Des Moines River Basin

Watershed Approach

Civic Engagement Project Summary

Photo Credit: Heron Lake Watershed District

Introduction

Civic engagement and public participation was a major focus during the Des Moines River Basin Watershed Approach in Cottonwood, Jackson, Martin, Murray and Nobles counties from 2014 through the summer 2018. The MPCA worked with county and SWCD staff, the Heron Lake Watershed District, consultants, citizens, and other state agency staff to work on two projects to promote civic engagement collaboratively in the area. Projects were tailored to local partner interest and capacity.

The Des Moines River Basin Civic engagement projects were:

The following pages contain the summary, results, final reports and attachments of each of the two projects

East Fork Des Moines River Watershed Priority Management Zone Strategy

The purpose of this project is to identify community/landowner opportunities, obstacles, and opinions on land management and water quality in the East Fork Des Moines River watershed, and assist in data collection in the East and West Fork Des Moines River watersheds. Ultimately, this work will help identify land management options for the purposes of surface water quality restoration and protection within the East Fork Des Moines River watershed. This project worked in collaboration with MPCA, Minnesota State University, Mankato (MNSU), and local county (Martin and Jackson) and SWCD staff, and Houston Engineering. The goals of the project were to 1) develop watershed restoration and protection strategies based on their specialized expertise and knowledge of local community goals and interests, and 2) Develop TMDL allocations for impaired waterbodies in the Des Moines River Basin. The findings from this project informed the development of the watershed restoration and protection strategies (WRAPS) report within the East Fork Des Moines River and West Fork Des Moines Watersheds.

East Fork Des Moines River

Watershed Priority Management Zone Strategy Final Report

Martin Soil and Water Conservation District
August 1, 2018

Grant project summary

Project title: East Fork Des Moines River Watershed Priority Management Zone Strategy

Organization (Grantee): Martin Soil and Water Conservation District

Project start date: 03/19/2015 Project end date: 06/30/2018 Report submittal date: 08/01/2018

Grantee contact name: Ashley Brenke Title: District Manager

Address: 923 North State Street, Suite 110

City: Fairmont State: MN Zip: 56031

Phone number: 507-235-6680 Fax: Email: ashleybrenke@frontier.com

Basin (Red, Minnesota, St. Croix, etc.) /Watershed & 8 digit HUC:: Des Moines River Basin; 07100003 County: Martin, Jackson

Project type (check one):

- ☐ Clean Water Partnership
- ☒ Total Maximum Daily Load (TMDL)/Watershed Restoration or Protection Strategy (WRAPS) Development
- ☐ 319 Implementation
- ☐ 319 Demonstration, Education, Research
- ☐ TMDL/WRAPS Implementation

Grant funding

Final grant amount: $87,600.67 Final total project costs: $87,600.67

Matching funds: Final cash: $ Final in-kind: $ Final Loan: $

MPCA project manager: Bryan Spindler

For TMDL/WRAPS development or TMDL/WRAPS implementation projects only

Impaired reach name(s): County Ditch 53, Des Moines River East Branch, Okamanpeedan , Bright, Pierce, Fourmile Creek, Unnamed creek, County Ditch 1/Judicial Ditch 50, County Ditch 11, Temperance

AUID or DNR Lake ID(s): 07100003-506, 07100003-527, 46-0051-00, 46-0052-00, 46-0076-00, 07100003-510, 07100003-529, 07100003-515, 07100003-503, 46-0103-00, 07100003-525

Listed pollutant(s): Nutrient/eutrophication biological indicators, Aquatic macroinvertebrate bioassessments, Fishes bioassessments, Escherichia coli

303(d) List scheduled start date: 2018 Scheduled completion date:

AUID = Assessment Unit ID
DNR = Minnesota Department of Natural Resources

Executive summary of project (300 words or less)

This summary will help us prepare the Watershed Achievements Report to the Environmental Protection Agency. (Include any specific project history, purpose, and timeline.)

Problem (one paragraph)

The East Fork Des Moines River watershed covers 839,518 acres, 130,380 of which are in Minnesota's Martin and Jackson counties. Cities in Minnesota's portion include Alpha, Sherburn, Dunnell, Ceylon and Wilbert. The main branch of the East Fork flows southeast for approximately 30 miles before outletting to Okamanpeedan Lake on the Minnesota-Iowa border. Over eighty-five percent of the land in the watershed is devoted to the production of row crops. There has been little attention given to this watershed in past years for government conservation programs. However, there are still a number of wetland restoration projects and conservation reserve lands and hunting and wildlife organizations have been active in this watershed.

Waterbody improved (one paragraph)

The purpose of this project was to identify community/landowner opportunities, obstacles, and opinions on land management and water quality in the East Fork Des Moines River watershed. Ultimately, this work will help identify land management options for the purposes of surface water quality restoration and protection within the East Fork Des Moines River watershed.

Project highlights (one paragraph)

This project occurred between the Spring of 2015 and the Spring of 2018. Major partners in this effort included Martin SWCD, Jackson SWCD, Minneosta PCA, MNSU – Mankato Water Resources Center, Houston Engineering, and the West Fork Des Moines River project team. The findings from this project will inform the development of the watershed restoration and protection strategies (WRAPS) report within the East Fork Des Moines River Watershed.

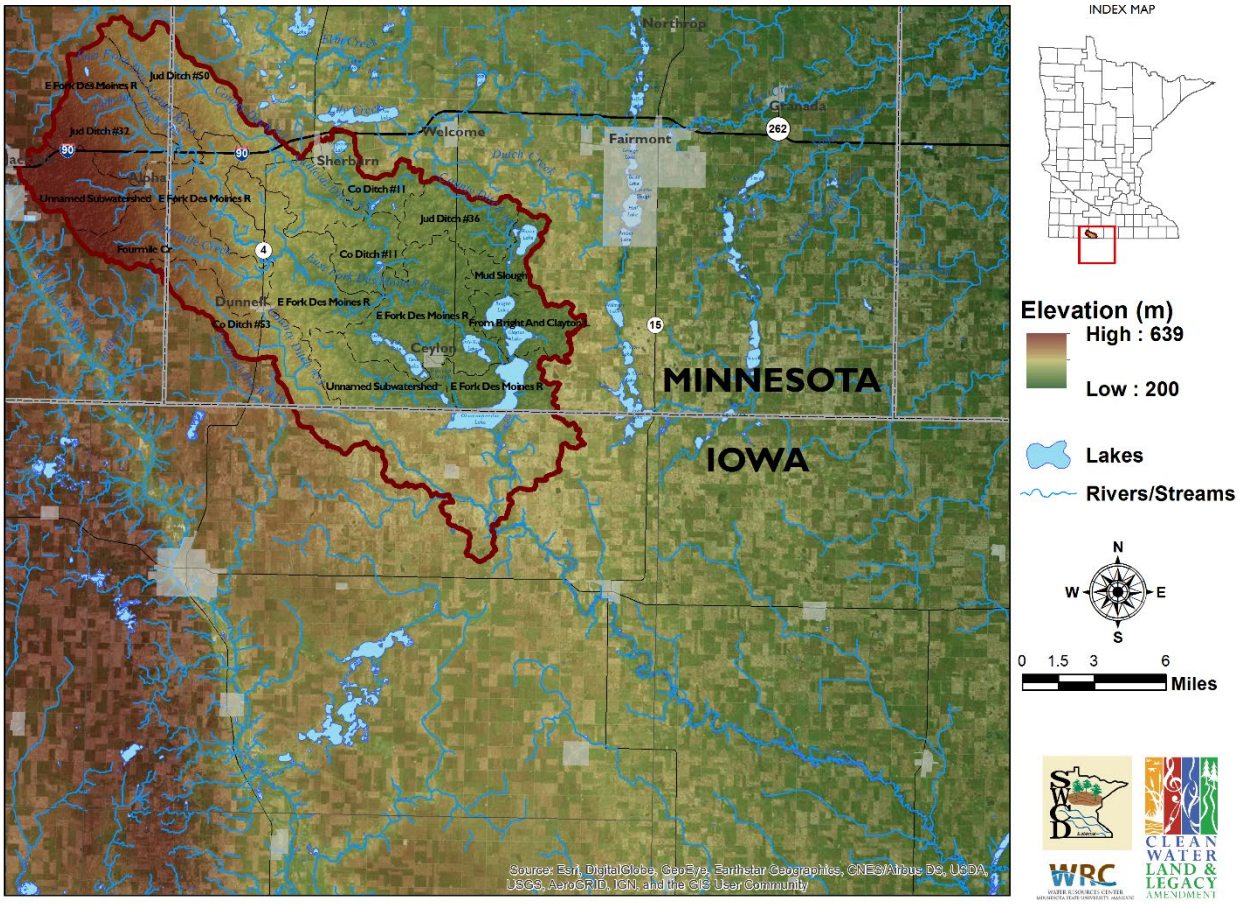
Results (one paragraph)

The main water quality results from this effort was increased LGU knowledge about the implementation interest for best management practices. Also, as a result of public participation efforts that occurred during this project, there have been at least four CREP wetland restoration efforts by private landowners.

Partnerships (Name all partners and indicate relationship to project)

- Minnesota Pollution Control Agency
- Jackson Soil and Water Conservation District
- MNSU, Mankato, Water Resources Center
- Houston Engineering
- West Fork Des Moines River project team

Pictures



EAST FORK DES MOINES RIVER WATERSHED

Section I – Work Plan Review

- There was one approved change from the original work plan. Almost $15,000 was moved to an additional Objective – TMDL Allocation Development.

Objective 1: Compile and analyze information from watershed citizens, landowners, policy makers, and other groups or individuals as necessary to identify land management options and water quality restoration and protection strategies.

- *Task A: Develop a process to identify community/landowner opportunities, obstacles, and opinions on land management*
- *Task B: Assist MPCA with Data Collection and Report Input*
- *Task C: Progress Tracking*
- *Task D: Project Management*

All of the tasks identified under Objective 1 were completed including developing an Engagement Team, cross-jurisdiction coordination with the West Fork Des Moines River project team, completing reports and reimbursement requests, assisting with Biological and Stressor ID reports, assisting with Stressor ID sampling, developing maps that aid in the identification of potential BMP projects, developing surveys and interview questions, obtaining public feedback for inclusion in project final report, and tracking project results.

Objective 2: TMDL Allocation Development

- *Task A: Compute loads and margins of safety*
- *Task B: Bath Tub Models and Technical Memorandum*

All of the tasks identified under Objective 2 were completed including WLA, LA, and MOS for impaired waters in the Des Moines basin and Technical Memorandum of calculation results.

Section II – Grant Results

Measurments

For gathering information under this project we used surveys, interviews, and public meetings. Surveys were sent to 75 people and 18 responded. Results from the surveys and interviews were analyzed by MNSU Mankato Water Resources Center [SB(1)]

Products

A number of products were created as part of this project:

1. ACPF Land Management Opportunities maps
2. East Fork Des Moines watershed map – Whole Watershed
3. East Fork Des Moines watershed map – Minnesota
4. Survey and Interview Questions[SB(2)]
5. East Fork Des Moines River meeting handout – Community Perspectives
6. East Fork Des Moines River handout – Watershed Study
7. East Fork Des Moines Story Map
8. Technical memorandum: Des Moines River Basin Lake Modeling
9. Technical memorandum: Des Moines River Basin Load Duration Curves and TMDL Tables
10. Water monitoring data submitted into EQuIS

Public Outreach and Education

Outreach and education were large parts of this work plan. Overall, our public participation activities were very successful. Meeting flyers about the watershed were sent to 100 people and interview/survey requests were sent to 75 people. [SB(3]

The main public meeting project partners hosted had 35 atendees. The March 20 meeting was held at the Community Center in Sherburn, MN, the largest City in the Minnesota portion of the East Fork Des Moines River Watershed. The meeting started with an overview of PCA's watershed approach then transitioned into a discussion on the Monitoring and Assessment report. Next, atendees (primarily agricultural landowners) answered a series of questions.

- What do you think should be done to improve watershed conditions and water quality?
- What Best Management Practices (BMPs) do you think will address those concerns and improve watershed conditions?
- Which BMPs do you think that people will be more willing to adopt in this watershed?
- Are there some parts of the watershed that you would like to see protected?
- Are there some parts of the watershed that you think are particularly troubled and should be restored?
- What types of activities do you think will help to improve watershed conditions?
- What types of projects should the SWCD focus on in the future? Please help us prioritize.

The main concern discussed was increased flooding. Citizens were interested in slowing the flow of water as well as working towards eliminating surface water ponding and keeping water on the landscape upstream. Water storage was a recurrent theme, and included discussions on storage/retention/holding ponds, CREP, and a desire to look at drainage systems more comprehensively. But, there were concerns about the funding needed to fix flooding issues and how to provide long term compensation for storage areas.

Residents also expressed concerns about fish consumption safety, excesive bank erosion and sedimentation, high bacteria levels, and excessive nutrients. Participants wanted more information about baseline water quality levels and what is being done to regulate runoff from municipalities. All of the meeting, survey, and interview results have been summarized in the document produced by MNSU-Mankato Water Resources Center titled "Community Perspectives: East Fork Des Moines River Watershed."

At the end of the meeting, the majority of participants wanted to have a follow up meeting to discuss the final WRAPS report for the watershed and to continue discussions on improving water quality in the watershed.

The East Fork Des Moines Watershed was also the focus of 3 County Water Plan meetings (2 in Martin County, 1 in Jackson County). These County Water Plan meetings reached 40 unique individuals. 10 interviews were completed during this project and 18 surveys were returned.

Long-term Results

The results of the interviews and public meetings identified conservation practices people are and aren't willing to adopt. People thought water storage, holding ponds, CRP/CREP, and wetlands were the BMPs needed the most. Respondents were for the most part ok with buffers but thought the widths needed to be more flexible. They were also interested in ditch channel storage and two stage ditches and felt there was a need to more often clean out exisiting storage areas that get silted up. In general, people felt existing programs were too restrictive and had too long of timeframes. Respondents were more interested in conservation tillage than nutrient management and cover crops.

Cover crops were brought up multiple times in the the surveys, interviews, and the meeting. Some people thought cover crops were great and some participants did not think that BMP was effective in this area. Because of this, the District will now be providing cost share money in this watershed for residents to try cover crops. There is a need to showcase the water storage capacity of soil when there is good organic matter, which is something the District will be focusing on in future outreach events.

The landowner relationships formed during this process will make it easier during the watershed planning process and have already made it easier when talking about BMP implementation. Because of our public participation efforts in the watershed, we have had more people interested in CRP and CREP. There is also an increased understanding in the public about the [SB(4]water quality monitoring agencies and Districts do as part of the Watershed Approach.

This project led to an increased partnership between Martin SWCD and Jackson SWCD. It also increased coordination among the entire Des Moines Basin. Initial discussions have occurred with MNSU – Mankato Water Resources Center to host a follow up landowner meeting with participants of the March meeting. Martin SWCD will continue to keep elected officials (SWCD Supervisors and County Commissioners) and landowners informed throughout the remainder of the WRAPS process.

Two Conservation Update articles (which reaches 12,000 people) were written about the East Fork Des Moines Watershed and information was also posted on the Martin SWCD website. This watershed was also the focus of Martin SWCD social media posts which reached approximately 200 people. The Minnesota Board of Water and Soil Resources (BWSR) would be interested in the results of this project.

Opportunties for future WRAPS work in the East Fork Des Moines River Watershed include looking at water storage, providing information on soil health, and having baseline water quality information.

Section III – Expenditures

See attached spreadsheet

East Fork Des Moines River Watershed Interview Results

We attempted to interview a diverse group of individuals throughout the watershed. The majority of interviewees were middle aged and had been living in the area for a number of years. This provided a good vision of the history of the area and how things have changed.

History and Reflections about Farming

1-How long have you lived/farmed here?
The majority have lived in the area for 50+ years. Most of them have been involved in farming their whole life.

2-How has the farm land changed? +/-
Some repeated reflections on how the farm land has changed include: more tile, pattern tile, loss of wetlands and water storage areas, less crop diversity, bigger fields, less fence lines and hay ground.

3-What do you like about farming? Dislike (what are some of the challenges you face)?
Likes: growing crops can be fun and enjoyable, tangible results, enjoy the lifestyle and independence.
Dislikes: paperwork, bad reputation, red tape, things you can't control such as market and prices, government programs take too long and have too much red tape.

4-What do you consider a "successful" farm operation? $ profit, sustainability, yield?
Profit and Sustainability were the most common answers.

5-How have your farming practices changed over the years?
We have gotten lazy and moved to a 2-crop system. Less tillage, specifically less moldboard plowing. More nutrient application, less animals used on the farm land and use more hog manure.

6-How has the landscape changed over the years? Community?
Loss of wetlands and natural areas including hay ground, fence lines, windbreaks, trees and fallow ground. More water in the creeks and streams, more erosion occurring in stream, more flooding.

Decision Making & Trust
7-Where do you go for information about farming?
Internet, neighbors/ other famrers, ag magazines, ag programs on radio and tv, SWCD, NRCS, FSA.

8-Who do you trust as an advisor when making decisions on your farm?
Family, neighbors/ other farmers, account manager.

9-Who else is helping you make decisions on your farm?
Family

Water Resources

10-How have the creeks/streams/rivers/lakes changed in your lifetime? +/-
Silted, chocolate milk, severe erosion, widened channels, cut banks, some have been drained and are gone, increased algae, more intense algal blooms, less buffer, less trees, straightened, less meanders, less fish, less wildlife, more water, higher more flashy flows, used to be smaller and deeper.

11-How would you rank water quality in your watershed? 1-10 (1 Poor, 10 Excellent)
Ranged from 1-7. Average ranking was 4

12-Is it improving or declining and what do you think is causing this?
Almost all though it is declining. Reasons: too much tile, no water storage, water is getting to the waterway too fast, too much water for the system to handle, excess rain.

13-How is it impacting you? Your farm?
Most did not see it impacting them or their farm with the exception of concerns about drinking water and erosion cutting into the fields.

14-Who do you think should be responsible for keeping water resources healthy?
All, everyone, farmer, operator, government needs to cut $ and incentives.

BMPs

15-Are there areas of concern on your farm that could benefit from BMPs? What is working/what is not working?
Most identified erosion as an area of concern. Multiple identified rip-rap as a good solution to erosion.

16-If you have areas of concern, what else could you do to correct those issues? What is stopping you from doing so?
What is stopping you from doing so? Answers: Money, too costly, government programs are too restrictive with too long of time lines.

17-What could we (SWCD) do to help correct these issues?
Get more funding for common sense projects, fund cover crops, reduced tillage, fund stabilizers and reduced nutrients.

18-Rank from most effective to least effective in regards to improving water quality. (1-5. 1 is most effective, 5 is least effective)

Cover crops	average ranking 4
Buffers, filter strips, grassed waterways	average ranking 2.6
Creating, restoring or preserving wetlands	average ranking 1.43
Conservation Tillage/ Strip Till/ No-Till	average ranking 2.17
Nutrient Application	average ranking 3

19-Have you used any of the BMP's mentioned? What has been your experience? What worked/ didn't work?
Conservation tillage, reduced nutrients, nutrient rate and timing, no till bean stubble, variable rate, adapt N through Nu-Way.

20-If not, why not? What type of information/assurances would you need to consider using these BMP's?
Cover crops won't work, too short of a growing season, establishment challenging. No till and strip till equipment is too expensive.

Soil Health
21-How would you rank soil health on your property? 1-10 (1 poor, 10 excellent)
Answers ranged from 5-10 average is 7.25

22-Is it improving or declining and what do you think is causing this?
The majority of the answers were that they were maintaining or improving. It was assumed to be improving because of less tillage and less erosion. Those that thought it was declining thought it was because of too much drainage, tillage and excess nutrients. They noticed it is compacted, doesn't soak in moisture, has very little organic matter and has lost it's texture/ structure.

23-How is it impacting you?
Less erosion, healthier fields, better yields.

24-What could we (Martin SWCD) do?
Help fund reduced tillage and cover crops. Continue education.

25-If your soil health is declining, are you currently doing anything to correct these issues? What is working/what is not working?
N/A

26-Are you trying to improve your soil health? If not, what is stopping you from doing so?
All said yes, most said via reduced tillage.

27-Who else is helping? What are your neighbors doing?
A couple mentioned neighbors are also using reduced tillage.

28-Who do you think should be responsible for keeping farm land/ soil productive and healthy?
The most common answer was the farmer/operator followed by the landowner.

Soil Health BMPs

29-Rank from most effective to least effective in regards to improving soil health. (1-4. 1 is most effective, 4 is least effective)

Cover Crops	average ranking: 3
Crop Rotation	average ranking: 1.71
Conservation Tillage/ Strip Till/ No Till	average ranking: 1.33
Nutrient Application	average ranking: 2.83

30-Have you used any of the BMP's mentioned? What has been your experience? What worked/ didn't work?

The majority mentioned reduced tillage, and nutrient application/timing. Crop rotation was also mentioned. Nutrient application timing was mentioned as a difficult task with unpredictable springs and not enough time to do everything in the spring.

31-If not, why not? What type of information/assurances would you need to consider using these BMP's?

Beyond what was mentioned regarding timing in the spring, they also mentioned costs as a hinderance.

32-How do you think we increase BMP adoption in this watershed?

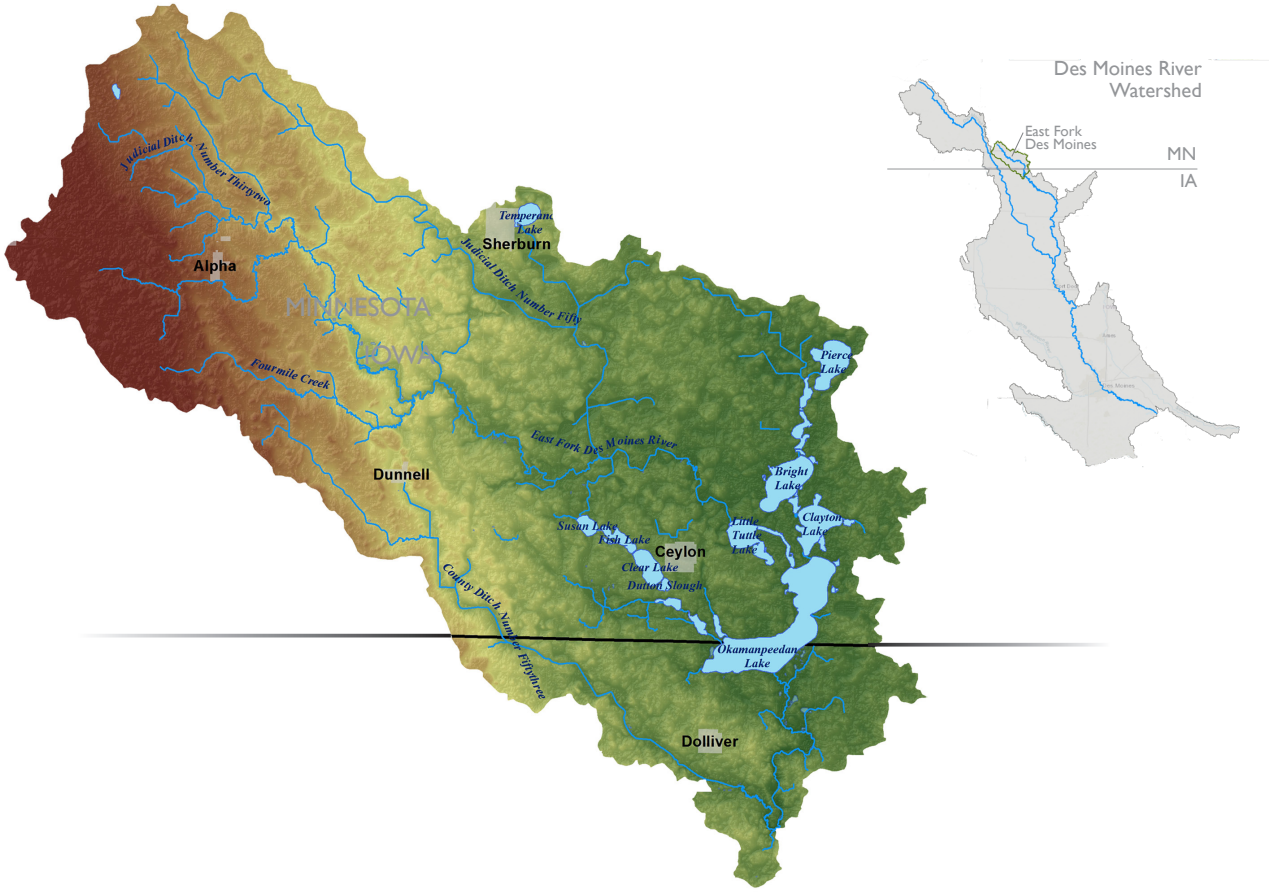
Grants and cost-share were mentioned the most. Education was also mentioned by many.

33-What can we (Martin SWCD) do better improve soil health and water quality in your watershed?

Continue with education and find more funding sources.

34-Who should I talk to next? (Who has perspectives like you? Who has viewpoints that are different that might be interesting to talk to?)

COMMUNITY PERSPECTIVES
EAST FORK DES MOINES RIVER WATERSHED



Martin and Jackson Soil and Water Conservation Districts (SWCDs) are interested in learning from watershed residents about their perspectives about the health of the East Fork Des Moines River Watershed. This pamphlet summaries perspectives from a community meeting where 35 residents from across the watershed shared their views and brainstormed together on March 20, 2018 at the Sherburn Senior Citizen Center. It also includes summary information from ____ one-on-one interviews conducted by SWCD staff during 2017 and 2018.

This information will be used by the SWCDs to help prioritize their work and planning. This community input will also be used to help inform watershed planning and prioritization efforts. The Minnesota Pollution Control Agency (MPCA) developed a process to assess water quality and identify and address threats to water quality in each watershed in Minnesota. This process is called the Watershed Restoration and Protection Strategy (WRAPS). Resident perspectives will be used to inform the WRAPS process.

QUALITY OF LIFE

What do you like about living and/or farming in the East Fork Des Moines?

"I enjoy farming because growing crops can be fun and enjoyable, tangible results. I enjoy the lifestyle and independence."

"It is quiet around here and the lakes are nice."

What changes have you seen across the watershed?

Almost all interviewees thought watershed health is declining. The most common reasons they mentioned were too much tile and no water storage.

"Water is getting to the waterway too fast, too much water for the system to handle along with excess rain."

"Increased algae, more intense algal blooms. There are less buffers, less trees, channels are straightened with less meanders. There are less fish, less wildlife, more water, higher more flashy flows, used to be smaller and deeper."

"The rivers look silted, like chocolate milk. There is more severe erosion, widened channels and cut banks. Some rivers have been drained and are gone."

"We [farmers] have gotten lazy and moved to a two-crop system. There is less tillage, specifically less moldboard plowing. There is more nutrient application. With more concentrated livestock there is more hog manure use."

"There is loss of wetlands and natural areas including hay ground, fence lines, windbreaks, trees and fallow ground. More water is running in the creeks and streams leading to more erosion occurring in stream, and more flooding."

How would you rank water quality in your watershed?

1-10 (1 Poor, 10 Excellent)
Ranged from 1-7.
Average ranking was 4

WATER QUALITY CONCERNS

Are there some water quality issues or concerns that you have? What are your top water quality concerns in this area?

Flooding, slowing the flow of water

Increased flows and flooding were primary concerns raised by community members. Citizens stated an interest in slowing the flow of water and promoting a more steady water flow as well as working towards eliminating the surface water ponding. They suggested keeping water on the landscape upstream, "clearing the mud out of the swamps" and "digging deeper holes to collect the silt".

Drainage

Drainage and maintenance of waterways are also central concerns. In particular, residents expressed the "need to keep drainage working." They noted the need for better drainage systems since many ditch systems are outdated as well as the need to clean and maintain ditches. Some expressed concern with future drainage improvement projects that might add expense for ponds, filter strips and other water storage techniques.

"There is pattern tile every 50 feet and that is linked with more flooding."

"We have huge problems on JD 50. In June three years ago, there was huge flooding problems. Over 700 acres and the road were under water for two weeks."

"There is an issue of fairness with the ditch improvement process. We take a lot of water from upstream sources yet we pay 80 percent of the assessment."

Funding & Compensation

Funding and compensation is on people's minds. Who should pay to fix these problems? Some expressed frustration about the cost of buffer program for landowners and that there was "no real estate tax relief on buffers." Others felt that the state was taking land, that there was a "land grab". "DNR is buying good farm ground and making hunting ground increase in price. There is a problem with private organizations purchasing land and then they give it to the DNR who takes it out of production. Then who pays taxes?"

Fish & Wildlife

Some participants expressed interest in better understanding if area fish are safe for consumption. They wondered about the contamination levels and risk for health. Some residents wanted to keep water clean for wildlife and others expressed an interest in preserving good hunting grounds for future generations.

Erosion & Sedimentation

Residents expressed concern about erosion—both in the field and excessive bank erosion. They noted that the rivers are carrying increased sediment levels.

Bacteria & Contaminants

Residents are concerned about high bacteria levels in the water and indicated a general interest in keeping the water safe from contaminants.

Excessive Nutrient Levels
Residents expressed concern about the rivers and lakes carrying excessive nutrient levels.

Baseline
What is the baseline? What are naturally occurring levels versus man made changes?

Cities
What is being done to monitor and regulate nutrient runoff in municipalities?

The East Fork Des Moines River watershed covers 839,518 acres (see map on the cover). Main lakes include Okamanpeedan / Tuttle, Clayton, Bright, Pierce, and Temperance as well as several other shallow waterfowl lakes in the southern part of the watershed. Cities include Alpha, Sherburn, Dunnell, Ceylon and Wilbert.

IMPROVING WATER QUALITY

What do you think should be done to improve watershed conditions and water quality?

Drainage
- Improve drainage law
- Provide a more comprehensive look at the system
- Focus on natural flood storage within drainage systems

More Water Storage
- Manage water—there is too much coming to an over-loaded system
- More holding time for water
- More storage, retention or holding ponds, CREP improvements
- More retention to prevent flooding downstream

Funding
- Grant money
- Find money to pay for fixing flooding
- Provide long term compensation for those storage areas
- Provide compensation for downstream flooding
- Help pay for projects in general
- We need more funds for programs in this watershed like CRP. We need federal funds beyond state boundaries.

Dredging /Silted
- Silted in lakes and wetlands
- Dredge Okamapeedan Lake

Wildlife
- "Increase in the number of wildlife. There are more deer more geese polluting water by adding bacteria."

BMPs
- Alternative practices —such as flexible filter strips.

Groundwater
- Groundwater declines are connected with increased tiling.

BEST MANAGEMENT PRACTICES (BMPs)

What Best Management Practices (BMPs) do you think will address those concerns and improve watershed conditions?

"Get more funding for common sense projects, fund cover crops, reduced tillage, fund stabilizers and reduced nutrients."

"Help fund reduced tillage and cover crops. Continue education."

Water Storage
- Create water storage and slow the flow of water from upstream (particularly coming from Jackson County into JD50)
- Create holding ponds
- Create an example pond, leave it alone with no regulations and let nature take its course

Clean Out/Maintenance
- Clean out existing storage areas
- Create a cycle of about every 5-10 years to clean out storage areas that are silted up

Controlled Drainage
- Diverter (controlled drainage)
- No controlled drainage. Not working in this area.

Soil Health
- BMPS to increase organic matter to hold water in soil
- Leaving residue impacts drainage
-

Two Stage Ditches

Filter Strips

Harvestable Buffers

Perennials/Grassland
- Grasslands
- We have been seeing people taking out grassed waterways and tiling

City Stormwater
- "Stormwater in cities account for increased flow. Why not put in a drainage line?"

CONSERVATION APPROACH

Outreach
- Soil and Water Conservation District staff should go around and talk to residents and farmers

Small Targeted Areas
- Focus on smaller areas and use a targeting program like Agricultural Conservation Planning Framework (ACPF), but don't take huge areas out of production

Landowner
- Let the landowner decide and take care of it

BMP WILLINGNESS

Which BMPs do you think that people will be more willing to adopt in this watershed?

"Some say cover crops won't work—too short of a growing season and establishment challenging. No till and strip till equipment is too expensive."

What is stopping you from doing conservation programs? "Money. It is too costly and government programs are too restrictive with timelines that are too long."

Trends

- More flooding and more flows
- Since 1990, the lake bottom was drowned out last 4 out of 5 years

Water Storage

- Educate people about water storage. In the past, drainage systems used to be able to take three inches in 24 hours. Now some drainage systems can't take a 2-inch rainfall.
- Pay people to store water
- "There should be compensation for retention areas." "You should buy the land outright at the right cost." "Pay me enough to purchase another or trade. Some people are willing to store water on their land."

Fix Drainage Problems

- Work with the drainage authority
- Improve drainage south of Sherburn and slow the flow north of Sherburn—maybe put in a holding pond?
- Upstream private people tile with no consideration for downstream impacts
- In the late 1980s there were upstream improvements in Jackson County that resulted in increased flows in JD 50

In-Ditch Storage

- Hold water in ditch channel storage. It can be deep and wide. "I've seen people put bale of hay in the ditch—it is low cost, low tech and it works."

Clean out storage areas & Maintenance

- Redetermination of Benefits
- Why not account for the entire ditchshed? If you don't pay, you don't' get the benefits. Everyone should pay the same per acre. It is not equitable to have 4-5 people to pay for the entire ditchshed.
- Need more maintenance. "The new road infrastructure on CR 13. The tile collapsed and it took five years to fix it. The county is not doing enough maintenance."

Soil Health

- Leave residue
- It costs less for reduced tillage and you use less chemicals
- Cover crops, other alternative crops, strip till all can be beneficial
- Soil health improvements with cover crops stores more water. "I heard that a 4 inch tile with strip till slows flow."

Buffers

- "16-feet is okay for a buffer but 50-feet is too much. One size does not fit all."
- There is the 50-foot buffer but the channels migrate, what do we do about that?

Filter strips

Grassed waterways
- Waterways
- More waterways

Controlled drainage systems
- Keep land productive. These systems can help remove water that haven't already pattern tiled

Lake Management
- Some people are frustrated about DNR lake management—"no more [shallow] mosquito lakes"

Depends
- Depends on the farm. Each farm is different. The size of the farm greatly impacts decisions.

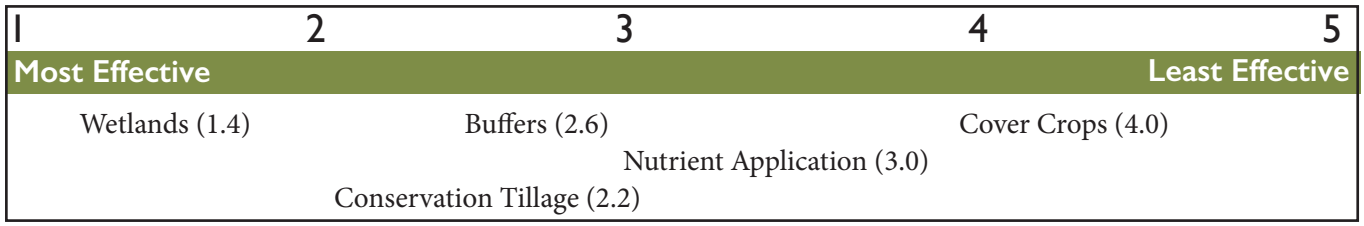
Existing Programs
- Programs are too restrictive and have long time frames that frustrate landowners

BMP EFFECTIVENESS

PERCEPTION OF BMP EFFECTIVENESS

Rank from most effective to least effective in regards to improving water quality.
(1 is most effective, 5 is least effective)

	Average ranking
Creating, restoring or preserving wetlands	1.4
Conservation Tillage/ Strip Till/ No-Till	2.2
Buffers, filter strips, grassed waterways	2.6
Nutrient Application	3.0
Cover crops	4.0



SOIL HEALTH BMPs

Rank from most effective to least effective in regards to improving soil health.
(1 is most effective, 4 is least effective)

	Average ranking
Conservation Tillage/ Strip Till/ No Till	1.3
Crop Rotation	1.7
Nutrient Application	2.8
Cover Crops	3.0

SWCD PRIORITIES

"In general, protect lakes and streams for future generations."

PROTECTION

Are there some parts of the watershed that you would like to see protected?

Protect Pierce Lake

Protect Tuttle/Okamanpeedan Lake

RESTORATION - TROUBLED AREAS

Are there some parts of the watershed that you think are particularly troubled and should be restored?

Flooding on JD 50 is a problem, south of Sherburn

"We have huge problems on JD 50. In June three years ago, there was huge flooding problems. Over 700 acres and the road were under water for two weeks."

"Lower ground, in general, is subject to flooding."

"Grandpa said that when there was more tile and lights on the tractor, that's when farming went to hell. They started to farm every square inch. In the past, there were more pastures, more neighbors, more community."

What types of activities do you think will help to improve watershed conditions?

- Set aside, CRP with financial incentives
- Permanent easements
- Buy out key areas so landowners can reinvest in other property buy for water retention benefit
- Wetland restoration, outlet tile from good ground
- Water storage on JD 50

"Continue with education and find more funding sources."

What types of projects should the SWCD focus on in the future?

Water Storage

- Look at holding ponds and retention areas for water storage
- Water storage can be different than digging a deeper hole. We can store water upstream to increase water storage.
- Work with drainage engineers to learn about successful projects
- Consider two stage ditches

Soil Health

- Promote agricultural practices that promote soil health
- Water storage doesn't have to be taking land out of production. It can be cover crops.

Lakes

- There is too much development around the lakes.

Research

- Check with and learn what researchers prove have worked

Education

- Meetings and education for the general public and for agricultural operators
- Focus on education in the cities

Programs

- Many people are frustrated with existing programs. "I have been asked many times to sell land needed 10 acres from neighbor so the program didn't work."

New Programs

- Advocate for programs where people still own land and farm land. Farmers want conservation but many don't want to sell land.
- Figure out ways to cover losses for a year when there is flooding
- Any program for permanent storage should replace or pay for another farm and also need to consider maintenance costs

"In the old days the creeks were cleaner and the lakes were less green. There were more areas for skinny dipping teenagers and beer drinking."

For More Information

Martin County Soil and Water Conservation District, Phone: 507-235-6680
923 N State St # 110, Fairmont, MN 56031
Jackson County Soil and Water Conservation District, Phone: 507-662-6682
603 S Hwy 86, Lakefield MN 56150

Project Team

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Water Resources Center, Minnesota State University, Mankato
Kimberly Musser, Tyler Grupa
Minnesota Pollution Control Agency
Bryan Spindler

Summary information from: *Des Moines River Basin In Minnesota Monitoring and Assessment Report* (MPCA, 2017).

MINNESOTA POLLUTION CONTROL AGENCY

CLEAN WATER LAND & LEGACY AMENDMENT

WRC
WATER RESOURCES CENTER
MINNESOTA STATE UNIVERSITY, MANKATO

EAST FORK DES MOINES RIVER WATERSHED

The East Fork Des Moines River watershed covers 839,518 acres (see map above). Approximately 130,380 acres are in Minnesota's Martin and Jackson counties. The main branch of the East Fork flows southeast for about 30 miles before emptying into Okamanpeedan Lake on the Minnesota-Iowa border.

Main lakes include Okamanpeedan, Clayton, Bright, Pierce, and Temperance as well as several other shallow waterfowl lakes in the southern part of the watershed. Cities include Alpha, Sherburn, Dunnell, Ceylon and Wilbert. Land use is mainly row crop agriculture (86%), predominantly in corn and soybean production.

Watershed Study

The Minnesota Pollution Control Agency (MPCA) and Minnesota Department of Natural Resources (MDNR) are currently studying the East Fork Des Moines River Watershed. The state is using a watershed approach to restore and protect Minnesota's rivers, lakes, and wetlands. MPCA is responsible for monitoring and assessing the health of the state's waterways to see if they meet water quality standards and comply with the federal Clean Water Act.

The MPCA developed a process to identify and address threats to water quality in each of these major watersheds. This process is called WRAPS or the Watershed Restoration and Protection Strategy. WRAPS has four major steps or phases. Public participation is welcome at all stages of the process.

Step 1. Monitor water bodies and collect data

The cycle begins with a two-year intensive monitoring program of lakes and streams in which the MPCA determines their overall health and identifies impaired waters. Additional information is collected about the watershed's physical characteristics, including land use, topography, soils, and pollution sources. MPCA produces two summary reports: the "Monitoring and Assessment Report" and the "Stressor Identification Report" that summarize water quality and the watershed's biota (fish, bugs, etc.).

Step 2. Assess the data

MPCA water quality specialists evaluate the data to:

- determine whether or not water resources meet water quality standards and designated uses,
- identify waters that do not meet water quality standards and list them as impaired waters,
- identify waters that should be protected, and
- identify stressors affecting aquatic life in streams.

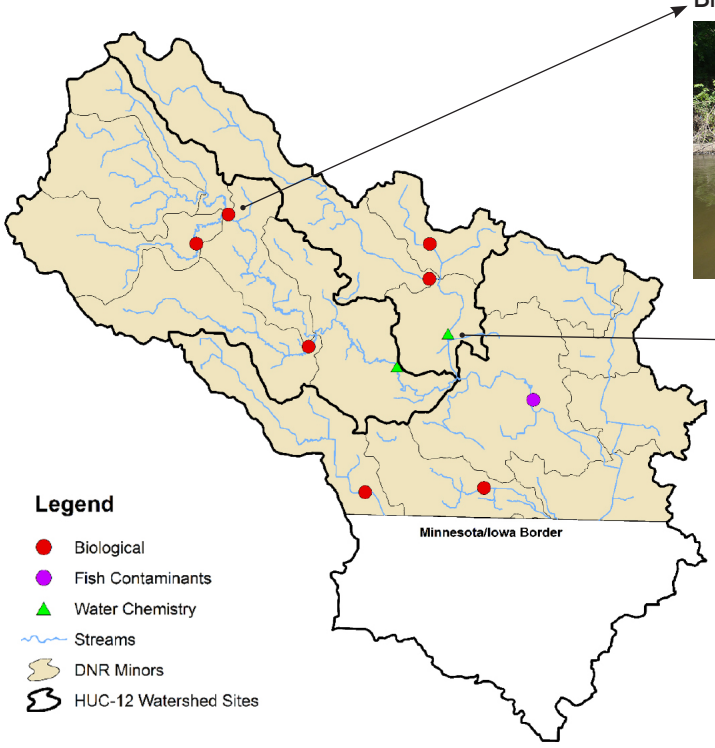
Step 3. Develop strategies to restore and protect the watershed's water bodies

Based on the watershed study two additional reports are completed, the "WRAPS" and "Total Maximum Daily Load" (TMDL). These reports identify water quality issues and clarify what needs to be done to clean up streams and lakes that are impaired and to protect those that are at risk of becoming impaired.

Step 4. Conduct restoration and protection projects in the watershed

In this step, restoration and protection projects are implemented in the watershed. Various local units of government, including watershed districts, municipalities, and soil and water conservation districts, take the lead in developing and carrying out implementation plans based on what was learned during the process.

EAST FORK DES MOINES WATERSHED MONITORING SITES



Biological Monitoring—Fish & Bugs

Water Quality Monitoring

Study Findings — Challenges

Increasing River Flows and Sedimentation

Researchers have documented increasing river flows across the watershed. This is due to precipitation patterns changing and additional field drain tile which reduces the time it takes rainwater to reach the rivers and streams. This increased flow leads to eroding river banks as more erosive streams cut into banks. Sedimentation is coming from unstable stream banks and farm fields. Researchers found many waterways with elevated levels of sediment and high levels of turbidity. Poor habitat conditions were noted at many biological monitoring sites, likely linked to turbidity and sedimentation issues, and sometimes riparian land use.

MDNR researchers study river flow and document changes in river channels.

Too Many Nutrients - Phosphorus and Nitrogen

Waterways in this watershed have elevated levels of phosphorus and nitrates. Most lakes and some streams in this watershed have the potential for algal blooms throughout the summer. Runoff and internal loading are the major contributors of phosphorus and nitrogen leading to the nutrient impairment of some lakes and streams in this watershed.

Greening Lakes are a concern. Elevated nutrient concentrations can lead to algae blooms in lakes throughout the summer.

Elevated Bacteria Levels

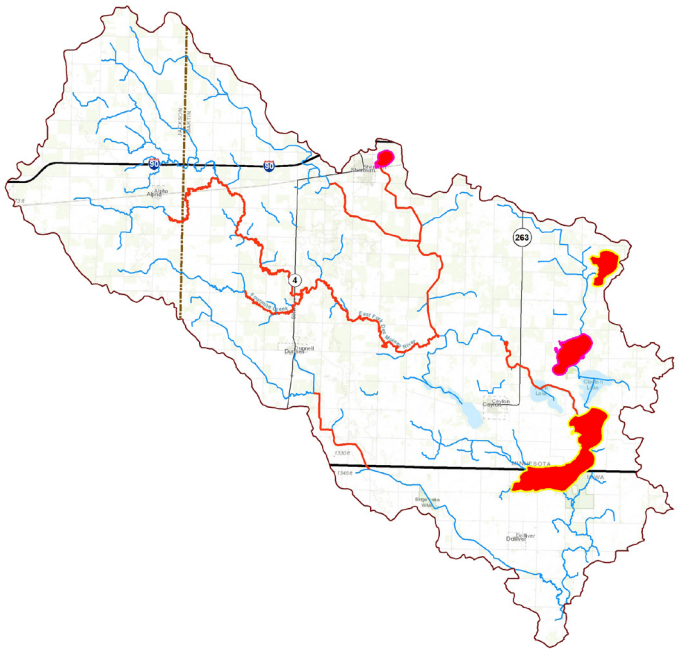
There are many impairments due to elevated bacteria levels, affecting most of the assessed streams in the watershed. High bacteria levels can likely be attributed to the large number of active feedlots as well as failing septic systems. In some places monitored, researchers noted livestock fenced in the river or stream corridor to provide a source of water for the animals.

Struggling Aquatic Life

Problems with healthy river life (Aquatic Life Use Impairments) are documented across this watershed. When in excess, sediment and nutrients are pollutants that harm fish, insects and mussels. Macroinvertebrate and fish communities were stressed throughout the watershed except in County Ditch 11 where researchers noted a healthier aquatic community that meets water quality standards. Biotic impairments are likely a result of nonpoint source pollution, and localized stress linked to unstable channel conditions and poor in-stream habitat, both of which can be associated with high suspended sediment concentrations. High nutrient concentrations are also likely impacting biotic communities, as seen in other watersheds across southern Minnesota.

Researchers assess macroinvertebrates, like this caddis fly, as an indicators of river health.

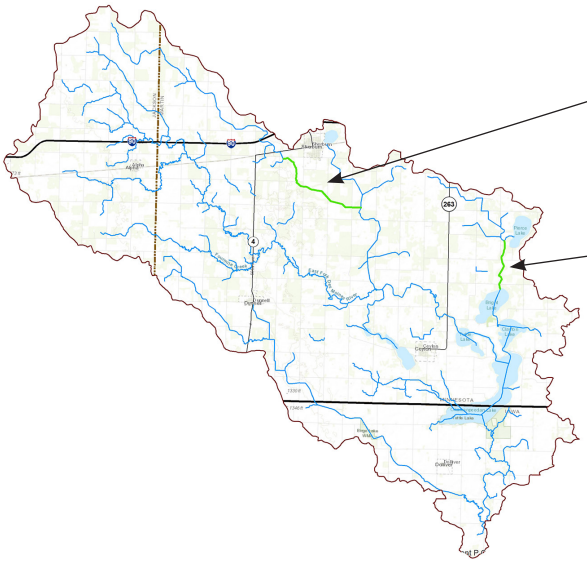
EAST FORK DES MOINES WATERSHED
IMPAIRED WATERS



The map at left shows Impaired Waters in the East Fork Des Moines River Watershed (in red). Impaired waters are those streams and lakes monitored and assessed that do not meet one or more water quality standards.

Study Findings — Good News

EAST FORK DES MOINES WATERSHED
STREAMS THAT MEET WATER QUALITY STANDARDS



Fully Supporting Aquatic Life
— Researchers found a healthy aquatic ecosystem in this area, County Ditch 1 (JD 50).

Fully Supporting Aquatic Recreation
— Bacteria levels were monitored and found to meet water quality standards and determined safe to support recreation in this area.

Waterway between Pierce and Bright Lakes
Good Water Quality

The stream segment between Pierce and Bright Lake (map at left) was studied and found to meet water quality standards—fully supporting for aquatic recreation. This means that the bacteria levels in this area were low enough to be considered safe for bodily contact and recreation.

County Ditch 1 (JD 50)
Healthy Aquatic Life

Researchers studied the fish populations and macroinvertebrate communities around County Ditch 1 (JD50) and found that they were healthy enough to meet water quality standards.

For More Information

Martin County Soil and Water Conservation District, Phone: 507-235-6680
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Summary information from: *Des Moines River Basin In Minnesota Monitoring and Assessment Report* (MPCA, 2017).

MINNESOTA POLLUTION CONTROL AGENCY

CLEAN WATER LAND & LEGACY AMENDMENT

WRC WATER RESOURCES CENTER
MINNESOTA STATE UNIVERSITY, MANKATO

West Fork Des Moines River Major Watershed Project

During this project, Heron Lake Watershed District, county and SWCD staff determined that civic engagement activities needed to focus on two areas. The first was to develop a group of local citizens that were charged with determining how to gather information from the public on values and restoration activities and how to share information with the public. The second area of work was public education. The citizen group developed three actions to be completed through this project: 1) develop a survey to gather public input and a poster to promote clean water, 2) develop a Facebook page and 3) connect with other civic organizations and events to distribute surveys and discuss watershed issues. They also identified two educational opportunities for the project: 1) working with the Prairie Ecology Bus Center to work with youth in the watershed and 2) a public officials summit in partnership with a community in the watershed. To complete public education, six events were held throughout the watershed with 184 participants. The participants ranged in age, profession and resident location. A Story Map was developed to help share watershed information with public that included topics such as water quality and changes in the landscape. A Facebook page was developed to help share information with the public. The survey requested by the citizen group was completed by 142 participants from throughout the watershed, ranging in ages from 18 to over 71 and representing many sectors, i.e. agriculture businesses, rural residents and city residents. The need for more education was heard throughout the project with a wide variety of topics suggested.

West Fork Des Moines River Major Watershed Project Phase II

Final Report

Jan Voit, District Administrator

July 31, 2018

Project Sponsor:
Heron Lake Watershed District

Contributing Sponsors:
Citizen Council: Mona Henkels, Paul Henning, and Ron Tibodeau
Lyon County and SWCD
Pipestone County and SWCD
Murray County and SWCD
Nobles County and SWCD
Cottonwood County and SWCD
Jackson County and SWCD
Martin County and SWCD
University of Minnesota Extension
Houston Engineering, Inc.

Grant Project Summary

Project title: West Fork Des Moines River Major Watershed Project Phase II

Organization (Grantee): Heron Lake Watershed District

Project start date: 3/26/2015 Project end date: 6/30/2018 Report submittal date:

Grantee contact name: Jan Voit Title: District Administrator

Address: PO Box 345

City: Heron Lake State: MN Zip: 56137

Phone number: 507-793-2462 Fax: n/a E-mail: jvoit@hlwdonline.org

Basin (Red, Minnesota, St. Croix, etc.) /Watershed & 8 digit HUC:: Des Moines County: Nobles, Jackson, Murray, Cottonwood, Lyon, Pipestone, and Martin

Project type (check one):

- ☐ Clean Water Partnership
- ☒ Total Maximum Daily Load (TMDL)/Watershed Restoration or Protection Strategy (WRAPS) Development
- ☐ 319 Implementation
- ☐ 319 Demonstration, Education, Research
- ☐ TMDL/WRAPS Implementation

Grant Funding

Final grant amount: $141,011.58 Final total project costs: $141,011.58

Matching funds: Final cash: $0.00 Final in-kind: $0.00 Final Loan: $0.00

Contract number: 89268 MPCA project manager: Katherine Pekarek-Scott

Executive Summary of Project (300 words or less)

The West Fork Des Moines River (WFDMR) watershed is part of the Western Corn Belt Plains and Northern Glaciated Plains ecoregions. The watershed extends across seven counties: Murray, Cottonwood, Jackson, and Nobles and small portions of Pipestone, Lyon, and Martin. It covers an area of 1,333 square miles. The river originates in the northwestern part of the watershed from several lakes including its principal source, Lake Shetek. The river flows from the Lake Shetek outlet near Currie in a southeasterly direction for 94 miles to the Minnesota/Iowa border. It eventually enters the Mississippi River at Keokuk, Iowa.

The Heron Lake subwatershed has an established watershed district. The Heron Lake Watershed District (HLWD) was formed in 1970 with a mission to protect and improve the water resources within its boundaries by supporting watershed residents through the use of education and financial programs.

As the lead organization for the WFDMR Major Watershed Project (MWP) Phase II Watershed Restoration and Protection Strategies (WRAPS) development, the HLWD believes that sound working relationships between Local Government Units (LGUs), citizens, and state government is imperative. The main objective of this grant effort was community involvement. This was done through development of a Citizen Council, four community events, one government leaders' event, a Facebook page, poster and citizen values survey, water quality sampling with the Prairie Ecology Bus Center (PEBC), and Local Work Group (LWG) meetings. The information gathered from these activities will be used to develop the WRAPS Report being written by the Minnesota Pollution Control Agency (MPCA).

Picture: Local Work Group Session 1

Acronyms (Name all project acronyms and their meanings.)

- WFDMR – West Fork Des Moines River
- HLWD – Heron Lake Watershed District
- BMP – best management practice
- MWP – Major Watershed Project
- WRAPS – Watershed Restoration and Protection Strategies
- LGUs – Local Government Units
- PEBC – Prairie Ecology Bus Center
- LWG – Local Work Group
- MPCA – Minnesota Pollution Control Agency
- TMDL – Total Maximum Daily Load
- UM – University of Minnesota
- CE – Civic Engagement
- SID – Stressor Identification
- MPCA – Minnesota Pollution Control Agency
- HEI – Houston Engineering, Inc.
- WECC – Windom Education and Collaborative Center
- MDNR – Minnesota Department of Natural Resources
- ESRI - Environmental Systems Research Institute
- BWSR – Board of Water and Soil Resources
- HLO- Heron Lake-Okabena
- USDA – United States Department of Agriculture
- GIS – Geographic Information System
- MinnFARM – Minnesota Feedlot Annualized Runoff Model
- HSPF - Hydrologic Simulation Program Fortran
- MWOA – Minnesota Wastewater Operators Association
- 1W1P – One Watershed, One Plan
- SWCD – Soil and Water Conservation District
- RD – Rural Development
- PFA – Public Facilities Authority
- WIF – Water Infrastructure Funds

Partnerships (Name all partners and indicate relationship to project)

- Heron Lake Watershed District: project sponsor, project staff, project administration, and inkind contribution
- Citizen Council: assist in determining education and community involvement opportunities
- Lyon County and SWCD: serve on LWG
- Pipestone County and SWCD: serve on LWG
- Murray County and SWCD: serve on LWG
- Nobles County and SWCD: serve on LWG
- Cottonwood County and SWCD: serve on LWG
- Jackson County and SWCD: serve on LWG
- Martin County and SWCD: serve on LWG
- University of Minnesota Extension: CE training and meeting facilitation
- Houston Engineering, Inc.: Draft TMDL allocation

Contents

Figures

Work Plan Review

1. Work Plan Changes

1.1. Work Plan Change #1: November 8, 2015

Barb Radke took a new position. Toby Spanier, University of Minnesota (UM) Extension, will be the Civic Engagement (CE) lead for the project.

- To allow the Watershed Coordinator to participate in the Watershed Specialist Training, $414.00* was moved from Task C Project Coordination Sub-Task 1: Project Management Training-Lodging to Training-Registration.
- *Per the contract language, a change order is not required to move funds within a Sub-task. This change order document is to provide documentation of the changes describe, however will not be added in the 10% cumulative amount allowed to move in a change order.

1.2. Work Plan Change #2: December 8, 2015

When creating a budget, it is always difficult to estimate the number of hours that will be required for each task. The number of hours for project coordination was grossly underestimated.

- To allow additional hours for project coordination, 600 hours were moved from Task A Community Outreach Sub-Task 1 LWG to Task C Project Coordination Sub-Task 1 Project Management. These additional hours will be for training, reports, reimbursement requests, orientation of new project coordinator, and ensuring contract requirements are met.

1.3. Work Plan Change #3: May 2, 2016

Funds were needed for shipping samples for the stressor ID work.

- $150.00 was moved from Task C Project Coordination Subtask 2 Assist MPCA to a new category under the same task and subtask. This was done to provide funds for Stressor Identification (SID) supplies and shipping.

1.4. Amendment #1: December 22, 2016

The HLWD requested an amendment to the contract for the MWP Phase II. After the Watershed Coordinator started the work, it was apparent hours would need to be reallocated to provide adequate funds for each task. The total contract amount would remain unchanged. Details would be provided in the work plan narrative. After the initial amendment request was submitted, the Watershed Coordinator took another position. Since that time, the HLWD has secured an individual to work part-time in the Watershed Coordinator's position. In addition, the HLWD Administrator will assume additional responsibilities in order to ensure that contract commitments are completed. Funds for UM Extension were reallocated in Subtask 1 and Subtask 2, but the amount for the contract with this organization remained the same.

- Objective 1: WRAPS Development Task A: Community Outreach Sub-Task 1: LWG. The amount for Watershed Coordinator 1 was reduced from $20,655 (765 hours) to $3,813.75 (141.25 hours), a line item was added for Watershed Coordinator 2 of $1,080.00 (40 hours), a line item was added for the HLWD Administrator of 125 hours ($4,375.00). These changes resulted in a reduction of $11,386.25 in this subtask.

- Objective 1: WRAPS Development Task A: Community Outreach Sub-Task 2: Citizen Council. The amount for Watershed Coordinator 1 was reduced from $35,694.00 (1,322 hours) to $918.00 (34 hours), a line item was added for Watershed Coordinator 2 of $34,776.00 (1,288 hours), a line item was added for the HLWD Administrator of $2,625.00 (75 hours), UM Extension Teaching Rate was increased by $125.00 (1 hour), Coaching Rate was reduced by $270.00 (3 hours), UM Extension mileage was increased by $707.20, UM Extension lodging was decreased by $105.00, UM Extension meals were reduced by $83, UM Extension Supplies were increased by $4.00. These changes resulted in an increase of $3,003.20 in this subtask.
- Objective 1: WRAPS Development Task A: Community Outreach Sub-Task 3: Public Participation and Education. The amount for Watershed Coordinator 1 was reduced from $6,210.00 (230 hours) to $459.00 (17 hours), a line item was added for Watershed Coordinator 2 of $8,613.00 (319 hours), a line item was added for the HLWD Administrator of $2,625.00 (75 hours), UM Extension Teaching Rate was reduced by $750.00 (6 hours). UM Extension Prep Rate was increased by $550 (11 hours), UM Extension mileage was increased by $209.80, UM Extension lodging was reduced by $490.00, UM Extension meals were increased by $72.00, and UM Extension supplies were increased by $30.00. The changes resulted in an increase of $5,108.80 in this subtask.
- Objective 1: WRAPS Development Task B: Information Analysis Sub-Task 1: Data Collection. The amount for the Watershed Coordinator 1 was reduced from $50,139.00 (1,857 hours) to $25,764.75 (954.25 hours), a line item was added for Watershed Coordinator 2 of $1,800.00 (300 hours), and mileage was reduced from $4,480.00 to $1,904.08. These changes resulted in a reduction of $18,850.17 in this subtask.
- Objective 1: WRAPS Development Task C: Project Coordination Sub-Task 1: Project Management. The amount for the HLWD Administrator was increased from $3,290.00 (94 hours) to $10,500.00 (300 hours), the amount for the Watershed Coordinator 1 was increased from $20,115.00 (745 hours) to $23,334.75 (864.25 hours), a line item was added for the Watershed Coordinator 2 in the amount of $15,403.50 (570.50 hours), Training-Registration was reduced from $1,194.00 to $948.00, Training-Meals was reduced from $630.00 to $45.32, Training-Lodging was reduced from $1,176.00 to $251.70, and mileage was increased by $29.63. These changes resulted in an increase of $24,107.90 in this subtask.
- Objective 1: WRAPS Development Task C: Project Coordination Sub-Task 2: Assist MPCA. The amount for the Watershed Coordinator 1 was decreased from $7,155.00 (265 hours) to $5,838.75 (216.25 hours), mileage was reduced by $614.39, and supplies were reduced by $52.84. These changes resulted in a decrease of $1,983.48 in this subtask.

1.5. Amendment #2: January 25, 2018

The HLWD requested an amendment to the contract for the MWP Phase II. The Watershed Coordinator and District Administrator's wages were moved within and between subtasks to provide funding for a watershed survey, printing costs, radio advertising, the PEBC, and a meal. They were also reallocated for a contract with Houston Engineering, Inc. (HEI) to conduct the TMDL Allocation Development for the WFDMR watershed. The total contract amount would remain unchanged. Details would be provided in the work plan narrative.

- Task A Sub-task 1: reduce watershed coordinator's hours by 13.25 (-$357.75) and reduce HLWD administrator's hours by 90 (-$3,150.00) for a total reduction of $3,507.75.
- Task A Sub-task 2: reduce watershed coordinator's hours by 922 (-$24,894.00) and increased HLWD administrator's hours by 55 ($1,925.00). Added printing costs ($1,305.00) and Survey Monkey costs ($372.00). Total reduction of $21,292.00.
- Task A Sub-task 3: increased watershed coordinator's hours by 64 ($1,728.00) and increased HLWD administrator's hours by 40 ($1,400.00). Added room rentals ($450.00), mailings ($347.00), Ecology bus ($975.00), radio advertising ($3,000.00), printing ($1,373.00) and meal ($1,500.00). Total increase of $10,773.00.
- Task B Sub-task 1: reduce watershed coordinator's hours by 108.25 (-$2,929.50) and reduced mileage by $672.18. Total reduction of $3,601.68.
- Task C Sub-task 1: increase HLWD administrator's hours by 48 ($1,680.00) and reduced watershed coordinator's hours by 178.75 (-$4,826.25). Increased mileage by $13.94. Total reduction of $3,132.31.
- Added Objective 2: TMDL Allocation Development, Task A Stream TMDL Allocation for $6,740.50 and Task B Lake TMDL Allocation for $14,020.24. Total increase of $20,760.74.

2. Activities and Tasks

Objective 1: WRAPS Development

Task A: Community Outreach

Sub-Task 1: LWG

- The LWG meeting was held on November 12, 2015. This meeting consisted of an introduction to the new watershed coordinator, an overview of the project work plan, an update on the activities of each part of the work plan, and a group discussion. The group discussion involved decisions about the formation of the Citizen Council and about the data collection needs.
- The LWG meeting was held on February 25, 2016. A project update was given from both the HLWD as well as the MPCA. Group discussion was held about the three documents that the group was asked to review. There was also discussion about story maps and next steps in the MWP.
- A phone conversation was held with Katherine Pekarek-Scott, MPCA on May 26, 2016 to discuss the creation of a survey to go out to LWG members. The purpose of the survey is to inform LWG members that the data collection done through this grant may help them get funding for projects more easily. The survey asked:
    - As LGUs, what targeted projects or programs would you like to seek funding for?
    - Aside from quantifiable load reduction numbers, what questions need to be answered in order for your organization to seek funding for these projects?
    - Results can be found in **Appendix 1**.
- The LWG meeting was held on September 15, 2016. Project updates were presented to the group members. Group discussion was held about the upcoming formation of the citizen group, ideas regarding Citizen Council activities, and possible names for the citizen group.
- The LWG meeting was held on February 23, 2017. The purpose of the meeting was to recognize the purpose and goals of a watershed citizens group in the development and completion of the WRAPS Report. The result of the meeting was identification and analysis of

potential watershed stakeholders to serve on the citizen group. There were 17 people in attendance.

- The LWG meeting was held on January 3, 2018. Katherine Pekarek-Scott gave an update on the WRAPS. LWG completed the draft survey and made suggestions. The suggested changes will be incorporated and the revised document will be distributed to the LWG for review. Discussion was held regarding education needs and how to proceed with promotion.
- The final LWG meeting was held on June 14, 2018. Ross Behrends, WFDMR Watershed Coordinator, welcomed everyone and described the meeting content. Jan Voit presented the WFDMR Story Map and asked for input from LWG members by June 22. Katherine Pekarek-Scott gave an update on the WRAPS Report and TMDL process. Joanne Boettcher, MPCA led the attendees through a series of questions and group activities to determine the level of involvement the LWG would like as the WRAPS development proceeds after the grant ends on June 30. MPCA staff will summarize the results of the group discussions and distribute them. A proposed timeline, along with tentative meeting needs will also be provided.
- Information regarding the LWG can be found in **Appendix 1**.

Sub-Task 2: Citizen Council

- On October 13, 2015 a meeting was held with UM Extension to make decisions about Citizen Council formation timeline and group design. It was decided that the Citizen Council would not be formed until January of 2017.
- Conducted research on strategies for forming a Citizen Council. The purpose of this research was to determine a way to include as many people that represent the population within the watershed as possible. This includes, women, people of differing ages, and other minority groups. Collected demographic data and calculated numbers of individuals in each group living within the watershed.
- The first meeting of the Citizen Council was held on July 18, 2017. Introductions were given. Purpose and objectives were discussed. Watershed processes and functions were explained. An overview of the watershed approach and WRAPS was given.
- The second meeting of the Citizen Council was held on September 6, 2017. The meeting focused on fostering citizen leadership and engagement in the watershed. Time was spent brainstorming about potential public involvement opportunities. It will be necessary to complete an amendment to move funds for the CE meetings that will be planned.
- The third meeting of the Citizen Council was held on November 28, 2017. The purpose of the meeting was to generate ideas for community involvement events and begin the planning process.
- Information regarding the Citizen Council can be found in **Appendix 2**.

Sub-Task 3: Public Participation and Education

- The Linking Landuse Workshops were held on March 26, 2015. Sponsors included Windom Education and Collaborative Center (WECC), Toro, MPCA, and the HLWD. Following the welcome and introductions, Karen Terry, UM Extension gave a presentation entitled "Linking Land Use and Water Quality". Jan Voit gave a presentation entitled "WFDMR Watershed Project: TMDLS and WRAPS". Jon Lore, Minnesota Department of Natural Resources (MDNR) Watershed Specialist give a presentation entitled "Des Moines River Watershed Health Assessment". The Watershed Game was played by all attendees. (See **Appendix 3** for details.)
- The Facebook page for the project was developed on January 23, 2018. Information was added as necessary.

- *Water in Southwest Minnesota: It Affects You!* was held at Key Largo on February 12, 2018. Following is a summary of the event. Ross Behrends welcomed the attendees. Katherine Pekarek-Scott provided an overview of the watershed approach. She described some of the monitoring and assessment work that has been done in the WFDMR Watershed, as well as a timeline for completion of the WRAPS Report. Toby Spanier led the group in a discussion focused on three key questions: *What would you like to see happen with your water infrastructure and stormwater management? What do you need to make what you want happen? And what can you do to make it happen?* Chuck Ackman from US Representative Amy Klobachar's office told the group he appreciated the invitation and would provide Representative Klobachar with information regarding this meeting. Gene Short, City of Currie moderated a panel discussion with State Representatives Joe Schomacher, Erin Murphy, Dean Urdahl, and Paul Torkelson and State Senator Bill Weber. They responded to: *What are the main areas of water infrastructure and stormwater management you want to see more work done on? What opportunities do you see that exist for this work to happen? And what part(s) of this are you willing to help with?* During the meal, Karen Terry provided water education regarding water, watersheds, stormwater, and practices to slow down runoff. Karen Cavet, S.E.H. Engineering gave an overview of the water and sewer infrastructure needs within the WFDMR Watershed. Heidi Peper, S.E.H. Engineering described potential funding options available at the federal and state levels. (See **Appendix 5** for details.)
- The PEBC worked with high school students from Windom Area School to test the water quality in the HLWD. They tested locations in the spring of 2018. They will also gather information in the fall. Students look at temperature, turbidity, color, smell, dissolved oxygen, pH, nitrates, and phosphates. They also collect macroinvertebrates that live there. Students will compare these tests to the previous year, as well as the results from the fall in the spring. Photos from the event can be found in **Appendix 6**.
- The use of geographic information system was used to create the story map. It was done through Environmental Systems Research Institute (ESRI) with assistance from MPCA. See **Appendix 7** for detailed information.
- The Des Moines River Watershed Shared Leadership session was held on June 18, 2018. Ross Behrends started the meeting with introductions. Katherine Pekarek-Scott gave a PowerPoint presentation covering the watershed approach, WRAPS process, work completed to date, TMDL impairments, and general timeframe for WRAPS Report completion. Ross Behrends presented the results from the WFDMR watershed survey. Toby Spanier explained collaboration and led the group in a visioning exercise. Julie Westerlund, Board of Water and Soil Resources (BWSR), provided information on One Watershed, One Plan (1W1P). See **Appendix 8** for further information.
- The Water Education Event was held on June 26, 2018. Ross Behrends welcomed attendees and asked for introductions through sharing what each individual valued most about water. Karen Terry presented on watershed basics and what residents can do to improve water quality. Ross Behrends gave an update on WRAPS and the status of lakes and streams in the WFDMR watershed. He also gave a presentation on past and current projects in the Fulda Lakes area. Attendees were invited to a picnic at Seven Mile Park, where they had an opportunity to see the lake, water quality projects around the lake, and take part in a poster tour. Details can be found in **Appendix 9**.

Obstacles and Lessons Learned

LWG

Fostering a sense of responsibility for the project among local partners proved difficult. This WRAPS project seeks to involve local partners to a higher extent than WRAPS projects in surrounding watersheds. Due to expectations of this WRAPS work plan, there was less participation than HLWD staff had hoped.

Citizen Council

The recruitment process for the Citizen Council was challenging. The goal was to recruit two citizens from each county. However after much correspondence with the LWG and potential citizens, only three people participated. Despite a surplus of funds in the budget because of staff turnover, the HLWD was not allowed to provide any financial support for Citizen Council members. The financial constraints were a deterrent for keeping the members engaged.

Creating a poster and water values survey were great ideas generated by the Citizen Council. Members were excited about sharing the information at many events. Because the documents could not be developed until an amendment was approved, the delay led to lack of interest in Citizen Council members distributing the poster and survey.

Citizen Council members believed that a Facebook page would be a good means to provide the public with information about the WFDMR watershed. However, time constraints did not allow for frequent postings. The page generated very little response.

Public Participation and Education

Linking Landuse Workshops

Planning for this event was challenging as a result of not having a signed contract until two hours before the event was held. Despite the difficulties with MPCA Contracting, it was a successful event.

Water in Southwest Minnesota: It Affects You!

Planning for this educational event was difficult as a result of not having a signed contract until one day before the event. Despite delays, it was a well-attended and successful event. The inadequacies of our watershed's rural sewer and water infrastructures and the amount of money needed to update those systems needs to be considered in future watershed planning and implementation efforts.

PEBC Water Quality Testing

Due to a wintery start to the spring, PEBC was unable to do Heron Lake-Okabena (HLO) and Fulda programs. HLO will be going out again in the fall and Fulda next spring.

Story Map

The Story Map development was challenging, but rewarding. The narrative development began with Erin Nordquist when she was employed as the WFDMR Watershed Coordinator. It was completed by Jan Voit with the assistance of MPCA staff.

Shared Leadership

The Shared Leadership event was originally scheduled for March 26, 2018. Due to a snow storm, the event was rescheduled for June 18. Waiting until two weeks before the end of the grant to hold the event was unfortunate. Participation may have been greater in March.

Water Education Event

Due to time constraints, the event was held the last week of the grant period. Planning and preparation for the event felt rushed. But the overall event was well received.

Working with the UM Extension throughout the grant period was very enjoyable. The working relationship was very good. The work they did with the Citizen Council and all the events resulted in valuable information that HLWD staff could not have gathered. Their expertise in working with public participation and community involvement was greatly appreciated.

Task B: Information Analysis

Sub-Task 1: Data Collection

- Accompanied MDNR staff on the annual survey of five channel cross sections on Jack, Lime, and Okabena Creeks on October 14, 2015.
- Collected data from the US Department of Agriculture (USDA) Agricultural Census. She compiled all necessary data between the years of 1950-2012. The purpose of this data collection is to show the change in farm practices over time as a means of better characterizing the watershed.
- Collected data about cities within the watershed (size, human population, pet population, etc.) and any storm water oriented ordinances they may have. The purpose of this data collection is to show that all entities within the watershed are responsible for water quality.
- Analyzed the collected USDA census data. The purpose of the analysis was to learn about the context of certain trends seen in the census data.
- Created and compiled Geographic Information Systems (GIS) maps of watershed characteristics. These maps were distributed at the next LWG meeting to ensure accuracy.
- Researched possible drained lakes and created a shapefile for visualization. LWG members and local historical societies will be asked to review shapefile for accuracy.
- Collected estimated pet population data for urban areas within the watershed.
- Researched TMDL water quality standards. The purpose of this research was to put the standards into a context that the general public may better understand. Instead of using a measurement such as milligrams per liter, something like dump truck loads could be used to better demonstrate the standards. The need for this was brought up at the LWG meeting on November 12, 2015. It was discussed that the LWG needs to be very clear about what the water quality standards really mean for stakeholders.
- Researched historical records from County Historical Society websites. The purpose of this research was to find any historical descriptions of the watershed to visualize how the watershed has changed. Particular attention was paid to descriptions of lakes to determine locations of lakes that have been drained.
- Researched information on past and current wildlife patterns within the watershed.
- Interpreted aerial photos of the watershed to determine watershed characteristics, shoreline buffer placements, possible bank failures, and sediment islands.
- Created an infographic to help the general public visualize the water quality standards that were put into plain language.
- Facilitated a meeting with the County Feedlot Officers Brooke Burmeister, Jackson County; Jon Bloemendaal, Murray County; Al Langseth, Nobles County; and Jared Morrill, Cottonwood County on February 25, 2016. The purpose of the meeting was to discuss the plans for the 20 percent of feedlots within the watershed that remain to be inspected.
- Prepared inspection forms and maps for feedlot inspections.
- Worked on an infographic to explain the WFDMR watershed's Water Quality Standards in plain language.

- Attended a webinar about the use of the Minnesota Feedlot Annualized Runoff (MinnFARM) model.
- Created a GIS shapefile of the longitudinal survey data.
- Developed narrative for the Story Map project. The objective and intended audience for the Story Map were identified.
- Conducted a longitudinal Secchi tube survey of Lime Creek on July 12, 2016.
- Completed feedlot inspections for the WFDMR watershed on August 8, 2017.
- Completed MinnFARM data entry for the WFDMR watershed on April 21, 2018.

Obstacles and Lessons Learned

The majority of tasks in this objective were done by online research. Though time consuming, no difficulties were encountered. Coordination with feedlot officers was key to the successful completion of the feedlot inventory.

Task C: Project Coordination

Sub-Task 1: Project Management

- On September 30, 2015, MPCA staff hosted a Des Moines River WRAPS meeting. Following introductions, project updates were given from MPCA, MDNR, and the East and West Fork watersheds. Andrea Plevan, TetraTech gave a PowerPoint presentation about the Hydrologic Simulation Program Fortran (HSPF) modeling for the WRAPS being done by their firm. The model will be based on flow and water quality data for 1995 through 2014. Discussion was held regarding data needs for model development.
- Presented at the Southwest Region Minnesota Wastewater Operators Association (MWOA) annual meeting on February 17, 2016. The presentation included an overview of the TMDL process, an explanation of the impaired reaches in the watershed, the limitations of the TMDL process, and an overview of the new watershed approach.
- Participated in and finished all coursework for the Watershed Specialist Training through the UM.
- Attended the Professional Judgment Group meeting for the WFDMR watershed on June 17, 2016. The purpose of this meeting was for the MPCA to obtain local input on the conclusions that have been made about the impaired reaches within the watershed.
- Semi-annual and annual reports were completed and submitted to MPCA as required by the work plan and contract.
- Detailed information can be found in **Appendix 10**.

Sub-Task 2: Assist MPCA in Data Collection in Watershed Approach

- Erin Nordquist attended training for the SID data collection project on March 23, 2016. The training was led by Katherine Pekarek-Scott and Bryan Spindler, MPCA. It included training on how to take proper water samples and field data, information on the SID work, how to fill out the field data sheet, chain of custody, and bottle labels, and what to take photos of in the field. Attendees were also provided with sample bottles for the project.
- Erin Nordquist met with Catherine Wegehaupt, HLWD Technician on May 18, 2016 to discuss sampling logistics. Catherine answered questions about the sampling process and shipping samples.

- Erin Nordquist conducted SID sampling in May, June, July, and August of 2016. Entered SID data and photos, prepared cooler, chain of custody forms, and coordinated shipping on each sampling day.
- Assisted Katherine Pekarek-Scott and Matt Moon, MPCA, on August 4, 2016 to deploy sondes at some stream sites around the WFDMR watershed. Sondes are probes that stay in a stream for an extended time that periodically record water quality data. This gives watershed analysts a better understanding of the water quality data. They may be able to find patterns in what the data indicates at certain times of the day.

Obstacles and Lessons Learned

Project Management

Staff turnover proved to be a big challenge. When Ross Behrends began working in January 2017, he was the third person in this position.

Delays in contract and amendment approval at the state level caused difficulties for HLWD staff to implement work plan tasks. In addition, staffing issues within MPCA resulted in missed deadlines for drafting the WRAPS Reports. As a result, the WRAPS Report will not be completed until early 2020, nearly two years behind schedule.

Assist MPCA

Not having access to ideal project tools like ArcGIS and having to coordinate water sampling resources with other HLWD staff have been obstacles that may have affected the overall timeline of the project.

Objective 2: TMDL Allocation Development

Task A: Compute loads and margins of safety

- HEI computed sub-watershed load capacities, waste load allocations, load allocations, and margin of safety for each impaired reach in the Des Moines basin. Stream water chemistry, flow data, standard information and the HSPF model data was provided by MPCA.

Task B: Bath Tub Models and Technical Memorandum

- HEI developed stochastic BATHTUB models and determine waste load allocation, load capacities, load allocations, and margin of safety for each impaired lake in the Des Moines basin. Stream water chemistry, flow data, standard information and the HSPF model data was provided by MPCA.

Obstacles and Lessons Learned

No difficulties were encountered.

Grant Results

3. Measurable Outcomes

Successful implementation of a grant program requires an extensive effort in recordkeeping. Section 2 summarized the activities completed during the grant period. The methods of measured results and success are varied and dependent upon the tasks. The measurements are described below by objective and task as presented in the work plan.

Objective 1: WRAPS Development

Task A: Community Outreach

Sub-Task 1: LWG

- The LWG met six times.
- The LWG participated in a process for identification and analysis of potential watershed stakeholders to serve on the citizen group.
- The LWG completed the water values survey and made constructive comments that were incorporated into the document.
- The LWG identified education needs and recommended the implementation of a water education event.

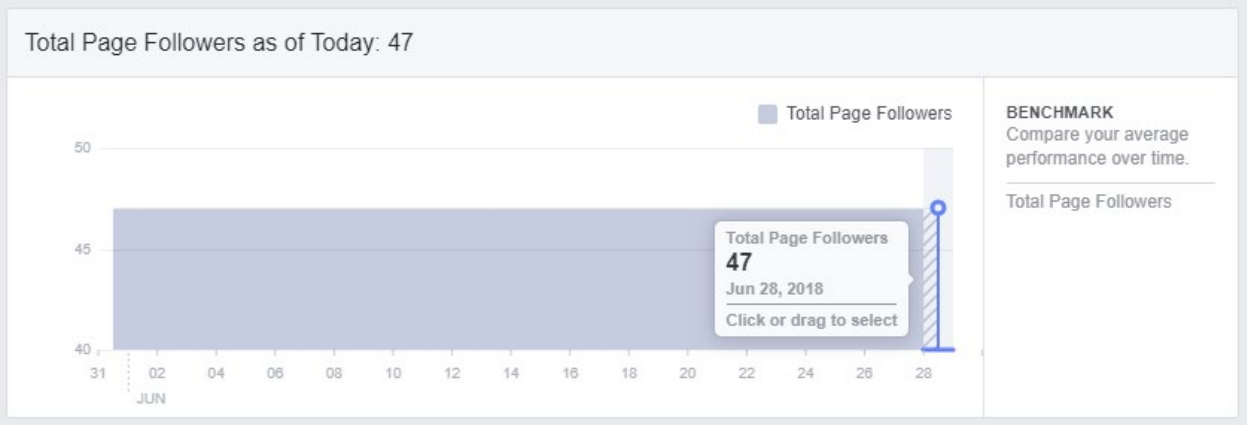
Sub-Task 2: Citizen Council

- The Citizen Council met three times.
- Brainstorming about potential public involvement opportunities resulted in:
    - Facebook page
    - Poster
    - Water values survey
    - Education event with the City of Currie
    - Funding for an education program with PEBC

Sub-Task 3: Public Participation and Education

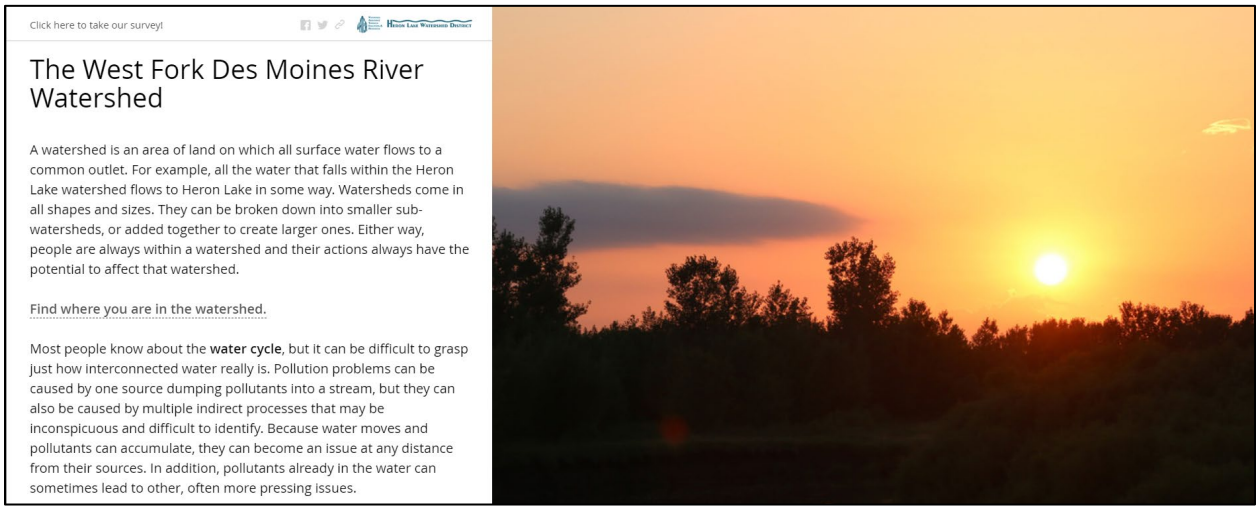
- Linking Landuse and Water Quality Workshops
    - Session one: 39 attendees
    - Session two: 13 attendees
- Facebook page
    - 47 followers as of June 28, 2018

Figure 1. Facebook Page Followers



- Water in Southwest Minnesota
  - 50 attendees representing almost all of the 18 cities and seven counties
- PEBC Water Quality Testing
  - Water sampling with 22 students
- Story Map
  - The Story Map was completed at the end of June. It will be used as an education tool by partners in the WFDMR watershed. It will also be used as a tool when moving into 1W1P.

Figure 2. Story Map Image



- Shared Leadership
  - 33 attendees, representing six of the seven counties in the watershed
- Water Education Event
  - 36 attendees

Task B: Information Analysis

Sub-Task 1: Data Collection

- Completed 52 feedlot inspections and completed MinnFarms on 24 open lots through the WRAPS. Throughout the entire project, which began with WFDMR TMDL Implementation Project in October of 2011, inspections were completed on 1,002 registered sites.

Task C: Project Coordination

Sub-Task 1: Project Management

- Project update meeting with 12 attendees.
- Provided TMDL and WRAPS information to 50 attendees at the MWOA Southwest Region meeting.
- Semi-annual and annual reports were submitted and approved as described in Section 2 above. The reports were uploaded to the web page.

Sub-Task 2: Assist MPCA

- Monitoring data was gathered to assist MPCA and MDNR work.

Objective 2: TMDL Allocation Development

Task A: Compute loads and margins of safety

- Technical memorandum

Task B: BATHTUB models

- Technical memorandum

4. Products

There have been several products produced through this grant. Below is a list of the products created and the appendices in which the products are located.

4.1. Appendix 1 – LWG

- Invitation – November 2015
- Agenda – November 2015
- LWG PowerPoint Presentation – November 2015
- Brainstorming questions
- Minutes – November 2015
- DesMoines_PotentialTileDrain
- WQS infographic
- Power-interest grid
- USDA Census data
- Data Collection Update Handout
- Minutes – February 2016
- Inventory survey answers
- WFDMR survey data needs
- Agenda – September 2016
- Map Activity
- MWPII General Project Update Handout
- Secchi Tube High Flows
- WFDMR Drained Lakes
- Minutes – September 2016

- Planning Agenda
- Facilitator Agenda
- Meeting Agenda
- Meeting Notes
- Photo 1
- Photo 2
- Lead Roles and Responsibilities
- Negotiables for LWG
- Stakeholder Analysis
- Vision Worksheet
- Power & Interest Grid
- Check in Notes – June 2017
- Stakeholder Identification, Mapping, and Analysis
- Invitation – December 2017
- WRAPS Update
- CC CE Plans
- Educational Workshop Descriptions 2017-2018
- LWG Minutes 1-3-18
- LWG meeting follow up
- Save the Date
- Agenda

4.2. Appendix 2 – Citizen Council

- Citizen Council Purpose and Promise
- Check In June 30, 2017
- Facilitators Agenda Session 1
- Agenda Session 1
- WRAPS Overview
- Session 1 Photo
- Session 1 Evaluation Summary
- CC Agenda Session 2
- CE Examples
- Citizen Council CE Outcomes
- Fostering Citizen Leadership in Heron Lake
- Session 2 Evaluation Summary
- CC Agenda Session 3
- Citizen Council Ideas and Audiences
- CC CE Plans

4.3. Appendix 3 – Linking Land Use Workshops

- WECC contact list
- Linking Land Use and Water Quality flyer
- Media Release
- Linking Land Use and Water Quality – UM Extension
- TMDL and WRAPS Presentation
- Linking Land Use and Water Quality – DNR
- Photo 1
- Photo 2
- Photo 3
- Evaluation 12 pm to 4 pm Summary

- Evaluation 5 pm to 9 pm Summary
- Summary

4.4. Appendix 4 – Poster and Survey

- Heron Lake Watershed Poster – WITH Survey
- Heron Lake Watershed Poster – NO Survey
- WFDMR Watershed Survey
- Survey Export March 2018
- Survey Export July 2018
- WFDMR Survey Participants
- $100 Prize Winner

4.5. Appendix 5 – Water in Southwest Minnesota

- City of Currie planning meeting summary
- Water in Southwest Minnesota invite
- Audience Responses
- MPCA Presentation
- Effects of Urban Runoff on a Watershed
- SW Water Presentation – SEH
- News Release – Water in Southwest Minnesota

4.6. Appendix 6 – PEBC

- Water Sampling Event Summary
- Photo 1
- Photo 2
- Photo 3

4.7. Appendix 7 - Story Map

- USDA Census data
- Census data
- City Data
- DesMoines_1969
- DesMoines_AgChemSpills
- DesMoines_Agroecogrions
- DesMoines_AlteredWatercourse
- DesMoines_AnnualPrecip
- DesMoines_DamLocations
- DesMoines_DrainedLakes
- DesMoines_Feedlots
- DesMoines_Hillshaed
- DesMoines_Impairments
- DesMoines_LTAs
- DesMoines_PresettlementVeg
- DesMoines_RegulatedAreas
- DesMoines_Restorable_Wetlands
- DesMoines_SchoolDistricts
- DesMoines_Slope
- DesMoines_UrbanAreas
- MPCAGIS_WFMR_Story_Map_Narrative
- Story Map

- Story Map Works Cited
- The WFDMR - Print

4.8. Appendix 8 - Shared Leadership

- Save the Date – March 2018
- Agenda – March 2018
- Shared Leadership Facilitation Notes – March 2018
- Reflections on Collaboration and Engagement
- Cover Story Vision
- Survey Export March 2018
- Shared Leadership Cancellation Notice
- Shared Leadership Agenda – June 2018
- MPCA Presentation – Shared Leadership
- WFDMR Survey Results
- Collaboration Tips
- IAP2 Spectrum
- Reflections on Collaboration and Engagement
- Watershed Vision Elements
- 1W1P for Des Moines River WRAPS
- 1W1P Fact Sheet 2018
- Using WRAPS reports in local water planning
- Shared Leadership Summary

4.9. Appendix 9 - Water Education Event

- Event Planning Information
- Flyer
- Marketing outlets
- KDOM Advertisement
- KJOE Advertisement
- KWOA Advertisement
- Marshall radio advertisement
- KDOM and KMHL Radio Interview Questions
- Agenda
- Watersheds 101
- WRAPS Presentation
- Fulda Lakes
- What You Can Do
- Resources
- Fulda Lake Restoration Posters
- Photo 1
- Photo 2
- Water Education Event Summary

4.10. Appendix 10 - Project Management

- WFDMR Project Tasks
- Contact Information
- MWP II Monthly Report 03-2015
- MWP II Monthly Report 04-2015
- MWP II Monthly Report 05-2015
- MWP II Monthly Report 06-2015

- MWP II Monthly Report 07-2015
- DMR Meeting Agenda September 2015
- DMR Project Update Notes
- MWP II Monthly Report 10-2015
- MWP II Monthly Report 11-2015
- MWP II Monthly Report 12-2015
- MWP II Monthly Report 1-2016
- MWOA Presentation
- MWP II Monthly Report 2-2016
- MWP II Monthly Report 3-2016
- MWP II Monthly Report 4-2016
- MWP II Monthly Report 5-2016
- MWP II Monthly Report 6-2016
- MWP II Monthly Report 7-2016
- MWP II Monthly Report 8-2016
- MWP II Monthly Report 9-2016
- MWP II Monthly Report 10-2016

5. Public Outreach and Education

The following section summarizes the public outreach and education efforts undertaken.

The first education endeavors undertaken were the Linking Land Use and Water Quality Workshops. These workshops were the result of a grant application by the WECC to the Toro Corporation. The grant provided 50 percent of the costs for the UM Extension to present two instructional courses for education and information for community leaders, members, and families to work together for cleaner water.

The workshops were held on March 26, 2015 at the Fulda American Legion. Sponsors included WECC, Toro, MPCA, and the HLWD. Following the welcome and introductions, Karen Terry gave a presentation entitled "Linking Land Use and Water Quality". Jan Voit gave a presentation entitled "WFDMR Watershed Project: TMDLS and WRAPS". Jon Lore gave a presentation entitled "Des Moines River Watershed Health Assessment". The Watershed Game was played by all attendees. (Detailed information regarding the workshops can be found in **Appendix 3**.)

Convening the LWG was one of the work plan tasks. Over the course of the grant, the LWG met six times. They were part of brainstorming sessions and completed a survey. They participated in a process for identification and analysis of potential watershed stakeholders to serve on the Citizen Council. Once the list was developed, LWG members made initial contact with the individuals. Ross Behrends and Jan Voit followed up with those that were considering serving on the Citizen Council. Three people agreed to participate: Mona Henkels, Paull Henning, and Ron Tibodeau. (Details regarding each of the LWG meetings can be found in **Appendix 1**.)

The first meeting of the Citizen Council was held on July 18, 2017. Only two of the members were able to attend. Introductions and a warm-up activity were done. Ross Behrends explained the purpose and objectives for the Citizen Council. Karen Terry gave an overview of watershed processes and functions. Katherine Pekarek-Scott described the watershed approach and gave a WRAPS update. (Details regarding each of the Citizen Council meetings can be found in **Appendix 2**.)

The second meeting of the Citizen Council was held on September 6, 2017. Following introductions and a warm-up, Toby Spanier provided information about CE. Citizen Council members were asked to

brainstorm ideas for CE. Time was spent identifying water values in the watershed. A homework assignment was given as well. The book Strengths Finder 2.0 was distributed. Instructions were given to read the book and complete the survey before the next meeting.

The final meeting of the Citizen Council was held on November 28, 2017. Discussion was held regarding the "must haves" for public gatherings, as well as what the MPCA and HLWD could bring to those events. Time was spent using the snow carding technique to identify and prioritize ideas for public gatherings. The results of the snow carding activity are identified below.

CE actions

- Develop survey to gather public input and a poster to promote clean water
- Develop a Facebook page
- Connect with other civic organizations and events to distribute surveys and discuss watershed issues

Educational Activities

- PEBC for watershed experiences
- Public officials summit in partnership with the City of Currie

When the Citizen Assessment and Values Survey was being developed, the draft version was reviewed by the LWG. Comments received were valuable for question clarification and were incorporated into the document. (Information regarding the survey and poster can be found in **Appendix 4**.)

The survey was distributed at the Cottonwood County Game and Fish League's annual meeting. Other venues were Soil and Water Conservation District (SWCD) offices and libraries throughout the watershed, as well as to the HLWD Advisory Committee and attendees of the *Water in Southwest Minnesota* meeting. The survey link was also included on the HLWD website, Story Map, and the Facebook page. The printed survey data was entered into survey monkey. The results can be found in **Appendix 4**.

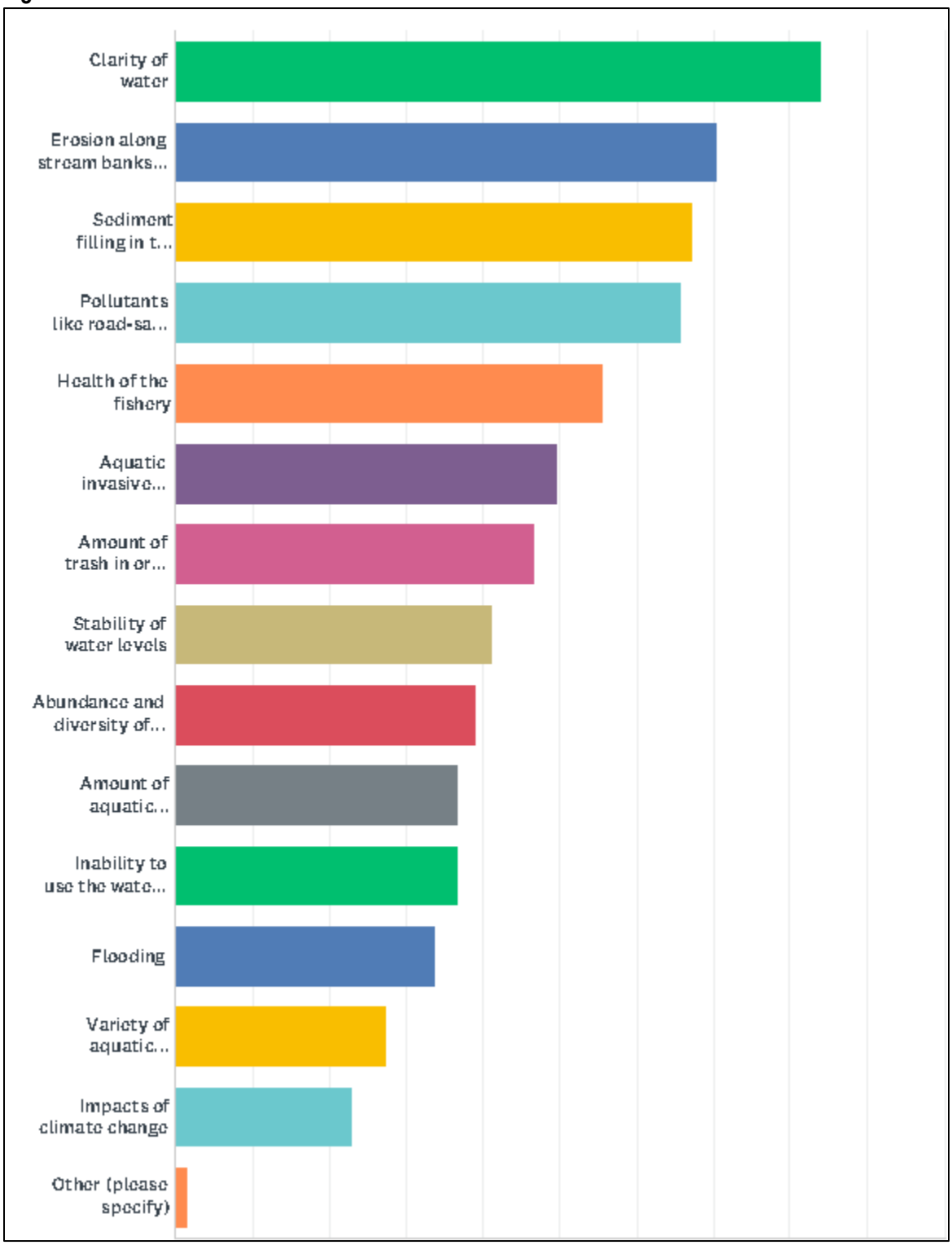
Information from the survey will be used by MPCA and the LWG in developing the implementation strategies for the WRAPS report. Responses were received from a variety of individuals as shown in Figure 3.

Figure 3. Response Representation

ANSWER CHOICES	RESPONSES	
SWCD/NRCS	24.82%	34
Production Ag.	13.14%	18
Sportsman Association	6.57%	9
Rural Resident	18.98%	26
Elected Official	18.98%	26
Civic Organization	2.92%	4
Lake Association	1.46%	2
Student	2.19%	3
Ag. Business	1.46%	2
Business Owner	8.03%	11

Concerns about the condition of the lakes, creeks, ponds, and wetlands in the watershed are shown in Figure 4. Survey results as of July 17, 2018 can be found in **Appendix 4**.

Figure 4. Concerns



The Facebook page was developed in January of 2018. Information was posted regarding upcoming events, as well as links to the citizen values survey and the story map. It is hoped that all of the partners

will share this page and invite others to "like" it. It could then be used as a platform to post events and other information for the entire watershed.

One of the education events identified by the Citizen Council developed into *Water in Southwest Minnesota: It Affects You!* The meeting was held at Key Largo on February 12, 2018.

Ross Behrends welcomed the attendees. Katherine Pekarek-Scott provided an overview of the watershed approach. She described some of the monitoring and assessment work that has been done in the WFDMR Watershed, as well as a timeline for completion of the WRAPS Report. Toby Spanier led the group in a discussion focused on three key questions: *What would you like to see happen with your water infrastructure and stormwater management? What do you need to make what you want happen? And what can you do to make it happen?*

Chuck Ackman from US Representative Amy Klobachar's office told the group he appreciated the invitation and would provide Representative Klobachar with information regarding this meeting. Gene Short, City of Currie moderated a panel discussion with State Representatives Joe Schomacher, Erin Murphy, Dean Urdahl, and Paul Torkelson and State Senator Bill Weber. They responded to: *What are the main areas of water infrastructure and stormwater management you want to see more work done on? What opportunities do you see that exist for this work to happen? And what part(s) of this are you willing to help with?*

During the meal, Karen Terry provided water education regarding water, watersheds, stormwater, and practices to slow down runoff. Karen Cavet, S.E.H. Engineering gave an overview of the water and sewer infrastructure needs within the WFDMR Watershed. Heidi Peper, S.E.H. Engineering described potential funding options available at the federal and state levels. (Detailed information about this event can be found in **Appendix 5**.)

The Citizen Council identified the need to work with students. Because of time constraints, they requested that funding be provided to the PEBC to assist with water quality programs underway at three schools within the WFDMR watershed. The PEBC worked with high school students from Windom Area School to test the water quality in the HLWD. They tested locations in the spring of 2018. They will also gather information in the fall. Students look at temperature, turbidity, color, smell, dissolved oxygen, pH, nitrates, and phosphates. They also collect macroinvertebrates that live there. Students will compare these tests to the previous year, as well as the results from the fall in the spring. Due to a wintery start to the spring, PEBC was unable to do HLO and Fulda programs. HLO will be going out in the fall and Fulda next spring. Information regarding the PEBC event can be found in **Appendix 6**.

The work plan called for holding two Shared Leadership events. The LWG did not believe that these were necessary because there would be such a long period of time between the end of this grant, when the WRAPS Report would be completed, and when 1W1P could begin. However, since these were specifically identified in the work plan, one session was planned. It was scheduled for March 26, 2018. A snow storm that day caused the event to be cancelled. County commissioners, SWCD supervisors, and HLWD managers were invited to attend the Des Moines River Watershed Shared Leadership session on a new date of June 18.

The purpose of the this meeting was to bring together elected and appointed officials, as well as the Citizen Council and LWG, for an update on the Des Moines Watershed WRAPS Report, as well as an introduction to the 1W1P process. There were 33 people in attendance, representing six of the seven counties in the watershed.

Ross Behrends started the meeting with introductions. Katherine Pekarek-Scott gave an overview of the watershed approach, described land use and altered watercourses, provided an update on the WRAPS process including preliminary assessments for stream and lake impairments, including biological impairments and stressors, and explained work completed to-date. She also provided a summary of the TMDL impairments and general timeframes towards the overall completion of the WRAPS Report.

Ross Behrends presented the results from the WFDMR Watershed Survey. To date there were 103 surveys completed and entered online into Survey Monkey. Results will be used in the WRAPS Report, as well as included in the MWP Phase II Final Report.

Tobias Spanier explained collaboration. The purpose of collaboration is to create a shared vision and joint strategies to address concerns that go beyond the concerns of any particular party. To begin to develop a shared vision within the Des Moines Watershed, attendees were broken up into small groups to develop their vision for the watershed. Each group's vision was shared with the whole group and discussion was held. Key values were shared from the group. Values shared were: drinking water; quality of life – clean, recreational use, social; controlled drainage; water storage; improved water quality; community involvement – and sense of personal responsibility; partnerships lead to measured success; reduced algae blooms; business growth; improved farming techniques; community involvement to use resources; hard work; education about goals; personal responsibility; and maintaining what has been achieved.

Julie Westerlund provided information on 1W1P. BWSR's vision for 1W1P is to align local water planning on major watershed boundaries with state strategies towards prioritized, targeted, and measurable implementation plans – the next logical step in the evolution of water planning in Minnesota. The benefits of a shared watershed plan would be: a shared understanding of the concepts of prioritized, targeted, and measured; agreement on the expectations, benefits, and outcomes for implementing 1W1P; implementation activities that address the largest threats and provide the greatest measurable environmental benefit; an understanding of the procedures for substituting or replacing all or portions of existing water plans; and an understanding of next steps for coordinated funding and implementation. (Details regarding the Shared Leadership meeting can be found in **Appendix 8**.)

The Shared Leadership meeting was the first step in developing a shared vision for the future of the WFDMR watershed and its water resources. There were different visions from the participants. Leaders from the upper portion of the watershed focused more on water quality aspects. Whereas, leaders in the lower portions of the watershed were more concerned about water quantity and water retention. This meeting demonstrated that in order to move forward with future watershed planning efforts, a complete understanding of the issues, along with the options available to work toward solving those issues, are vital components for developing a unified vision. Future watershed planning efforts must continue to develop a shared vision in order to responsibly and successfully improve our water resources.

The LWG was asked to provide input regarding the topic for the final education event required in the grant work plan. The discussion revolved around identifying education needs. The LWG recommended the implementation of a water education event. Data regarding this event can be found in **Appendix 9**.

The result of the LWG recommendation for a water education event was *Where Does Your Water Go? Presentations and Picnic*. A flyer was created and distributed to the Citizen Council, SWCDs, the HLWD

Advisory Committee, county commissioners and county staff, local agriculture cooperatives, cities and city staff, and conservation groups. It was posted on the HLWD website and uploaded to the Facebook page. Radio advertising was done on KDOM, KJOE, KWOA, and KMHL radio stations. This event was held on June 26, 2018, at the American Legion in Fulda, MN. Where Does Your Water Go? was developed to bring watershed awareness to the residents of the WFDMR watershed. There were 36 people in attendance.

Ross Behrends started the event by welcoming the attendees and asking everyone to introduce themselves and share what they value most about water.

Karen Terry presented on watershed basics and what residents can do to help improve water quality. Clean water is important to all of us for the life it sustains and the opportunities it provides. Every drop of water that runs across the surface of the land has the ability to pick up pollution (like phosphorus and dirt) and carry it to a nearby lake or stream. To improve and protect water quality, we need to stop water from running overland into our waterbodies. That can be done by creating spaces for the water to slow down and soak into the ground or be taken up by plants. Some of the ways to do that are by creating rain gardens and shoreline restorations, installing rain barrels, restoring wetlands, and building bioretention basins. She commented that the HLWD can help attendees identify the best strategies for their property.

Ross Behrends gave an update on the WRAPS and presented on the current status of the lakes and streams in the West Fork Des Moines River watershed.

Following the WRAPS and WFDMR update, Ross Behrends highlighted past and current projects throughout the Fulda Lakes area that have led to the successful improvement of Fulda Lakes. Partnerships and active participation from the Fulda Lakes community have driven this grassroots effort to become one of the great water quality success stories in Southern Minnesota.

Questions were asked and discussion was held following the presentations. Several Fulda residents commented on the excellent health of their lake and thanked the HLWD for their efforts. Some concerns and possible areas for improvement were mentioned.

Attendees were invited for refreshments at Seven Mile Park. At the park, attendees had an opportunity to see the lake, water quality projects around the lake, and also take part in a poster tour highlighting specific Fulda Lakes' projects.

6. Long-term Results

Products developed through this grant will be helpful for future education endeavors. The Facebook page will be maintained and used to share information regarding the WFDMR watershed and planned events. The story map will be used as an educational tool at meetings and events. The survey will remain live until the end of 2018. The information will be compiled and distributed to partners to help guide decisions regarding project implementation and education event development.

Based upon information received from Senator Bill Weber's office on June 18, 2018, the City of Currie's drinking water and wastewater projects will be funded with a combination of USDA Rural Development (RD) loans and grants and Public Facilities Authority (PFA) Water Infrastructure Funds (WIF) grants. Funding commitments were made known on July 19, 2018.

The City of Currie was informed that they were approved for $5.2 million in funding. Grant funds will comprise 80 percent and loan funds 20 percent of that figure.

It is the hope of HLWD staff that the relationship building that began with the Shared Leadership meeting will continue over the next two years. That relationship is vital to the successful enactment of education, implementation, and community involvement opportunities. It is also necessary for the review and development of the WRAPS Report. Once the WRAPS Report is complete, it is the HLWD'S intention that it be used as the basis to move forward with 1W1P.

This grant helped HLWD staff with efforts for education and implementation as described in the HLWD Watershed Management Plan. Staff will continue to seek funding to assist with water quality improvement efforts.

7. Final Expenditures

The cash and inkind expenditures for the WFDMR MWP Phase II grant period are included in the attached budget.

University of Minnesota | Extension

Watershed Assistance Through Education & Resources

Heron Lake Watershed District

Jackson County Land Management

LYON
MURRAY
NOBLES
MARTIN
JACKSON
COTTONWOOD

SWCD

Minnesota Pollution Control Agency

West Fork Des Moines River Watershed
Citizen Council's Civic Engagement Plans

Purpose: The purpose of the Citizen Council is to convene public meetings to gather information from watershed residents about the water quality values held by those who live and work in the watershed. These values will be essential for guiding strategy development.

These public meetings are being held to meet the requirements of the State of Minnesota's Clean Water Legacy Act. The data gathered will be included in the civic engagement portion of the WRAPS report that this process requires.

Citizen Council members will be provided with pertinent data about the watershed, as well as training and assistance for public meeting organization.

Civic Engagement Actions: Developed on 11/28/17

Goal #1: Develop Survey to Gather Public Input

Goal #2: Develop a Watershed Facebook Page

Goal #3: Connect with Other Civic Organizations and Events to Distribute Surveys and Discuss Watershed Issues

Educational Activities Planned:

#1: Prairie Ecology Bus for Watershed Experiences

#2: Improving Our Water and Watershed (Public Officials Summit – City of Currie)

#3:

#4:

***Local Work Group:** Nobles, Jackson, Murray, Cottonwood, Lyon, Pipestone, and Martin Counties and Soil and Water Conservation Districts, and the Heron Lake Watershed District

West Des Moines River Watershed **Workshop Evaluation** **N = 23**

Linking Land Use and Water Quality

March 26, 2015 12 pm – 4 pm Fulda Community Center

Circle the number that best represents how you would rate these questions or statements:

1. The **educational value** of the following:	Very Poor	Poor	Fair	Good	Very Good
a. The Linking Land Use & Water Quality presentation			8%	57%	35%
b. Learning about the TMDL and WRAPs processes			17%	61%	22%
c. Learning about the watershed health assessment			13%	39%	48%
d. The Watershed Game activity			9%	30%	61%
2. How much did the **Watershed Game activity increase your knowledge** of the following:	Very Little	Little	Some	Much	Very much
a. Targeting practices in your watershed			35%	35%	30%
b. Collaborating with officials across the watershed			17%	48%	35%
c. The importance of looking at clean water goals at a watershed level		4%	9%	43.5%	43.5%
3. Overall, how much did the program **increase your knowledge** of the following:	Very Little	Little	Some	Much	Very much
a. How good policies support practices that positively affect clean water		4%	17%	39%	39%
b. How what we do on the land impacts lakes & rivers		4%	22%	30.5%	43.5%
c. How you can make a difference in keeping your water clean		4%	17%	39%	39%

4. Give an example of how you will use information from this workshop to take action in your community.

- Keeping records of how % of contaminations change in our creek
- Live stream of council meetings to the community explaining the good use practice of water quality
- This workshop gave me ideas & info to use when talking to people about the importance of watershed health. I learned many interesting facts & real life cases that highlight the importance of watershed health, gave me great discussion points
- Will take info to other soil & water supervisors
- coordinate planning with other departments
- I am a commissioner, I may question some of our discussions differently now
- This workshop was great for exposing board members to the effects of watershed practices, or lack thereof, on water quality & hydrology

5. Is there a specific practice or policy or other topics about which you would like additional training?

- I would like to attend the shoreline clean water & the rain garden
- What specific things can we do in our watershed to improve water quality? How do we make these a reality?
- Implementation policies encouraging chronological applications of plan
- Would be interesting to see the same people in an event like this 4 years after our WRAPS civic engagement & education has been done

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West Des Moines River Watershed **Workshop Evaluation** **N = 6**
Linking Land Use and Water Quality
March 26, 2015 5 pm – 9 pm Fulda Community Center

Circle the number that best represents how you would rate these questions or statements:

1. The **educational value** of the following:	Very Poor	Poor	Fair	Good	Very Good
a. The Linking Land Use and Water Quality presentation			17%	67%	17%
b. Learning about the TMDL and WRAPs processes				50%	50%
c. Learning about the watershed health assessment			33%	33%	33%
d. The Watershed Game activity			33%	33%	33%
2. How much did the **Watershed Game activity increase your knowledge** of the following:	Very Little	Little	Some	Much	Very much
a. Targeting practices in your watershed			50%	33%	17%
b. Collaborating with officials across the watershed			67%	33%	
c. The importance of looking at clean water goals at a watershed level		17%	17%	33%	33%
3. Overall, how much did the program **increase your knowledge** of the following:	Very Little	Little	Some	Much	Very much
a. How good policies support practices that positively affect clean water			50%	17%	33%
b. How what we do on the land impacts lakes and rivers			50%	33%	17%
c. How you can make a difference in keeping your water clean			50%	33%	17%

4. Give an example of how you will use information from this workshop to take action in your community.

- Review Plans

5. Is there a specific practice or policy or other topics about which you would like additional training?

- Shoreline Buffers, especially those on farmland (streams, creeks, ditches)

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Summary of the Linking Land Use and Water Quality Workshops
Thursday, March 26, 2015

Registration, Welcome, and Introductions

The workshops were held at the Community Center in Fulda. Two sessions were held; one from 12:00-4:00 pm and one from 5:00-9:00 pm. There were 35 participants for the afternoon session and 8 participants for the evening session. Presenters and coordination staff were also present.

The workshops began with a check in and a meal catered by Brian's Supper Club was provided. Introductions then took place. The workshop sponsors were recognized and thanked. Everyone was asked to state their name and who they represent.

Linking Land Use and Water Quality

Karen Terry, University of Minnesota Extension Educator, began the workshop with a presentation entitled "Linking Land Use and Water Quality". Karen began her presentation by showing that the amount of available freshwater is a very small portion of the planet. Minnesota is unique in that it is the source of many major bodies of water in North America. Any problems that we create in our water bodies are transported downstream for other states to deal with. Karen then reviewed the extent of the West Fork Des Moines River (WFDMR) and provided information about land use and land cover in the watershed. Problems within the watershed include bacteria, nutrients, sedimentation, and streambank erosion.

The benefits a watershed provides were addressed. These benefits include: recreational opportunities, strong agricultural systems, drinking water protection, property values, flood minimization, habitat, and sense of place. Karen then discussed how adding impervious surfaces can affect a watershed. This causes altered runoff patterns, increases flooding, and creates water quality and quantity issues. Shoreland development around lakes also causes runoff problems. Although our watershed is currently altered, there are steps we can all take to improve the quality of our land and water resources. These steps include creating plans, policies, and practices. Plans are the goals we set fourth for the watershed. Policies are the rules and regulations we put in place and the practices include the actions we physically undertake to help achieve our goals. Everyone has an idea of how we can achieve a healthy watershed, and conversations need to be held between all stakeholders to ensure we are all working together towards the same, unified goals.

In the afternoon session, a question was asked regarding the aesthetics of a developed shoreline. Discussion was held and it was explained that science should be considered when making water quality decisions, not aesthetics.

West Fork Des Moines River Watershed Project: TMDLs and WRAPS

Jan Voit, Heron Lake Watershed District (HLWD), gave a presentation titled "West Fork Des Moines River Watershed Project: TMDLs and WRAPS". In her presentation, Jan reviewed the WFDMR Total Maximum Daily Load (TMDL) and the impairments listed in the TMDL. There are a

total of 33 impairments including: 5 for fecal coliform, 10 for turbidity, 15 for excess nutrients, and one for pH. Minnesota legislature is changing the way waters are managed. They are progressing towards a watershed approach and the Watershed Restoration and Protection Strategies (WRAPS) process. The process is a 10-year cycle that involves assessing the health of the watershed and formulating strategies to improve the health of the watershed. The TMDL and WRAPS were compared. The WFDMR faces some great challenges and needs to see reductions of 86%. The WFDMR started the WRAPS process in 2014.

In the evening session, discussion was held regarding the dam at the outlet to Heron Lake and the politics involved in water planning.

Des Moines River Watershed Health Assessment

Jon Lore, Minnesota Department of Natural Resources (DNR), gave a presentation titled "Des Moines River Watershed Health Assessment". During his presentation, Jon described the role that the Ecological & Water Resources Division will have in the WRAPS process. We have altered the hydrology of the area and this is having devastating effects on geomorphology and stream stability. It now takes less rain to create more runoff because the longitudinal, lateral, and vertical connectivity of streams has been altered. In this area of the state, streams are rarely allowed access to their floodplains. This increases the flow of streams and their ability to move vast amounts of sediment. Erosion and sedimentation in our streams are serious problems. Valuable land is disappearing due to streambank erosion and fish habitat is being eliminated due to sedimentation. Many banks are monitored in this area for erosion; in some cases over 20 feet of a bank was lost in a one year time period. Our watershed is suffering because water is not allowed to stay on the landscape long enough. In order to restore watershed health, we need to address the causes of the problems and not the symptoms. The economy and "this is the way it has always been done" mentality are roadblocks to achieving better water quality. Everyone has a role in restoring our watershed health.

The Watershed Game

After the presentations, the Watershed Game was played. There are two versions of the game: the lake and the stream model. The game is used to teach players how land use decisions can affect water quality. Each watershed has various land uses and players must implement Best Management Practices (BMPs) to reduce the amount of sediment in the water. The goal is to work together to significantly improve the water quality in the watershed. In the process, players learn of the different BMPs that can be implemented in their area. The process of having a plan, creating policies, and implementing practices to reach a goal is simulated. Sometimes the goals are met, while other times they are not. Discussion is then held after the game was played to reflect on the processes that took place.

Doug Malchow and Karen Terry, University of Minnesota Extension, led the Watershed Games during the workshop. Afterwards, discussions were held. It was noted that not every land use within a watershed cannot reduce their runoff by the same amount. Varying land uses have different impacts on the water quality. BMPs that are implemented in an urban area tend to be more costly due to the large amount of infrastructure and the high concentration of people. Having a plan and educating the population is important. Although they can be costly we will see great benefits from both.

It was observed that players became so invested in the game and worked hard to reduce their runoff, while this same amount of enthusiasm towards watershed work is usually not seen in real life. It was

also noted that point source pollution is easier to manage because can easily be identified and numbers can be assigned for reduction. Although the same reductions can be assigned to nonpoint source pollution, the causes and groups responsible for the reductions are much more difficult to identify.

There were difficulties in playing this game. One difficulty is that the standards can change. Money also plays a large role in what work can be done in a watershed. Natural disasters happen and we have no control over them. Oftentimes we have to deal with runoff and pollution problems that are created upstream. We have no control over what happens upstream, yet we have to deal with the consequences of having poor water quality. Watershed plans are important. However, the plans need to be created with sound science and we have to actually use to them in order for them to be beneficial.

Shared Leadership Summary
June 18, 2018
Fulda American Legion

On June 18, 2018, a Des Moines River Watershed Shared Leadership meeting was held at the American Legion in Fulda, MN. The purpose of the this meeting was to bring together elected and appointed officials, as well as the Citizen Council and local work group, for an update on the Des Moines Watershed Restoration and Protection Strategies (WRAPS) Report, as well as an introduction to the One Watershed One Plan (1W1P) process. There were 33 people in attendance, representing six of the seven counties in the watershed.

Ross Behrends, Heron Lake Watershed District (HLWD), started the meeting with introductions.

Katherine Pekarek-Scott, Minnesota Pollution Control Agency (MPCA), gave an overview of the watershed approach, described land use and altered watercourses, provided an update on the WRAPS process including preliminary assessments for stream and lake impairments, including biological impairments and stressors, and explained work completed to-date. She also provided a summary of the Total Maximum Daily Load impairments and general timeframes towards the overall completion of the WRAPS report.

Ross Behrends, HLWD, presented the results from the West Fork Des Moines River (WFDMR) Watershed Survey. To date there were 103 surveys completed and entered online into Survey Monkey. Results will be used in the WRAPS Report, as well as included in the Major Watershed Project Phase II Final Report.

Tobias Spanier, University of Minnesota (UM) Extension, explained collaboration. The purpose of collaboration is to create a shared vision and joint strategies to address concerns that go beyond the concerns of any particular party. To begin to develop a shared vision within the Des Moines Watershed, attendees were broken up into small groups to develop their vision for the watershed. Each group's vision was shared with the whole group and discussion was held. Key Values were shared from the group. Values shared were: drinking water; quality of life – clean, recreational use, social; controlled drainage; water storage; Improved water quality; community involvement – and sense of personal responsibility; partnerships lead to measured success; reduced algae blooms; business growth; improved farming techniques; community involvement to use resources; hard work; education about goals; personal responsibility; and maintaining what has been achieved.

Julie Westerlund, Minnesota Board of Soil and Water Resources (BWSR), provided information on 1W1P. BWSR's vision for 1W1P is to align local water planning on major watershed boundaries with state strategies towards prioritized, targeted, and measurable implementation plans – the next logical step in

the evolution of water planning in Minnesota. The benefits of a shared watershed plan would be: a shared understanding of the concepts of prioritized, targeted, and measured; agreement on the expectations, benefits, and outcomes for implementing 1W1P; implementation activities that address the largest threats and provide the greatest measurable environmental benefit; an understanding of the procedures for substituting or replacing all or portions of existing water plans; and an understanding of next steps for coordinated funding and implementation.

Watersheds 101 Event

On June 26, 2018, a West Fork Des Moines River (WFDMR) Water Education Event was held at the American Legion in Fulda, MN. The need for this event was identified by the WFDMR Local Work Group and Citizen Council. Watersheds 101 was developed to bring awareness to the residents of the WFDMR watershed. There were 36 people in attendance.

Ross Behrends, Heron Lake Watershed District (HLWD), started the event by welcoming the attendees and asking everyone to introduce themselves and share what they value most about water.

Karen Terry, University of Minnesota Extension, presented on watershed basics and what residents can do to help improve water quality. Clean water is important to all of us for the life it sustains and the opportunities it provides. Every drop of water that runs across the surface of the land has the ability to pick up pollution (like phosphorus and dirt) and carry it to a nearby lake or stream. To improve and protect water quality, we need to stop water from running overland into our waterbodies. We can do that by creating spaces for the water to slow down and soak into the ground or be taken up by plants. Some of the ways to do that are by creating rain gardens and shoreline restorations, installing rain barrels, restoring wetlands, and building bioretention basins. She commented that the HLWD can help attendees identify the best strategies for their property.

Ross Behrends, HLWD, gave an update on the Watershed Restoration and Protection Strategies Report (WRAPS) and presented on the current status of the lakes and streams in the West Fork Des Moines River watershed.

Following the WRAPS and WFDMR update, Ross Behrends, HLWD, highlighted past and current projects throughout the Fulda Lakes area that have led to the successful improvement of Fulda Lakes. Partnerships and active participation from the Fulda Lakes community have driven this grassroots effort to become one of the great water quality success stories in Southern Minnesota.

Questions were asked and discussion was held following the presentations. Several Fulda residents commented on the excellent health of their lake and thanked the HLWD for their efforts. Some concerns and possible areas for improvement were mentioned.

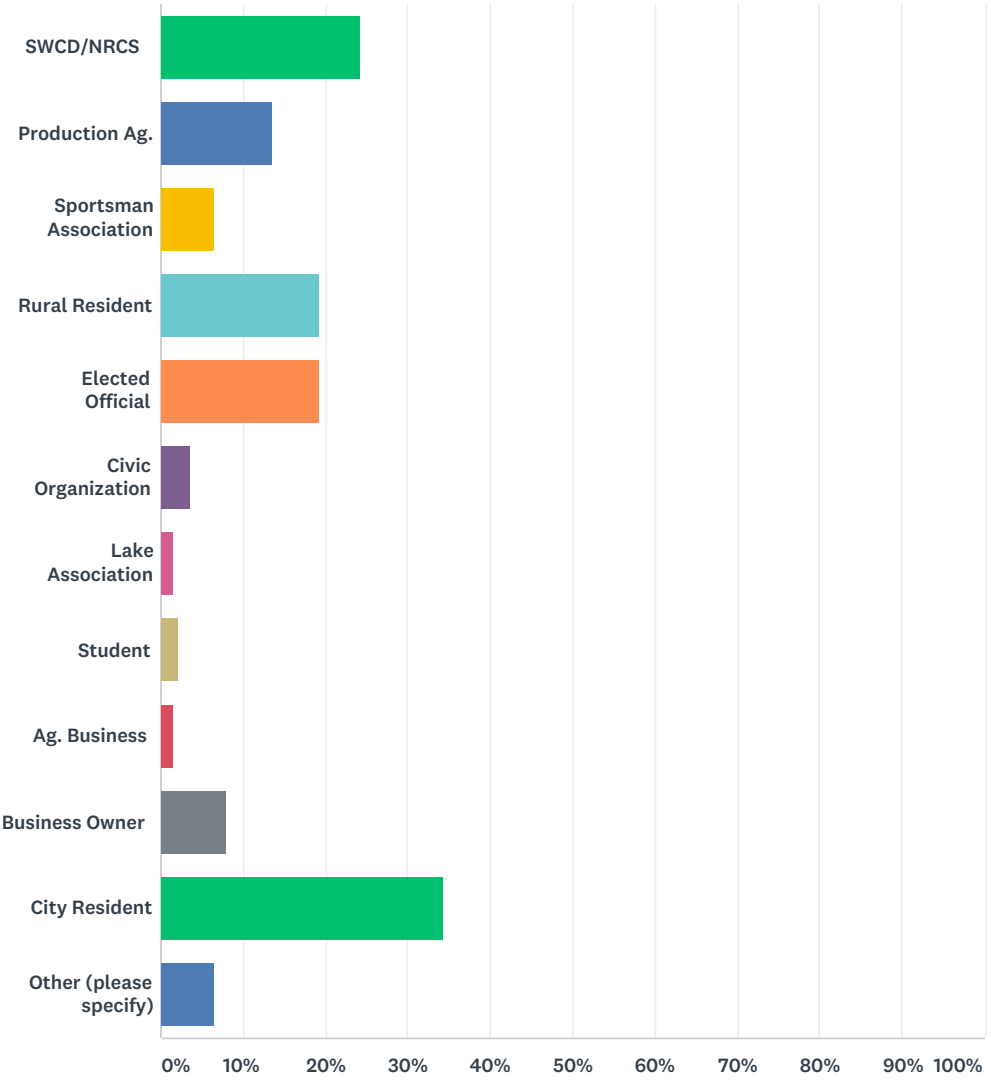
Attendees were invited to a picnic at Seven Mile Park. At the park, attendees had an opportunity to see the lake, water quality projects around the lake, and also take part in a poster tour highlighting specific Fulda Lakes' projects.

Q1 Please list your ZIP CODE.

Answered: 128 Skipped: 14

Q2 Please check which one(s) represent you the best:

Answered: 140 Skipped: 2

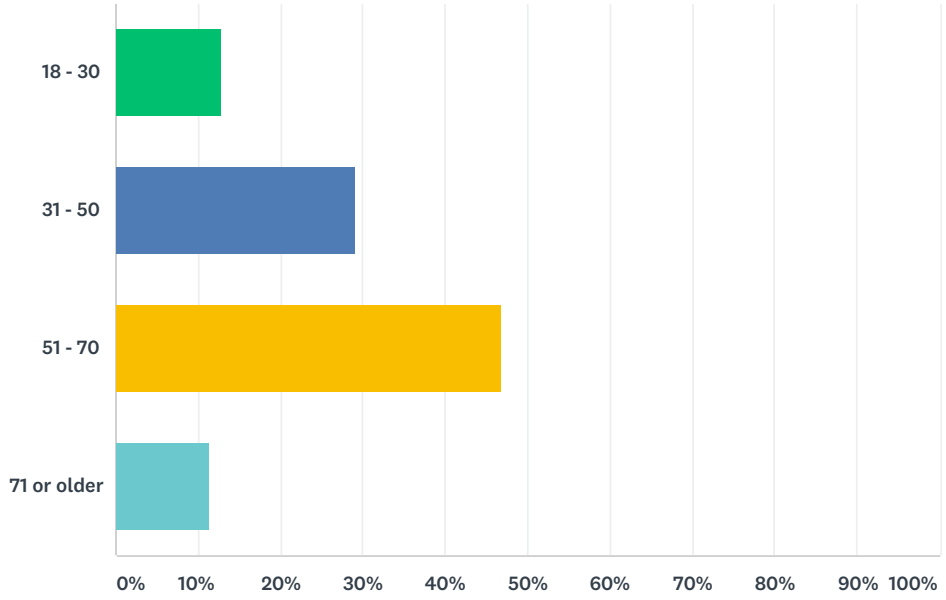


ANSWER CHOICES	RESPONSES	
SWCD/NRCS	24.29%	34
Production Ag.	13.57%	19
Sportsman Association	6.43%	9
Rural Resident	19.29%	27
Elected Official	19.29%	27
Civic Organization	3.57%	5
Lake Association	1.43%	2
Student	2.14%	3
Ag. Business	1.43%	2
Business Owner	7.86%	11

City Resident	34.29%	48
Other (please specify)	6.43%	9
Total Respondents: 140		

Q3 Which of the following describes your age?

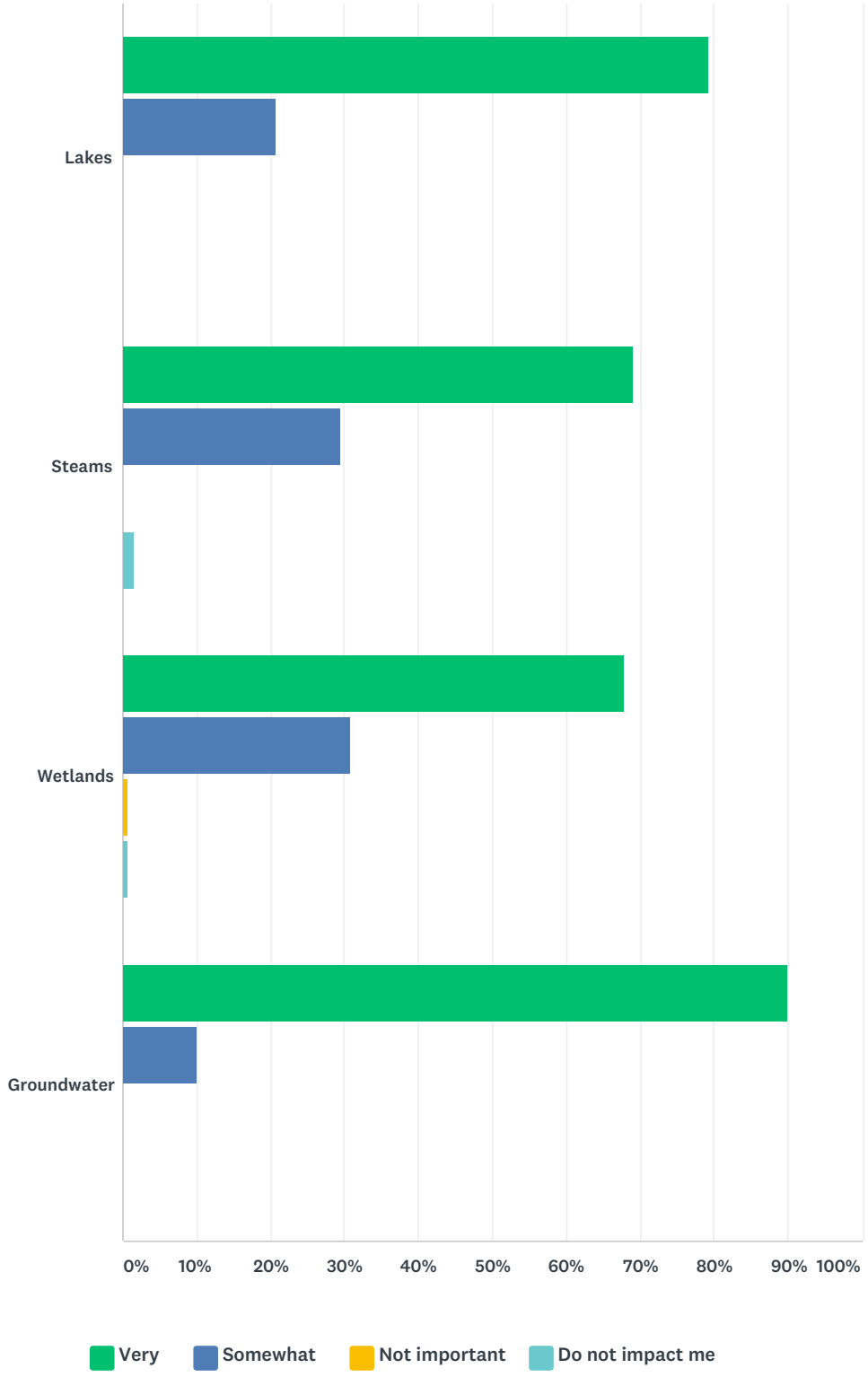
Answered: 141 Skipped: 1



ANSWER CHOICES	RESPONSES	
18 - 30	12.77%	18
31 - 50	29.08%	41
51 - 70	46.81%	66
71 or older	11.35%	16
TOTAL		141

Q4 How important are each of the following to your quality of life?

Answered: 141 Skipped: 1

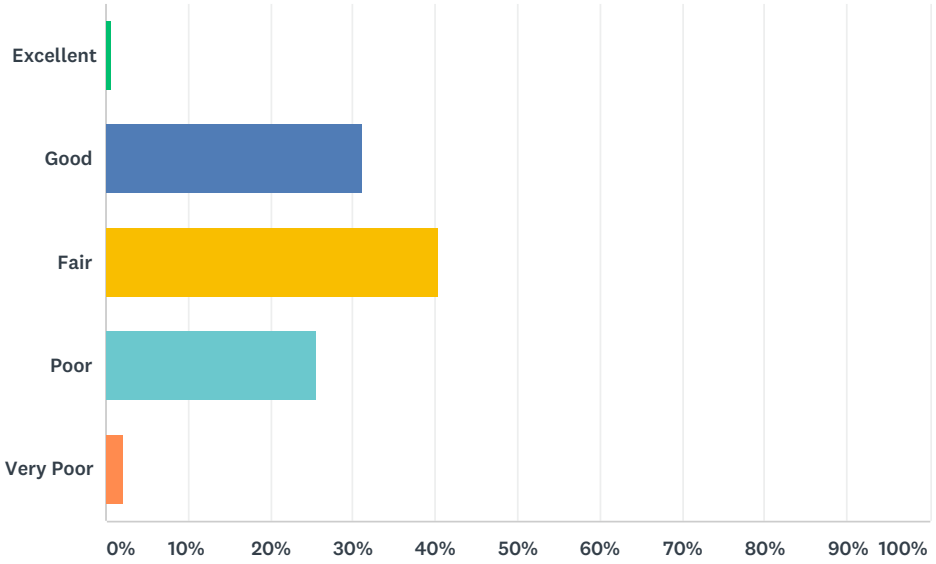


	VERY	SOMEWHAT	NOT IMPORTANT	DO NOT IMPACT ME	TOTAL RESPONDENTS
Lakes	79.29% 111	20.71% 29	0.00% 0	0.00% 0	140

Steams	69.06% 96	29.50% 41	0.00% 0	1.44% 2	139
Wetlands	67.86% 95	30.71% 43	0.71% 1	0.71% 1	140
Groundwater	90.00% 126	10.00% 14	0.00% 0	0.00% 0	140

Q5 In your opinion, what is the quality of surface water in your area?

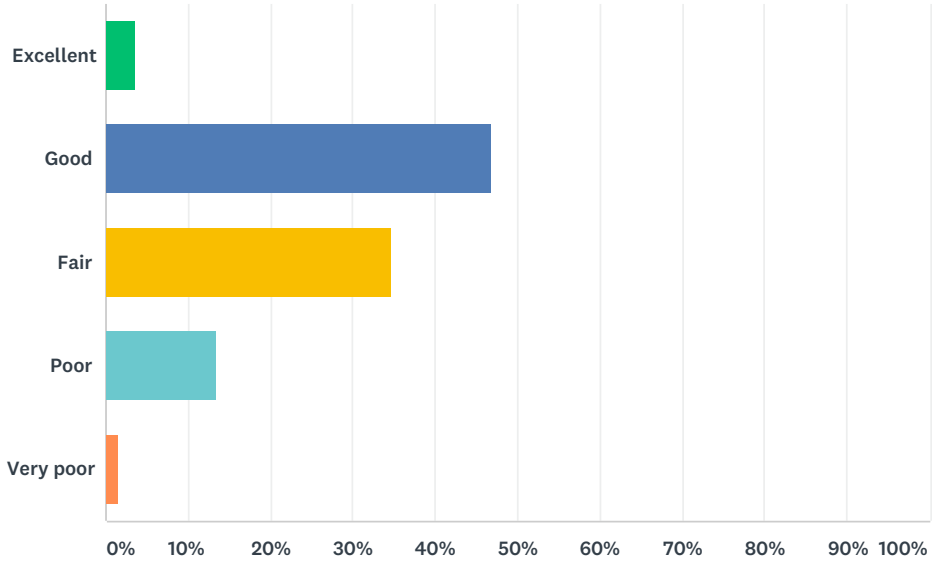
Answered: 141 Skipped: 1



ANSWER CHOICES	RESPONSES	
Excellent	0.71%	1
Good	31.21%	44
Fair	40.43%	57
Poor	25.53%	36
Very Poor	2.13%	3
TOTAL		141

Q6 In your opinion, what is the quality of groundwater in your area?

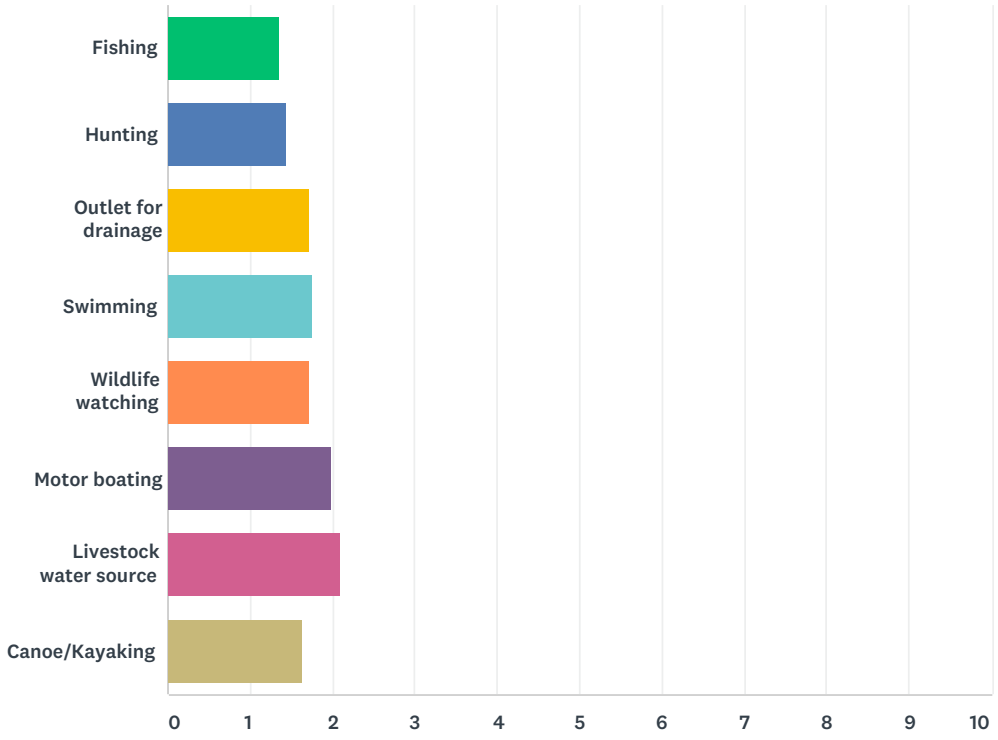
Answered: 141 Skipped: 1



ANSWER CHOICES	RESPONSES	
Excellent	3.55%	5
Good	46.81%	66
Fair	34.75%	49
Poor	13.48%	19
Very poor	1.42%	2
TOTAL		141

Q7 How important are the following uses for the lakes, creeks, ponds, and wetlands in your area?

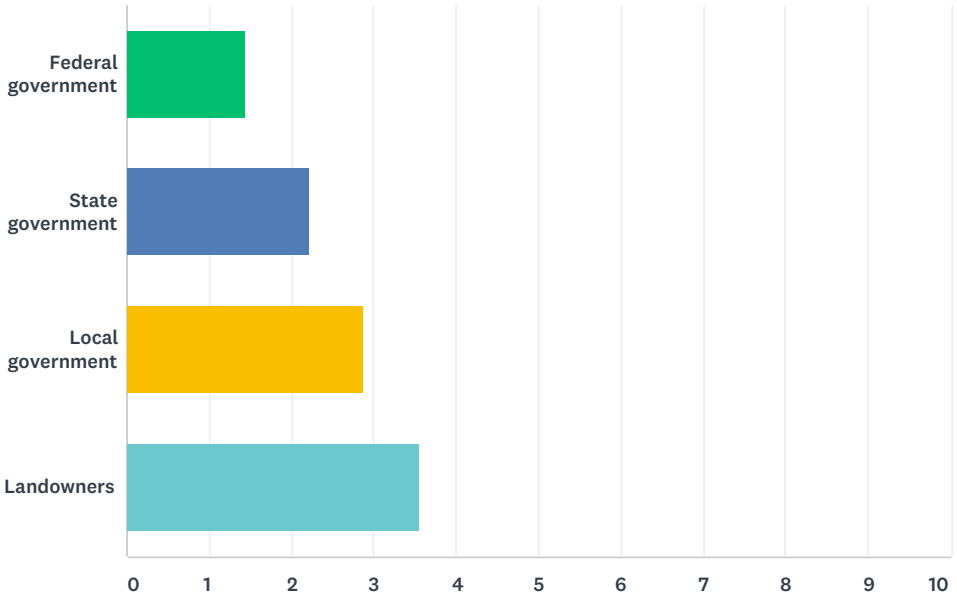
Answered: 141 Skipped: 1



	VERY	SOMEWHAT	NOT IMPORTANT	DOES NOT IMPACT ME	TOTAL	WEIGHTED AVERAGE
Fishing	75.18% 106	17.73% 25	3.55% 5	3.55% 5	141	1.35
Hunting	63.83% 90	30.50% 43	2.13% 3	3.55% 5	141	1.45
Outlet for drainage	49.28% 68	35.51% 49	8.70% 12	6.52% 9	138	1.72
Swimming	45.99% 63	39.42% 54	7.30% 10	7.30% 10	137	1.76
Wildlife watching	43.57% 61	45.00% 63	7.14% 10	4.29% 6	140	1.72
Motor boating	40.29% 56	34.53% 48	11.51% 16	13.67% 19	139	1.99
Livestock water source	33.33% 46	39.86% 55	11.59% 16	15.22% 21	138	2.09
Canoe/Kayaking	54.55% 6	36.36% 4	0.00% 0	9.09% 1	11	1.64

Q8 Who is responsible for water quality? Please rank the options below in order of responsibility. ONE being the most responsible for water quality to FOUR being the least responsible.

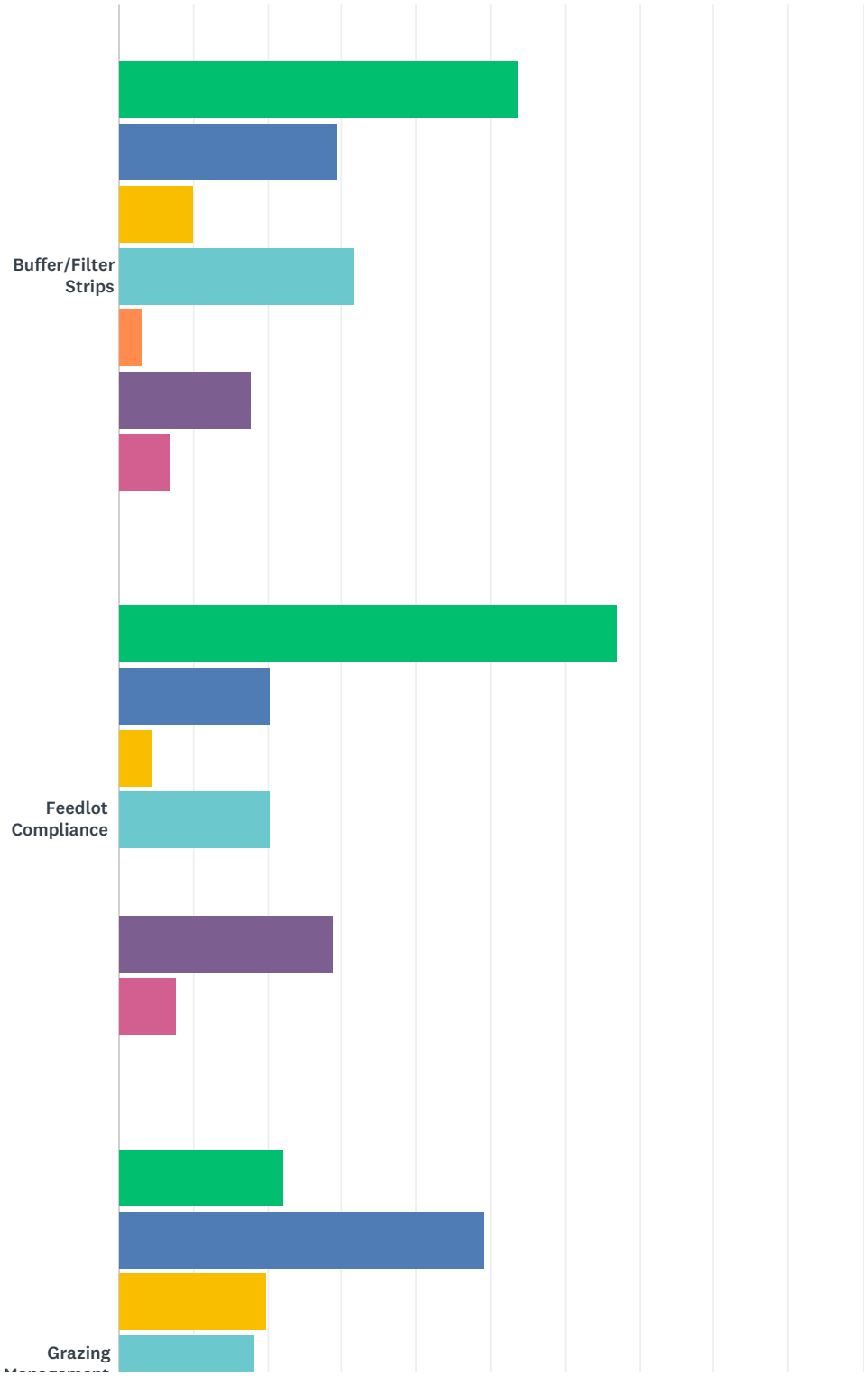
Answered: 137 Skipped: 5

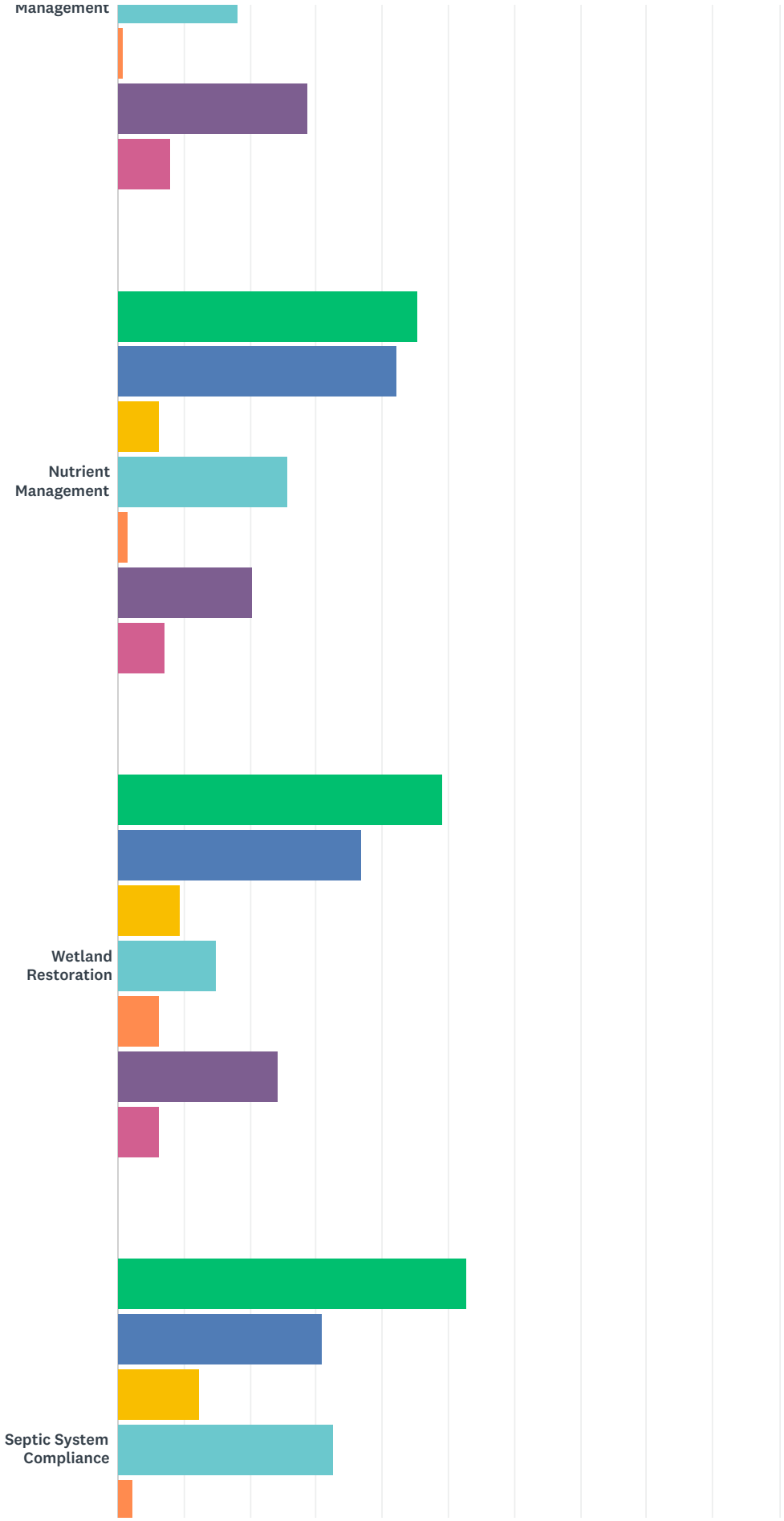


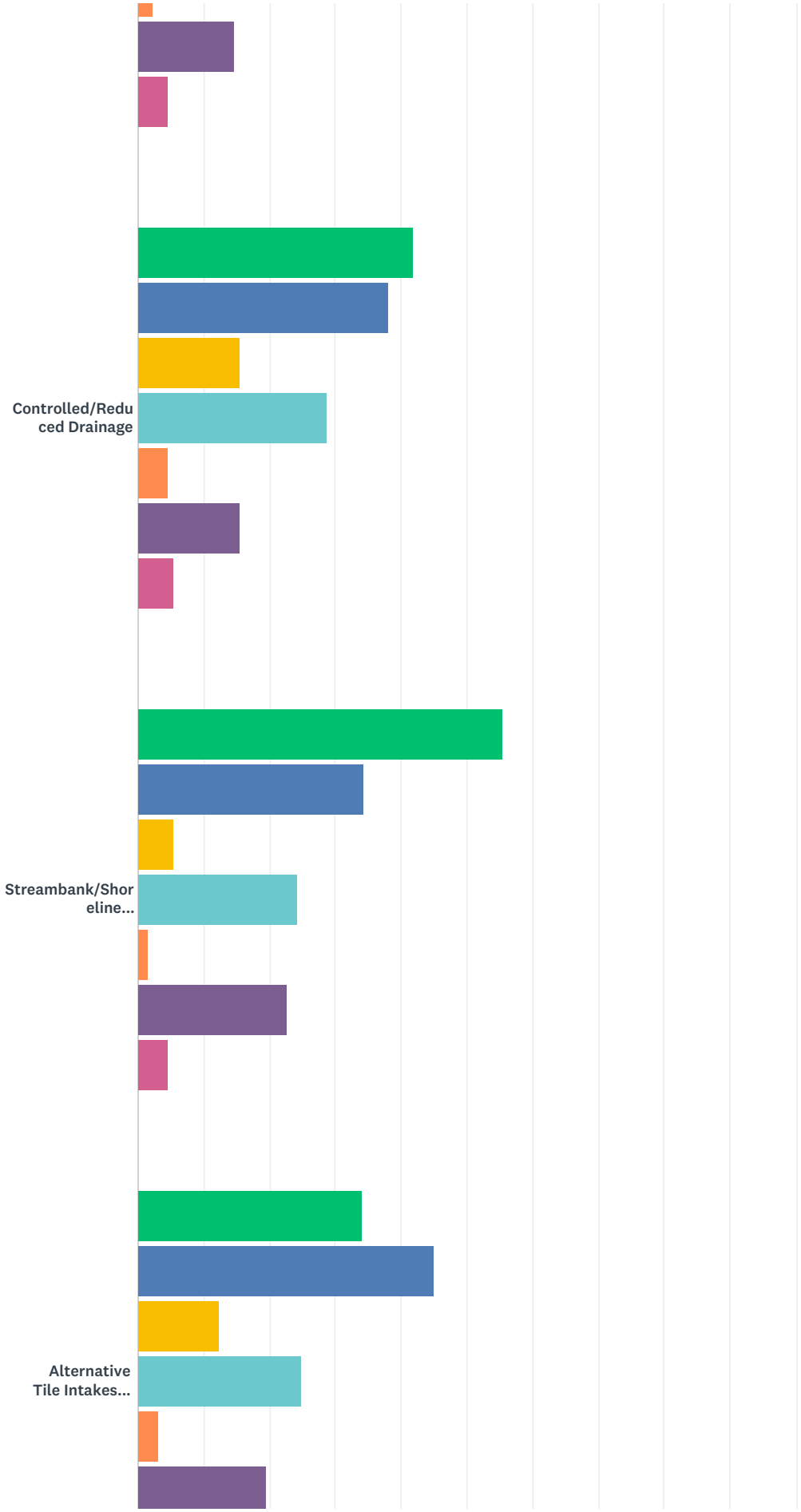
	1	2	3	4	TOTAL	SCORE
Federal government	7.94% 10	7.14% 9	6.35% 8	78.57% 99	126	1.44
State government	4.80% 6	16.00% 20	76.00% 95	3.20% 4	125	2.22
Local government	13.39% 17	66.93% 85	11.81% 15	7.87% 10	127	2.86
Landowners	78.03% 103	9.09% 12	3.79% 5	9.09% 12	132	3.56

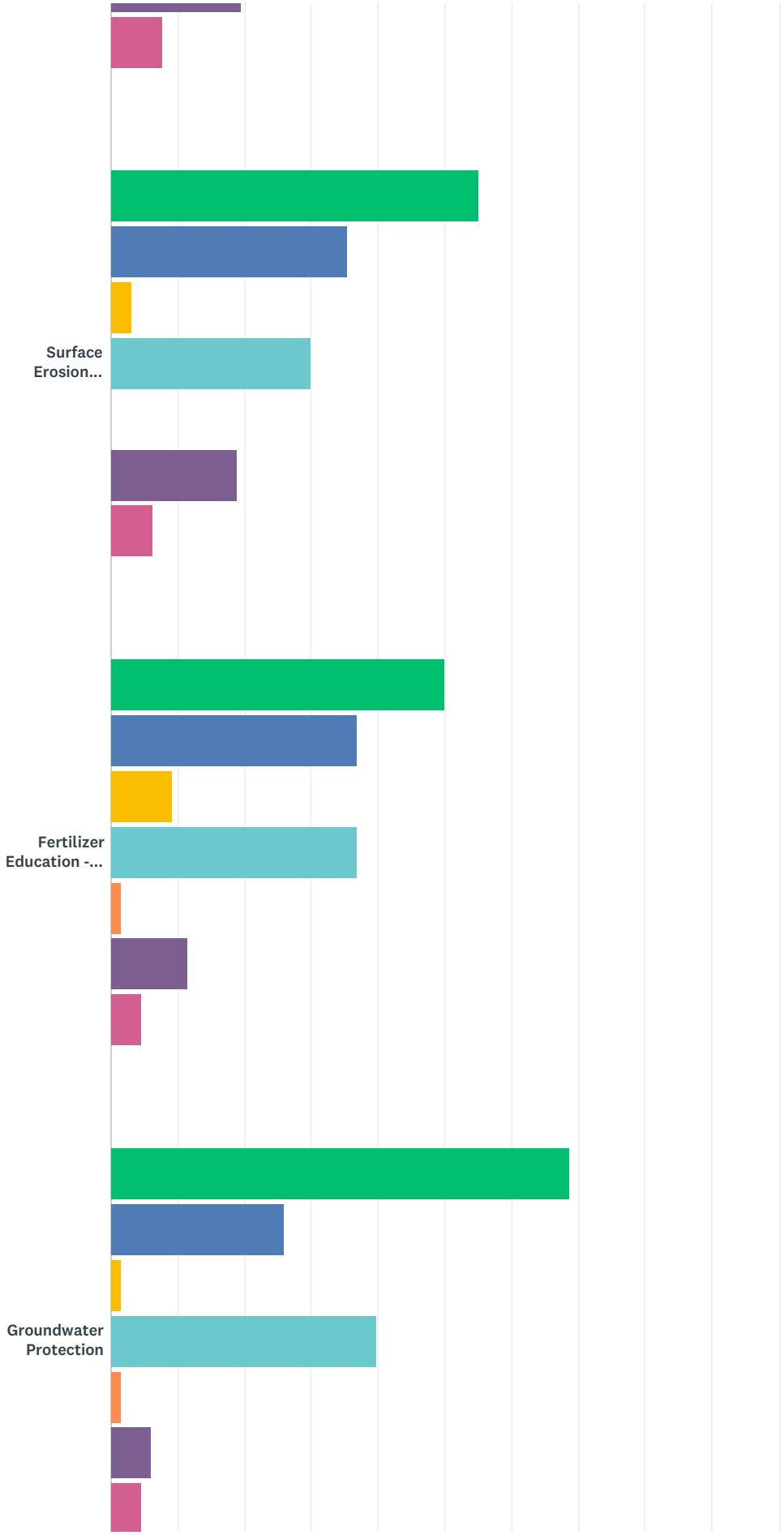
Q9 Please prioritize each of the Best Management Practices (BMPs) listed below by indicating whether you believe the BMP is High, Medium, or Low Priority for improving water quality. Also, indicate Yes or No as to whether or not you would be willing to implement the BMP on your property.

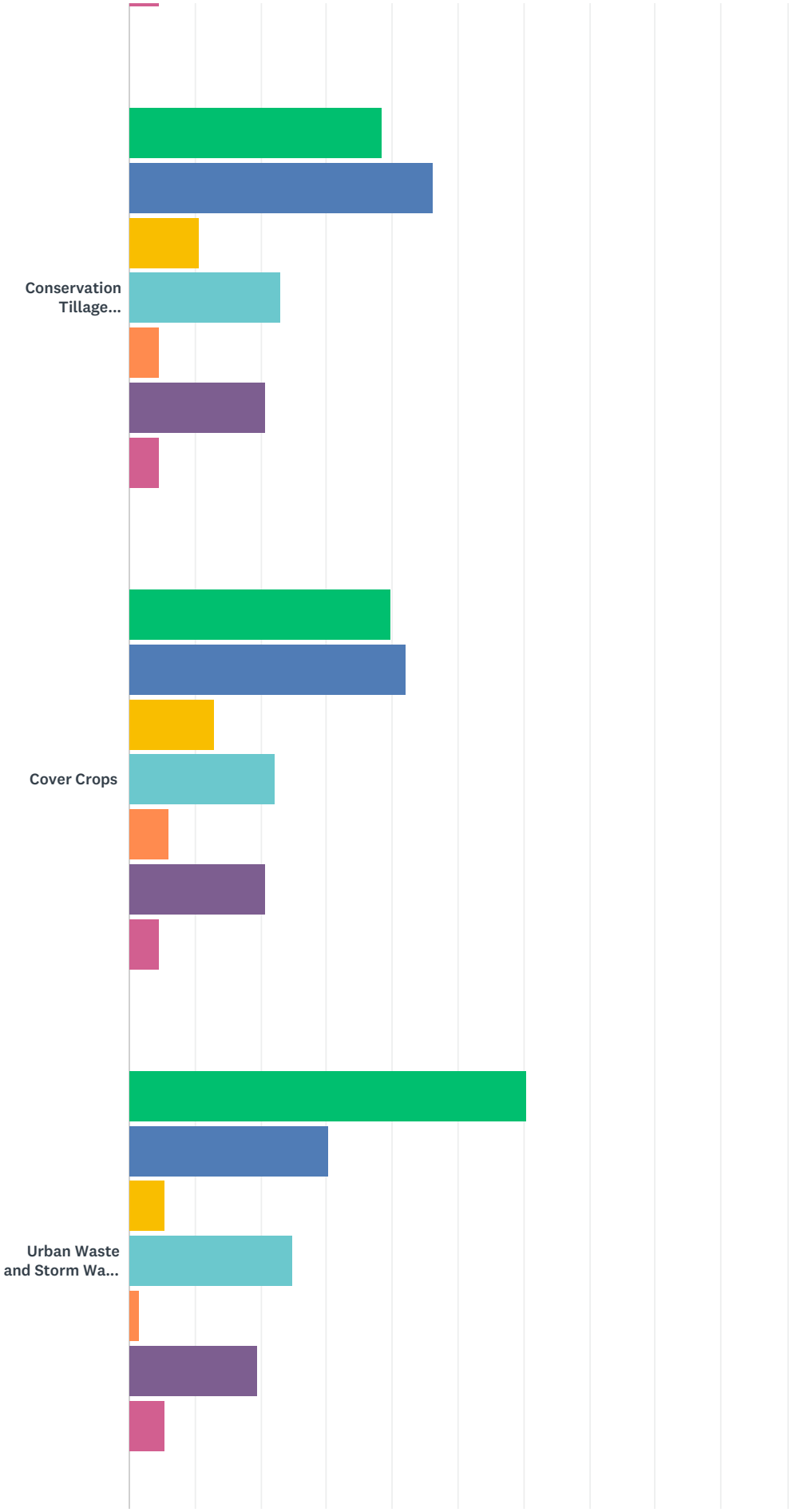
Answered: 131 Skipped: 11

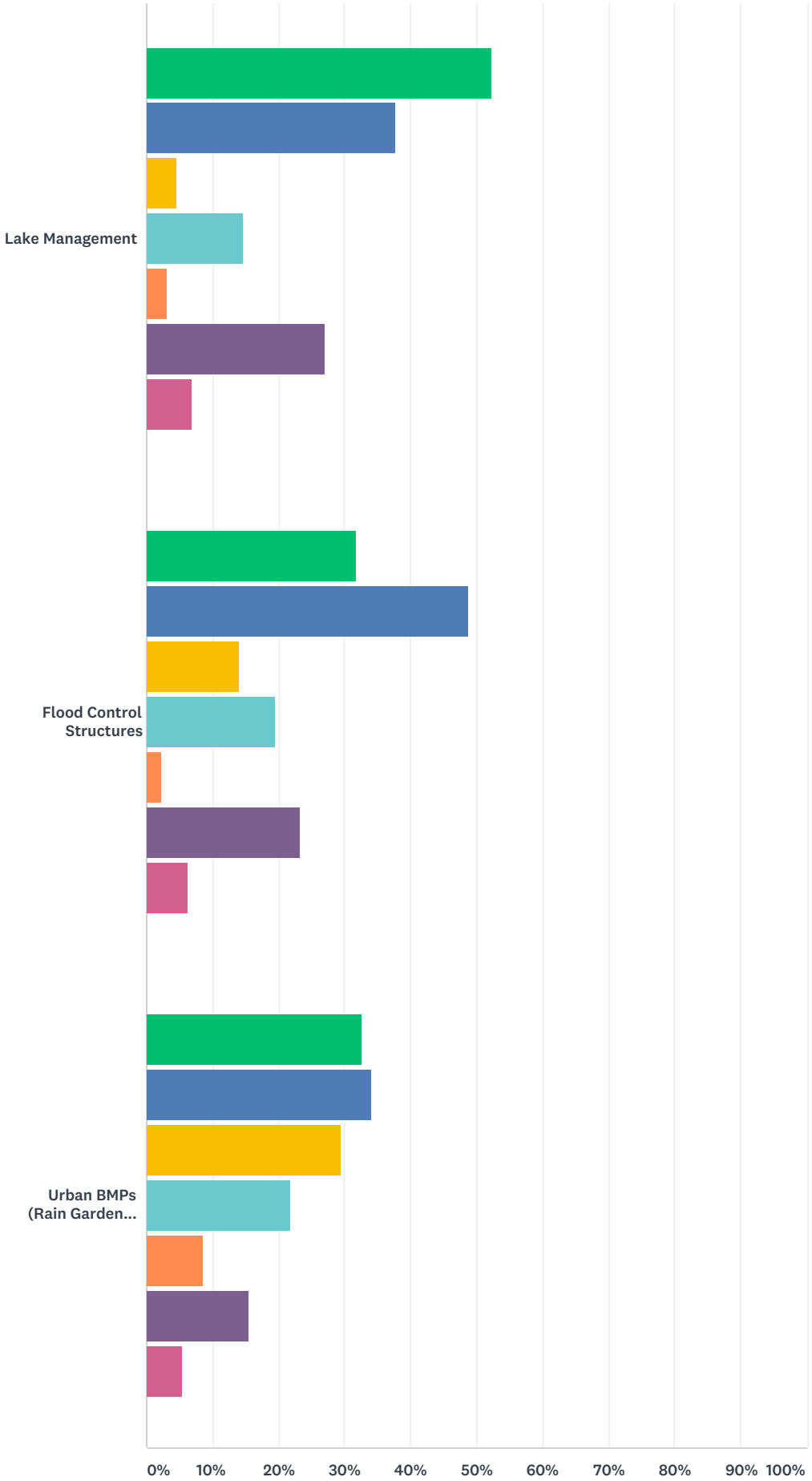


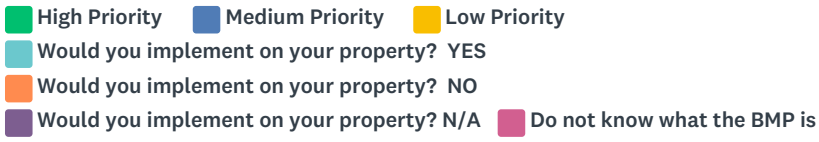

Management
Nutrient Management
Wetland Restoration
Septic System Compliance


Controlled/Reduced Drainage
Streambank/Shoreline...
Alternative Tile Intakes...


Surface Erosion...
Fertilizer Education -...
Groundwater Protection


Conservation Tillage...
Cover Crops
Urban Waste and Storm Wa...

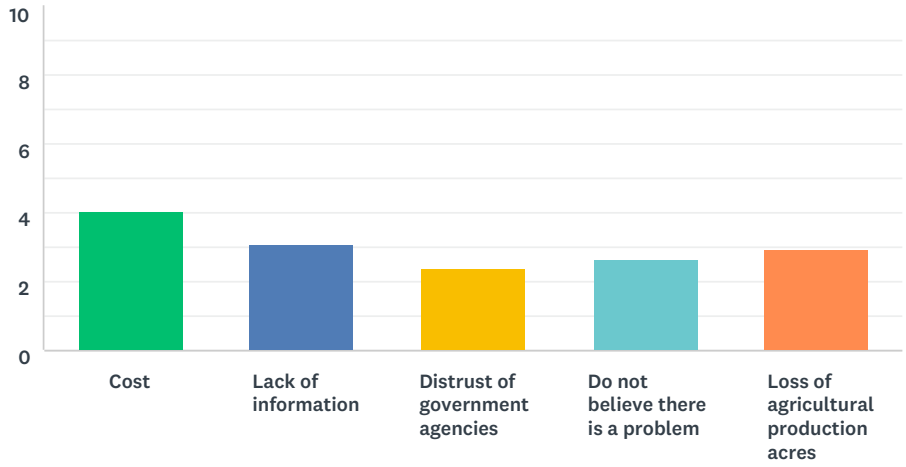

Lake Management
Flood Control Structures
Urban BMPs (Rain Garden...
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%



	HIGH PRIORITY	MEDIUM PRIORITY	LOW PRIORITY	WOULD YOU IMPLEMENT ON YOUR PROPERTY? YES	WOULD YOU IMPLEMENT ON YOUR PROPERTY? NO	WOULD YOU IMPLEMENT ON YOUR PROPERTY? N/A	DO NOT KNOW WHAT THE BMP IS	TOTAL RESPONDENT
Buffer/Filter Strips	53.85% 70	29.23% 38	10.00% 13	31.54% 41	3.08% 4	17.69% 23	6.92% 9	13
Feedlot Compliance	67.19% 86	20.31% 26	4.69% 6	20.31% 26	0.00% 0	28.91% 37	7.81% 10	12
Grazing Management	22.22% 28	49.21% 62	19.84% 25	18.25% 23	0.79% 1	28.57% 36	7.94% 10	12
Nutrient Management	45.31% 58	42.19% 54	6.25% 8	25.78% 33	1.56% 2	20.31% 26	7.03% 9	12
Wetland Restoration	49.22% 63	36.72% 47	9.38% 12	14.84% 19	6.25% 8	24.22% 31	6.25% 8	12
Septic System Compliance	52.71% 68	31.01% 40	12.40% 16	32.56% 42	2.33% 3	14.73% 19	4.65% 6	12
Controlled/Reduced Drainage	41.86% 54	37.98% 49	15.50% 20	28.68% 37	4.65% 6	15.50% 20	5.43% 7	12
Streambank/Shoreline Protection	55.47% 71	34.38% 44	5.47% 7	24.22% 31	1.56% 2	22.66% 29	4.69% 6	12
Alternative Tile Intakes (Rock, Blind, French, ect)	34.11% 44	44.96% 58	12.40% 16	24.81% 32	3.10% 4	19.38% 25	7.75% 10	12
Surface Erosion Practices (Terraces, Grassed Waterways, ect.)	55.12% 70	35.43% 45	3.15% 4	29.92% 38	0.00% 0	18.90% 24	6.30% 8	12
Fertilizer Education - Residential Lawn Care	50.00% 65	36.92% 48	9.23% 12	36.92% 48	1.54% 2	11.54% 15	4.62% 6	13
Groundwater Protection	68.70% 90	25.95% 34	1.53% 2	39.69% 52	1.53% 2	6.11% 8	4.58% 6	13
Conservation Tillage (No-till, Strip-till, ect.)	38.46% 50	46.15% 60	10.77% 14	23.08% 30	4.62% 6	20.77% 27	4.62% 6	13
Cover Crops	39.69% 52	41.98% 55	12.98% 17	22.14% 29	6.11% 8	20.61% 27	4.58% 6	13
Urban Waste and Storm Water Management	60.47% 78	30.23% 39	5.43% 7	24.81% 32	1.55% 2	19.38% 25	5.43% 7	12
Lake Management	52.31% 68	37.69% 49	4.62% 6	14.62% 19	3.08% 4	26.92% 35	6.92% 9	13
Flood Control Structures	31.78% 41	48.84% 63	13.95% 18	19.38% 25	2.33% 3	23.26% 30	6.20% 8	12
Urban BMPs (Rain Gardens, Rain Barrels, ect.)	32.56% 42	34.11% 44	29.46% 38	21.71% 28	8.53% 11	15.50% 20	5.43% 7	12

Q10 List in order (1 thru 5) what you believe are the biggest obstacles that keep people from implementing BMPs on their property? ONE being the biggest obstacle to Five being the least obstacle.

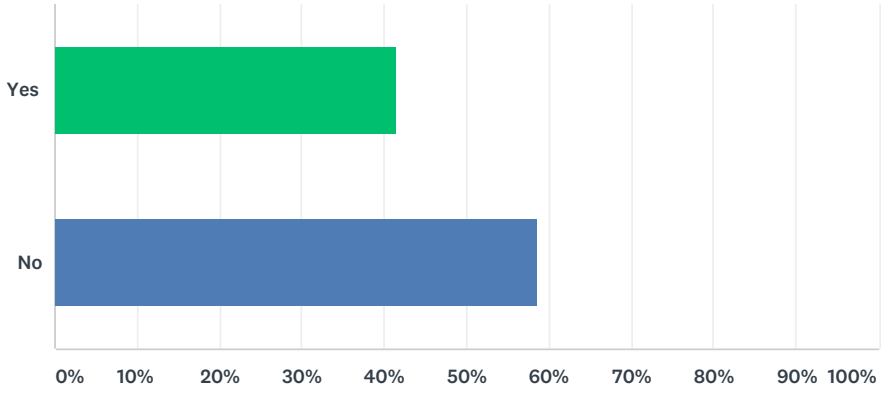
Answered: 131 Skipped: 11



	1	2	3	4	5	TOTAL	SCORE
Cost	50.00% 64	19.53% 25	17.97% 23	8.59% 11	3.91% 5	128	4.03
Lack of information	13.39% 17	27.56% 35	21.26% 27	29.92% 38	7.87% 10	127	3.09
Distrust of government agencies	7.94% 10	14.29% 18	19.84% 25	26.19% 33	31.75% 40	126	2.40
Do not believe there is a problem	19.05% 24	12.70% 16	18.25% 23	15.87% 20	34.13% 43	126	2.67
Loss of agricultural production acres	12.80% 16	27.20% 34	21.60% 27	17.60% 22	20.80% 26	125	2.94

Q11 Have you been impacted by flooding?

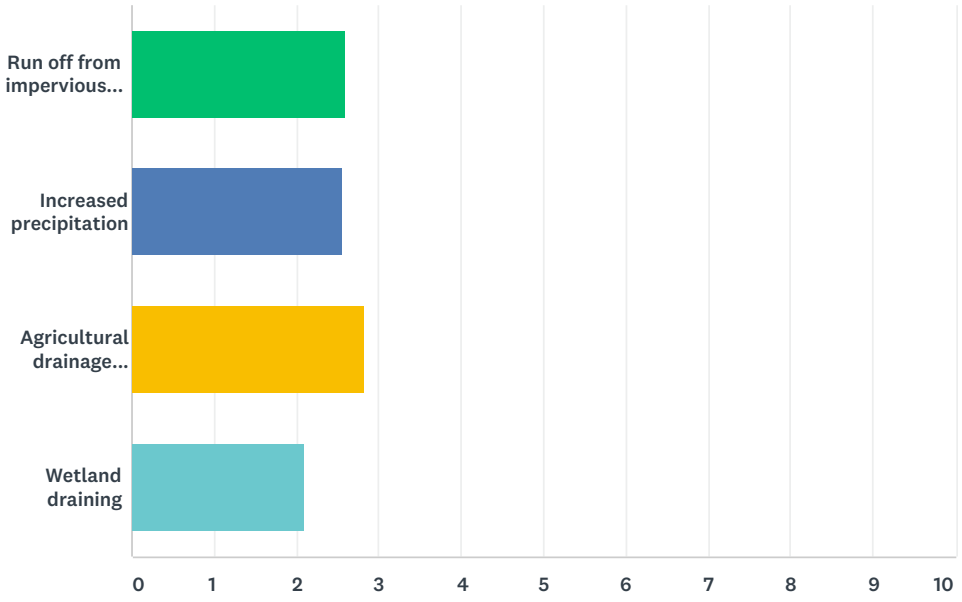
Answered: 133 Skipped: 9



ANSWER CHOICES	RESPONSES	
Yes	41.35%	55
No	58.65%	78
TOTAL		133

Q12 List in order (1 thru 4) what you believe is the biggest contributor towards flooding issues in your area? ONE being the biggest contributor to FOUR being the least contributor.

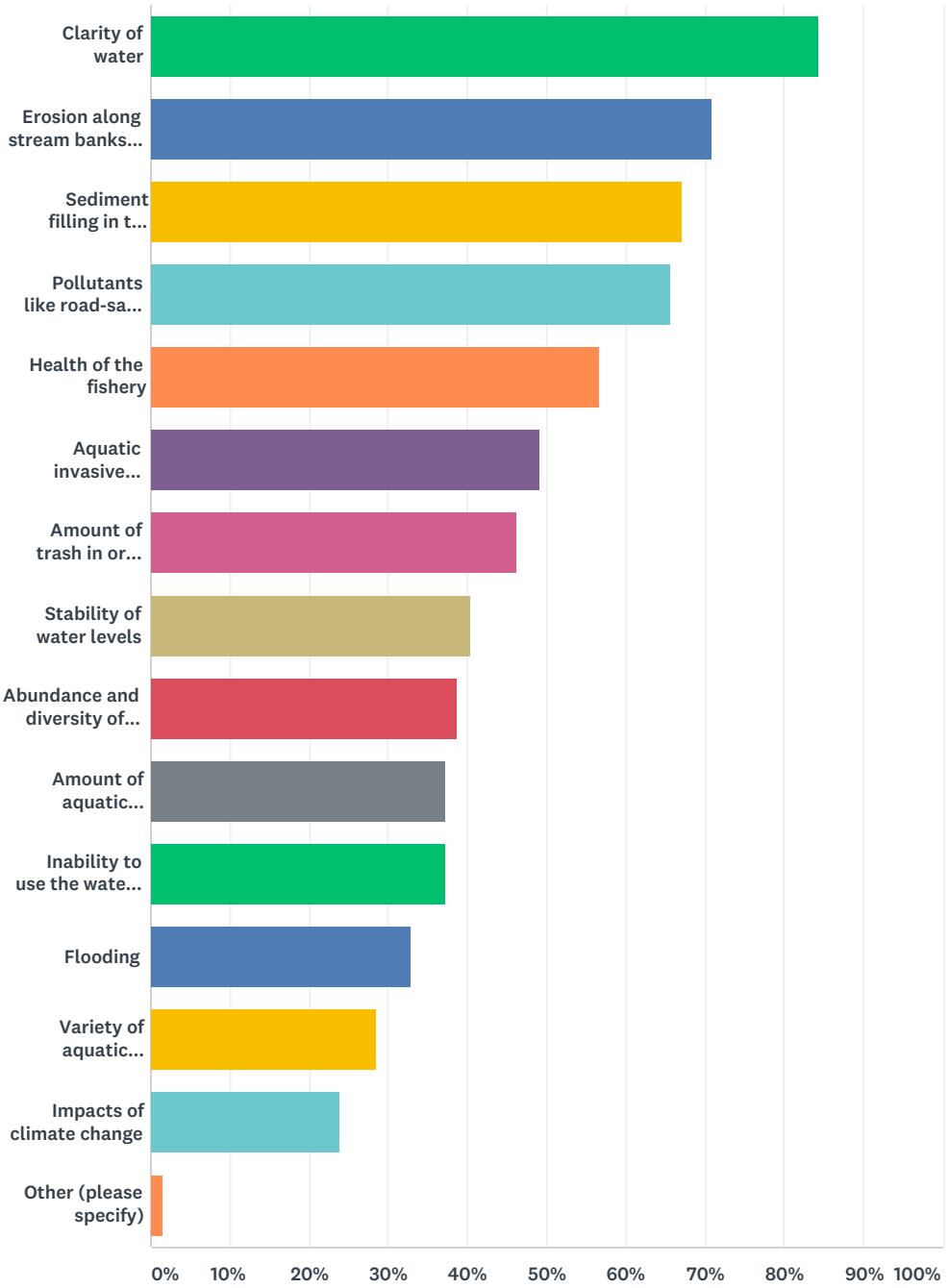
Answered: 132 Skipped: 10



	1	2	3	4	TOTAL	SCORE
Run off from impervious surfaces	29.84% 37	20.97% 26	27.42% 34	21.77% 27	124	2.59
Increased precipitation	31.75% 40	19.05% 24	22.22% 28	26.98% 34	126	2.56
Agricultural drainage (ditching, tiling, ect)	32.56% 42	31.78% 41	20.93% 27	14.73% 19	129	2.82
Wetland draining	8.87% 11	28.23% 35	27.42% 34	35.48% 44	124	2.10

Q13 What concerns you about the condition of the lakes, creeks, ponds, and wetlands in your area? (choose all that apply)

Answered: 134 Skipped: 8

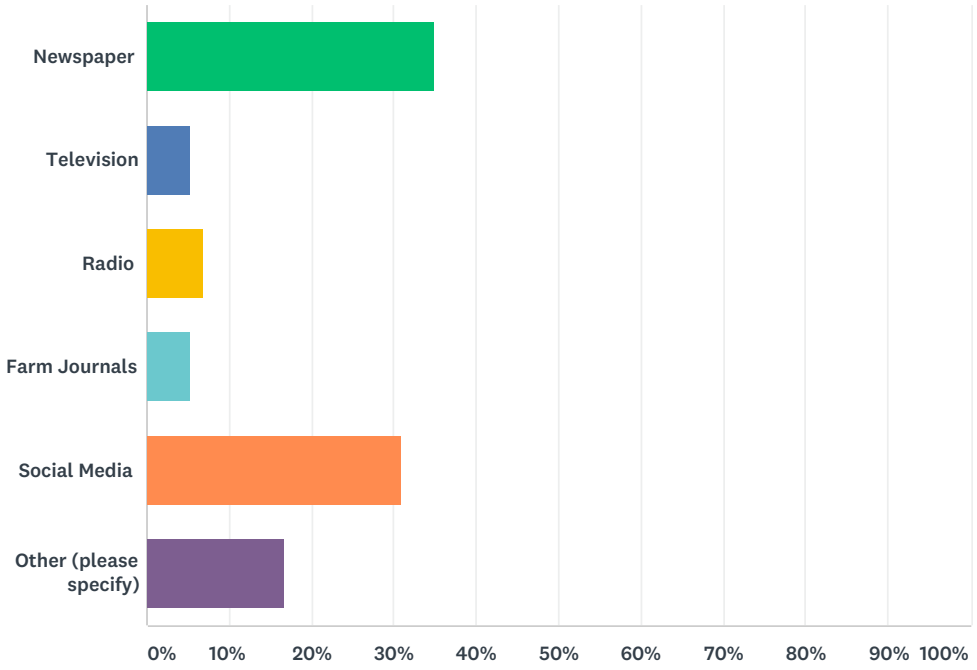


ANSWER CHOICES	RESPONSES	
Clarity of water	84.33%	113
Erosion along stream banks or shorelines	70.90%	95
Sediment filling in the water body	67.16%	90
Pollutants like road-salt, fertilizer and heavy metals entering water bodies	65.67%	88

Health of the fishery	56.72%	76
Aquatic invasive species	49.25%	66
Amount of trash in or around the water body	46.27%	62
Stability of water levels	40.30%	54
Abundance and diversity of wildlife	38.81%	52
Amount of aquatic vegetation	37.31%	50
Inability to use the water body for recreation	37.31%	50
Flooding	32.84%	44
Variety of aquatic vegetation	28.36%	38
Impacts of climate change	23.88%	32
Other (please specify)	1.49%	2
Total Respondents: 134		

Q14 What is the best way for you to get information about water quality projects and programs?

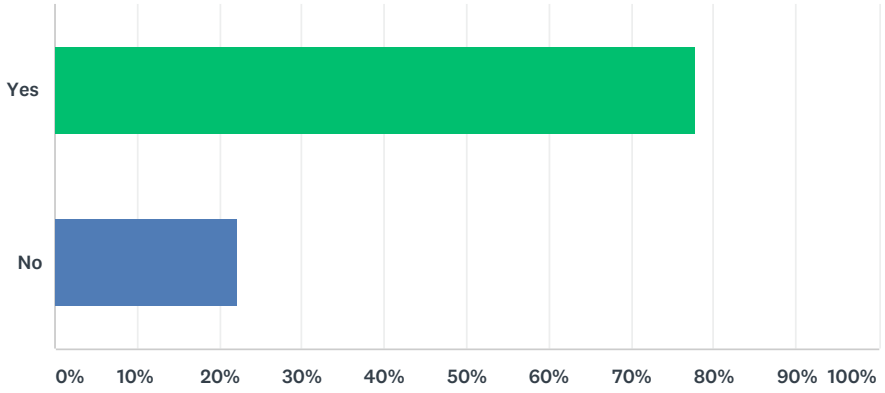
Answered: 132 Skipped: 10



ANSWER CHOICES	RESPONSES	
Newspaper	34.85%	46
Television	5.30%	7
Radio	6.82%	9
Farm Journals	5.30%	7
Social Media	31.06%	41
Other (please specify)	16.67%	22
TOTAL		132

Q15 Are you willing to pay for projects to improve water quality?

Answered: 86 Skipped: 56



ANSWER CHOICES	RESPONSES	
Yes	77.91%	67
No	22.09%	19
Total Respondents: 86		