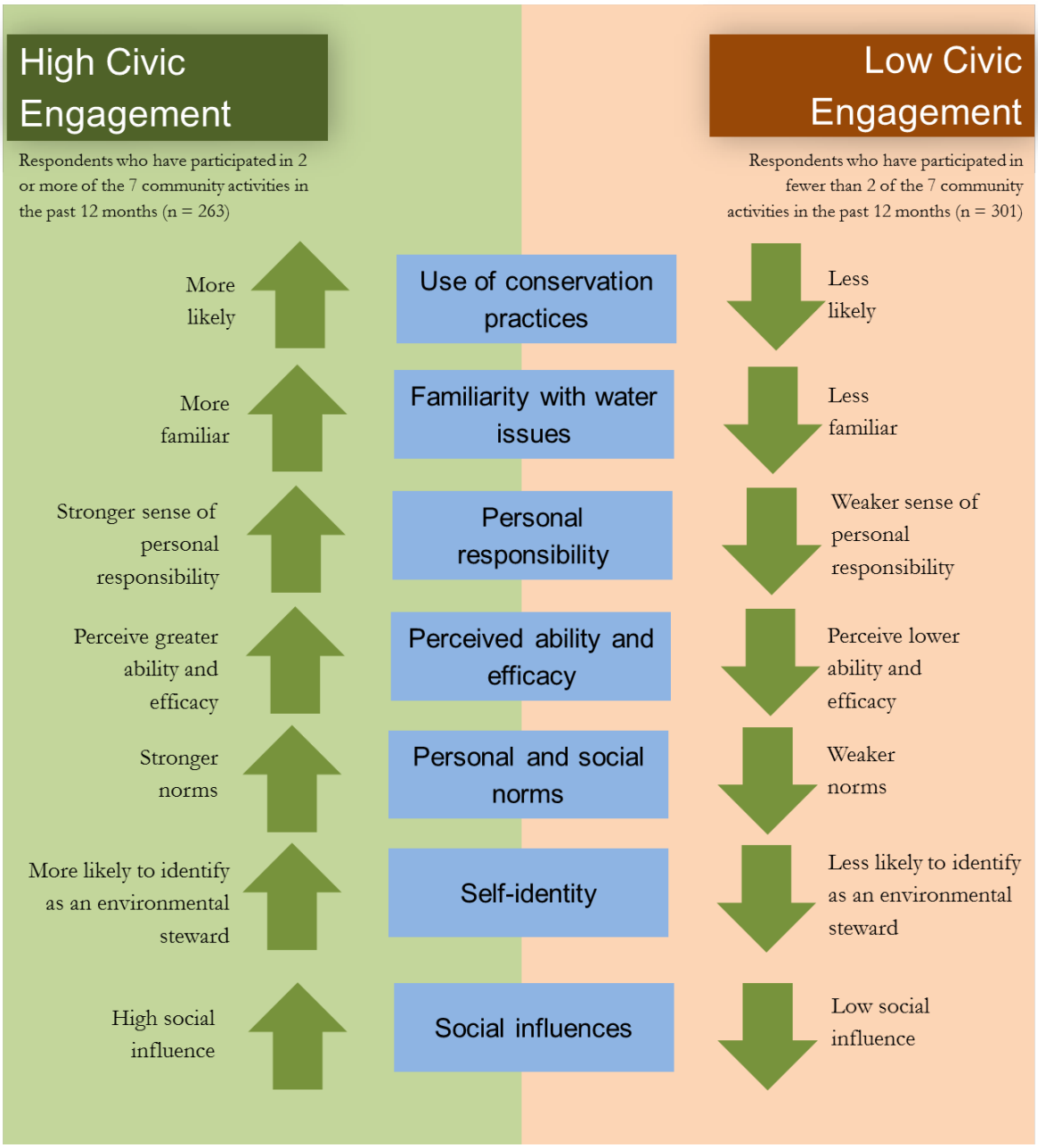

Figure 9. Differences between respondents with varying levels of civic engagement

3.2 Geospatial Analysis Findings

Findings from geospatial analyses are visualized in the following maps and organized into four broad themes: perceived value of clean water, familiarity with water issues, current use of conservation practice, and intention to engage in conservation in the future.

3.2.1 Perceived value of clean water

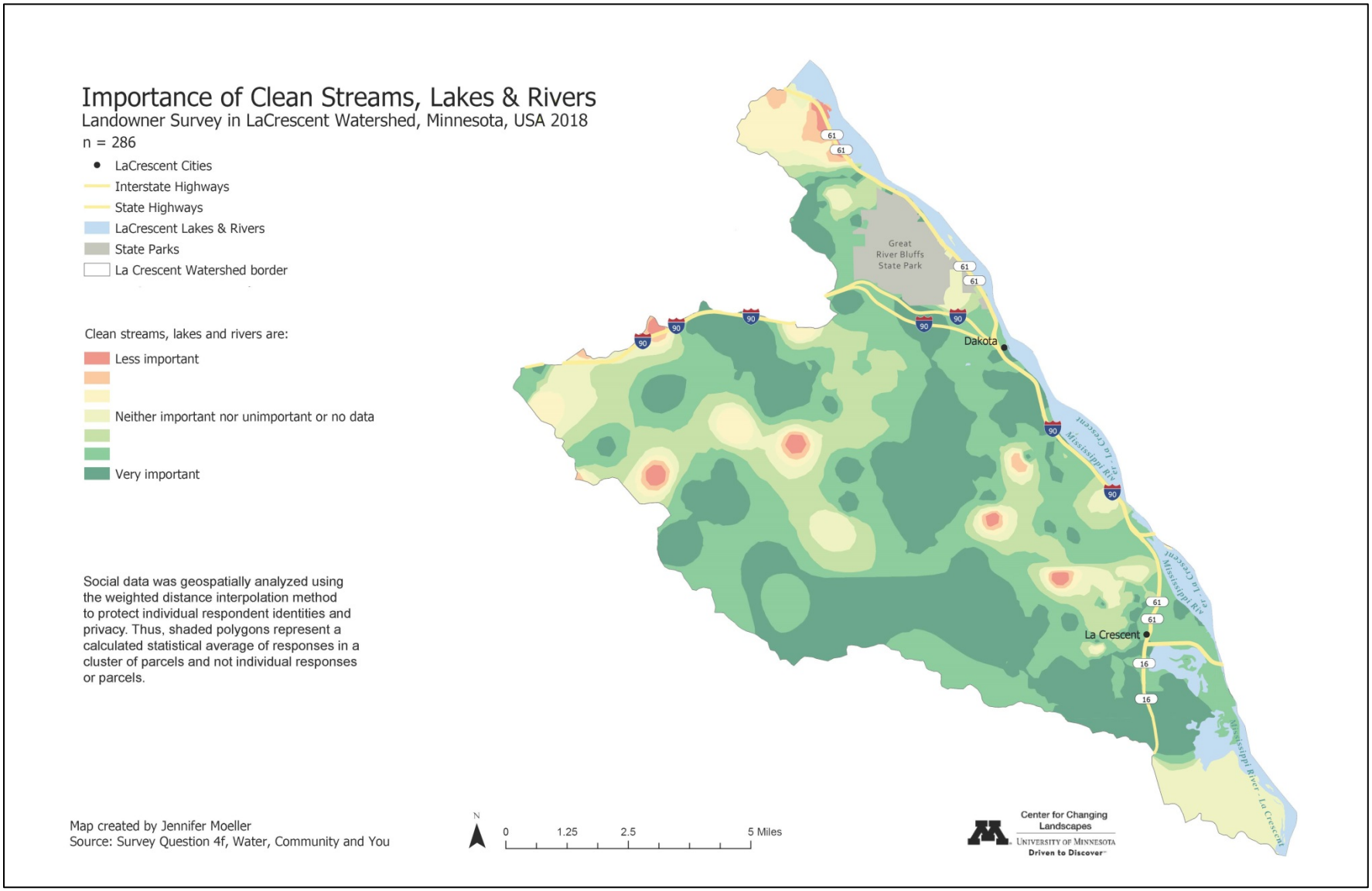

Figure 10. Landowners' perceived importance of clean water in the La Crescent watershed

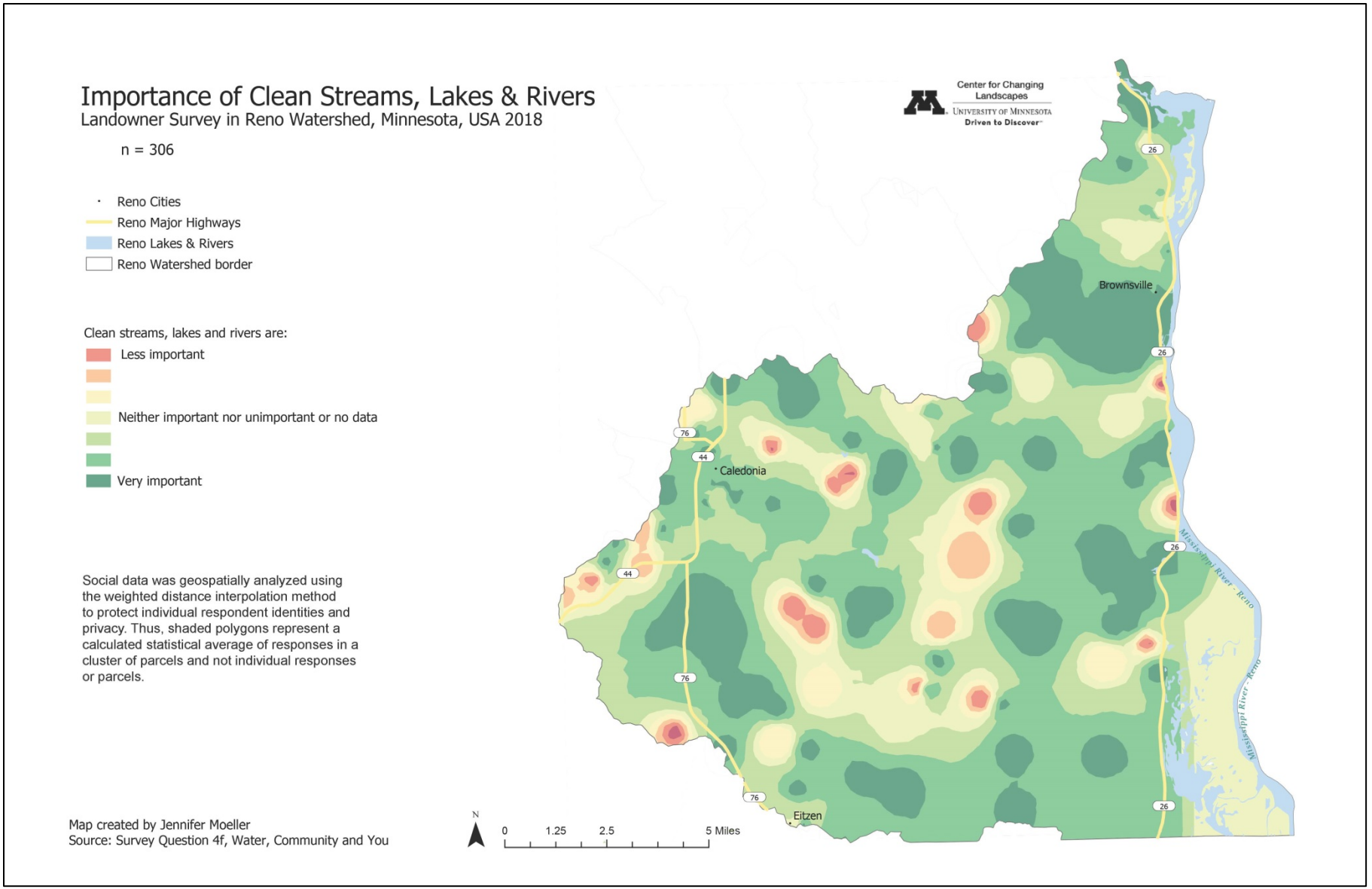

Figure 11. Landowners' perceived importance of clean water in the Reno watershed

3.2.2 Familiarity of water issues

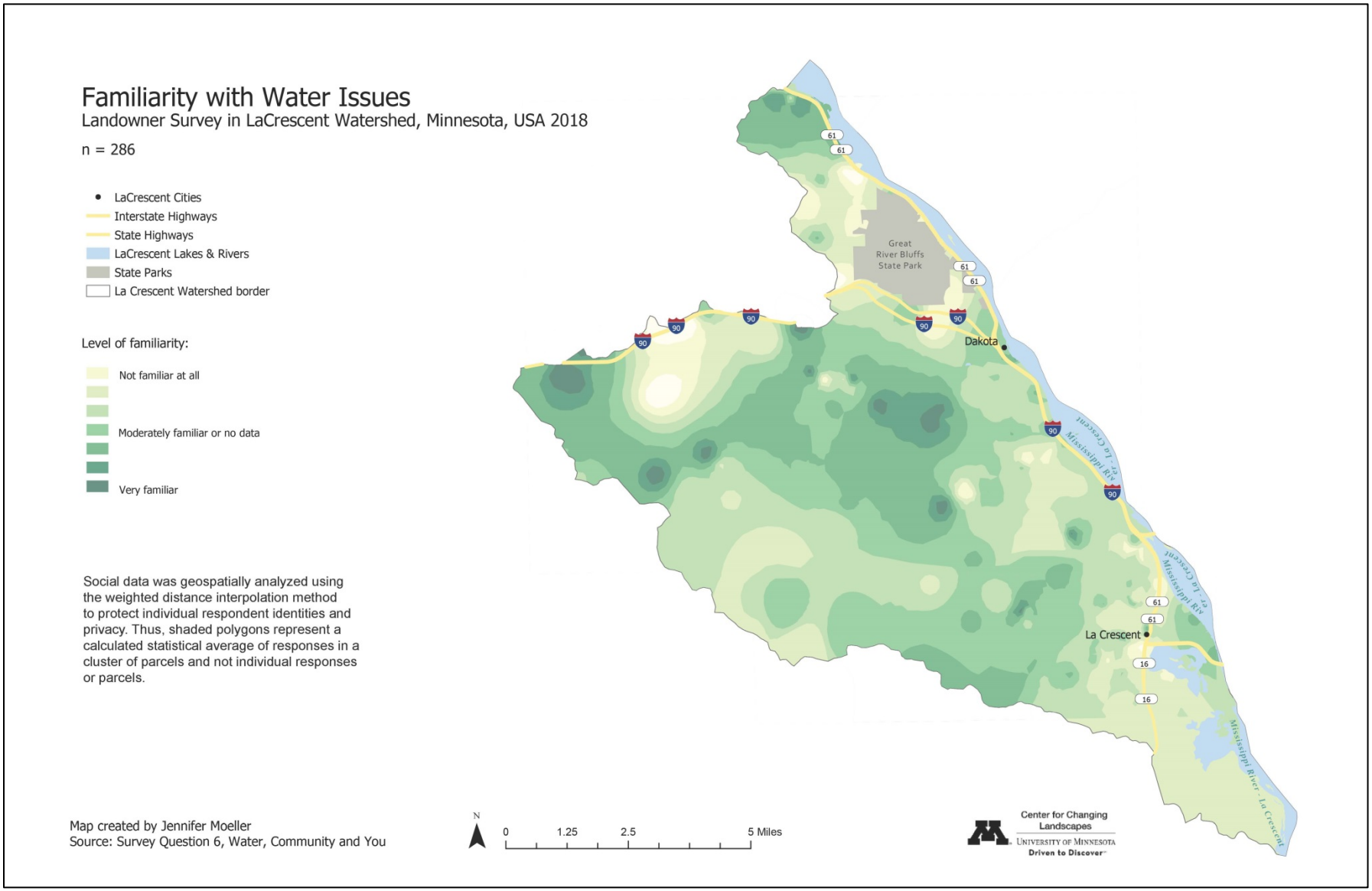

Figure 12. Landowners' familiarity with water issues in the La Crescent watershed

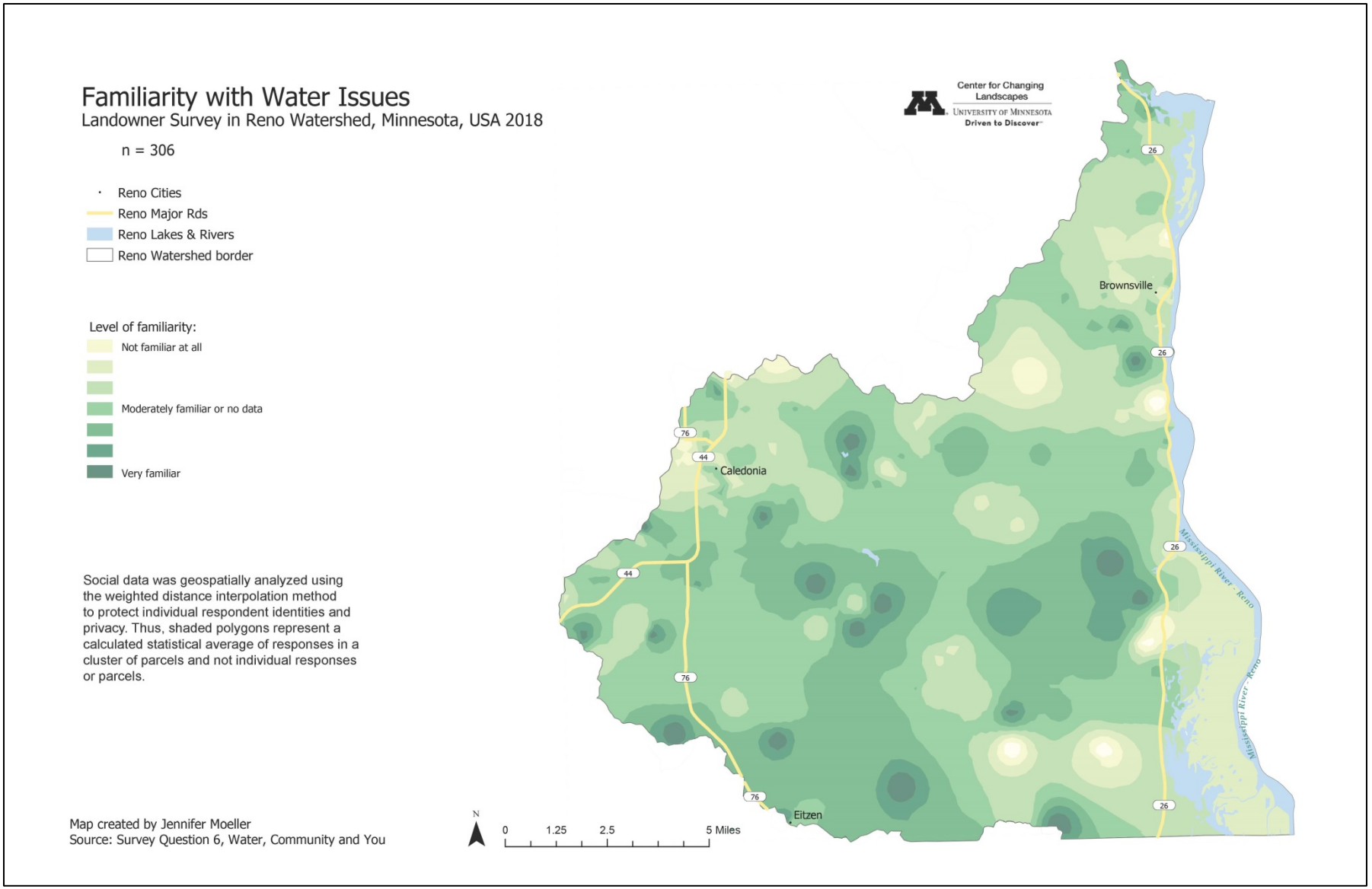

Figure 13. Landowners' familiarity with water issues in the Reno watershed

3.2.3 Current use of conservation practices

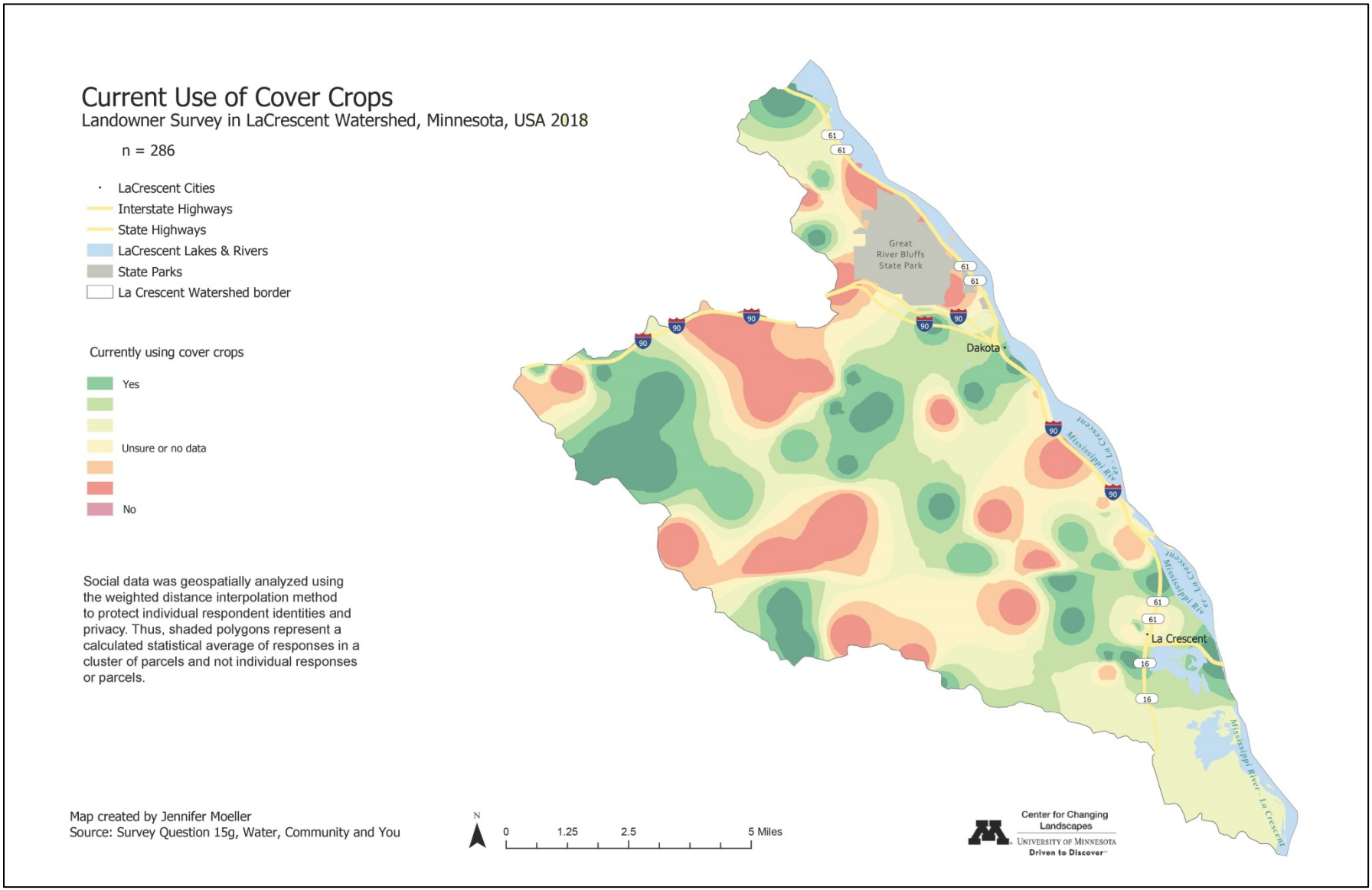

Figure 14. Landowners' current use of cover crops in the La Crescent watershed

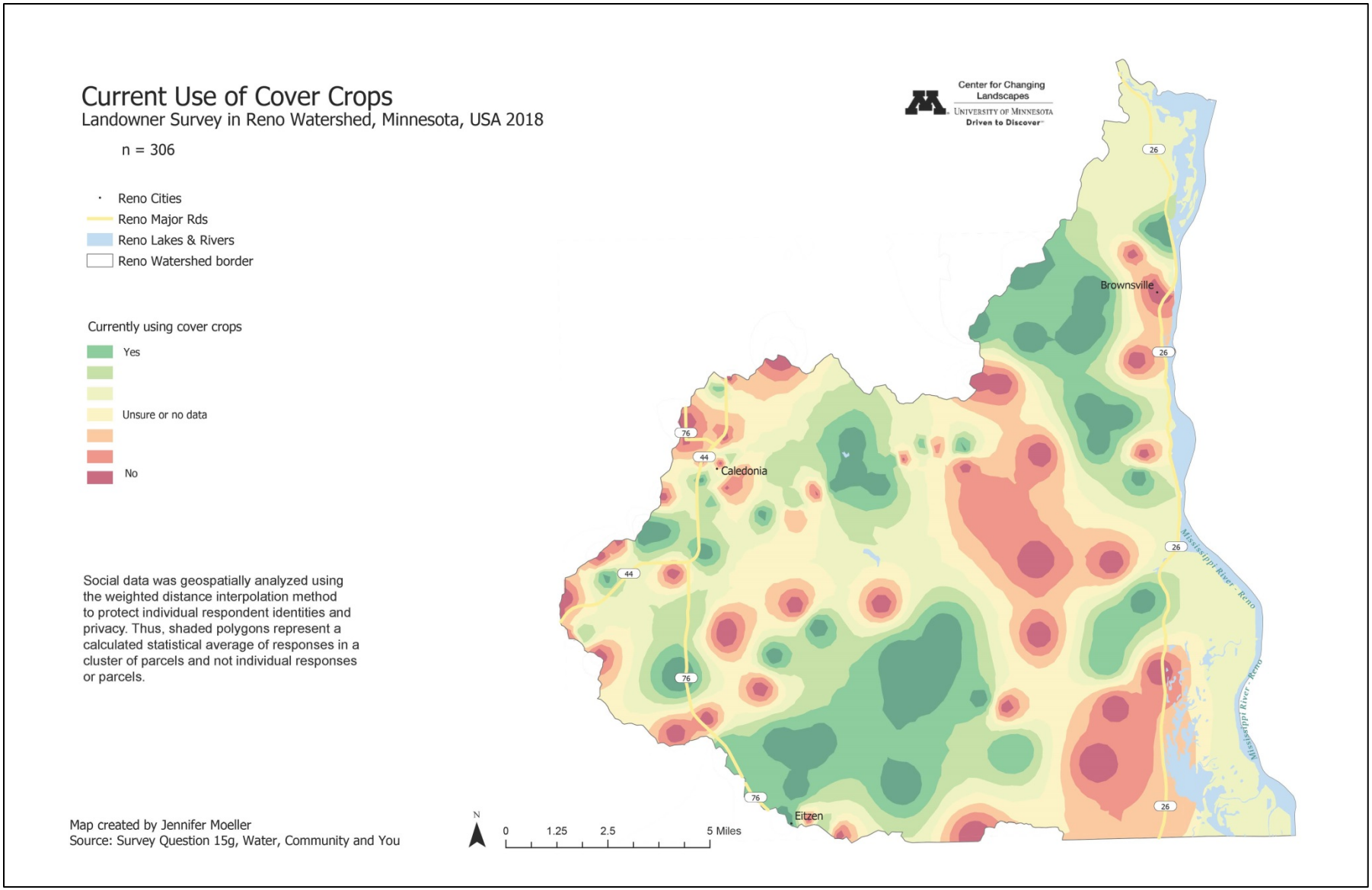

Figure 15. Landowners' current use of cover crops in the Reno watershed

3.2.4 Intentions to engage in conservation

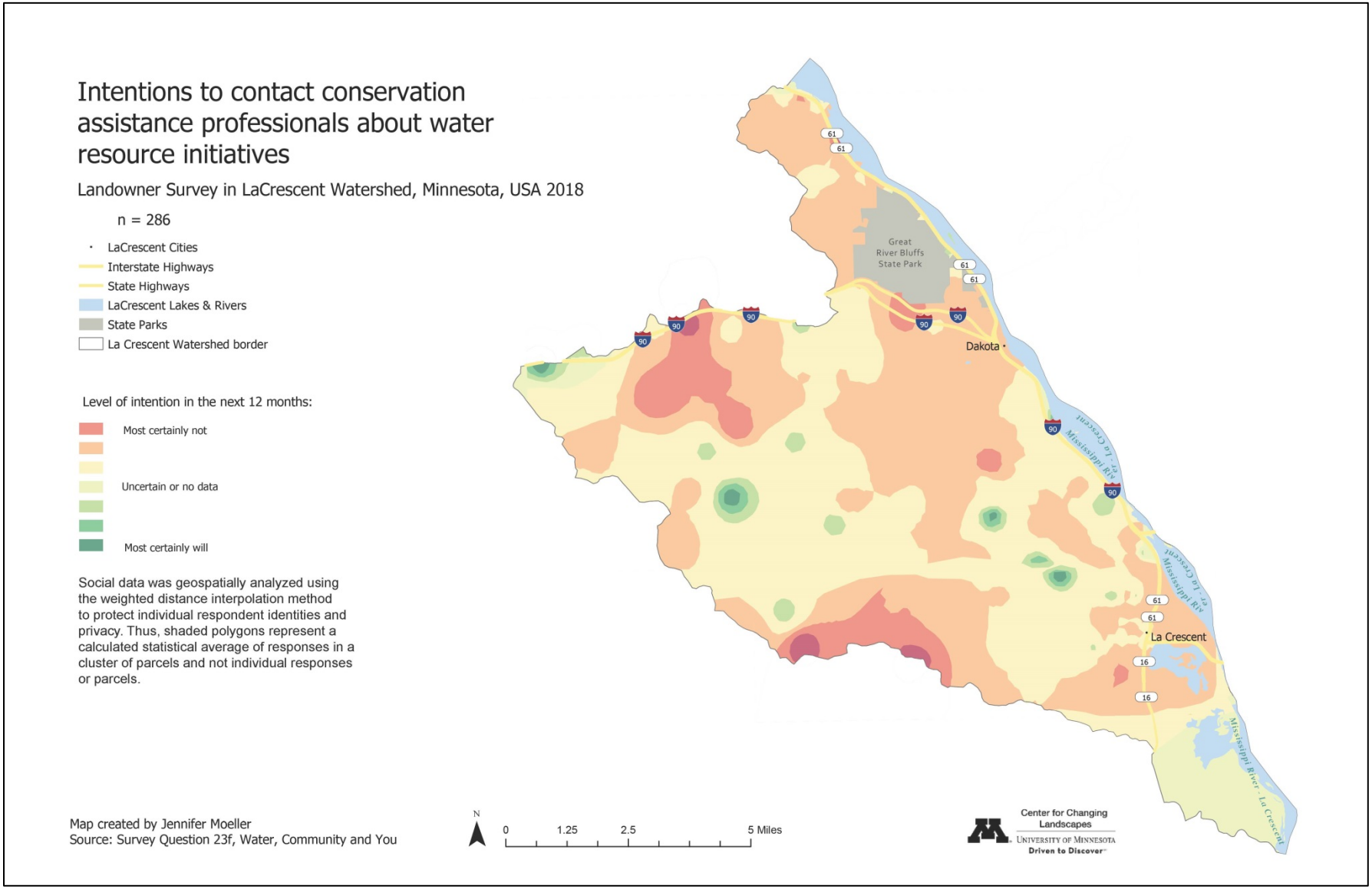

Figure 16. Landowners' intentions to contact conservation assistance professionals in the next 12 months, La Crescent watershed

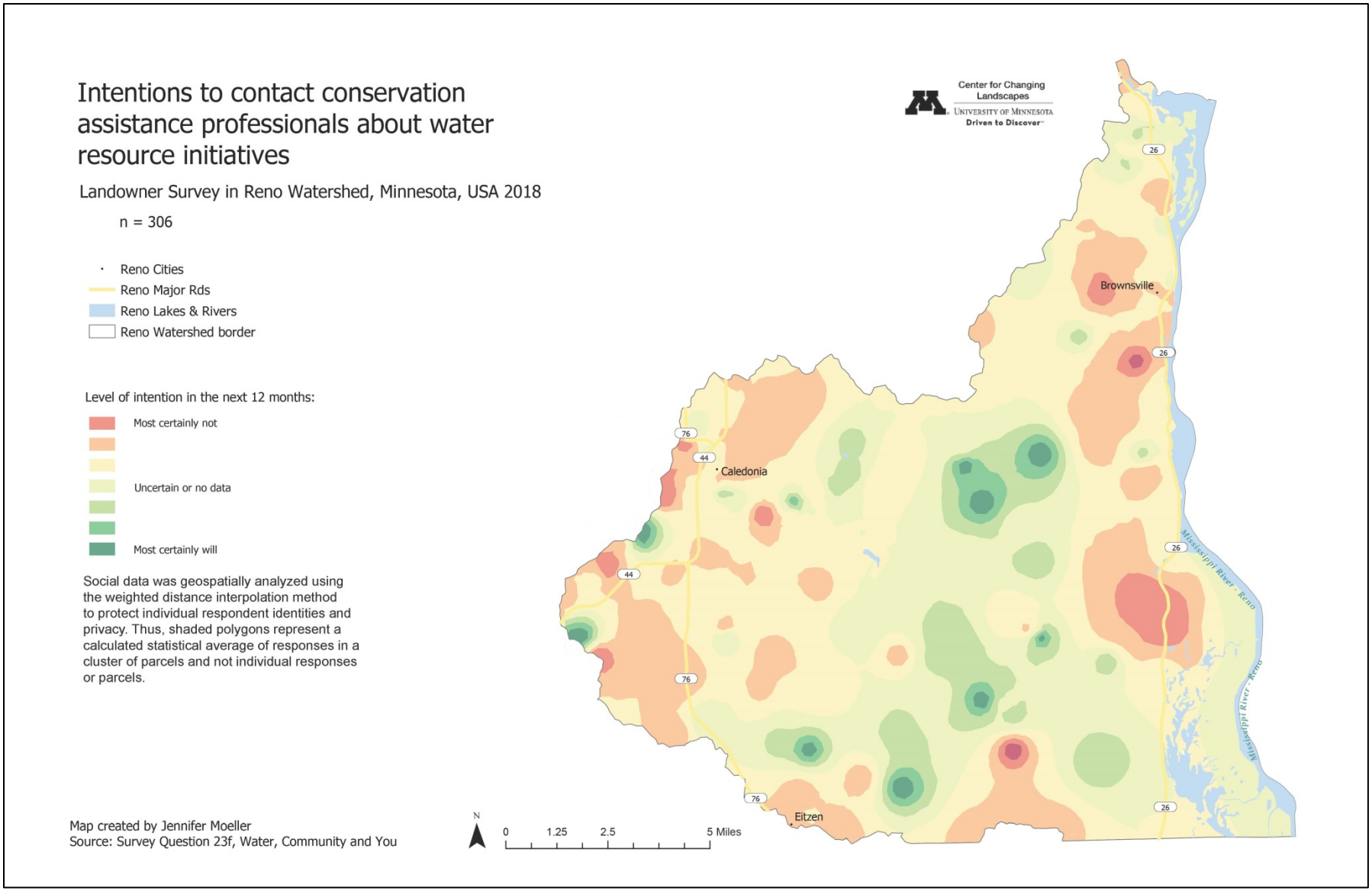

Figure 17. Landowners' intentions to contact conservation assistance professionals in the next 12 months, Reno watershed

4. Conclusions

This project's aim was to provide a social science-based assessment of conservation behavior among landowners in the La Crescent and Reno watersheds. Specifically, this study investigated the drivers of, and constraints to, conservation action among watershed landowners. Findings from this study are intended to inform and enhance conservation programming and to facilitate future communication about conservation.

Social influences drive conservation decision making

Study findings suggest that conservation decision making is a social process. The biggest influencers on landowners' conservation decision making were family, neighbors, farmers, county's SWCD, state agencies (e.g, MPCA, MNDNR), and the Natural Resources Conservation Service. Across the two watersheds, family and MNDNR were the most trusted sources of information about conservation. There were also significant differences between respondents with varying levels of civic engagement. High civic engagement (HCE) respondents (i.e., respondents who have participated in two or more of the seven community activities listed), were influenced to a greater extent by groups such as SWCD, and state agencies. Landowners are clearly influenced by multiple groups in their conservation decision making. These actors should be included in discussions about water resource protection. Given that many agencies and organizations at the state and local levels are influential, coordinated and consistent messaging about conservation and water resource issues from organizations is needed. Strategies that promote information exchange among various stakeholders is likely to be effective.

Access to financial resources and benefits of conservation practices drive conservation practice adoption

Survey findings show that landowners value clean water, are aware of and concerned about water pollution, and believe that it is their personal responsibility to address water resource issues. Most landowners surveyed believed that conservation practices protect aquatic life and contribute to quality of life in their community. Most landowners also feel a sense of personal obligation to protect water resources. In particular, HCE respondents reported feeling a stronger sense of personal obligation than LCE respondents. Survey findings also indicate that environmental and community benefits of conservation practices were important factors in landowners' decision making. On average, protecting groundwater, controlling erosion, protecting land for the next generation, and protecting or improving water resources were the most important factors in landowners' decision making. Increasing yield and long-term profitability of their farm were less important factors in landowners' conservation decision making.

Access to financial resources appears to be a major factor that would increase the likelihood of conservation practice adoption among landowners surveyed. Respondents in La Crescent and Reno watersheds reported that they would be more likely to adopt a new conservation practice or continue to use practices if they had access to financial resources to help them adopt new conservation practices. In particular, landowners who are already engaged in conservation (i.e., HCE respondents) are more likely to use conservation practices if they had access to financial resources. Along with access to financial resources, feedback about wildlife and water quality benefits also seems to be important factors in landowners' decisions to use conservation practices.

Lack of financial resources, equipment, and community leadership are primary constraints to landowners' conservation action

Lack of equipment, personal and community financial resources, and community leadership were major constraints to landowners' conservation action. Landowners believe that they have the knowledge and skills needed to use conservation practices on their land, and believe that they are capable of using and maintaining conservation practices. However, most respondents believe that they lack the equipment and financial resources to use conservation practices. There were notable differences between HCE and LCE respondents in perceptions of ability. Landowners who are more engaged in civic actions to protect water (i.e., HCE respondents) are more likely to believe that they have the knowledge, skills, and equipment they need to use conservation practices. HCE respondents, in particular, believe to a greater extent that they are capable of using and maintaining conservation practices. Lack of community financial resources and leadership also constrained landowners' conservation action. Most landowners agreed that farmers in their community have the ability to work together to change land use practices. However, most landowners reported that their community lacks financial resources and leadership to protect water resources.

There is a significant gap between landowners' individual and collective level actions and norms

Study findings indicate that there is a significant gap between landowners' individual (e.g., practice adoption) and collective level (e.g., civic engagement in water) norms and actions. While a majority of landowners reported feeling a sense of personal obligation to maintain their land/farm in a way that does not contribute to water resource problems and use conservation practices, fewer landowners feel obligated to engage in civic actions (e.g., talk to others about conservation, attend meetings or public hearings about water). Survey findings also reveal a gap between social norms of individual and civic action. While most landowners feel social pressure to use conservation practices, social expectations or norms of civic action are generally low. A majority of landowners reported that they currently use conservation practices and intend to use practices in the future. In contrast, a vast majority of respondents are not engaged in civic actions (e.g., participate in water resource protection initiative) to protect water, or intend to engage in civic actions in the future.

5. Recommendations

We recommend a multi-strategy approach to conservation programming that appeals to landowner values and norms, emphasizes the benefits of conservation practices, encourages personal commitment to conservation, addresses resource constraints, and supports community-building around water.

Appeal to landowners' values and norms, and emphasize benefits of conservation practices
This study shows that landowners in the La Crescent and Reno watersheds value clean water, feel a sense of personal obligation to protect water resources, and perceive environmental and community benefits of conservation practices. Landowners are also concerned about the consequences of water pollution for future generations, aquatic life, and their family's health. Communication campaigns that aim to engage landowners in conservation action should emphasize the environmental (e.g., water quality, wildlife) and community (e.g., quality of life) benefits of conservation practices. Campaigns should also highlight connections between conservation practices and water quality outcomes, and highlight the effectiveness of conservation practices in addressing water pollution. Tailored information strategies that provide specific information about local water conditions, coupled with information about effectiveness of practices in water protection are needed. Strategies that appeal to landowners' norms are also likely to be successful. Past research has shown that norm-based intervention strategies such as encouraging personal commitments influence conservation behavior (e.g., Abrahamse, Steg, Vlek, & Rothengatter, 2005; De Snoo et al., 2010). Research has shown that strategies that encourage individuals to make personal or public commitments to take action can be successful in promoting conservation behavior (e.g., De Snoo et al., 2010). Commitments, when coupled with a plan of action (e.g., I commit to planting perennial/cover crops in the next growing season) can be successful. Benchmarking, or providing social feedback about environmental conditions and behaviors can also be particularly useful to promote practice adoption. Comparing one's behaviors with others leads to normative pressure to keep up with others, and could induce behavior change (De Snoo et al., 2010). Bechmarking along with goal-setting has also had some success in changing environmental behavior (e.g., Abrahamse, Steg, Vlek, & Rothengatter, 2005; De Snoo et al., 2010). Setting specific and attainable goals on practice adoption (e.g., 15% of farmland in perennial crops) followed by frequent feedback about their actions, and the extent to which goals are being met can be a successful strategy. Studies on environmental behavior (e.g., household energy conservation) has shown that a combination of benchmarking, commitment, goal-setting, and feedback has been effective at reinforcing norms and changing behavior (e.g., Abrahamse et al., 2007).

Address individual and community-level constraints to conservation behavior
The biggest constraints to conservation action appear to be lack of equipment, personal and community financial resources, and community leadership. Access to financial resources, on the other hand, is a driver of conservation practice adoption. While many landowners are driven by their values, norms, and awareness of the benefits of conservation practices, adopting and maintaining conservation practices can put a financial strain on many landowners. Thus, programs that provide cost-share and financial assistance can help offset costs associated with practice adoption, and reduce risks associated with adopting and using conservation practices. Lack of equipment was a significant constraint for many landowners. Programs that provide access to equipment on a rental or trial basis could also be successful at promoting practice adoption.

Most landowners also perceive that their community lacks the financial resources and leadership needed to protect water resources. To address this concern, leadership development programs, training, and capacity-building may be needed in communities. Highlighting success stories in water protection can also be a useful

strategy to build momentum for conservation and to demonstrate to landowners that others in their community are taking action to address water pollution.

Tailor civic engagement programs to particular communities

Comparisons between respondent subgroups with varying levels of civic engagement (i.e., HCE vs LCE respondents) reveal some notable differences in their behaviors, sense of responsibility, perceived ability, social norms, and sense of personal obligation. Past research suggests that feelings of personal obligation or personal norms drive landowners' engagement in water resource protection (Pradhananga et al., 2015), and that personal norms are activated by four sets of beliefs: awareness of consequences of water pollution, responsibility for water resource protection, social norms of conservation, and ability to address water resource problems (Pradhananga, Davenport, and Olson, 2015; Pradhananga et al., 2017). Landowners are more likely to be civically engaged in water resource protection if they feel a sense of personal obligation to be engaged. Further, landowners who are aware of the consequences of water pollution, feel a sense of personal and collective responsibility to address water problems, believe that others around them expect them to protect water, and perceive that they have the ability to protect water resources are more likely to feel a sense of personal obligation (Pradhananga et al., 2017). In this study, we found that HCE respondents feel a stronger sense of personal obligation to protect water resources than LCE respondents. Further, HCE respondents feel stronger sense of personal responsibility for water protection, feel greater social pressures to protect water, and perceive greater ability to protect water resources. Civic engagement programs need to be tailored to different audiences depending on their level of current engagement. We recommend that resource managers continue to build momentum with HCE landowners. HCE landowners, because of their greater level of engagement, are likely to be the ones to shift social norms around conservation. Programs that appeal to their values and norms are likely to be successful. For LCE landowners, programs that emphasize the environmental and social impacts of water pollution, promote civic responsibility for water protection, and enhance their ability to protect water resources are likely to activate their sense of personal obligation to be civically engaged. For example, education and technical assistance programs that enhance LCE landowners' knowledge and skills to use conservation practices can not only promote practice adoption, but may also encourage civic participation in water protection.

Support community-building around water

This study revealed a significant gap between landowners' individual-level and collective-level norms and actions. While landowners believe that it is their responsibility to protect water, they also believed that others in their community including farmers, and local government are responsible for water resource protection. Landowners are also likely to adopt conservation practices in the future. However, considerably fewer landowners are currently engaged in or intend to engage in civic actions (e.g., talk to others about conservation, attend meetings or hearings about water). Further, social norms of civic action are generally low. As a result of the lack of engagement with others, landowners may not know much about what others are doing to protect water. Social norms, or "citizen effect" (Morton and Brown, 2011) can have a significant effect on landowners' commitment to water protection. We recommend sharing success stories of water resource protection as a key strategy to promote conservation as a community norm. Success stories of water protection can address issues of risk and uncertainty that may be associated with adopting a new conservation practice (Rogers, 1995). Community events that bring people together to celebrate successes and share information about conservation can help promote the idea that being engaged in water resource issues is a way to be an active community member.

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Appendices

Appendix A: Survey Questionnaire

ID# _____

Water, Community and You
A survey of landowners in La Crescent and Reno Watersheds

Center for Changing Landscapes
UNIVERSITY OF MINNESOTA
Driven to Discover℠

Before you begin:
We are conducting this survey **to better understand landowner opinions and practices** and to improve conservation programming. **This survey is voluntary and confidential.** It should take **about 20 minutes to complete** this questionnaire. Please answer the questions as completely as possible.

Once you've completed the survey:
Please fold it in thirds and mail it back in the enclosed self-addressed stamped envelope.

Thank you for your help!

I. Your Community

First, we would like to know your thoughts on your community.

1. Approximately how many years have you lived in your current community? _____

2. When you think of <u>your community</u>, what first comes to mind? *(Please check one)*

[ ] My neighborhood [ ] My township [ ] My city [ ] My county [ ] My watershed

3. Of your 10 closest neighbors, how many do you know? *(Please check one)*

[ ] 0-1 [ ] 2-3 [ ] 4-6 [ ] 7-8 [ ] 9-10

4. How important are the following qualities of <u>a community</u> to you? *(Please check one box for each row)*

	Very unimportant	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Very important
a. Strong family ties	☐	☐	☐	☐	☐
b. Good relationships among neighbors	☐	☐	☐	☐	☐
c. Opportunities to be involved in community projects	☐	☐	☐	☐	☐
d. Opportunities to express my culture and traditions	☐	☐	☐	☐	☐
e. Opportunities to serve in leadership roles	☐	☐	☐	☐	☐
f. Clean streams, rivers and lakes	☐	☐	☐	☐	☐
g. Safe drinking water	☐	☐	☐	☐	☐
h. Opportunities for outdoor recreation	☐	☐	☐	☐	☐

II. Water (Streams, Lakes, Wetlands and Groundwater)

5. To what extent do you agree or disagree with the following statements? *(Please check one box for each row)*

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. Water resources in <u>my community</u> are adequately protected.	☐	☐	☐	☐	☐
b. Water resources in <u>Minnesota</u> are adequately protected.	☐	☐	☐	☐	☐
e. Water pollution affects human health.	☐	☐	☐	☐	☐
f. Water pollution poses serious threats to the quality of life in my community.	☐	☐	☐	☐	☐
g. Excessive water runoff causes soil and nutrient loss.	☐	☐	☐	☐	☐
h. Conservation practices protect aquatic life (e.g., fish and plants).	☐	☐	☐	☐	☐
i. Conservation practices contribute to quality of life in my community.	☐	☐	☐	☐	☐

6. How familiar are you with water issues in your watershed? [*see enclosed watershed map*]

[ ] Not at all familiar [ ] Slightly familiar [ ] Moderately familiar [ ] Very familiar

7. Before this survey, did you know your property is in the watershed shown on the map?

[ ] Yes [ ] No [ ] My property is not in the shaded watershed

8. Who do you think should be responsible for protecting water in your community? *(Please check all that apply)*

[ ] I should be responsible
[ ] Landowners
[ ] Farmers
[ ] Urban residents
[ ] Local government (e.g., city, county)
[ ] State government

9. In your opinion, how much of a problem are the following potential sources of water pollutants/issues in your watershed *[see map]*? *(Please check one box for each row)*

	Not a problem	Slight problem	Moderate problem	Severe problem	Don't know
a. Industrial discharge to streams, rivers, and lakes	☐	☐	☐	☐	☐
b. Urban land development	☐	☐	☐	☐	☐
c. Improperly sized/maintained septic systems	☐	☐	☐	☐	☐
d. Soil erosion from farmland	☐	☐	☐	☐	☐
e. Wind erosion	☐	☐	☐	☐	☐
f. Stream bank erosion	☐	☐	☐	☐	☐
g. Fertilizer management for lawn/turf care	☐	☐	☐	☐	☐
h. Fertilizer management for crop production	☐	☐	☐	☐	☐
i. Livestock operations	☐	☐	☐	☐	☐
j. Tile drainage	☐	☐	☐	☐	☐
k. Grass clippings and leaves entering storm drains	☐	☐	☐	☐	☐
l. Urban/suburban water runoff	☐	☐	☐	☐	☐
m. Unregulated contaminants (e.g., pharmaceuticals, personal care products)	☐	☐	☐	☐	☐
n. Natural causes (e.g., natural erosion, wildlife)	☐	☐	☐	☐	☐
o. Increased frequency or intensity of storms	☐	☐	☐	☐	☐
p. Pesticide/herbicide application	☐	☐	☐	☐	☐

10. To what extent do you agree or disagree with the following statements? *(Please check one box for each row)*

I am concerned about the consequences of water pollution for…	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. My family's health	☐	☐	☐	☐	☐
b. Future generations	☐	☐	☐	☐	☐
c. Wildlife	☐	☐	☐	☐	☐
d. Farmland	☐	☐	☐	☐	☐
e. Aquatic life (e.g., fish and plants)	☐	☐	☐	☐	☐
f. People in my community	☐	☐	☐	☐	☐
g. People downstream	☐	☐	☐	☐	☐

11. To what extent do you believe you are capable of the following? *(Please check one box for each row)*

	Not at all capable	Slightly capable	Moderately capable	Very capable
a. Using a new conservation practice on the land/farm	☐	☐	☐	☐
b. Maintaining conservation practices on the land/farm	☐	☐	☐	☐
c. Changing land use practices to reduce impacts on water resources	☐	☐	☐	☐
d. Influencing decision making about water resources in your community	☐	☐	☐	☐

12. To what extent do you agree or disagree with the following statements? *(Please check one box for each row)*

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. My use of a conservation practice contributes to healthy water resources.	☐	☐	☐	☐	☐
b. By taking an active part in conservation, people can keep water clean in Minnesota	☐	☐	☐	☐	☐
c. I have the knowledge and skills I need to use conservation practices on the land	☐	☐	☐	☐	☐
d. I have the money I need to use conservation practices on the land	☐	☐	☐	☐	☐
e. I have the equipment I need to adopt a new conservation practice	☐	☐	☐	☐	☐
f. I do not have the time to use conservation practices	☐	☐	☐	☐	☐
g. It is my personal responsibility to help protect water.	☐	☐	☐	☐	☐
h. It is my personal responsibility to make sure that what I do on the land doesn't contribute to water resource problems.	☐	☐	☐	☐	☐
i. Farmers in my community have the ability to work together to change land use practices.	☐	☐	☐	☐	☐
j. My community has the financial resources it needs to protect water resources.	☐	☐	☐	☐	☐
k. My community has the leadership it needs to protect water resources.	☐	☐	☐	☐	☐

13. To what extent do you agree or disagree with the following statements? *(Please check one box for each row)*

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. I think of myself as an environmental steward.	☐	☐	☐	☐	☐
b. I think of myself as someone who is very concerned with environmental issues.	☐	☐	☐	☐	☐
c. To engage in water resource protection is an important part of who I am.	☐	☐	☐	☐	☐

14. To what extent do you agree or disagree with the following statements? *(Please check one box for each row)*

People who are important to me…	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. Expect me to use conservation practices on my land.	☐	☐	☐	☐	☐
b. Expect me to maintain my land in a way that does not contribute to water resource problems.	☐	☐	☐	☐	☐
c. Expect me to attend meetings, public hearings or workshops about water.	☐	☐	☐	☐	☐
d. Expect me to work with other community members to protect water.	☐	☐	☐	☐	☐
e. Attend meetings, public hearings or workshops about water.	☐	☐	☐	☐	☐
f. Talk to others about conservation practices.	☐	☐	☐	☐	☐
g. Work with other community members to protect water.	☐	☐	☐	☐	☐

III. Conservation Practices and Community Engagement

Now, we have questions about your conservation practices and community engagement. Remember, your responses to all of the survey questions are confidential. Please see the factsheet for more information about various conservation practices.

15. Do you use the following practices on your land/property? Do you intend to use these practices on your land/property in the future? *(Please check yes/no for each)*

	Do you use the practice on your land/property now?		Do you intend to use the practice on your land/property in the future?		Not applicable
	Yes	No	Yes	No	
a. Storage basins/ponds or water and sediment control basins	☐	☐	☐	☐	☐
b. Conservation tillage practices (e.g., no till, minimum till)	☐	☐	☐	☐	☐
c. Land in conservation cover (e.g., Conservation Reserve Program)	☐	☐	☐	☐	☐
d. Terraces	☐	☐	☐	☐	☐
e. Agriculture waste management facility or system	☐	☐	☐	☐	☐
f. Rotational grazing	☐	☐	☐	☐	☐
g. Cover crops	☐	☐	☐	☐	☐
h. Perennial crops (e.g., alfalfa, switchgrass)	☐	☐	☐	☐	☐
i. Protect wetlands on the land/property	☐	☐	☐	☐	☐
j. Plant trees as a windbreak on the land/property	☐	☐	☐	☐	☐
k. Woodland management (i.e., addressing invasive species in the woods, using the forestry stewardship plan)	☐	☐	☐	☐	☐
l. Rain barrel or cistern to store water	☐	☐	☐	☐	☐
m. Rain garden	☐	☐	☐	☐	☐
n. Reduce mowed lawn turf on my land	☐	☐	☐	☐	☐
o. Using fertilizers/pesticides on lawns and gardens at recommended rates	☐	☐	☐	☐	☐
p. Other conservation structures (please specify: _____)	☐	☐	☐	☐	☐

16. Do you use your land/property for agricultural production? *(Please check yes or no)*

[ ] Yes *(If yes, answer questions 16a-d)* [ ] No *(If no, skip to question 18)*

16a. How many acres are in agricultural production? _____acres

16b. Approximately what percentage of your income is dependent on agricultural production? ____%

16c. What is your experience with programs that offer financial incentives to farmers for conservation practices? *(Please check one box)*

[ ] Not relevant for my property [ ] Never heard of any [ ] Familiar but not enrolled [ ] Currently enrolled

16d. Do you follow a nutrient management plan on your farm?

[ ] Yes (if yes, answer question 17) [ ] No (if no, skip to question 18)

17. To what extent do you use the following practices to manage nutrients? *(Please check one box for each row)*

	Not familiar with it	Familiar with, but do not use	Minimal use	Moderate use	Heavy use
a. Soil testing and other methods to determine optimal fertilizer rates	☐	☐	☐	☐	☐
b. GPS-facilitated precision agriculture practices such as variable rate fertilizer application	☐	☐	☐	☐	☐
c. Nitrogen stabilizers (e.g., N-Serve)	☐	☐	☐	☐	☐
d. Growing season application of nitrogen fertilizer (e.g., side-dress)	☐	☐	☐	☐	☐
e. Spring application of nitrogen fertilizer	☐	☐	☐	☐	☐
f. Fall application of nitrogen fertilizer	☐	☐	☐	☐	☐
g. Credit nutrients from manure	☐	☐	☐	☐	☐
h. Use of University of Minnesota guidelines for nutrient application	☐	☐	☐	☐	☐
i. Follow setbacks for manure application near sensitive features	☐	☐	☐	☐	☐

18. How important are the following factors in your decisions to use conservation practices and structures on your land? *(Please check one box for each row)*

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
a. Protecting my land for the next generation	☐	☐	☐	☐	☐
b. Contributing to the collective good	☐	☐	☐	☐	☐
c. Protecting my investment in the land	☐	☐	☐	☐	☐
d. Protecting or improving water resources	☐	☐	☐	☐	☐
e. Protecting or improving wildlife habitat	☐	☐	☐	☐	☐
f. Controlling erosion	☐	☐	☐	☐	☐
g. Protecting groundwater	☐	☐	☐	☐	☐
h. Maintaining or improving soil health	☐	☐	☐	☐	☐
i. Reducing nutrient and chemical loss from my land/farm	☐	☐	☐	☐	☐
j. Increasing long-term profitability of my farm	☐	☐	☐	☐	☐
k. Increasing yield	☐	☐	☐	☐	☐
l. My financial ability	☐	☐	☐	☐	☐
m. Availability of financial assistance/cost share	☐	☐	☐	☐	☐
n. Maintaining or improving my way of life	☐	☐	☐	☐	☐
o. Improving quality of life in my community	☐	☐	☐	☐	☐
p. Encouragement of family members	☐	☐	☐	☐	☐
q. My emotional connection to the land	☐	☐	☐	☐	☐
r. Conservation is a part of who I am	☐	☐	☐	☐	☐
s. Other (please specify:_____)	☐	☐	☐	☐	☐

19. To what extent do you agree or disagree with the following statements? *(Please check one box for each row)*

I would be more likely to install new conservation practices or to continue to use practices if…	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. I knew more about the wildlife benefits of conservation practices.	☐	☐	☐	☐	☐
b. I had help with the physical labor of implementing and maintaining conservation practices.	☐	☐	☐	☐	☐
c. I had access to financial resources to help me adopt conservation practices.	☐	☐	☐	☐	☐
d. I could talk to other landowners or farmers who are using conservation practices.	☐	☐	☐	☐	☐
e. I could attend a workshop or field day on conservation practices.	☐	☐	☐	☐	☐
f. I could be enrolled in a program that recognizes local conservation stewards.	☐	☐	☐	☐	☐
g. My neighbors maintained conservation practices.	☐	☐	☐	☐	☐
h. There were regulations that mandated using a conservation practice.	☐	☐	☐	☐	☐
i. Conservation programs were more flexible.	☐	☐	☐	☐	☐
j. I could get higher payments for adopting conservation practices.	☐	☐	☐	☐	☐
k. I could get equipment to adopt new conservation practices.	☐	☐	☐	☐	☐
l. I could learn how to maintain conservation practices for soil conservation.	☐	☐	☐	☐	☐
m. I had evidence that the conservation practice improved water resources.	☐	☐	☐	☐	☐
n. I was compensated for lost crop production because of conservation practices.	☐	☐	☐	☐	☐
o. Conservation program requirements were less complex.	☐	☐	☐	☐	☐
p. I had evidence that conservation practices did not reduce crop yield.	☐	☐	☐	☐	☐
q. A conservation assistance professional would visit my land to discuss conservation practice options.	☐	☐	☐	☐	☐

20. To what extent do the following individuals or groups <u>influence</u> your decisions about conservation on your land/farm? *(Please check one box for each row)*

	Not at all	Slightly	Moderately	A lot	Don't know/Not applicable
a. My family	☐	☐	☐	☐	☐
b. Farmers	☐	☐	☐	☐	☐
c. My neighbors	☐	☐	☐	☐	☐
d. Environmental advocacy organizations	☐	☐	☐	☐	☐
e. My county's Soil and Water Conservation District (SWCD)	☐	☐	☐	☐	☐
f. My financial institution (e.g., financial advisor, loan officer, mortgage lender, etc.)	☐	☐	☐	☐	☐
g. University researchers	☐	☐	☐	☐	☐
h. The MN Department of Natural Resources	☐	☐	☐	☐	☐
i. The MN Pollution Control Agency	☐	☐	☐	☐	☐
j. The MN Department of Agriculture	☐	☐	☐	☐	☐
k. The Farm Service Agency (USDA)	☐	☐	☐	☐	☐
l. The Natural Resources Conservation Service (NRCS)	☐	☐	☐	☐	☐
m. My local extension agent	☐	☐	☐	☐	☐
n. University of Minnesota Extension	☐	☐	☐	☐	☐
o. My county's Farm Bureau	☐	☐	☐	☐	☐
p. Agricultural commodity associations (e.g., Minnesota Corn Growers Association)	☐	☐	☐	☐	☐
q. Certified crop advisors (CCA)	☐	☐	☐	☐	☐
r. Seed/input dealer	☐	☐	☐	☐	☐
s. My local Farmer's Union	☐	☐	☐	☐	☐
t. My local co-op	☐	☐	☐	☐	☐
u. My agronomist/agricultural advisor	☐	☐	☐	☐	☐
v. Farmer-led councils	☐	☐	☐	☐	☐
w. Other (please specify): _____	☐	☐	☐	☐	☐

21. From the previous list (Question 20, a-w), what are your three most <u>trusted sources of information</u> regarding conservation on your land/farm? (*Please list three letters from 20a to w in order of first, second, and third most trusted*)

1. _____ 2. _____ 3. _____

22. How often have you engaged in the following actions in the past 12 months? *(Please check one box for each row)*

In the past 12 months how often have you…	Never	Every few months	Every month	Every two weeks	Weekly or more
a. Volunteered for community organizations or events?	☐	☐	☐	☐	☐
b. Heard about a water resource protection initiative?	☐	☐	☐	☐	☐
c. Participated in a water resource protection initiative?	☐	☐	☐	☐	☐
d. Worked with other community members to protect water?	☐	☐	☐	☐	☐
e. Talked to others about conservation practices?	☐	☐	☐	☐	☐
f. Attended a meeting, public hearing, or workshop about water?	☐	☐	☐	☐	☐
g. Taken a leadership role around water resource conservation in the community?	☐	☐	☐	☐	☐

23. Please rate your intentions to engage in the following actions in the next 12 months. *(Please check one box for each row)*

In the next 12 months, I intend to…	Most certainly not	Probably not	Uncertain	Probably will	Most certainly will
a. Use a new conservation practice on my land	☐	☐	☐	☐	☐
b. Learn more about water resource issues in my watershed	☐	☐	☐	☐	☐
c. Talk to others about conservation practices	☐	☐	☐	☐	☐
d. Work with other community members to protect water	☐	☐	☐	☐	☐
e. Attend a meeting, public hearing or workshop about water	☐	☐	☐	☐	☐
f. Contact conservation assistance professionals (e.g. my soil and water conservation district or the Natural Resources Conservation Service) about water resource initiatives	☐	☐	☐	☐	☐
g. Learn more about conservation practices	☐	☐	☐	☐	☐

24. To what extent do you agree or disagree with the following statements? *(Please check one box for each row)*

I feel a personal obligation to…	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. Do whatever I can to prevent water pollution	☐	☐	☐	☐	☐
b. Maintain my land/farm in a way that does not contribute to water resource problems	☐	☐	☐	☐	☐
c. Talk to others about conservation practices	☐	☐	☐	☐	☐
d. Use conservation practices on my land/property	☐	☐	☐	☐	☐
e. Work with other community members to protect water resources	☐	☐	☐	☐	☐
f. Attend meetings, public hearings, or workshops about water	☐	☐	☐	☐	☐

IV. About You and Your Land/Farm

Finally, we want to know a little bit about you in order to better understand who responded to this survey. Remember, your responses to all of the survey questions are confidential.

25. How would you characterize the quality of water in the stream, lake, or river closest to you? *(Please check one box)*

[ ] Very poor [ ] Poor [ ] Fair [ ] Good [ ] Very good [ ] Don't know

26. How would you characterize the quality of water in the Mississippi River? *(Please check one box)*

[ ] Very poor [ ] Poor [ ] Fair [ ] Good [ ] Very good [ ] Don't know

27. Does the land you own or rent touch a stream, lake, or river? *(Please check yes or no)*

[ ] Yes [ ] No

28. Please describe the ownership arrangement and size of your property. *(Please check all that apply and include acreage)*

Ownership	Approximate Acreage
[ ] I own and manage my own land.	_____
[ ] I rent land to another party.	_____
[ ] I rent land from another party.	_____
[ ] Other (please specify): _____	_____

29. Who makes the management decisions on the land? *(Please check one box)*

[ ] I make my own decisions.

[ ] I leave it up to my renter.

[ ] I leave it up to the landowner/property owner.

[ ] I work together with the renter/landowners to make decisions.

30. In what year were you born? _____ [ ] Prefer not to respond

31. Are you… [ ] Male [ ] Female [ ] Prefer not to respond

32. What is the highest level of formal education you have completed? (Please check one box)

[ ] Did not finish high school

[ ] Completed high school

[ ] Some college but no degree

[ ] Associate degree or vocational degree

[ ] College bachelor's degree

[ ] Some college graduate work

[ ] Completed graduate degree (Masters or PhD)

[ ] Prefer not to respond

33. Which of the following best describes your total household income from all sources in 2017 before taxes? *(Please check one box)*

[ ] Under $20,000

[ ] $20,000 - $49,999

[ ] $50,000 - $74,999

[ ] $75,000 - $99,999

[ ] $100,000 - $149,999

[ ] $150,000 - $199,999

[ ] $200,000 - $249,999

[ ] $250,000 - $299,999

[ ] $300,000 or more

[ ] Prefer not to respond

34. What category best describes you? (Please check all that apply)

[ ] White
For example, German, Irish, English, Italian, Polish, French, Swedish, Norwegian, etc.

[ ] Hispanic, Latino, or Spanish heritage
For example, Mexican or Mexican American, Puerto Rican, Cuban, Salvadoran, Dominican, Colombian, etc.

[ ] Black or African American
For example, African American, Jamaican, Haitian, Nigerian, Ethiopian, Somalian, etc.

[ ] Asian
For example, Chinese, Filipino, Asian Indian, Vietnamese, Hmong, Korean, Japanese, etc.

[ ] American Indian or Alaska Native
For example, Minnesota Chippewa Tribe, Shakopee Mdewakanton Sioux, Navajo Nation, Mayan, Aztec, Nome Eskimo Community, etc.

[ ] Middle Eastern or North African
For example, Lebanese, Iranian, Egyptian, Syrian, Moroccan, Algerian etc.

[ ] Native Hawaiian or Other Pacific Islander
For example, Native Hawaiian, Samoan, Chamorro, Tongan, Fijian, Marshallese, etc.

[ ] Some other race, ethnicity or heritage (Please specify):
_____

[ ] Prefer not to respond

35. Do you have any other comments about your community or water management?

Thank you for your help!

Please complete the survey, fold it in thirds, and mail it back in the enclosed self-addressed stamped envelope.

If you have questions please contact Dr. Amit Pradhananga, Department of Forest Resources, 115 Green Hall, 1530 Cleveland Avenue N., St. Paul, MN 55108. Phone: (612) 624-6726 or by email at prad0047@umn.edu. Cover photo by Robert J Hurt Landscape Photography. Factsheet designed by Cody Venier, University of Minnesota

Appendix B: Survey Cover Letter

[Date]

[First Name] [Last Name]
[Street Address]
[City] [State] [Zip code]

Water, Community and You: A survey of landowners in La Crescent and Reno Watersheds
Information and Consent Form

Dear [First Name] [Last Name],

I am writing to ask for your help in a study about landowners and water resources. The study is being conducted by the Center for Changing Landscapes, University of Minnesota in partnership with Winona County. I am contacting you because you are a landowner in the La Crescent or Reno watersheds and we want to know what you think about water.

The findings from this study will be used to help local resource managers and community leaders better understand landowners' views and to facilitate communication and outreach programs in the area. We really appreciate your taking the time to help us with this study. It should take you only about 20 minutes to complete the questionnaire.

For your reference, a map of the watershed is enclosed.

This survey is voluntary and completely confidential. The risks of participating in this study are minimal. There are no direct benefits to you for participating in this study. You are free to withdraw at any time. Completion of this survey indicates your voluntary consent to participate. Your decision to participate will not affect your current or future relationship with the University of Minnesota. The ID # on the front page of your survey is used to help us track mailings, ensuring that your name is never affiliated with your responses. Please answer the questions as completely as possible. Once you have **completed the questionnaire, fold it in thirds and mail it back in the enclosed self-addressed, postage-paid envelope.**

We would be happy to answer any questions or listen to any comments you may have about this study. Please feel free to contact me by phone at 612-624-6726, or by email at prad0047@umn.edu. If you have any questions or concerns regarding the study and would like to talk to someone other than the researcher(s), you are encouraged to contact the Research Subjects' Advocate Line, D-528 Mayo, 420 Delaware Street S.E., Minneapolis, Minnesota, 55455; telephone (612) 625-1650.

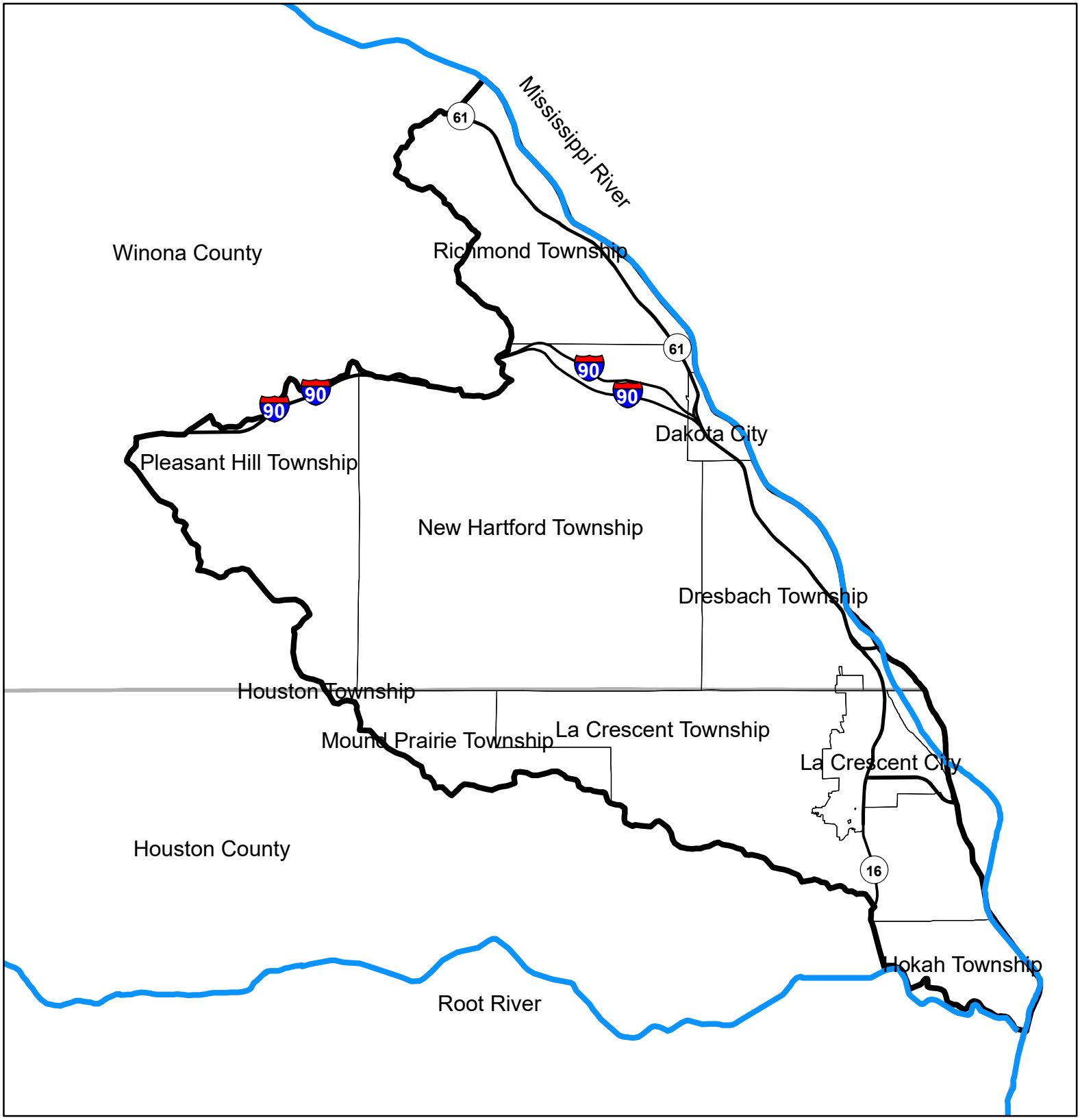
I hope you enjoy completing the questionnaire and I look forward to receiving your response.

Sincerely,

Amit Pradhananga
Center for Changing Landscapes
University of Minnesota

Appendix C: Watershed Maps

La Crescent Watershed



N

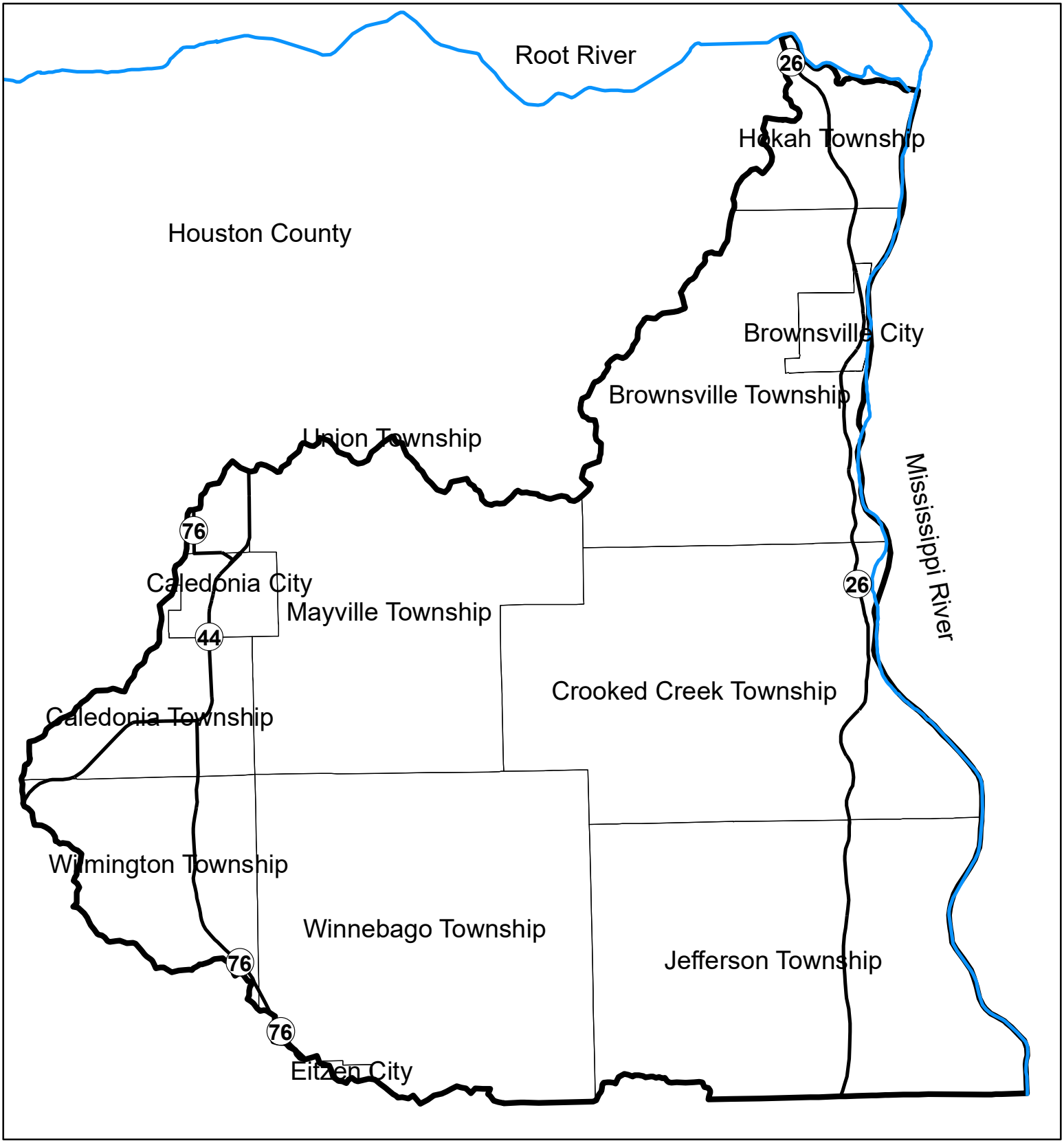
0 2 4 8 Miles

Legend

La Crescent Watershed

City/Township

Reno Watershed



N

0 2 4 8 Miles

Legend

- Reno Watershed
- City/Township

Appendix D: Survey Reminder Letter

[Date]

[First Name] [Last Name]
[Street Address]
[City] [State] [Zip code]

Water, Community and You: A survey of landowners in La Crescent and Reno Watersheds
Information and Consent Form

Dear [First Name] [Last Name],

About a month ago, I sent you a questionnaire that asked about your perspectives on your community and its water resources. If you have already returned your questionnaire, thank you for your response. We sincerely appreciate your input!

If you have not yet responded, I am writing again because of the importance of your participation to the study and its intended outcomes. It should take you only about 20 minutes to complete the questionnaire. The responses we have already received from other landowners in your watershed show a range of beliefs about water resources and support for watershed management initiatives. We want to ensure that your opinions are represented, too!

The purpose of this survey is to learn more about how landowners in your watershed perceive and interact with their community, their environment, and specifically water resources. Your input will inform water and land management decisions in the area. The study is being conducted by the Center for Changing Landscapes, University of Minnesota in partnership with Winona County.

For your reference, a map of the watershed is enclosed.

This survey is voluntary and completely confidential. The ID # on the front page of your survey is used to help us track mailings, ensuring that your name is never affiliated with your responses. Please answer the questions as completely as possible. Once you have **completed the questionnaire, fold it in thirds and mail it back in the enclosed self-addressed, postage-paid envelope.**

We would be happy to answer any questions or listen to any comments you may have about this study. Please feel free to contact me by phone at 612-624-6726, or by email at prad0047@umn.edu. If you have any questions or concerns regarding the study and would like to talk to someone other than the researcher(s), you are encouraged to contact the Research Subjects' Advocate Line, D-528 Mayo, 420 Delaware Street S.E., Minneapolis, Minnesota, 55455; telephone (612) 625-1650.

Thank you in advance for your help with this study.

Sincerely,

Amit Pradhananga
Center for Changing Landscapes
University of Minnesota

Appendix E: Survey Findings- La Crescent Watershed

Table 1. Respondents' sociodemographic characteristics

Socio-Demographic Characteristics		N	Percent
Gender	Male	208	74.6
	Female	62	22.2
Race*	White	264	98.1
	Hispanic, Latino or Spanish Heritage	0	0
	Black or African American	0	0
	Asian	0	0
	American Indian or Alaska Native	4	1.5
	Middle Eastern or North African	0	0
	Native Hawaiian or Other Pacific Islander	0	0
	Other (e.g., Mutt)	1	0.4
Age	Median	65	-
	Minimum	21	-
	Maximum	98	-
Years lived in community	Median	30	-
	Minimum	0	-
	Maximum	94	-
Formal education	Did not finish high school	5	1.8
	Completed high school	46	16.7
	Some college but no degree	38	13.8
	Associate or vocational degree	66	23.9
	College bachelor's degree	48	17.4
	Some college graduate work	17	6.2
	Completed graduate degree (MS or PhD)	52	18.8
Household income	Under $20,000	10	3.6
	$20,000-$49,999	44	15.9
	$50,000-$74,999	41	14.8
	$75,000-$99,999	47	17.0
	$100,000-$149,999	50	18.1
	$150,000-$199,999	18	6.5
	$200,000-$249,999	7	2.5
	$250,000-$299,999	4	1.4
	$300,000 or more	10	3.6

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watersheds, Questions 1, 30, 31, 32, 33, and 34

*Respondents could give more than one response.

Table 2. Respondents' property characteristics

Property Characteristics		N	Percent
Land/property borders a ditch, stream, lake, or river	Yes	55	20.1
	No	219	79.9
Property used for agricultural production	Yes	49	18.4
	No	218	81.6
Acres in agricultural production	Mean	91.9	-
	Minimum	0	-
	Maximum	600	-
Percent income dependent on land/property	0 - 49.9%	43	71.7
	50% or more	17	28.3
Ownership arrangement*	I own and manage my own land	240	80.8
	I rent my land to another party	27	9.1
	I rent my land from another party	8	2.7
	Other	22	7.4
Management decisions on land/property	I make own decisions	248	91.5
	I leave it up to my renter	8	3.0
	I leave it up to the landowner/property owner	3	1.1
	I work together with renter/landowner to make decisions	12	4.4
Experience with programs that offer financial incentives to farmers for conservation practices	Not relevant for my property	20	31.3
	Never heard of any	11	17.2
	Familiar but not enrolled	22	34.4
	Currently enrolled	11	17.2

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 16, 16a, 16b, 16c, 27, 28, 29

*Respondents could give more than one response

Table 3. Respondents' property size and acres of land in agricultural production

	N	Mean	Under 100 acres[a]	100 - 200 acres	200 - 500 acres	501 acres or more
Size of property owned	211	64.26	86.3	8.1	4.3	1.4
Size of property rented	8	197.75	62.5	12.5	12.5	12.5
Size of property rented out	25	44.40	84.0	16.0	0.0	0.0
Other (e.g., own a lot, seasonal recreation, city lot)	10	76.42	70.0	0.0	30.0	0.0
Acres in agricultural production*	63	91.87	69.8	12.7	14.3	3.2

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Questions 16a and 28

[a]Percent

*Acres in agricultural production among respondents that use their land for agricultural production

Table 4. Respondents' perception of their community

Response	N	Percent
My neighborhood	93	32.9
My city	79	27.9
My township	76	26.9
My county	24	8.5
My watershed	11	3.9

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watersheds, Question 2

Table 5. Number of neighbors known to respondents

Response	N	Percent
9-10	112	39.9
4-6	72	25.6
7-8	60	24.6
2-3	21	7.5
0-1	7	2.5

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watersheds, Question 3

Table 6. Respondents' perceived importance of the qualities of a community

	N	Mean*	SD[a]	Very unimportant[b]	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Very important
Safe drinking water	284	1.23	1.52	17.6	0.4	0.0	5.6	76.4
Clean streams, rivers and lakes	285	1.12	1.44	14.7	2.8	1.8	17.5	63.2
Good relationships among neighbors	283	0.99	1.39	13.1	5.3	1.8	29.3	50.5
Opportunities for outdoor recreation	285	0.97	1.47	16.1	2.8	3.5	23.5	54.0
Strong family ties	285	0.73	1.42	14.0	6.7	13.7	23.9	41.8
Opportunities to be involved in community projects	284	0.34	1.05	7.7	10.9	30.6	40.8	9.9
Opportunities to express my culture and traditions	286	0.06	1.00	8.7	14.0	46.9	23.8	6.6
Opportunities to serve in leadership roles	285	-0.01	1.06	11.2	16.1	42.1	23.5	7.0

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 4

*Responses based on a 5-point scale from very unimportant (-2) to very important (2)

[a] SD=Standard deviation

[b] Percent

Table 7. Respondents' familiarity with water resource issues in their watershed

Response	N	Percent
Not at all familiar	63	22.6
Slightly familiar	86	30.8
Moderately familiar	98	35.1
Very familiar	32	11.5
Total	279	100.0

Source: Water, Community and You: A survey of landowners in La Crescent and Reno Watershed, Question 6

Table 8. Respondents' perceptions about water quality in the ditch, stream, lake, or river water closest to them and in the Minnesota River

	N	Mean*	SD[a]	Very poor[b]	Poor	Fair	Good	Very good	Don't know
Water quality in the ditch, stream, lake, or river water closest to them	279	3.66	0.96	1.8	8.2	27.6	35.1	18.3	9.0
Water quality in the Minnesota River	279	3.04	0.93	4.7	18.3	44.8	19.7	5.7	6.8

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Questions 25 and 26

*Responses based on a 5-point scale from very poor (1) to very good (5)

[a] SD=Standard deviation

[b] Percent

Table 9. Respondents' beliefs about water resources and conservation practices

	N	Mean*	SD[a]	Strongly disagree[b]	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Water pollution affects human health.	280	1.71	0.79	2.1	1.1	4.3	8.9	83.6
Excessive water runoff causes soil and nutrient loss.	281	1.52	0.84	2.1	0.7	7.5	22.4	67.3
Conservation practices protect aquatic life (e.g., fish and plants).	282	1.44	0.89	2.5	2.1	6.0	27.3	62.1
Conservation practices contribute to quality of life in my community.	282	1.25	0.94	2.8	1.8	12.8	33.0	49.6
Water pollution poses serious threats to the quality of life in my community.	283	0.87	1.27	7.8	8.5	16.3	24.0	43.5
Water resources in my community are adequately protected.	282	0.44	1.14	8.2	14.2	17.4	46.5	13.8
Water resources in Minnesota are adequately protected.	279	0.37	1.04	5.4	16.1	24.7	43.4	10.4

Source: Water, Community and You: A survey of landowners in La Crescent and Reno Watershed, Question 5

*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

[a] SD=Standard deviation; [b] Percent

Table 10. Respondents' perception about the location of their property in the watershed before the survey

Response	N	Percent
Yes	150	54.7
No	121	44.2
Property not in watershed	3	1.1
Total	274	100.0

Source: Water, Community and You: A survey of landowners in La Crescent and Reno Watershed, Question 7

Table 11. Respondents' beliefs about who should be responsible for water resource protection

	N	Percent
Landowners	240	18.8
Local government (e.g., city, county)	226	17.7
I should be responsible	214	16.8
Farmers	212	16.6
State government	202	15.8
Urban residents	182	14.3

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 8
*Respondents could give more than one response

Table 12. Respondents' perceptions about potential sources of water pollutants/issues in their watershed

	N	Mean*	SD[a]	Not a problem[b]	Slight problem	Moderate Problem	Severe problem	Don't know
Fertilizer management for crop production	280	2.98	0.81	3.6	18.9	40.0	23.9	13.6
Fertilizer management for lawn/turf care	281	2.92	0.87	5.0	22.4	36.3	24.9	11.4
Pesticide/herbicide application	279	2.91	0.88	5.4	21.1	35.1	24.4	14.0
Soil erosion from farmland	280	2.91	0.84	3.6	25.0	36.8	23.9	10.7
Stream bank erosion	278	2.83	0.82	4.3	23.7	39.2	18.0	14.7
Livestock operations	280	2.74	0.92	8.6	24.3	33.2	18.9	15.0
Improperly sized/maintained septic systems	279	2.68	0.93	10.0	22.2	33.0	16.1	18.6
Increased frequency or intensity of storms	279	2.62	0.93	11.8	24.0	35.1	15.1	14.0
Unregulated contaminants (e.g., pharmaceuticals, personal care products)	278	2.56	1.00	12.6	23.7	23.4	15.5	24.8
Urban land development	279	2.52	0.86	11.5	29.4	37.3	10.0	11.8
Urban/suburban water runoff	278	2.52	0.93	12.2	28.4	29.5	12.9	16.9
Tile drainage	280	2.33	0.97	15.0	26.1	18.6	9.6	30.7
Natural causes (e.g., natural erosion, wildlife)	278	2.29	0.76	12.2	37.1	29.9	2.9	18.0
Industrial discharge to streams, rivers, and lakes	278	2.28	1.01	21.9	25.5	22.7	10.8	19.1
Grass clippings and leaves entering storm drains	280	2.17	0.86	17.5	35.7	19.3	5.7	21.8
Wind erosion	280	2.14	0.86	21.4	31.1	25.0	3.9	18.6

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 9

*Responses based on a 4-point scale from not a problem(1) to severe problem (4)

[a] SD=Standard deviation

[b] Percent

Table 13. Respondents' concern about the consequences of water pollution

I am concerned about the consequences of water pollution for…	N	Mean*	SD[a]	Strongly disagree[b]	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Future generations	279	1.49	0.87	1.8	3.2	5.0	24.0	65.9
Aquatic life (e.g., fish and plants)	280	1.35	0.88	2.5	1.4	8.2	33.9	53.9
My family's health	280	1.33	0.99	2.9	3.9	8.6	26.4	58.2
People downstream	280	1.32	0.96	2.9	1.8	12.5	26.1	56.8
People in my community	279	1.31	0.95	2.2	3.2	11.5	27.6	55.6
Wildlife	280	1.27	0.94	2.5	2.5	11.8	32.1	51.1
Farmland	279	1.08	0.97	2.5	2.9	19.4	34.4	40.9

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 10
*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)
[a] SD=Standard deviation
[b] Percent

Table 14. Respondents' perceptions about their responsibility and ability to protect water resources

	N	Mean*	SD[a]	Strongly disagree[b]	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
It is my personal responsibility to make sure that what I do on the land doesn't contribute to water resource problems.	278	1.51	0.67	0.0	0.0	9.7	29.1	61.2
By taking an active part in conservation, people can keep water clean in Minnesota.	280	1.43	0.76	1.4	0.7	6.1	37.5	54.3
It is my personal responsibility to help protect water.	278	1.34	0.82	1.1	2.2	9.4	37.1	50.4
I think of myself as someone who is very concerned with environmental issues.	279	1.15	0.86	0.0	4.7	16.1	38.7	40.5
My use of a conservation practice contributes to healthy water resources.	278	1.14	0.82	0.7	1.8	18.0	41.7	37.8
I think of myself as an environmental steward.	279	0.99	0.90	1.8	2.9	21.1	42.7	31.5
Farmers in my community have the ability to work together to change land use practices.	277	0.84	0.89	1.1	3.6	31.0	38.6	25.6
To engage in water resource protection is an important part of who I am.	279	0.67	0.97	1.8	8.6	32.3	35.1	22.2
I have the knowledge and skills I need to use conservation practices on the land.	277	0.59	1.06	4.3	11.2	25.6	39.4	19.5
I have the money I need to use conservation practices on the land.	278	-0.03	1.17	13.7	18.0	36.7	20.9	10.8
My community has the leadership it needs to protect water resources.	276	-0.05	0.95	8.0	18.1	50.7	17.8	5.4
My community has the financial resources it needs to protect water resources.	278	-0.15	0.91	8.6	20.1	52.5	14.7	4.0
I have the equipment I need to adopt a new conservation practice.	277	-0.32	1.10	18.8	19.9	40.4	16.2	4.7
I do not have the time to use conservation practices.	275	-0.60	0.97	21.5	28.7	39.6	8.4	1.8

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 12

*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

[a] SD=Standard deviation

[b] Percent

Table 15. Respondents' beliefs about their capability to take actions to protect water resources

	N	Mean*	SD[a]	Not at all capable[b]	Slightly capable	Moderately capable	Very capable
Maintaining conservation practices on the land/farm	279	2.92	1.01	12.2	18.3	35.1	34.4
Using a new conservation practice on the land/farm	278	2.69	1.04	16.2	25.2	31.7	27.0
Changing land use practices to reduce impacts on water resources	278	2.68	1.07	18.7	21.9	32.4	27.0
Influencing decision making about water resources in your community	277	2.37	0.97	19.9	38.3	26.7	15.2

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 11

*Responses based on a 4-point scale from not at all capable (1) to very capable (4)

[a] SD=Standard deviation

[b] Percent

Table 16. Respondents' feelings of personal obligation

I feel a personal obligation to…	N	Mean*	SD[a]	Strongly disagree[b]	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Maintain my land/farm in a way that does not contribute to water resource problems	274	1.34	0.84	1.1	1.8	12.0	32.5	52.6
Do whatever I can to prevent water pollution	278	1.27	0.82	0.0	3.6	13.3	36.0	47.1
Use conservation practices on my land/property	276	1.06	0.85	0.4	2.5	23.2	38.8	35.1
Work with other community members to protect water resources	275	0.34	0.92	3.3	9.5	48.4	27.6	11.3
Talk to others about conservation practices	276	0.30	0.90	3.3	10.1	49.3	27.5	9.8
Attend meetings, public hearings, or workshops about water	276	-0.05	0.93	8.7	14.1	55.4	16.7	5.1

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 24

*Responses based on a 4-point scale from strongly disagree (1) to strongly agree (5)

[a] SD=Standard deviation

[b] Percent

Table 17. Respondents' perceptions about their responsibility and ability to protect water resources

	N	Mean*	SD[a]	Strongly disagree[b]	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I think of myself as someone who is very concerned with environmental issues.	279	1.15	0.86	0.0	4.7	16.1	38.7	40.5
I think of myself as an environmental steward.	279	0.99	0.90	1.8	2.9	21.1	42.7	31.5
To engage in water resource protection is an important part of who I am.	279	0.67	0.97	1.8	8.6	32.3	35.1	22.2

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 13
*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)
[a] SD=Standard deviation
[b] Percent

Table 18. Respondents' current use of and intentions for future use of conservation practices

	Current use of practice			Intentions to use practice in the future		
	N	Yes[a]	No	N	Yes	No
Using fertilizers/pesticides on lawns and gardens at recommended rates	226	80.1	19.9	157	77.1	22.9
Perennial crops (e.g., alfalfa, switchgrass)	80	72.5	27.5	46	82.6	17.4
Plant trees as a windbreak on the land/property	153	71.9	28.1	95	78.9	21.1
Protect wetlands on the land/property	80	63.7	36.3	42	71.4	28.6
Woodland management (i.e., addressing invasive species in the woods, using the forestry stewardship plan)	136	55.9	44.1	96	70.8	29.2
Cover crops	75	52.0	48.0	43	60.5	39.5
Conservation tillage practices (e.g., no till, minimum till)	89	49.4	50.6	58	51.7	48.3
Reduce mowed lawn turf on my land	211	46.4	53.6	148	44.6	55.4
Terraces	102	46.1	53.9	67	55.2	44.8
Other conservation structures (e.g., rip rap, tree planting)	27	44.4	55.6	19	42.1	57.9
Rotational grazing	56	39.3	60.7	29	51.7	48.3
Storage basins/ponds or water and sediment control basins	138	39.1	60.9	93	41.9	58.1
Land in conservation cover (e.g., Conservation Reserve Program)	86	34.9	65.1	59	42.4	57.6
Rain barrel or cistern to store water	173	25.4	74.6	131	41.2	58.8
Agriculture waste management facility or system	55	18.2	81.8	29	24.1	75.9
Rain garden	158	14.6	85.4	109	29.4	70.6
Nutrient management plan	61	34.4	65.6	-	-	-

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Questions 15 and 16d (nutrient management plan)

[a]Percent

Table 19. Respondents' use of nutrient management practices

	N	Mean*	SD[a]	Not familiar with it[b]	Familiar with but do not use	Minimal use	Moderate use	Heavy use
Soil testing and other methods to determine optimal fertilizer rates	32	3.19	1.45	15.6	21.9	15.6	21.9	25.0
Credit nutrients from manure	28	3.04	1.64	32.1	7.1	10.7	25.0	25.0
Follow setbacks for manure application near sensitive features	29	2.90	1.59	34.5	6.9	10.3	31.0	17.2
Spring application of nitrogen fertlizer	29	2.62	1.37	31.0	17.2	17.2	27.6	6.9
Growing season application of nitrogen fertlizer (e.g., side-dress)	26	2.54	1.33	30.8	19.2	23.1	19.2	7.7
Nitrogen stabilizers (e.g., N-Serve)	27	2.37	1.50	40.7	22.2	11.1	11.1	14.8
GPS-facilitated precision agriculture practices such as variable rate fertilizer application	30	2.33	1.42	36.7	33.3	0.0	20.0	10.0
Fall application of nitrogen fertlizer	27	1.93	1.04	37.0	48.1	3.7	7.4	3.7
Use of University of Minnesota guidelines for nutrient application	27	1.93	1.27	59.3	7.4	18.5	11.1	3.7

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 17

*Responses based on a 5-point scale from not familiar with it (1) to heavy use (5)

[a] SD=Standard deviation

[b] Percent

Table 20. Respondents' perceived importance of factors that affect their decisions to use conservation practices and structures

	N	Mean*	SD[a]	Not at all important[b]	Slightly important	Moderately important	Very important	Extremely important
Protecting groundwater	276	4.30	0.89	2.2	1.4	12.0	33.0	51.4
Controlling erosion	275	4.15	0.95	2.2	3.3	15.3	35.6	43.6
Protecting my investment on the land	276	4.13	0.93	1.8	4.0	14.5	38.4	41.3
Protecting my land for the next generation	276	4.11	0.98	1.4	5.8	16.7	33.0	43.1
Protecting or improving water resources	273	4.00	0.97	1.8	4.8	21.2	35.9	36.3
Maintaining or improving soil health	275	3.99	0.97	2.5	3.6	21.8	36.7	35.3
Protecting or improving wildlife habitat	275	3.96	1.08	4.0	5.8	19.3	32.4	38.5
Contributing to the collective good	271	3.91	1.01	3.0	5.5	21.8	36.9	32.8
Improving quality of life in my community	269	3.78	1.05	3.0	7.8	27.1	32.3	29.7
Maintaining or improving my way of life	263	3.76	1.19	8.0	4.6	23.6	31.6	32.3
Reducing nutrient and chemical loss from my land/farm	264	3.71	1.16	7.6	6.1	22.7	35.6	28.0
My emotional connection to the land	272	3.70	1.21	7.4	9.2	21.7	30.1	31.6
Conservation is a part of who I am	268	3.62	1.16	5.6	11.2	25.4	31.0	26.9
Encouragement of family members	271	3.46	1.24	9.2	12.9	24.4	29.9	23.6
Other (e.g., Seeing how others (gov. agencies, companies, neighbors) use practices and structures)	30	3.20	1.67	30.0	3.3	16.7	16.7	33.3
My financial ability	251	3.20	1.36	17.9	10.8	24.7	26.7	19.9
Availability of financial assistance/cost share	244	2.94	1.46	26.6	9.8	25.8	18.4	19.3
Increasing long-term profitability of my farm	237	2.89	1.51	30.8	8.4	20.7	21.5	18.6
Increasing yield	236	2.58	1.49	39.8	7.2	22.0	17.4	13.6

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 18

*Responses based on a 5-point scale from not at all important (1) to extremely important (5)

[a] SD=Standard deviation

[b] Percent

Table 21. Respondents' views about factors that would enhance their use of conservation practices

I would be more likely to adopt new conservation practices or to continue to use practices if…	N	Mean*	SD[a]	Strongly disagree[b]	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I had access to financial resources to help me adopt conservation practices.	270	0.54	1.12	8.5	3.3	35.2	31.5	21.5
I knew more about the wildlife benefits of conservation practices.	276	0.46	1.01	6.2	5.4	39.5	34.1	14.9
I had to help with the physical labor of implementing and maintaining conservation practices.	273	0.46	1.06	6.2	7.3	38.8	29.7	17.9
I had evidence that the conservation practice improved water resources.	266	0.43	0.99	6.0	5.3	41.4	34.6	12.8
I could learn how to maintain conservation practices for soil conservation.	267	0.38	0.94	5.2	6.0	45.7	32.2	10.9
My neighbors maintained conservation practices.	270	0.29	0.97	5.9	8.5	46.3	29.3	10.0
I could get equipment to adopt new conservation practices.	264	0.21	0.96	7.6	6.4	51.9	25.4	8.7
I could talk to other landowners or farmers who are using conservation practices.	266	0.20	0.98	7.9	7.5	50.4	25.2	9.0
Conservation program requirements were less complex.	264	0.18	0.97	8.0	5.7	56.8	19.7	9.8
Conservation programs were more flexible.	266	0.17	0.80	4.1	7.9	59.4	24.1	4.5
I could get higher payments for adopting conservation practices.	263	0.15	1.03	9.1	8.4	51.7	20.2	10.6
I could attend a workshop or field day on conservation practices.	269	0.14	1.04	10.4	8.9	45.0	27.5	8.2
A conservation assistance professional would visit my land to discuss conservation practice options.	264	0.03	1.09	14.0	6.4	50.4	20.5	8.7
There were regulations that mandated using a conservation practice.	273	0.03	1.11	12.5	12.8	43.6	21.6	9.5
I had the evidence that conservation practices did not reduce my crop yield.	255	-0.01	0.93	9.8	7.1	63.9	12.5	6.7
I was compensated for lost crop production because of conservation practices.	254	-0.04	1.08	13.8	8.3	55.9	11.8	10.2
I could be enrolled in a program that recognizes local conservation stewards.	268	-0.09	1.02	12.7	11.6	54.1	14.9	6.7

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 19

*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

[a] SD=Standard deviation

[b] Percent

Table 22. Respondents' engagement in civic actions in the past 12 months

In the <u>past 12 months</u> how often have you...	**N**	**Mean***	**SD[a]**	**Never[b]**	**Every few months**	**Every month**	**Every two weeks**	**Weekly or more**
Volunteered for community organizations or events?	279	1.84	1.15	52.0	28.0	11.1	1.8	7.2
Talked to others about conservation practices?	277	1.68	0.94	53.8	32.9	9.0	0.7	3.6
Heard about a water resource protection initiative?	276	1.45	0.77	66.3	26.8	4.0	1.4	1.4
Participated in a water resource protection initiative?	272	1.22	0.67	85.7	10.3	1.8	0.4	1.8
Worked with other community members to protect water?	275	1.22	0.61	84.7	11.3	2.5	0.4	1.1
Attended a meeting, public hearing, or workshop about water?	275	1.18	0.48	8.4	13.1	1.8	0.0	0.4
Taken a leadership role around water resource conservation in the community?	275	1.14	0.57	91.6	6.2	0.4	0.4	1.5

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 22

*Responses based on a 4-point scale from never (1) to weekly or more (5)

[a] SD=Standard deviation

[b] Percent

Table 23. Respondents' intentions to engage in civic actions in the next 12 months

In the next 12 months, I intend to...	N	Mean*	SD[a]	Most certainly not[b]	Probably not	Uncertain	Probably will	Most certainly will
Learn more about conservation practices	275	-0.01	0.99	4.4	31.3	30.5	28.7	5.1
Talk to others about conservation practices	275	-0.02	0.99	4.0	32.0	32.0	26.2	5.8
Learn more about water resource issues in my watershed	274	-0.06	0.96	4.7	30.3	35.4	25.2	4.4
Use a new conservation practice on my land	275	-0.21	1.00	6.9	35.3	36.0	15.6	6.2
Work with other community members to protect water	275	-0.26	0.88	4.7	36.7	41.5	13.5	3.6
Attend a meeting, public hearing, or workshop about water	275	-0.32	0.90	6.9	37.5	39.6	12.7	3.3
Contact conservation assistance professionals (e.g., my Soil and Water Conservation District or the Natural Resources Conservation Service) about water resource initiatives	275	-0.51	0.89	9.5	46.9	32.4	8.0	3.3

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 23

*Responses based on a 4-point scale from most certainly not (1) to most certainly will (5)

[a] SD=Standard deviation

[b] Percent

Table 24. Individuals or groups that influence respondents' decisions about conservation on their land

	N	Mean*	SD[a]	Not at all[b]	Slightly	Moderately	A lot	Don't know/Not applicable
My family	275	3.07	1.00	9.8	12.0	29.5	37.8	10.9
My neighbors	275	2.63	1.02	16.4	18.9	33.5	18.9	12.4
The MN Department of Natural Resources	274	2.42	1.09	22.3	21.9	23.0	17.2	15.7
My county's Soil and Water Conservation District (SWCD)	276	2.33	1.05	22.5	21.7	23.9	12.7	19.2
The MN Pollution Control Agency	272	2.29	1.11	27.9	17.3	23.5	14.3	16.9
Environmental advocacy organizations	274	2.26	1.00	24.5	21.9	28.1	9.1	16.4
Farmers	275	2.26	1.08	27.6	16.7	25.5	11.6	18.5
The MN Department of Agriculture	271	2.19	1.11	31.0	17.0	21.0	12.5	18.5
University researchers	275	2.14	1.08	32.4	17.1	22.2	10.9	17.5
The Natural Resources Conservation Service (NRCS)	271	2.11	1.12	32.8	15.5	17.3	11.8	22.5
University of Minnesota Extension	272	2.02	1.11	36.8	14.7	16.9	10.7	21.0
My local extension agent	273	1.97	1.06	36.3	16.5	17.2	8.4	21.6
The Farm Service Agency (USDA)	271	1.96	1.08	38.0	12.5	18.1	8.5	22.9
Other (e.g., county ed. programs, local fertilizer applicators, myself)	57	1.90	1.32	33.3	1.8	3.5	12.3	49.1
My county's Farm Bureau	273	1.69	0.98	45.8	12.1	12.5	5.1	24.5
My financial institution (e.g., financial advisor, loan officer, mortgage lender, ect.)	276	1.69	0.93	46.0	15.9	13.4	4.0	20.7
My local co-op	271	1.57	0.91	48.7	9.2	11.1	3.3	27.7
My agronomist/agricultural advisor	271	1.51	0.86	49.1	9.2	9.6	2.6	29.5
Agricultural commodity associations (e.g., Minnesota Corn Growers Association)	272	1.50	0.83	50.0	10.3	9.9	1.8	27.9
Certified crop advisors (CCA)	271	1.46	0.81	50.6	9.6	8.9	1.8	29.2
Seed/input dealer	273	1.43	0.81	51.3	10.6	5.5	2.9	29.7
farmer-led councils	272	1.42	0.75	50.7	9.6	8.8	0.7	30.1
My local Farmer's Union	272	1.35	0.73	54.4	7.4	6.3	1.5	30.5

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 20

*Responses based on a 4-point scale from not at all (1) to a lot (4)

[a] SD=Standard deviation

[b] Percent

Table 25. Respondents' most trusted sources of information

	N	Percent*
The MN Department of Natural Resources	100	35.0%
My family	81	28.3%
My neighbors	68	23.8%
My county's Soil and Water Conservation District (SWCD)	57	19.9%
Farmers	49	17.1%
Environmental advocacy organizations	38	13.3%
The MN Pollution Control Agency	36	12.6%
The MN Department of Agriculture	36	12.6%
University of Minnesota Extension	33	11.5%
University researchers	32	11.2%
The Natural Resources Conservation Service (NRCS)	27	9.4%
My local extension agent	23	8.0%
The Farm Service Agency (USDA)	22	7.7%
My county's Farm Bureau	7	2.4%
My local co-op	7	2.4%
Seed/input dealer	6	2.1%
My agronomist/agricultural advisor	6	2.1%
Other (e.g., county ed. programs, local fertilizer applicators, myself)	5	1.7%
My local Farmer's Union	3	1.0%
Farmer-led councils	3	1.0%
Certified crop advisors (CCA)	2	0.7%
My financial institution (e.g., financial advisor, loan officer, mortgage lender, ect.)	1	0.3%
Agricultural commodity associations (e.g., Minnesota Corn Growers Association)	1	0.3%

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 21
*Percent of all survey respondents (N = 286)

Table 26. Respondents' perceived social norms of conservation action

People who are important to me…	N	Mean*	SD[a]	Strongly disagree[b]	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Expect me to maintain my land in a way that does not contribute to water resource problems.	277	0.95	0.83	0.7	2.5	24.9	44.8	27.1
Expect me to use conservation practices on my land.	279	0.70	0.85	0.7	4.3	38.0	38.0	19.0
Work with other community members to protect water.	279	0.17	0.99	6.8	12.9	46.2	25.1	9.0
Talk with others about conservation practices.	277	0.04	1.05	9.4	15.2	46.9	18.8	9.7
Expect me to work with other community members to protect water.	278	0.02	1.00	9.4	14.0	48.6	21.2	6.8
Expect me to attend meetings, public hearings or workshops about water.	276	-0.14	0.95	10.9	15.6	54.3	14.9	4.3
Attend meetings, public hearings or workshops about water.	279	-0.18	0.96	11.5	18.6	49.8	16.5	3.6

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 14

*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

[a] SD=Standard deviation

[b] Percent

Appendix F: Survey Findings- Reno Watershed

Table 1. Respondents' sociodemographic characteristics

Socio-Demographic Characteristics		N	Percent
Gender	Male	227	76.9
	Female	56	19.0
Race*	White	281	92.4
	Hispanic, Latino or Spanish Heritage	0	0.0
	Black or African American	0	0.0
	Asian	0	0.0
	American Indian or Alaska Native	0	0.0
	Middle Eastern or North African	1	0.3
	Native Hawaiian or Other Pacific Islander	0	0.0
	Other (e.g., American)	1	0.3
Age	Median	64	-
	Minimum	27	-
	Maximum	98	-
Years lived in community	Median	40	-
	Minimum	1	-
	Maximum	97	-
Formal education	Did not finish high school	11	3.7
	Completed high school	77	25.8
	Some college but no degree	45	15.1
	Associate or vocational degree	52	17.4
	College bachelor's degree	56	18.8
	Some college graduate work	10	3.4
	Completed graduate degree (MS or PhD)	35	11.7
Household income	Under $20,000	16	5.6
	$20,000-$49,999	51	17.7
	$50,000-$74,999	54	18.8
	$75,000-$99,999	48	16.7
	$100,000-$149,999	40	13.9
	$150,000-$199,999	16	5.6
	$200,000-$249,999	3	1.0
	$250,000-$299,999	1	0.3
	$300,000 or more	3	1.0

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watersheds, Questions 1, 30, 31, 32, 33, and 34

*Respondents could give more than one response

Table 2. Respondents' property characteristics

Property Characteristics		N	Percent
Land/property borders a ditch, stream, lake, or river	Yes	67	22.6
	No	229	77.4
Property used for agricultural production	Yes	91	33.6
	No	180	66.4
Acres in agricultural production	Mean	245	-
	Minimum	0	-
	Maximum	6500	-
Percent income dependent on land/property	0 - 49.9%	63	54.8
	50% or more	52	45.2
Ownership arrangement*	I own and manage my own land	221	66.4
	I rent my land to another party	50	15.0
	I rent my land from another party	29	8.7
	Other	33	9.9
Management decisions on land/property	I make own decisions	222	79.3
	I leave it up to my renter	11	3.9
	I leave it up to the landowner/property owner	6	2.1
	I work together with renter/landowner to make decisions	41	14.6
Experience with programs that offer financial incentives to farmers for conservation practices	Not relevant for my property	26	21.7
	Never heard of any	6	5.0
	Familiar but not enrolled	50	41.7
	Currently enrolled	38	31.7

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 16, 16a, 16b, 16c, 27, 28, 29

*Respondents could give more than one response

Table 3. Respondents' property size and acres of land in agricultural production

	N	Mean	Under 100 acres[a]	100 - 200 acres	200 - 500 acres	501 acres or more
Size of property owned	186	352.75	69.4	9.1	14.0	7.5
Size of property rented out	43	217.17	60.5	20.9	14.0	4.7
Size of property rented	27	321.63	37.0	22.2	22.2	18.5
Other (e.g., own a lot, seasonal recreation, city lot)	10	191.30	40.0	30.0	20.0	10.0
Acres in agricultural production*	122	245.01	52.5	18.9	18.9	9.8

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Questions 16a and 28

[a]Percent

*Acres in agricultural production among respondents that use their land for agricultural production

Table 4. Respondents' perception of their community

Response	N	Percent
My city	90	30.4
My neighborhood	79	26.7
My county	60	20.3
My township	52	17.6
My watershed	15	5.1

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watersheds, Question 2

Table 5. Number of neighbors known to respondents

Response	N	Percent
9-10	161	54.0
7-8	55	18.5
4-6	44	14.8
2-3	30	10.1
0-1	8	2.7

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watersheds, Question 3

Table 6. Respondents' perceived importance of the qualities of a community

	N	Mean*	SD[a]	Very unimportant[b]	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Very important
Safe drinking water	301	1.12	1.59	19.3	1.7	0.7	4.3	74.1
Clean streams, rivers and lakes	298	1.01	1.50	16.4	3.4	2.3	18.1	59.7
Good relationships among neighbors	300	0.82	1.43	14.3	7.3	5.0	28.7	44.7
Opportunities for outdoor recreation	300	0.81	1.42	14.0	7.0	7.0	27.7	44.3
Strong family ties	299	0.76	1.51	16.7	5.7	10.4	19.1	48.2
Opportunities to be involved in community projects	297	0.34	1.13	8.8	14.8	21.5	43.1	11.8
Opportunities to serve in leadership roles	298	0.11	1.06	8.7	15.8	40.3	26.2	9.1
Opportunities to express my culture and traditions	298	0.06	1.11	11.1	16.1	37.6	25.8	9.4

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 4

*Responses based on a 5-point scale from very unimportant (-2) to very important (2)

[a] SD=Standard deviation

[b] Percent

Table 7. Respondents' familiarity with water resource issues in their watershed

Response	N	Percent
Not at all familiar	44	15.2
Slightly familiar	92	31.8
Moderately familiar	119	41.2
Very familiar	34	11.8
Total	289	100.0

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 6

Table 8. Respondents' perceptions about water quality in the ditch, stream, lake, or river water closest to them and in the Minnesota River

	N	Mean*	SD[a]	Very poor[b]	Poor	Fair	Good	Very good	Don't know
Water quality in the ditch, stream, lake, or river water closest to them	296	3.88	0.95	2.0	5.4	19.6	40.2	25.0	7.8
Water quality in the Minnesota River	297	2.94	0.94	5.1	24.6	38.4	20.5	4.0	7.4

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Questions 25 and 26

*Responses based on a 5-point scale from very poor (1) to very good (5)

[a] SD=Standard deviation

[b] Percent

Table 9. Respondents' beliefs about water resources and conservation practices

	N	Mean*	SD[a]	Strongly disagree[b]	Somewhat disagree	agree nor disagree	Somewhat agree	Strongly agree
Water pollution affects human health.	299	1.57	0.90	3.3	1.0	5.0	16.4	74.2
Excessive water runoff causes soil and nutrient loss.	303	1.51	0.89	2.6	2.6	3.6	23.4	67.7
Conservation practices protect aquatic life (e.g., fish and plants).	303	1.46	0.89	2.6	2.3	4.3	28.1	62.7
Conservation practices contribute to quality of life in my community.	302	1.38	0.86	1.7	2.6	7.3	32.8	55.6
Water pollution poses serious threats to the quality of life in my community.	300	0.89	1.19	6.3	6.7	18.7	28.0	40.3
Water resources in my community are adequately protected.	301	0.47	1.16	7.0	15.9	17.3	42.5	17.3
Water resources in Minnesota are adequately protected.	301	0.39	1.12	5.6	18.6	22.3	38.5	15.0

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 5

*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

[a] SD=Standard deviation

[b] Percent

Table 10. Respondents' perception about the location of their property in the watershed before the survey

	N	Percent
Yes	184	62.0
No	101	34.0
Property not in watershed	12	4.0
Total	297	100.0

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 7

Table 11. Respondents' beliefs about who should be responsible for water resource protection

	N	Percent
Landowners	249	19.1
Local government (e.g., city, county)	234	17.9
Farmers	225	17.2
I should be responsible	218	16.7
Urban residents	194	14.8
State government	187	14.3

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 8
*Respondents could give more than one response

Table 12. Respondents' perceptions about potential sources of water pollutants/issues in their watershed

	N	Mean*	SD[a]	Not a problem[b]	Slight problem	Moderate Problem	Severe problem	Don't know
Soil erosion from farmland	299	2.89	0.87	5.4	24.7	38.5	25.1	6.4
Pesticide/herbicide application	298	2.87	0.98	8.1	25.8	26.5	29.9	9.7
Stream bank erosion	298	2.84	0.88	5.0	28.9	33.9	24.5	7.7
Fertilizer management for crop production	297	2.82	0.94	8.4	23.2	32.7	24.2	11.4
Fertilizer management for lawn/turf care	297	2.81	0.98	10.4	19.9	32.7	24.2	12.8
Increased frequency or intensity of storms	297	2.80	0.97	11.4	19.5	36.7	24.2	8.1
Livestock operations	298	2.78	0.91	8.1	25.5	34.6	21.5	10.4
Urban/suburban water runoff	297	2.46	0.95	15.8	27.3	31.0	12.1	13.8
Unregulated contaminants (e.g., pharmaceuticals, personal care products)	298	2.38	0.95	14.1	27.9	21.8	10.1	26.2
Urban land development	296	2.34	0.89	18.2	28.4	35.1	6.8	11.5
Improperly sized/maintained septic systems	298	2.33	0.95	18.1	26.8	26.5	9.1	19.5
Natural causes (e.g., natural erosion, wildlife)	296	2.24	0.86	19.3	35.1	28.7	5.7	11.1
Wind erosion	296	2.17	0.79	19.3	39.9	29.1	2.7	9.1
Industrial discharge to streams, rivers, and lakes	298	2.12	0.92	23.5	30.2	21.5	6.0	18.8
Tile drainage	296	2.09	0.99	25.3	23.6	16.9	7.4	26.7
Grass clippings and leaves entering storm drains	296	1.98	0.85	27.0	33.4	18.9	3.4	17.2

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 9

*Responses based on a 4-point scale from not a problem (1) to severe problem (4)

[a] SD=Standard deviation

[b] Percent

Table 13. Respondents' concern about the consequences of water pollution for the following

I am concerned about the consequences of water pollution for…	N	Mean*	SD[a]	Strongly disagree[b]	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Future generations	299	1.51	0.90	3.3	0.7	5.4	22.7	67.9
My family's health	298	1.39	0.96	3.0	2.3	8.7	24.5	61.4
Aquatic life (e.g., fish and plants)	297	1.31	0.93	2.4	2.7	10.1	31.0	53.9
People downstream	297	1.31	0.91	2.4	1.7	11.1	32.0	52.9
People in my community	297	1.29	0.91	2.7	1.7	9.8	35.7	50.2
Wildlife	299	1.15	0.95	2.0	3.0	17.1	33.4	44.5
Farmland	297	1.08	1.00	2.7	3.4	19.5	32.3	42.1

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 10

*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

[a] SD=Standard deviation

[b] Percent

Table 14. Respondents' perceptions about their responsibility and ability to protect water resources

	N	Mean*	SD[a]	Strongly disagree[b]	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
By taking an active part in conservation, people can keep water clean in Minnesota.	297	1.42	0.82	1.0	2.4	8.4	30.0	58.2
It is my personal responsibility to make sure that what I do on the land doesn't contribute to water resource problems.	298	1.39	0.87	2.3	1.0	8.7	31.2	56.7
It is my personal responsibility to help protect water.	297	1.38	0.81	1.7	0.7	9.1	34.7	53.9
My use of a conservation practice contributes to healthy water resources.	297	1.25	0.79	0.7	1.0	14.8	39.4	44.1
I think of myself as someone who is very concerned with environmental issues.	298	1.07	0.88	0.7	4.0	19.1	39.6	36.6
I think of myself as an environmental steward.	298	1.00	0.86	1.0	3.0	21.8	43.3	30.9
Farmers in my community have the ability to work together to change land use practices.	298	0.88	1.04	4.4	5.4	17.8	42.6	29.9
To engage in water resource protection is an important part of who I am.	298	0.79	0.98	2.3	5.7	29.5	35.9	26.5
I have the knowledge and skills I need to use conservation practices on the land.	298	0.75	0.97	3.0	7.0	23.2	45.6	21.1
My community has the leadership it needs to protect water resources.	297	0.04	1.05	9.4	16.5	42.1	24.2	7.7
I have the money I need to use conservation practices on the land.	297	-0.13	1.19	14.1	24.9	31.0	19.9	10.1
My community has the financial resources it needs to protect water resources.	297	-0.17	1.01	11.1	22.6	44.1	16.8	5.4
I have the equipment I need to adopt a new conservation practice.	297	-0.31	1.18	20.5	20.2	36.7	14.8	7.7
I do not have the time to use conservation practices.	295	-0.59	1.04	22.7	28.8	36.9	7.8	3.7

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Questions 12

*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

[a] SD=Standard deviation

[b] Percent

Table 15. Respondents' beliefs about their capability to take actions to protect water resources

	N	Mean*	SD[a]	Not at all capable[b]	Slightly capable	Moderately capable	Very capable
Maintaining conservation practices on the land/farm	296	2.94	1.05	14.5	14.5	33.4	37.5
Influencing decision making about water resources in your community	296	2.65	1.06	17.9	26.0	29.1	27.0
Using a new conservation practice on the land/farm	297	2.61	1.04	18.9	24.9	32.7	23.6
Changing land use practices to reduce impacts on water resources	297	2.35	0.94	19.9	38.0	29.6	12.5

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 11

*Responses based on a 4-point scale from not at all capable (1) to very capable (4)

[a] SD=Standard deviation

[b] Percent

Table 16. Respondents' feelings of personal obligation

I feel a personal obligation to…	N	Mean*	SD[a]	Strongly disagree[b]	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Maintain my land/farm in a way that does not contribute to water resource problems	293	1.34	0.91	2.0	2.0	11.9	27.6	56.3
Do whatever I can to prevent water pollution	294	1.29	0.88	1.4	2.7	11.9	34.0	50.0
Use conservation practices on my land/property	294	1.12	1.02	3.7	2.7	16.0	33.0	44.6
Talk to others about conservation practices	292	0.43	0.98	3.8	8.2	44.9	27.4	15.8
Work with other community members to protect water resources	293	0.41	1.00	3.1	11.3	44.4	24.2	17.1
Attend meetings, public hearings, or workshops about water	291	0.03	1.03	10.7	11.3	50.5	19.6	7.9

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 24

*Responses based on a 4-point scale from strongly disagree (1) to strongly agree (5)

[a] SD=Standard deviation

[b] Percent

Table 17. Respondents' perceptions about their responsibility and ability to protect water resources

	N	Mean*	SD[a]	Strongly disagree[b]	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I think of myself as someone who is very concerned with environmental issues.	298	1.07	0.88	0.7	4.0	19.1	39.6	36.6
I think of myself as an environmental steward.	298	1.00	0.86	1.0	3.0	21.8	43.3	30.9
To engage in water resource protection is an important part of who I am.	298	0.79	0.98	2.3	5.7	29.5	35.9	26.5

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 13

*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

[a] SD=Standard deviation

[b] Percent

Table 18. Respondents' current use of and intentions for future use of conservation practices

	Current use of practice			Intentions to use practice in the future		
	N	Yes[a]	No	N	Yes	No
Using fertilizers/pesticides on lawns and gardens at recommended rates	219	80.8	19.2	164	75.6	24.4
Perennial crops (e.g., alfalfa, switchgrass)	136	77.2	22.8	104	76.9	23.1
Conservation tillage practices (e.g., no till, minimum till)	141	75.2	24.8	98	79.6	20.4
Plant trees as a windbreak on the land/property	177	69.5	30.5	140	72.9	27.1
Storage basins/ponds or water and sediment control basins	189	66.7	33.3	136	71.3	28.7
Protect wetlands on the land/property	84	64.3	35.7	57	73.7	26.3
Woodland management (i.e., addressing invasive species in the woods, using the forestry stewardship plan)	157	59.2	40.8	123	68.3	31.7
Cover crops	127	52.8	47.2	96	67.7	32.3
Rotational grazing	89	50.6	49.4	68	57.4	42.6
Other conservation structures (e.g., rip rap, tree planting)	38	50.0	50.0	25	60.0	40.0
Land in conservation cover (e.g., Conservation Reserve Program)	133	48.9	51.1	101	62.4	37.6
Terraces	132	45.5	54.5	98	42.9	57.1
Reduce mowed lawn turf on my land	199	37.2	62.8	171	40.4	59.6
Agriculture waste management facility or system	89	33.7	66.3	60	35.0	65.0
Rain barrel or cistern to store water	189	27.0	73.0	161	49.7	50.3
Rain garden	166	14.5	85.5	136	29.4	70.6
Nutrient management plan	116	43.1	56.9	-	-	-

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Questions 15 and 16d (nutrient management plan)

[a]Percent

Table 19. Respondents' use of nutrient management practices

	N	Mean*	SD[a]	familiar with it[b]	Familiar with but do not use	Minimal use	Moderate use	Heavy use
Soil testing and other methods to determine optimal fertilizer rates	75	3.57	1.34	10.7	14.7	10.7	34.7	29.3
Spring application of nitrogen fertilizer	75	3.36	1.44	14.7	20.0	6.7	32.0	26.7
Credit nutrients from manure	74	3.16	1.50	20.3	18.9	9.5	27.0	24.3
Follow setbacks for manure application near sensitive features	72	2.99	1.53	25.0	16.7	18.1	15.3	25.0
Nitrogen stabilizers (e.g., N-Serve)	74	2.73	1.35	20.3	33.8	10.8	23.0	12.2
Use of University of Minnesota guidelines for nutrient application	73	2.60	1.44	28.8	31.5	2.7	24.7	12.3
Growing season application of nitrogen fertilizer (e.g., side-dress)	72	2.57	1.27	16.7	47.2	11.1	12.5	12.5
GPS-facilitated precision agriculture practices such as variable rate fertilizer application	74	2.24	1.18	23.0	55.4	6.8	4.1	10.8
Fall application of nitrogen fertilizer	72	2.13	0.87	18.1	63.9	6.9	9.7	1.4

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 17

*Responses based on a 5-point scale from not familiar with it (1) to heavy use (5)

[a] SD=Standard deviation

[b] Percent

Table 20. Respondents' perceived importance of factors that affect their decisions to use conservation practices and structures

	N	Mean*	SD[a]	Not at all important[b]	Slightly important	Moderately important	Very important	Extremely important
Protecting groundwater	295	4.24	1.04	3.7	4.1	9.8	29.2	53.2
Controlling erosion	295	4.11	1.11	5.4	4.1	11.5	32.5	46.4
Protecting my land for the next generation	294	4.10	1.06	3.1	6.5	13.6	31.3	45.6
Protecting my investment on the land	293	4.06	1.05	3.1	7.2	11.9	36.9	41.0
Protecting or improving water resources	295	3.99	1.03	3.7	4.1	19.0	36.3	36.9
Maintaining or improving soil health	291	3.99	1.07	5.2	3.8	15.1	39.2	36.8
Maintaining or improving my way of life	288	3.87	1.16	6.6	6.3	16.0	36.1	35.1
Contributing to the collective good	290	3.85	1.18	7.6	4.8	18.3	33.4	35.9
My emotional connection to the land	287	3.83	1.20	7.7	5.9	18.5	31.7	36.2
Protecting or improving wildlife habitat	292	3.82	1.17	5.8	7.9	20.2	30.8	35.3
Improving quality of life in my community	287	3.79	1.16	6.3	7.0	21.3	32.4	33.1
Conservation is a part of who I am	288	3.78	1.18	5.6	9.4	20.8	29.9	34.4
Reducing nutrient and chemical loss from my land/farm	289	3.74	1.25	9.3	7.3	16.6	33.6	33.2
Encouragement of family members	284	3.59	1.30	10.2	11.3	18.0	31.0	29.6
My financial ability	279	3.39	1.40	16.5	8.6	21.9	25.8	27.2
Other (e.g., Good science & tech papers, Retired conservation worker)	30	3.33	1.60	23.3	6.7	20.0	13.3	36.7
Increasing long-term profitability of my farm	276	3.21	1.60	28.3	4.7	14.1	23.6	29.3
Availability of financial assistance/cost share	277	3.16	1.45	22.4	7.9	23.8	23.1	22.7
Increasing yield	273	3.02	1.60	32.2	5.5	15.8	21.6	24.9

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 18

*Responses based on a 5-point scale from not at all important (1) to extremely important (5)

[a] SD=Standard deviation

[b] Percent

Table 21. Respondents' views about factors that would enhance their use of conservation practices

I would be more likely to adopt new conservation practices or to continue to use practices if…	N	Mean*	SD[a]	Strongly disagree[b]	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I had access to financial resources to help me adopt conservation practices.	284	0.61	1.08	5.6	5.3	34.9	30.6	23.6
I had evidence that the conservation practice improved water resources.	280	0.45	0.97	4.6	6.4	42.1	32.9	13.9
I could get higher payments for adopting conservation practices.	278	0.45	1.06	5.4	7.2	45.3	21.6	20.5
Conservation program requirements were less complex.	276	0.42	1.02	5.4	6.9	44.9	26.1	16.7
I knew more about the wildlife benefits of conservation practices.	287	0.39	0.95	4.5	7.3	45.3	30.3	12.5
I had to help with the physical labor of implementing and maintaining conservation practices.	286	0.35	1.08	8.4	6.6	41.3	28.7	15.0
I could learn how to maintain conservation practices for soil conservation.	280	0.34	0.91	4.3	7.1	48.6	30.0	10.0
I could get equipment to adopt new conservation practices.	279	0.34	1.00	6.1	7.2	46.2	27.6	12.9
My neighbors maintained conservation practices.	280	0.30	0.96	5.7	7.5	47.9	28.6	10.4
Conservation programs were more flexible.	281	0.26	0.93	5.3	8.5	49.8	27.0	9.3
I could talk to other landowners or farmers who are using conservation practices.	281	0.22	0.93	6.8	7.5	50.2	28.5	7.1
I could attend a workshop or field day on conservation practices.	281	0.21	0.96	7.1	8.9	47.3	29.2	7.5
I had the evidence that conservation practices did not reduce my crop yield.	275	0.13	0.97	9.1	6.2	55.6	21.1	8.0
I was compensated for lost crop production because of conservation practices.	274	0.11	1.10	12.0	8.0	48.5	19.7	11.7
A conservation assistance professional would visit my land to discuss conservation practice options.	275	0.09	0.99	9.5	9.1	52.0	21.8	7.6
I could be enrolled in a program that recognizes local conservation stewards.	279	0.00	0.95	8.2	12.5	57.3	14.3	7.5
There were regulations that mandated using a conservation practice.	280	-0.06	1.16	15.7	12.9	42.5	19.3	9.6

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 19

*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

[a] SD=Standard deviation; [b] Percent

Table 22. Respondents' engagement in civic actions in the past 12 months

In the past 12 months how often have you...	N	Mean*	SD[a]	Never[b]	Every few months	Every month	Every two weeks	Weekly or more
Volunteered for community organizations or events?	294	1.90	1.13	46.9	31.6	12.6	2.0	6.8
Talked to others about conservation practices?	293	1.65	0.80	50.9	36.9	9.9	1.4	1.0
Heard about a water resource protection initiative?	292	1.48	0.72	62.0	30.8	5.1	1.4	0.7
Attended a meeting, public hearing, or workshop about water?	291	1.26	0.55	78.0	18.9	2.4	0.3	0.3
Worked with other community members to protect water?	290	1.26	0.57	80.7	12.8	6.6	0.0	0.0
Participated in a water resource protection initiative?	291	1.24	0.61	82.1	13.7	3.1	0.0	1.0
Taken a leadership role around water resource conservation in the community?	291	1.14	0.52	91.4	5.2	2.4	0.3	0.7

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 22

*Responses based on a 4-point scale from never (1) to weekly or more (5)

[a] SD=Standard deviation

[b] Percent

Table 23. Respondents' intentions to engage in civic actions in the next 12 months

In the next 12 months, I intend to...	N	Mean*	SD[a]	Most certainly not[b]	Probably not	Uncertain	Probably will	Most certainly will
Learn more about conservation practices	289	0.30	1.02	4.8	17.0	31.1	37.4	9.7
Learn more about water resource issues in my watershed	293	0.22	0.99	4.1	19.1	36.2	32.1	8.5
Talk to others about conservation practices	291	0.16	1.04	5.2	23.0	31.6	31.6	8.6
Use a new conservation practice on my land	291	-0.05	1.11	7.9	28.9	33.7	18.9	10.7
Work with other community members to protect water	292	-0.11	0.95	5.8	28.4	42.8	17.1	5.8
Attend a meeting, public hearing, or workshop about water	293	-0.25	1.00	9.2	31.7	39.2	14.0	5.8
Contact conservation assistance professionals (e.g., my Soil and Water Conservation District or the Natural Resources Conservation Service) about water resource initiatives	291	-0.28	1.03	10.0	34.0	36.8	12.4	6.9

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 23

*Responses based on a 4-point scale from most certainly not (1) to most certainly will (5)

[a] SD=Standard deviation

[b] Percent

Table 24. Individuals or groups that influence respondents' decisions about conservation on their land

	N	Mean*	SD[a]	Not at all[b]	Slightly	Moderately	A lot	Don't know/Not applicable
My family	290	3.03	1.06	12.8	11.7	27.6	40.0	7.9
My county's Soil and Water Conservation District (SWCD)	287	2.81	1.03	13.2	16.4	31.7	26.5	12.2
Farmers	288	2.65	1.08	18.4	14.9	30.9	21.9	13.9
My neighbors	289	2.58	1.06	19.0	20.4	31.1	20.4	9.0
The Natural Resources Conservation Service (NRCS)	284	2.56	1.08	20.1	15.8	30.3	18.7	15.1
The MN Department of Natural Resources	289	2.49	1.03	20.1	21.1	31.8	15.9	11.1
The Farm Service Agency (USDA)	288	2.44	1.12	24.7	15.3	26.7	17.4	16.0
The MN Department of Agriculture	287	2.41	1.04	21.3	21.6	28.2	13.9	15.0
My local extension agent	285	2.38	1.11	25.3	17.2	25.3	15.8	16.5
University of Minnesota Extension	285	2.37	1.06	24.2	19.3	28.1	13.7	14.7
The MN Pollution Control Agency	286	2.32	1.06	25.5	21.0	26.2	13.6	13.6
Other (e.g., City council, market, organic certifier)	46	2.31	1.23	23.9	2.2	19.6	10.9	43.5
University researchers	286	2.29	1.01	24.5	20.3	29.7	9.4	16.1
Environmental advocacy organizations	284	2.25	1.07	27.5	22.5	22.9	13.0	14.1
My agronomist/agricultural advisor	284	1.92	1.09	39.1	12.3	15.1	8.8	24.6
My local co-op	283	1.90	1.01	38.2	15.2	18.7	5.7	22.3
My county's Farm Bureau	285	1.83	0.98	41.4	16.5	16.8	5.3	20.0
Seed/input dealer	283	1.82	1.00	41.3	13.4	16.6	5.3	23.3
My financial institution (e.g., financial advisor, loan officer, mortgage lender, ect.)	286	1.81	0.99	41.6	15.7	15.7	5.6	21.3
Agricultural commodity associations (e.g., Minnesota Corn Growers Association)	285	1.77	0.99	43.2	14.0	14.7	5.3	22.8
Farmer-led councils	281	1.69	0.94	43.8	13.5	13.2	3.9	25.6
Certified crop advisors (CCA)	284	1.67	0.93	45.1	13.7	12.3	3.9	25.0
My local Farmer's Union	284	1.59	0.88	48.2	11.6	12.3	2.5	25.4

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 20

*Responses based on a 4-point scale from not at all (1) to a lot (4)

[a] SD=Standard deviation

[b] Percent

Table 25. Respondents' most trusted sources of information

	N	Percent*
My county's Soil and Water Conservation District (SWCD)	86	28.3
My family	82	27.0
The MN Department of Natural Resources	70	23.0
Farmers	54	17.8
My neighbors	52	17.1
The Natural Resources Conservation Service (NRCS)	45	14.8
University researchers	37	12.2
The Farm Service Agency (USDA)	34	11.2
University of Minnesota Extension	34	11.2
The MN Department of Agriculture	33	10.9
The MN Pollution Control Agency	32	10.5
My local extension agent	31	10.2
My local co-op	17	5.6
My agronomist/agricultural advisor	15	4.9
Seed/input dealer	14	4.6
Environmental advocacy organizations	13	4.3
My financial institution (e.g., financial advisor, loan officer, mortgage lender, ect.)	8	2.6
Other (e.g., City council, market, organic certifier)	8	2.6
My county's Farm Bureau	5	1.6
Farmer-led councils	3	1.0
Certified crop advisors (CCA)	2	0.7
Agricultural commodity associations (e.g., Minnesota Corn Growers Association)	1	0.3
My local Farmer's Union	1	0.3

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 21
*Percent of all survey respondents (N = 304)

Table 26. Respondents' perceived social norms of conservation action

People who are important to me…	N	Mean*	SD[a]	Strongly disagree[b]	Somewhat disagree	agree nor disagree	Somewhat agree	Strongly agree
Expect me to maintain my land in a way that does not contribute to water resource problems.	299	0.94	0.88	1.7	3.0	22.7	44.5	28.1
Expect me to use conservation practices on my land.	299	0.78	0.91	2.0	4.0	30.8	40.5	22.7
Work with other community members to protect water.	298	0.33	0.99	6.0	10.1	38.3	36.2	9.4
Talk with others about conservation practices.	298	0.27	1.00	6.4	11.1	41.6	30.9	10.1
Expect me to work with other community members to protect water.	299	0.22	1.03	7.0	12.4	43.8	25.4	11.4
Expect me to attend meetings, public hearings or workshops about water.	297	0.01	0.98	9.4	12.1	52.5	19.5	6.4
Attend meetings, public hearings or workshops about water.	299	0.00	0.95	7.7	16.1	50.8	19.4	6.0

Source: Water, Community and You: A Survey of landowners in La Crescent and Reno Watershed, Question 14

*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

[a] SD=Standard deviation

[b] Percent

Appendix G: Survey Findings- Subgroup Comparisons

Subgroup comparisons: Watershed

Table 1. Number of respondents by watershed

Watershed	n	Percent
La Crescent	286	48.5
Reno	304	51.5
Total	590	100.0

Source: Source: Water, Community, and You: A Survey of Landowners in La Crescent and Reno Watersheds

Table 2. Differences between respondents in La Crescent and Reno watersheds in years lived in community

Watershed	n	Mean	SD	t[a]
La Crescent	276	30.89	19.09	-4.420**
Reno	287	39.03	24.21	

Source: Source: Water, Community, and You: A Survey of Landowners in La Crescent and Reno Watersheds, Question 1

[a]T-test statistic for testing differences in means. Only items with statistical differences at a significance level of $p \leq 0.01$ reported here.

SD = Standard deviation

Table 3. Difference between respondents in La Crescent and Reno watersheds in their level of formal education

	Watershed[a]		χ^2
	La Crescent	Reno	
Did not finish high school	31.3%	68.8%	
Completed high school	37.4%	62.6%	
Some college but no degree	45.8%	54.2%	
Associate degree or vocational degree	55.9%	44.1%	17.726
College bachelor's degree	46.2%	53.8%	
Some college graduate work	63.0%	37.0%	
Completed graduate degree (Masters or PhD)	59.8%	40.2%	

Source: Source: Water, Community, and You: A Survey of Landowners in La Crescent and Reno Watersheds, Question 32

[a]Percent

χ^2 Chi-square statistic for testing differences in proportions; $p \leq 0.01$

Table 4. Difference between respondents in La Crescent and Reno watersheds in their use of land for agricultural production

	Land used for agricultural production[a]		χ^2
Watershed[a]	Yes	No	
La Crescent	18.4	81.6	16.199
Reno	33.6	66.4	

Source: Source: Water, Community, and You: A Survey of Landowners in La Crescent and Reno Watersheds, Question 16

[a]Percent

χ^2 Chi-square statistic for testing differences in proportions; $p \leq 0.01$

Table 5. Difference between respondents in La Crescent and Reno watersheds in their current and future use of conservation practices

Conservation Practices	Watershed	Current use of practice %Yes	χ^2	Future use of practice %Yes	χ^2
Storage basins/ponds or water and sediment control basins	La Crescent	39.1	24.440	41.9	19.778
	Reno	66.7		71.3	
Conservation tillage practices (e.g., no till, minimum till)	La Crescent	49.4	15.935	51.7	13.284
	Reno	75.2		79.6	

Source: Source: Water, Community, and You: A Survey of Landowners in La Crescent and Reno Watersheds, Question 15

χ^2 Chi-square statistic for testing differences in proportions; $p \leq 0.01$

Table 6. Differences between respondents in La Crescent and Reno watersheds in their intentions to engage in civic actions in the next 12 months

Survey item[a]	Watershed	n	Mean	SD	t[b]
Learn more about water resource issues in my watershed	La Crescent	274	-0.06	0.96	-3.385
	Reno	293	0.22	0.99	
Contact conservation assistance professionals (e.g. my soil and water conservation district or the Natural Resources Conservation Service) about water resource initiatives	La Crescent	275	-0.51	0.89	-2.883
	Reno	291	-0.28	1.03	
Learn more about conservation practices	La Crescent	275	-0.01	0.99	-3.684
	Reno	289	0.30	1.02	

Source: Water, Community, and You: A Survey of Landowners in La Crescent and Reno Watersheds, Question 23

[a]Items measured on a five-point scale from most certainly not (-2) to most certainly will (2)

[b]T-test statistic for testing differences in means. Only items with statistical differences at a significance level of $p \leq 0.01$ reported here.

SD = Standard deviation

Table 7. Difference between La Crescent and Reno watershed respondents in their perception about potential sources of water pollutants/issues, importance of factors in conservation decision making, and facilitators of conservation practice adoption

Survey item	Watershed	n	Mean	SD	t[d]
Perception about potential sources of water pollutants/issues[a]					
Improperly sized/maintained septic systems	La Crescent	227	2.68	0.93	4.015
	Reno	240	2.33	0.95	
Importance of factors in conservation decision making[b]					
Increasing yield	La Crescent	236	2.58	1.49	-3.183
	Reno	273	3.01	1.60	
Facilitators of practice adoption[c] (I would be more likely to adopt new conservation practices or continue to use practices if…)					
I could get higher payment for adopting conservation practices.	La Crescent	263	0.15	1.03	-3.309
	Reno	278	0.45	1.06	
Conservation program requirements were less complex.	La Crescent	264	0.18	0.97	-2.783
	Reno	276	0.42	1.02	

Source: Water, Community, and You: A Survey of Landowners in La Crescent and Reno Watersheds, Questions 9, 18, and 19

[a]Item measured on a four-point scale from not a problem (1) to severe problem (4)

[b]Items measured on a five-point scale from not at all important (1) to extremely important (5)

[c]Items measured on a five-point scale from strongly disagree (-2) to strongly agree (+2)

[d]T-test statistic for testing differences in means. Only items with statistical differences at a significance level of $p \leq 0.01$ reported here

SD = Standard deviation

Subgroup comparisons: Levels of civic engagement

Table 8. Number of respondents by levels of civic engagement

Levels of civic engagement[a]	N	Percent
Low	301	53.4
High	263	46.6
Total	564	100.0

Source: Water, Community, and You: A Survey of Landowners in La Crescent and Reno Watersheds, Question 22
[a]Based on an index of survey questions 22a through 22g;. High = respondents who have participated in 2 or more of the 7 community activities in the past 12 months, low = respondents who have participated in 1 or fewer of the 7 community activities in the past 12 months

Table 9. Difference between respondents with varying levels of civic engagement in their familiarity with water issues, beliefs about water resource protection, perceived efficacy, perceived ability, and responsibility

Survey item	Levels of civic engagement[d]	n	Mean	SD	t[e]
Familiarity with water issues[a]					
Familiarity with water issues in their watershed	Low	288	2.08	0.87	-9.671
	High	256	2.79	0.85	
Beliefs about water resource protection[b]					
Water resources in my community are adequately protected	Low	296	0.60	1.04	3.290
	High	263	0.29	1.24	
Excessive water runoff causes soil and nutrient loss	Low	296	1.40	0.94	-2.988
	High	263	1.62	0.80	
Perceived efficacy (To what extent do you believe you are capable of…)[b]					
Using a new conservation practice on the land/farm	Low	292	2.46	1.03	-4.561
	High	260	2.86	1.00	
Maintaining conservation practices on the land/farm	Low	292	2.71	1.07	-5.010
	High	260	3.13	0.92	
Changing land use practices to reduce impacts on water resources	Low	291	2.50	1.09	-3.910
	High	260	2.85	0.99	
Influencing decision-making about water resources in your community	Low	293	2.17	0.90	-5.250
	High	259	2.58	0.94	
Perceived ability[c]					
My use of a conservation practice contributes to healthy water resources	Low	292	1.03	0.84	-5.204
	High	260	1.38	0.73	
By taking an active part in conservation, people can keep water clean in Minnesota	Low	294	1.31	0.84	-3.460
	High	260	1.54	0.69	
I have the knowledge and skills I need to use conservation practices on the land	Low	293	0.44	1.05	-5.773
	High	259	0.92	0.87	
I have the equipment I need to adopt a new conservation practice	Low	293	-0.49	1.12	-3.786
	High	260	-0.13	1.12	
I do not have the time to use conservation practices	Low	291	-0.48	0.99	3.057
	High	258	-0.74	0.99	
Responsibility[c]					
It is my personal responsibility to help protect water	Low	293	1.19	0.87	-4.451
	High	259	1.50	0.73	

Source: Water, Community, and You: A Survey of Landowners in La Crescent and Reno Watersheds, Question 5,6, 11, and 12; [a]Item measured on a four-point scale from not at all familiar (1) to very familiar (4)
[b]Items measured on a five-point scale from strongly disagree (-2) to strongly agree (+2)
[c]Items measured on a four-point scale from not at all capable (1) to very capable (4)
[d]Based on an index of survey questions 22a through 22g;. High = respondents who have participated in 2 or more of the 7 community activities in the past 12 months, low = respondents who have participated in 1 or fewer of the7 community activities in the past 12 months; [e]T-test statistic for testing differences in means. Only items with statistical differences at a significance level of $p \leq 0.01$ reported here
SD = Standard deviation

Table 10. Differences between respondents with varying levels of civic engagement in their personal and social norms

Survey item	Levels of civic engagement[b]	n	Mean	SD	t[c]
Self-identity[a]					
I think of myself as an environmental steward	Low	293	0.77	0.93	-6.132
	High	260	1.22	0.77	
I think of myself as someone who is very concerned with environmental issues	Low	293	0.93	0.91	-4.801
	High	260	1.28	0.79	
To engage in water resource protection is an important part of who I am	Low	293	0.50	0.98	-5.632
	High	260	0.95	0.91	
Personal norms[a] (I feel a personal obligation to…)					
Do whatever I can to prevent water pollution	Low	296	1.09	0.90	-4.978
	High	263	1.44	0.76	
Maintain my land/farm in a way that does not contribute to water resource problems	Low	293	1.09	0.98	-6.746
	High	262	1.58	0.68	
Talk to others about conservation practices	Low	296	0.04	0.86	-9.255
	High	263	0.73	0.89	
Use conservation practices on my land/property	Low	295	0.77	0.99	-8.421
	High	263	1.40	0.75	
Work with other community members to protect water resources	Low	295	0.14	0.92	-6.132
	High	263	0.62	0.93	
Attend meetings or public hearings about water	Low	295	-0.26	0.96	-6.313
	High	263	0.24	0.90	
Social norms (People who are important to me…)[a]					
Expect me to use conservation practices on my land	Low	294	0.55	0.89	-5.245
	High	262	0.93	0.81	
Expect me to maintain my land in a way that does not contribute to water resource problems	Low	293	0.78	0.88	-4.476
	High	261	1.10	0.78	
Expect me to attend meetings or public hearings about water	Low	292	-0.26	0.91	-5.199
	High	262	0.15	0.94	
Expect me to work with other community members to protect water	Low	294	-0.11	0.96	-5.991
	High	261	0.38	0.97	
Attend meetings or public hearings about water	Low	294	-0.24	0.88	-4.159
	High	262	0.08	0.97	
Talk to others about conservation practices	Low	294	-0.06	0.98	-5.547
	High	261	0.41	1.01	
Work with other community members to protect water	Low	294	0.03	0.95	-5.864
	High	261	0.50	0.94	

Source: Water, Community, and You: A Survey of Landowners in La Crescent and Reno Watersheds, Question 5,6, 13, 14, and 24; [a]Items measured on a five-point scale from strongly disagree (-2) to strongly agree (+2)
[b]Based on an index of survey questions 22a through 22g;. High = respondents who have participated in 2 or more of the 7 community activities in the past 12 months, low = respondents who have participated in 1 or fewer of the

7 community activities in the past 12 months; [c]T-test statistic for testing differences in means. Only items with statistical differences at a significance level of $p \leq 0.01$ reported here
SD = Standard deviation

Table 11. Difference between respondents with varying levels of civic engagement in their current use of conservation practices

Conservation Practices	Levels of civic engagement[a]	Current use of practice %Yes	χ^2
Storage basins/ponds or water and sediment control basins	Low High	40.8 65.3	19.174
Conservation tillage practices (e.g., no till, minimum till)	Low High	50.5 76.5	16.108
Terraces	Low High	35.3 53.7	7.583
Agriculture waste management facility or system	Low High	15.1 38.1	9.382
Protect wetlands on the land/property	Low High	47.4 81.7	20.495
Woodland management	Low High	41.1 69.8	23.190

Source: Source: Water, Community, and You: A Survey of Landowners in La Crescent and Reno Watersheds, Question 15

[a]Based on an index of survey questions 22a through 22g;. High = respondents who have participated in 2 or more of the 7 community activities in the past 12 months, low = respondents who have participated in 1 or fewer of the 7 community activities in the past 12 months

χ^2 Chi-square statistic for testing differences in proportions; $p \leq 0.01$

Table 12. Difference between respondents with varying levels of civic engagement in their intentions to use conservation practices in the future

Conservation Practices	Levels of civic engagement[a]	Current use of practice %Yes	χ^2
Storage basins/ponds or water and sediment control basins	Low	47.7	10.796
	High	69.2	
Conservation tillage practices (e.g., no till, minimum till)	Low	55.6	9.543
	High	79.2	
Cover crops	Low	51.7	8.293
	High	75.3	
Protect wetlands on the land/property	Low	53.5	14.956
	High	87.9	
Woodland management	Low	53.7	18.219
	High	80.8	
Rain barrel or cistern to store water	Low	36.3	8.979
	High	53.9	
Rain garden	Low	20.9	7.812
	High	37.3	

Source: Source: Water, Community, and You: A Survey of Landowners in La Crescent and Reno Watersheds, Question 15

[a]Based on an index of survey questions 22a through 22g;. High = respondents who have participated in 2 or more of the 7 community activities in the past 12 months, low = respondents who have participated in 1 or fewer of the 7 community activities in the past 12 months

χ^2 Chi-square statistic for testing differences in proportions; $p \leq 0.01$

Table 13. Difference between respondents with varying levels of civic engagement in the extent to which their conservation decisions are influenced by individuals or groups

Survey item[a]	Levels of civic engagement[b]	n	Mean	SD	t[c]
My family	Low	247	2.86	1.10	-4.407
	High	249	3.26	0.91	
Farmers	Low	224	2.26	1.09	-4.140
	High	232	2.67	1.04	
My neighbors	Low	244	2.48	1.07	-2.879
	High	245	2.74	0.98	
Environmental advocacy organizations	Low	219	2.04	0.95	-4.285
	High	239	2.44	1.05	
My county's Soil and Water Conservation District (SWCD)	Low	220	2.27	1.04	-6.463
	High	240	2.89	1.00	
My financial institution	Low	216	1.63	0.90	-2.805
	High	218	1.89	1.00	
University researchers	Low	219	1.97	1.00	-5.006
	High	235	2.45	1.04	
The MN Department of Natural Resources	Low	233	2.25	1.04	-3.632
	High	240	2.60	1.03	
The MN Pollution Control Agency	Low	221	2.10	1.04	-3.656
	High	238	2.46	1.08	
The MN Department of Agriculture	Low	216	2.05	1.04	-4.469
	High	234	2.49	1.05	
The Farm Service Agency (USDA)	Low	210	1.96	1.10	-4.639
	High	228	2.45	1.09	
The Natural Resources Conservation Service (NRCS)	Low	211	2.01	1.08	-6.285
	High	228	2.66	1.06	
My local extension agent	Low	210	1.95	1.09	-4.137
	High	229	2.37	1.05	
University of Minnesota Extension	Low	213	2.00	1.06	-3.586
	High	232	2.36	1.09	
My county's Farm Bureau	Low	205	1.62	0.92	-2.886
	High	219	1.89	1.00	
My local co-op	Low	193	1.62	0.90	-2.571
	High	212	1.86	1.02	
My agronomist/agricultural advisor	Low	190	1.59	0.93	-2.730
	High	205	1.86	1.05	

Source: Source: Water, Community, and You: A Survey of Landowners in La Crescent and Reno Watersheds, Question 20

[a]Items measured on a four-point scale from not at all (1) to a lot (4)

[b]Based on an index of survey questions 22a through 22g;. High = respondents who have participated in 2 or more of the 7 community activities in the past 12 months, low = respondents who have participated in 1 or fewer of the 7 community activities in the past 12 monthss

[c]T-test statistic for testing differences in means. Only items with statistical differences at a significance level of $p \leq 0.01$ reported here

SD = Standard deviation

Table 14. Difference between respondents with varying levels of civic engagement in their facilitators of practice adoption

Survey item[a] (I would be more likely to install new conservation practices or to continue to use practices if…)	**Levels of civic engagement**[b]	**n**	**Mean**	**SD**	**t**[c]
I had help with the physical labor of implementing and maintaining conservation practices	Low	284	0.28	1.11	-2.816
	High	261	0.54	0.99	
I had access to financial resources to help me adopt conservation practices	Low	281	0.40	1.11	-4.174
	High	260	0.78	1.03	
I could talk to other landowners or farmers who are using conservation practices	Low	276	0.05	0.97	-4.002
	High	258	0.37	0.88	
I could attend a workshop or field day on conservation practices	Low	278	-0.03	1.00	-4.999
	High	259	0.39	0.94	
I could be enrolled in a program that recognizes local conservation stewards	Low	277	-0.21	0.97	-4.286
	High	257	0.14	0.93	
I could get higher payments for adopting conservation practices	Low	275	0.17	1.00	-3.103
	High	253	0.45	1.07	
I could get equipment to adopt new conservation practices	Low	275	0.15	0.98	-3.372
	High	255	0.43	0.94	
I could learn how to maintain conservation practices for soil conservation	Low	277	0.24	0.88	-3.030
	High	257	0.48	0.93	
I had evidence that the conservation practice improved water resources	Low	276	0.29	0.94	-3.331
	High	257	0.57	0.99	
Conservation program requirements were less complex	Low	274	0.17	0.95	-3.187
	High	254	0.44	1.02	
A conservation assistance professional would visit my land to discuss conservation practice options	Low	272	-0.06	1.00	-2.921
	High	255	0.20	1.04	

Source: Source: Water, Community, and You: A Survey of Landowners in La Crescent and Reno Watersheds, Question 19

[a]Items measured on a four-point scale from strongly disagree (-2) to strongly agree (+2)

[b]Based on an index of survey questions 22a through 22g;. High = respondents who have participated in 2 or more of the 7 community activities in the past 12 months, low = respondents who have participated in 1 or fewer of the 7 community activities in the past 12 monthss

[c]T-test statistic for testing differences in means. Only items with statistical differences at a significance level of $p \leq 0.01$ reported here

SD = Standard deviation