English River Watershed Landowner Survey

2014

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Introduction

The English River Watershed is home to approximately 21,600 residents. As part of the comprehensive watershed management planning project, watershed staff conducted a survey of landowners in the watershed. The purpose of the survey was to determine future outreach and educational needs by assessing the characteristics of urban and rural properties in the watershed, landowner demographics, watershed use, the scope of water quality and flood impacts, best management practices and barriers to implementation, as well as attitudes and perceptions towards watershed topics such as weather patterns, water impairment, and policy issues.

Methodology

Staff utilized parcel data from 6 counties that the watershed area covers portions of. First, Geographic Information System software was use to extract parcels in the watershed from county parcel data. The English River watershed contains approximately 15,329 total parcels. Of these, a random sample of 800 parcels was extracted. Next, because the survey was designed for individually owned parcels, or parcels owned by individuals or LLCs; 112 parcels were removed from the sample that were determined to be duplicate (parcels owned by individual landowners already included in sample), or they were owned by public institutions such as cities, churches, or schools. The final mailing list included 688 landowners in the watershed.

Landowners were invited to participate in the survey in a 3-tired approach. First, a postcard was sent to the mailing addresses of 688 sample landowners 1) introducing the watershed organization, 2) explaining the survey and purpose, 3) an invitation to take it online, and 4) . Next, paper copies of the survey were mailed 3 weeks later to landowners who did not take the survey online. Landowners were assigned a unique 6-digit password that allowed staff to send follow-up reminders to take the survey only to landowners who did not participate. In the first 3 weeks following the launch of the survey, 28 individuals took it online. In the following 4 weeks, another 135 individuals returned the paper survey mailed to them for a grand total of 163 survey participants. This was a return rate of 24.4 percent (of approximately 668 survey invitations sent out). Approximately 20 (of 688) invitations to take the survey were returned as undeliverable.

Acknowledgements

The English River Watershed would like to extend our appreciation to the following individuals for their expertise, resources, and time generously shared with us in development of this survey: Mary Beth Stevenson, Iowa – Cedar River Basin Coordinator, Department of Natural Resources; Dr. Stephen Gasteyer, Associate Professor, Michigan State University; Dr. Andrew High, Assistant Professor, University of Iowa; and Dr. J. Gordon Arbuckle, Associate Professor, Iowa State University.

Several resources were utilized in development of the questions in this survey, primarily surveys with an environmental or agricultural focus. Survey questions were borrowed or adapted from works created by the individuals above, as well as other resources and tools. Please see the "Resources" section at the end of this report for a complete list.

Demographics (Survey Participants)

Survey respondents were asked to tell us a little about themselves in terms of gender, age, educational attainment, household income, and whether or not they identify as a "farmer" or not. The brackets used for educational attainment and household income are standard ones used by the U.S. Census Bureau in decennial surveys.

Gender

The vast majority of survey participants were male (76%), with females comprising only 17 percent of participants, while 7 percent of those surveyed chose not to provide this information (Table X).

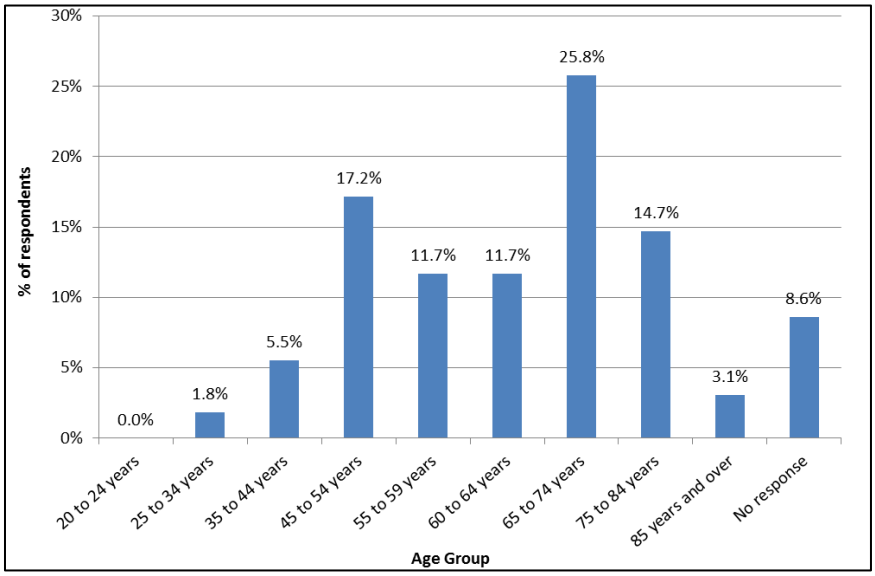
Table 1. What is your gender?

Response	Count	(%)
Female	28	17.0
Male	124	76.0
No response	11	7.0
Total	163	100

Age

Age of survey participants was positively skewed (Figure 1). Over half (55%) of those who responded stated they were age 60 or older. The youngest person surveyed was 30 years old and the oldest was 86 years old. The average (mean) age was 63 years old, with a median age of 64. The most frequent age provided (mode) was age 73. Less than 9 percent of those surveyed chose not to answer this question.

Figure 1. What is your age? (n=163)



Education

The education level of survey participants was somewhat negatively skewed. Over half of survey respondents responded that they had not attained a college degree (Table 2). These participants completed some formal schooling but did not complete high school (7%), received a high school diploma or GED (32%), or attended some college but did not finish a degree program (16%). A third of survey respondents, however, indicated that they had attained a 4-year degree (19%) or higher (9%).

Table 2. What is the highest grade in school that you have completed?

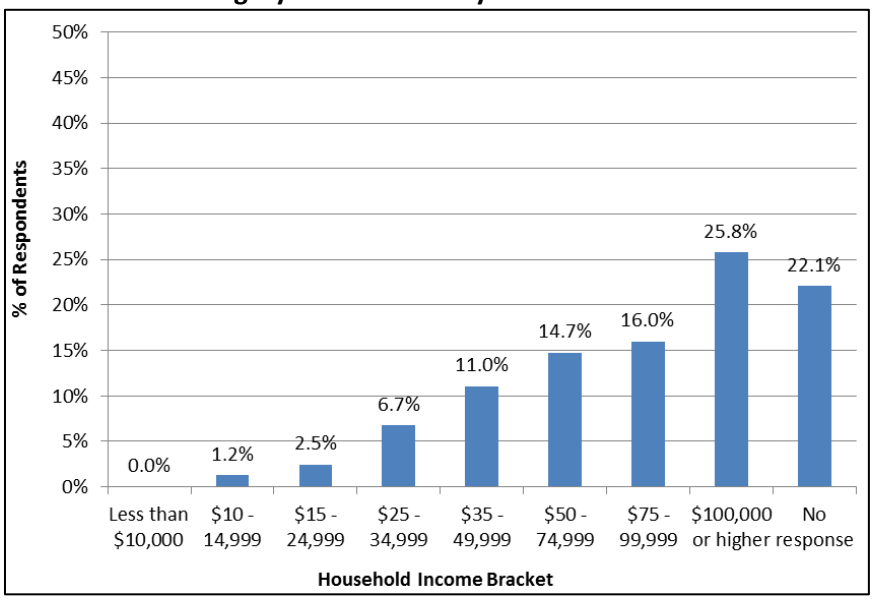
Response	Count	(%)
Some formal school	12	7.0
Diploma / GED	52	32.0
Some college	26	16.0
2-yr degree	12	7.0
4-yr degree	31	19.0
Post-grad	15	9.0
No response	15	9.0
Total	163	100

Household Income

Despite educational attainment being somewhat negatively skewed in this survey sample, household income was positively skewed, with 40 percent of respondents indicating that their annual household income was $75,000 or higher (Figure 2). Less than 5 percent of respondents indicated that their household income was around or below poverty level for a family of 4 ($25,000)[1]. Not surprisingly, nearly a quarter (22%) of those surveyed chose not to answer this question.

[1] The 2014 Poverty Guidelines for a family of 4 is $23,850. United States Health and Human Services Poverty Guidelines for the 48 Contiguous States and District of Columbia (aspe.hhs.gov/poverty/14poverty.cfm)

Figure 2. Please tell us what category best describes your household's total annual income (n=163)



Farmers and non-farmers

Finally, we asked participants; "Would you describe yourself as a farmer?" Slightly over half (52%) of participants stated that they do describe themselves as "farmers," while 45 percent stated that they did not (Table 3). A small number (3%) of participants skipped this question.

Table 3. Would you describe yourself as a farmer?

Response	Count	(%)
Yes	85	52.0
No	73	45.0
No response	5	3.0
Total	163	100

Demographics (Watershed Properties)

Next, we asked survey participants to tell us a little about their watershed properties, including whether they own more than one, if their primary residence is in the watershed, land uses, rental status, and proximity to waterbodies. Accounting for the fact that landowners might own more than one property in the watershed, we often referred to "any watershed property" or "property/properties in the watershed" throughout the survey for clarification.

We presented a map of the watershed for participants to attempt to locate their properties in it. Due to space limitations of the online and paper versions of the survey, a high resolution map with significant detail was a constraint for some in identifying the locations of their properties. We received a few comments to this effect; "I can't tell from this map," etc. Analysis of the parcel data with GIS was used to confirm that parcels included in the survey sample are located in the English River watershed, however, it was not possible to provide a map with this level of detail on paper or online versions of the survey.

Owning Multiple Properties

Slighter fewer survey participants own more than one property in the English River watershed than those who do not (Table 4). Nearly 14 percent of respondents did not answer the question. For some, it may be because the map presented posed challenges for participants attempting to locate their properties within it.

Table 4. Do you own more than one property in the watershed?

Response	Count	(%)
Yes	66	40.5
No	75	46
No response	22	13.5
Total	163	100

Tenure

Next, we asked participants about the length of time they have owned land in the watershed. Of the 142 responses to this question, the clear majority (74%) of landowners indicated that they have owned their watershed property for over 10 years (Table 5). Nearly 13 percent of survey respondents did not respond to this question.

Table 5. What is the longest that you have owned any property in the watershed area?

Response	Count	(%)
More than 10 years	121	74.2
6 – 10 years	13	8.0
1 – 5 years	6	3.7
Less than 1 year	2	1.2
No response	21	12.9
Total	163	100

Absentee Landowners

Two questions were presented in this survey to estimate the prevalence of absentee landownership in the English River watershed. First we asked watershed landowners if they live in the watershed, and additionally, whether or not they rent out any land they own here. Well over half (65%) of those surveyed stated that their primary residence is in the English River watershed (Table 6). A third (30%) of those surveyed stated their primary residence was not in the watershed. A small percentage of participants (3.1%) were unsure.[2]

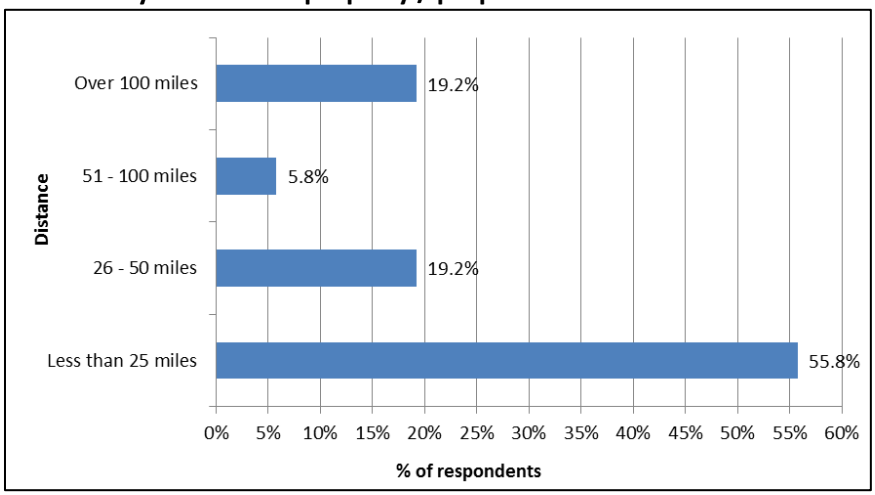
Table 6. Is your primary residence in the English River watershed area?

Response	Count	(%)
Yes	106	65.0
No	49	30.1
Unsure	5	3.1
No response	3	1.8
Total	163	100

Of the 54 survey respondents who stated in the previous question that their primary residence was not in the English River watershed, or that they were unsure if it was, nearly all of them (52) provided information when asked about how far they live from their watershed property (or properties). Over half (56%) of those surveyed whose primary residences are not in the watershed live within 25 miles of their watershed properties, and 75 percent live within 50 miles of their properties (Figure 3). Slightly fewer than 20 percent of those surveyed live over 100 miles away from their properties.

[2] Due to space limitations, the map provided for participants to determine the proximity of their watershed properties to their current primary residence lacked a level of detail those along the periphery of the watershed may have needed to accurately answer this question. While the parcel data utilized made it easy to determine parcels in the watershed, the data contained only landowner mailing addresses of those sampled and not their residential addresses. Many rural Iowa communities require residents to use P.O. Boxes as mailing addresses, so staff were unable to independently verify where landowners actually reside.

Figure 3. How far do you live from property / properties that own in the watershed? (n=52)



Next, we asked participants about leasing land. Slightly more than half (53%) of those surveyed responded that they do rent out some portion of the land they own in the watershed. A few (2%) did not provide a response to this question.

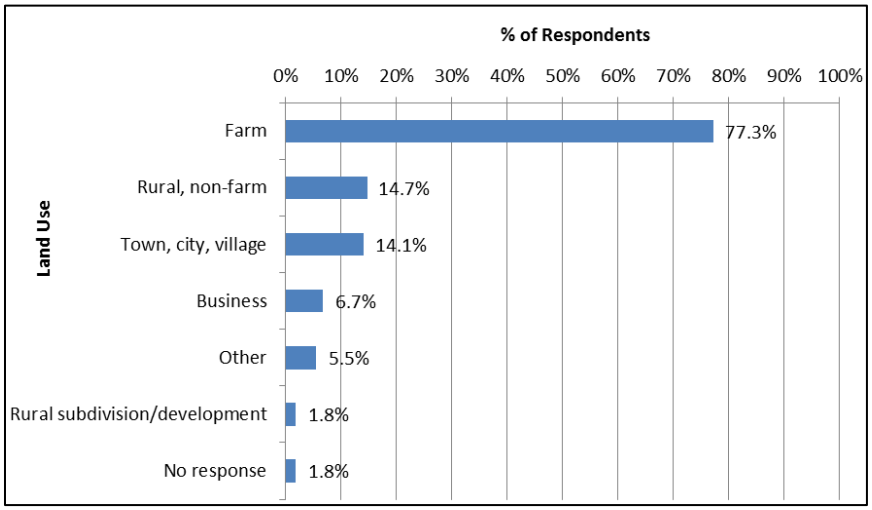
Table 7. Do you rent out any property that you own in the watershed area?

Response	Count	(%)
Yes	86	52.8
No	74	45.4
No response	3	1.8
Total	163	100

Land Use

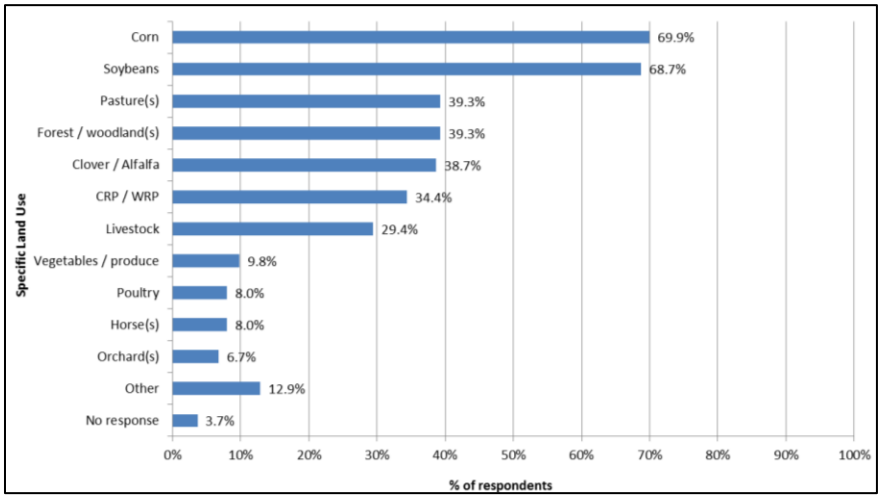
Next we asked survey participants to characterize their watershed properties as farms, rural non-farm, urban, business, or other types of land uses. Participants were allowed to select multiple categories. Over 75 percent of those surveyed classified their property in the watershed as a farm, and 15 percent indicated their property was rural, but a non-farm property (Figure 4). Only 14 percent of those surveyed classified their property as being in town, a city, or rural village, and 2 percent classified their property as being in a rural subdivision or development. Participants classified 7 percent of these properties (either rural or urban) as a business. Very few (2%) of participants chose not to answer this question. Of those surveyed, nine participants provided information about the following "Other" land uses on their properties, including wood lots, timber, wildlife or conservation area, pasture, and wetland.

Figure 4. Which of the following describes your property/properties in the watershed area? (select all that apply) (n=163)



Getting more specific on land use of watershed properties, we asked participants to tell us what (if any) crops, livestock, or horticulture activities take place on properties they own there. Participants were asked to choose all of the categories that apply, so there is overlap in the data.

Figure 5. Which of the following, if any, are on the property / properties you own in the watershed, including property rented out to others? (select all that apply) (n=163)



Consistent with the data supporting a large number of parcels in the survey being farmland, corn (70%) and beans (69%) emerge as the most frequently cited land use on these watershed properties. Less frequently, but at significant frequencies, pasture, forest / woodlands, clover/alfalfa, conservation or wetland reserve, and livestock were cited at frequencies between 30 and 40 percent. Almost 17 percent of those surveyed indicated that vegetable / produce gardens and or orchards could be found on their

watershed properties. Of the "Other" categories provided by those surveyed included the serious (farm conservation structures, tree farms, oats, alfalfa or grass hay, rye, ponds, wildlife), to the humorous (brome, weeds, insects, trespassers, and hunters).

Proximity of Property to Waterbody

In the final three questions pertaining to property characteristics, we ask survey participants about the proximity of their land to waterbodies, and whether or not they have ever had to stabilize a streambank or alter a stream on their properties.

Table 8. Does any portion of your property/properties touch a stream, river, lake, or wetland?

Response	Count	(%)
Yes	106	65.0
No	47	28.8
Unsure	2	1.2
No response	8	4.9
Total	163	100

The majority of those surveyed stated that their properties in the watershed do touch a stream, river, or wetland; while slightly less than 30 percent said their properties do not.

Streambank Stabilization

The following two questions do not apply to the nearly 30 percent of watershed landowners surveyed who indicated in the former question that their properties are not adjacent to waterbodies. Of the approximately 70 percent of landowners who properties are adjacent to waterbodies, however, the majority of those surveyed (54%) indicated that they have not stabilized a streambank on any of their properties here (Table 9). A small percentage (17%) indicated that they have, while an additional 5 percent declined to answer the question.

Table 9. Have you ever had to stabilize a streambank on a creek/river on any of your properties in this watershed?

Response	Count	(%)
Yes	27	16.6
No	87	53.4
No response	8	4.9
Does not apply	41	25.2
Total	163	100

Altering Creek / River Direction

An even higher percentage (68%) of those surveyed indicated that they have never changed the direction of a creek or river on their properties (Table 10). A very small percentage (4.3%) of those

surveyed stated that they have. Only 2 percent of those surveyed (whom this question was relevant to) declined to answer this question.

Table 10. Have you ever had to change the direction of a creek/river on any of your properties here?

Response	Count	(%)
Yes	7	4.3
No	110	67.5
No response	3	1.8
Does not apply	43	26.4
Total	163	100

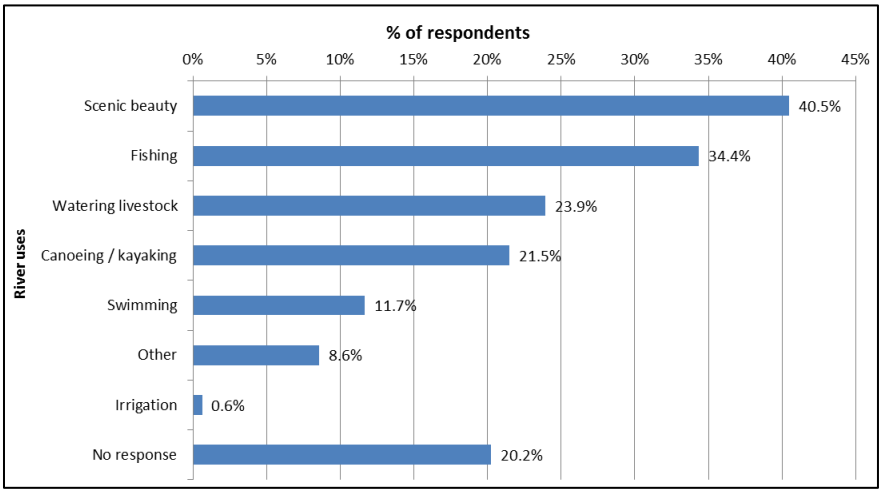
Water Quality

Several questions in the survey were focused on an assessment of what purposes, if any; watershed landowners utilized waterbodies in the watershed, the safety and quality of surface and ground waters on or near their properties, and landowner perspectives on sources of water contamination.

Utilization of the Watershed

Of those surveyed, "scenic beauty" was the most frequently cited use of English River waterbodies amongst landowners (41%), with fishing (34%) and watering livestock (24%) following in second or third place (Figure 6). Participants were permitted to "select all that apply," so there is overlap in the data. Surprisingly, a large percentage of those surveyed did not answer this question (20%). A "Not Applicable" option was not provided to them, so it may be possible that many of those landowners live outside the watershed and the question simply wasn't relevant. While nearly 9% of participants selected an "Other" use of waterbodies, few comments were provided indicating what those other uses might be. A couple of comments received did clarify that the question was not applicable to them, or they used the watershed for "nothing." However, one user indicated they use watershed rivers and streams for "hunting," and another stated "drainage." One disparaging comment stated "None, it's a sewer," suggesting that water quality concerns may be deterrents for some for utilizing the English River.

Figure 6. Have you ever utilized a river or stream in the English River watershed for any of the following purposes? (select all that apply) (n=163)

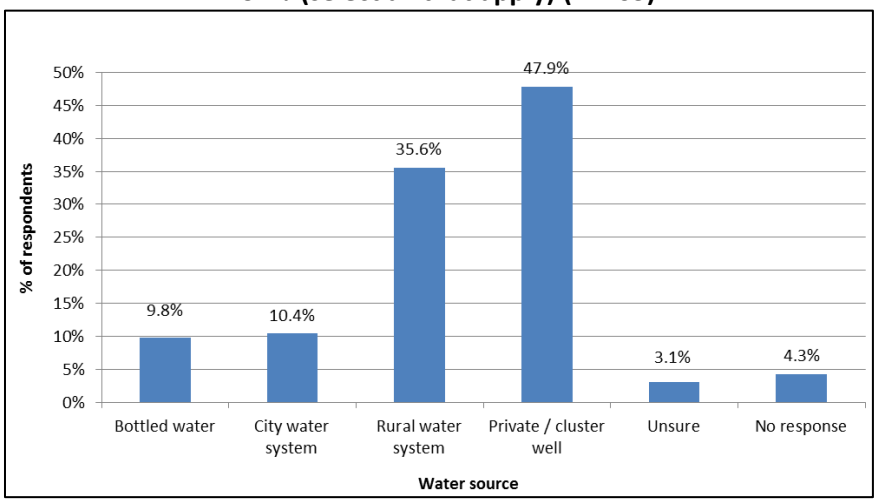


Drinking Water Source

Nearly half (48%) of those surveyed indicated that the drinking water on their watershed properties comes from a private (or cluster) well (Figure 7). Another 36 percent of those surveyed indicated that their drinking water sources come from a rural water system. Nearly 10 percent utilize bottled water, another 10 percent were connected to municipal utilities (city water system), and 3 percent indicated

they were "Unsure" where drinking water on their properties comes from. Slightly over 4 percent did not respond to this question.

Figure 7. Where does the drinking water on your property/properties in the watershed area come from? (select all that apply) (n=163)



Safety of Drinking Water

The next two questions ask landowners about the quality of their drinking and surface waters. The data suggests that the vast majority (73%) of those surveyed feel that the drinking water supply on their watershed properties is safe to drink (Table 11). Very few (5%) indicated that they felt their water supplies were not safe for drinking. What is interesting is the nearly 15 percent of those who responded that they were unsure. It may be that those individuals do not have access to information about their drinking water quality, either from data their respective cities collect and maintain, or from private well testing. Rural residents may have not had their well water tested, or know how to do so.

Table 11. Do you feel that the drinking water on your property/properties is safe to drink?

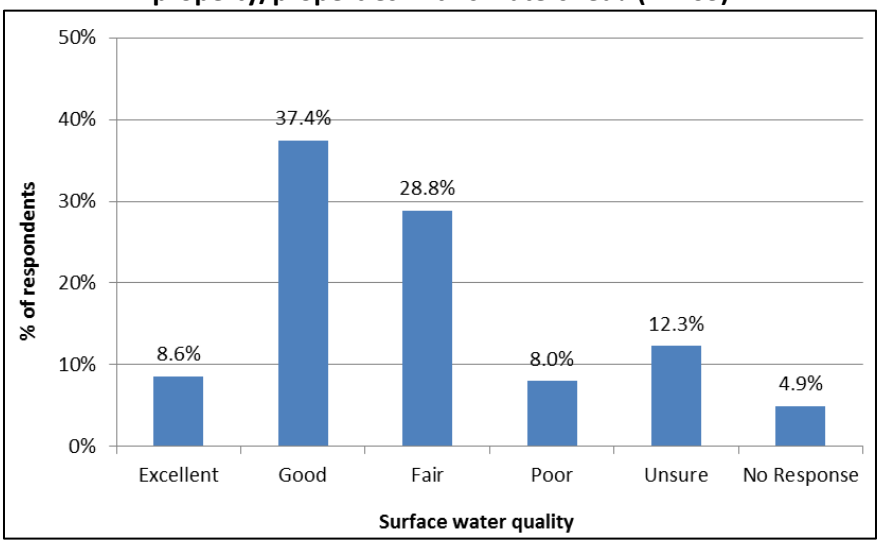
Response	Count	(%)
Yes	119	73.0
No	8	4.9
Unsure	24	14.7
No response	12	7.4
Total	163	100

Quality of Surface Waters

Those surveyed suggested somewhat less optimistic attitudes regarding the quality of surface waters in the English River watershed. Less than 10 percent of those surveyed classified the water as "Excellent," with the majority of those surveyed classifying surface water quality as "Good" (39%), or "Fair" (30%).

Similar to the uncertainty seen in the question about *drinking water* quality, another 13 percent indicated that they were "Unsure" about *surface water* quality in their watershed.

Figure 8. How would you rate the quality of surface waters (rivers, streams, lakes) near your property/properties in this watershed? (n=163)

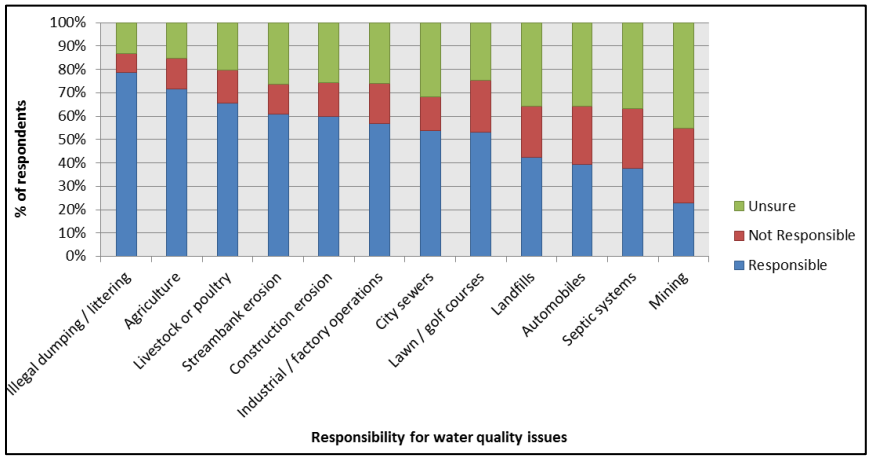


Responsibility for Iowa's Existing Water Quality Issues

Finally, survey participants were asked for their opinions on general causes of water impairments in the state of Iowa. Survey participants were provided a list of possible water quality "culprits" and asked to choose whether each one was "Responsible," "Not responsible," or if they were "Unsure." The data was analyzed in two ways. First, Figure 9 summarizes the collective responses of all individuals who answered the question. [3]

[3] Percentages were determined by dividing the number of responses by the total number of participants who answered the particular question. Between 18 and 37 individuals skipped varying questions in this section.

Figure 9. Do you feel that the following are *responsible* or *not responsible* for existing pollution problems in Iowa's rivers and lakes? (check all that apply)



As Table 12 shows, illegal dumping, agriculture, and livestock or poultry operations were considered to be the variables most "responsible" for Iowa's current water quality issues by those surveyed, followed by "agriculture" and "livestock or poultry." The responses of those who identified themselves as being "farmers" were separated from those that indicated that they were not farmers because it was assumed that they might have contrasting perspectives from their urban counterparts. This was correct, but not in the ways that were expected. The data suggests that the majority of farmers who took this survey (72%) felt that illegal dumping or littering bears responsibility for water quality issues in Iowa more than any other variable. Farmers may be more acutely aware of dumping/littering because they are disproportionately impacted by it. However, compare this to their non-farmer counterparts, who essentially ranked dumping/littering last on their list of variables responsible for water quality issues.

Moreover, a much larger percentage of farmers (65%) identified agriculture as a variable that is "responsible" for Iowa's water quality issues compared to their non-farmer counterparts (34%). While both groups identified "livestock or poultry" in the top three variables as "responsible" for Iowa's water quality issues; more non-farmers (67%) than farmers (59%) supported this view. Those surveyed who identified as being non-farmers were most inclined to feel that construction erosion (68%), livestock or poultry (67%), and mining (56%) were "responsible" for Iowa's water quality issues. It is noteworthy that farmers surveyed put construction erosion and mining much further down on their list.

Table 12. Comparison of Attitudes about Responsibility for Water Quality Impairments: Farmers & Non-farmers

Rank	Farmers (n=81)	Non-farmers (n=68)
1	Illegal dumping / littering (72%)	Construction erosion (68%)
2	Agriculture (65%)	Livestock or poultry (67%)
3	Livestock or poultry (59%)	Mining (56%)
4	City sewers (54%)	Lawn / golf courses (53%)
5	Industrial / factory operations (54%)	Automobiles (44%)
6	Construction erosion (52%)	Landfills (37%)
7	Lawn / golf courses (51%)	City sewers (36%)
8	Landfills (38%)	Agriculture (34%)
9	Automobiles (35%)	Septic systems (33%)
10	Septic systems (31%)	Industrial / factory operations (30%)
11	Mining (18%)	Illegal dumping / littering (18%)

Note: (4) farmers and (5) non-farmers skipped this question (not included in total above)

This question was included in the survey because it has important implications for the direction of future education and discussion topics. Urban and rural landowners often do not realize the cumulative impacts of their land management practices on water quality. Not only does this question identify what residents and property owners know (or believe they know) about water pollution in their state's watersheds, it identifies areas where knowledge is lacking (factors they indicate are "not responsible", or they are "unsure" if they are responsible for water quality issues), which should be viewed as an opportunity for watershed and conservation organizations to do more outreach on the subject if the particular contaminant (source) is relevant to their state and / or local watershed.

Comparing responses from farmers to non-farmers in this survey, the data suggests that nearly half (or more) of the farmers surveyed do not feel that (or are unsure) mining (60%), septic systems (54%), or automobiles (47%) are very relevant to water quality issues in the state of Iowa (Figure 10). More than half of non-farmers, on the other hand, are skeptical or "unsure" that illegal dumping (64%), industrial operations (53%), or septic systems (52%) are relevant pollutant sources in Iowa (Figure 11).

Figure 10. What farmers (n=85) are "unsure" of, or do not feel are responsible for causing water quality issues in the state of Iowa

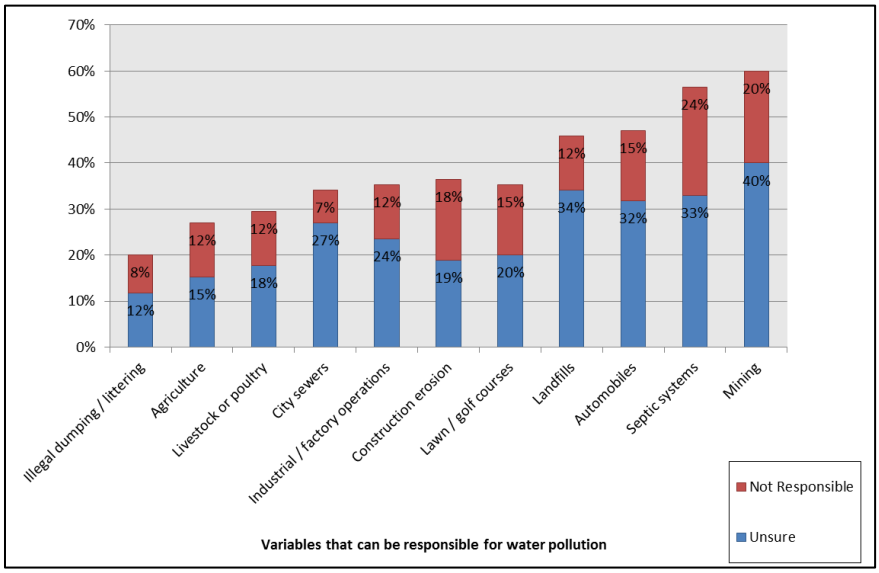
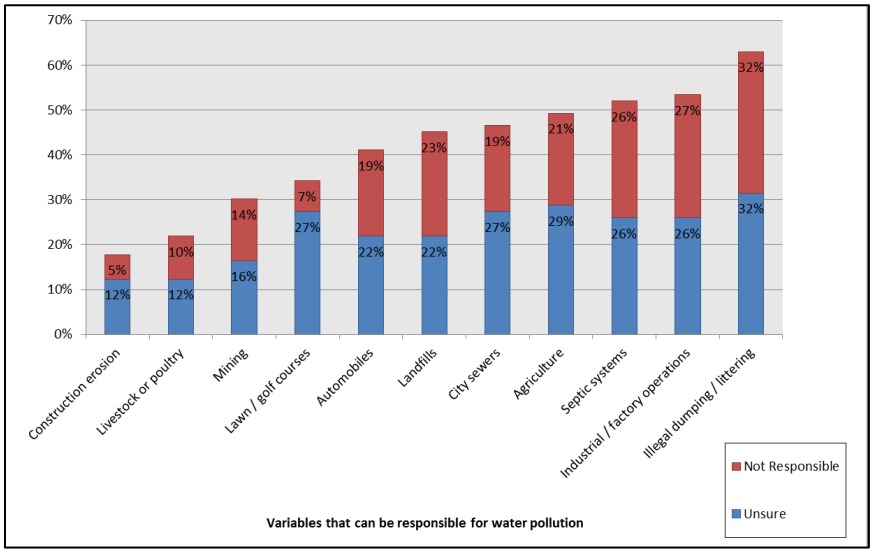


Figure 11. What non-farmers (n=73) are "unsure" of, or do not feel are responsible for causing water quality issues in the state of Iowa



The following comments were received on the subject of "other" factors responsible for Iowa's water quality issues:

- *Free Masons*
- *Chemicals & herbicides used on farm & lawns*
- *The tiling and draining of almost all of Iowa's wetlands. The destruction of protective strips of flora right up to the lip of almost every waterway no matter how small or large.*
- *Farmers that over work ground, hog shed run off and spills*

- *Don't believe we have a pollution problem!*
- *EPA needs to keep their nose out of our area*
- *Any of the above categories that are Poorly Managed may be responsible for pollution*

Flooding

Flooding is as equally important to the English River watershed improvement efforts as is water quality. In the survey, we asked landowners basic questions about their experience and perspectives on the topic of flooding in both the watershed and in the state of Iowa.

Flooding Impacts

Half of those surveyed (49.1%) indicated that none of their watershed properties have been impacted by flooding in the past 10 years; however, nearly 42 percent of those surveyed have been impacted (Table 13). This was a larger percentage of impacted landowners than anticipated in this sample. A small minority of survey participants indicated they were unsure if their properties had been impacted (2.5%) and for reasons unknown, almost 7 percent of those surveyed chose not to answer this question. It may be that those who were unsure about flooding impacts are landowners who live some distance from their watershed properties.

Table 13. Have any of your properties in the watershed been impacted by flooding in the last 10 years?

Response	Count	(%)
Yes	68	41.7
No	80	49.1
Unsure	4	2.5
No response	11	6.7
Total	163	100

Despite 42 percent of those surveyed indicating that their watershed properties have been impacted by flooding in recent years, only 33 percent indicated that they were concerned about *future* flooding affecting their properties.

Concerns about Future Flooding

Table 14. Are you concerned about future flooding affecting your property/properties in the watershed?

Response	Count	(%)
Yes	53	32.5
No	97	59.5
Unsure	9	5.5
No response	4	2.5
Total	163	100

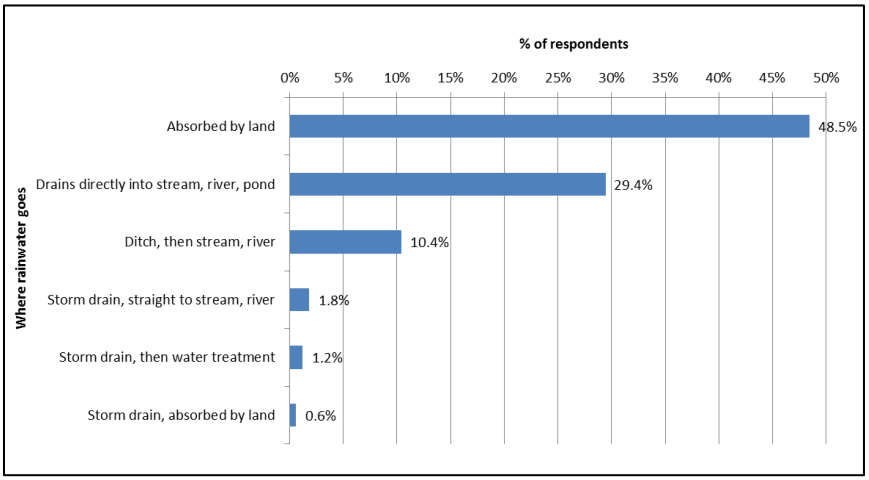
Best Management Practices

In this section of the survey, we asked participants about their degree of knowledge about stormwater management on their properties. Understanding the basic principles of what and how a watershed works, as well as the mechanisms by which stormwater is "shed" from property is an important first step in understanding the impact of individual land management decisions on a watershed. Landowners, such as farmers, may be acutely aware of stormwater managing structures on their properties, especially if they constructed it themselves. Other landowners may not have every thought about it before. Next, participants are asked about the practices they use, practices they may have heard of but would like to learn more about. Similar to Question 15, regarding the variables responsible for Iowa's water quality issues, questions about BMP use in this survey are designed to identify opportunities for future educational programming and technical assistance.

Knowledge of Water "Shed"

At the beginning of the survey's section on Best Management Practices, survey participants were asked where rainwater goes after it falls on their property. Nearly half (46.5%) of those surveyed chose the option of rainwater gets "absorbed by the land" after it falls on their properties (Figure 12). Another 30 percent chose the option of "drains directly into a stream, river, or pond."

Figure 12. To the best of your knowledge, where does most of the rainwater go after it falls on your property / properties?



Comments left by those individuals as to where rainwater goes after it falls on their properties are as follows ("Other" category):

- *Absorbed by land and then into the nearby City Sewer*
- *Into dry ponds- then drained by tile*
- *Goes through our wetlands*
- *Street*

- *Waterways then ditch*
- *Land, then take to streams*
- *Into the land- floods only if abnormally high water amounts fall when ground is saturated*
- *First into land, then into waterway, then into ditch, then under road, into ditch, into the English River*

Best Management Practices: Current Use, and Desire to Learn More

Of the 163 landowners surveyed, only 145 individuals responded to the question about BMPs they have recently used. It may be possible that options presented were irrelevant to the properties of the 11 percent who did not respond. Of those who responded, the most commonly cited BMPs used in recent years include crop rotation (68%), grassed waterways (64%), no-till (55%), and crop or fertilizer adjustments (51%). Clearly these are practices used only on farm properties. Practices on the list applicable to either farm or non-farm properties (in bold) were less commonly used. Of those practices, the most commonly cited ones include replacing or maintaining septic systems (30%), following instructions for lawn and garden products (26%), and recycling household paint and chemicals ((24%).

Table 15. Have you (or someone in your household) done any of the following in the last 5 years to protect water quality or soil health on the land you own in this watershed? (select all that apply)

Best Management Practice	Count (n=145)	(%)
Crop rotation	99	68.3%
Grassed waterway	93	64.1%
No-till	80	55.2%
Adjusting crops / fertilization	74	51.0%
Grass filter strip	68	46.9%
Monitoring soil pH, or phosphorus, nitrogen	62	42.8%
Cover crops	59	40.7%
Terracing	54	37.2%
Avoiding fall application	47	32.4%
Farm pond	46	31.7%
Ditch for field drainage	44	30.3%
Replacing / maintaining septic	**43**	**29.7%**
Lawn & garden product instructions	**37**	**25.5%**
Recycled paint / chemicals	**35**	**24.1%**
ISU Extension fertilization	33	22.8%
Nutrient management plan	33	22.8%
Pest control	27	18.6%
Grade stabilization	25	17.2%
Building / maintaining wetland	**22**	**15.2%**
Manure storage	22	15.2%
Restricting livestock	22	15.2%
Native plants	**22**	**15.2%**
Collecting rainwater	**19**	**13.1%**
No spray	**18**	**12.4%**

Riparian buffer	**16**	**11.0%**
Saturated buffer	**5**	**3.4%**
Rain garden	**2**	**1.4%**
Woodchip bioreactor	2	1.4%
Total	n/a	100

Disappointingly low numbers of those surveyed expressed a desire to learn about additional BMPs through this survey. Of the 145 percent of participants who responded to the question about BMPs they currently used, single digit percentages expressed an interest in learning about any of the BMPs presented. Of the BMPs presented, the most popular ones were collecting rainwater (9%), cover crops (6%), building or maintaining wetlands (6%), no spray (6%), and rain gardens (6%).

Other practices landowners are using or would like to learn more about were mentioned in the following comments:

- *Plant(ing) trees*
- *Wetlands managed on site (~100 acres)*
- *Planting willow on river banks and streams*
- *Planted lots of trees and am letting most of property "grow wild"*
-

Table 16. BMPs those surveyed want to learn more about

Best Management Practice	Count (n=145)	(%)
Collecting rainwater	13	9.0%
Cover crops	9	6.2%
Building / maintaining wetland	8	5.5%
No spray	8	5.5%
Rain garden	8	5.5%
Recycled paint / chemicals	6	4.1%
Farm pond	4	2.8%
manure storage	4	2.8%
Native plants	4	2.8%
Grass filter strip	3	2.1%
Monitoring soil pH, or phosphorus, nitrogen	3	2.1%
Pest control	3	2.1%
Woodchip bioreactor	3	2.1%
Adjusting crops / fertilization	2	1.4%
Avoiding fall application	2	1.4%
Ditch for field drainage	2	1.4%
Grassed waterway	2	1.4%
No-till	2	1.4%
Restricting livestock	2	1.4%
Terracing	2	1.4%
Crop rotation	1	0.7%
ISU Extension fertilization	1	0.7%
Replacing / maintaining septic	1	0.7%
lawn & garden product instructions	0	0

grade stabilization	0	0
Nutrient management plan	0	0
Riparian buffer	0	0
Saturated buffer	0	0
Total	n/a	100

Barriers to Practice

Question 27 of the survey was presented to determine if barriers to practice were an issue for landowners and if so, how? This was an important question intended to guide future education and technical assistance provided by watershed and / or conservation issues. Responses were minimal; however the following comments were presented:

- *We wanted to build a pond to help control water shed, but the NRCS told us good idea but there was no money on their end to help pay for it*
- *Stabilize River Banks*
- *Plant trees- Be educated on trees to plant and money and labor to do it*
- *Cover crops- Cost*
- *We have a tenant and he may or may not practice some or all of the above.*
- *Though about a large pond, but it would have taken up too much prime deer ground*
- *Retired farmer-too old to do much anymore. Made few ponds for geese. Planted quite a few years ago tall grasses. Now wildlife conservation co-owning. English keeps flooding over the fields to empty into Iowa*
- *Terraces, dry ponds; unaffordable*

Policy

Survey participants were asked several questions to assess their general perspectives on topics of water quality, flooding, and agricultural and environmental policy.

Management of Water Quality and Quantity Issues in Iowa

In addition to being asked about their feelings on water quality of surface and drinking waters at their watershed properties, those who took the survey were also asked whether or not they felt "enough" was being done to address water quality issues in Iowa. Participants were fairly divided on this subject, with 37 percent indicating they were "Unsure" about this topic; a third (31%) suggesting that "Yes," enough was being done; and slightly fewer (29%) suggesting that "No," not enough was being done to address water quality issues in Iowa.

Table 17. Do you feel that enough is being done to address water quality issues in Iowa?

Response	Count	(%)
Yes	50	30.7
No	47	28.8
Unsure	60	36.8
No response	6	3.7
Total	163	100

A similar division amongst those surveyed was also seen when they were asked whether enough was being done in Iowa to address flooding. Almost half (42%) suggested that they were "Unsure" about this subject; while slightly over a quarter (27%) suggested "No," not enough was being done; and 24 percent suggesting enough *was* being done.

Table 18. Do you feel that enough is being done to address flooding in Iowa?

Response	Count	(%)
Yes	39	23.9
No	45	27.6
Unsure	69	42.3
No response	4	2.5
Total	163	100

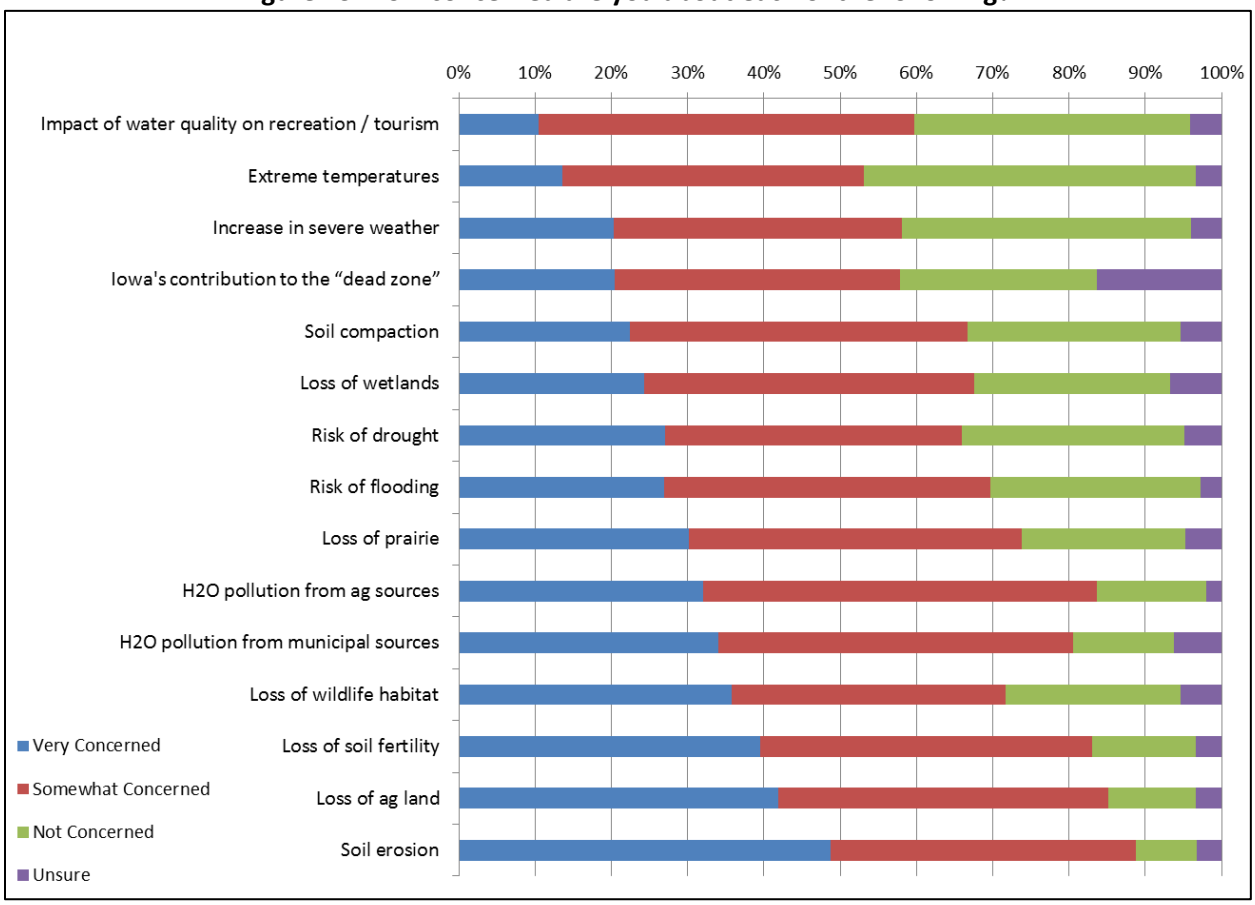
Opinions on Current Water Resource Policy Topics

Discussions of water quality (and quantity) issues in the United States today are often oriented around common themes of economic impacts, climate change, soil health, severe weather, land conversion and responsibility. Since the purpose of watershed planning is to address water quality and quantity concerns on a local level, in addition to a national level, we surveyed landowners on their level of concern about these topics.

Resource Concerns

As Figure 13 shows, the top three items those surveyed were "Very Concerned" about included soil erosion (45%), loss of agricultural land (38%), and loss of soil fertility (36%). Combining the data for those who expressed any level of concern (either being "Very" or "Somewhat Concerned"), the top three concerns shift a bit: soil erosion (83%), loss of agricultural land (77%, and water pollution from agricultural sources (76%). This shift occurs because of the large percentage (47%) of those surveyed who indicated they are "somewhat concerned" about water pollution from agricultural sources.

Figure 13. How concerned are you about each of the following?



The topics that survey participants indicated they were "not concerned about" included extreme temperatures (39%), severe weather (34%), and the impact of water quality issues on recreation and tourism (32%). It's noteworthy that the topic those surveyed appeared to be most "Unsure" about (15%) was "Iowa's contribution to the dead zone" in the Gulf of Mexico.

Policy Needs

Another way to solicit attitudes and perceptions from those surveyed about current water quality policy topics was to present them with a series of statements and ask them whether, and to what degree, they agree or disagree with them. The statements included topics pertaining to regulations, incentives,

land use, crop and livestock production, water quality, flooding, climate change, and economics. The following statements were provided:

- *We need to provide more education for landowners on flood issues*
- *We need to provide more education for landowners on water quality issues*
- *We need to provide more natural areas for hunting/recreation*
- *We need to provide more wildlife habitat*
- *We need to improve crop resilience to extreme weather*
- *We need to improve rivers & lakes for tourism/recreation*
- *We need to improve soil health*
- *We need to improve water quality*
- *We need to increase crop production*
- *We need to increase incentives for communities to protect soil & water*
- *We need to increase incentives for farmers to protect soil & water*
- *We need to increase livestock production*
- *We need to increase regulations for landowners to protect soil & water*
- *We need to reduce impacts of flooding on communities*
- *We need to reduce impacts of flooding on farmland*
- *We need to reduce impacts of wildlife on crops/livestock*
- *We need to reduce restrictions associated with conservation dollars (EQIP, CRP, WQIP)*
- *We need to reduce regulations on private property use*

As Figure 14 shows, the greatest percentage of those surveyed agreed, to some extent, with the following statements:

- *We need to improve water quality* (85%)
- *We need to improve soil healt*h (84%)
- *We need to provide more education for landowners on water quality issues* (76%)
- *We need to increase incentives for farmers to protect soil and water* (71%)

In comparison, the greatest percentage of those surveyed disagreed, to some extent, with the following statements (Figure 15):

- *We need to increase regulations for landowners to protect soil and water* (40%)
- *We need to reduce regulations on private property use* (20%)
- *We need to increase livestock production* (17%)
- *We need to reduce restrictions associated with conservation dollars* (EQIP, CRP, WQIP) (17%)

It is unclear why pro and anti-regulatory statements simultaneously received high levels of disagreement from those surveyed, but it may be the case that the question was poorly worded,

overlooked, or misunderstood. Overall, however, the policy statements in this questions were more likely to agree with those surveyed, than disagree.

Figure 14. Percent of those surveyed who either "Somewhat" or "Strongly Agree" with Statements Presented (n=151)

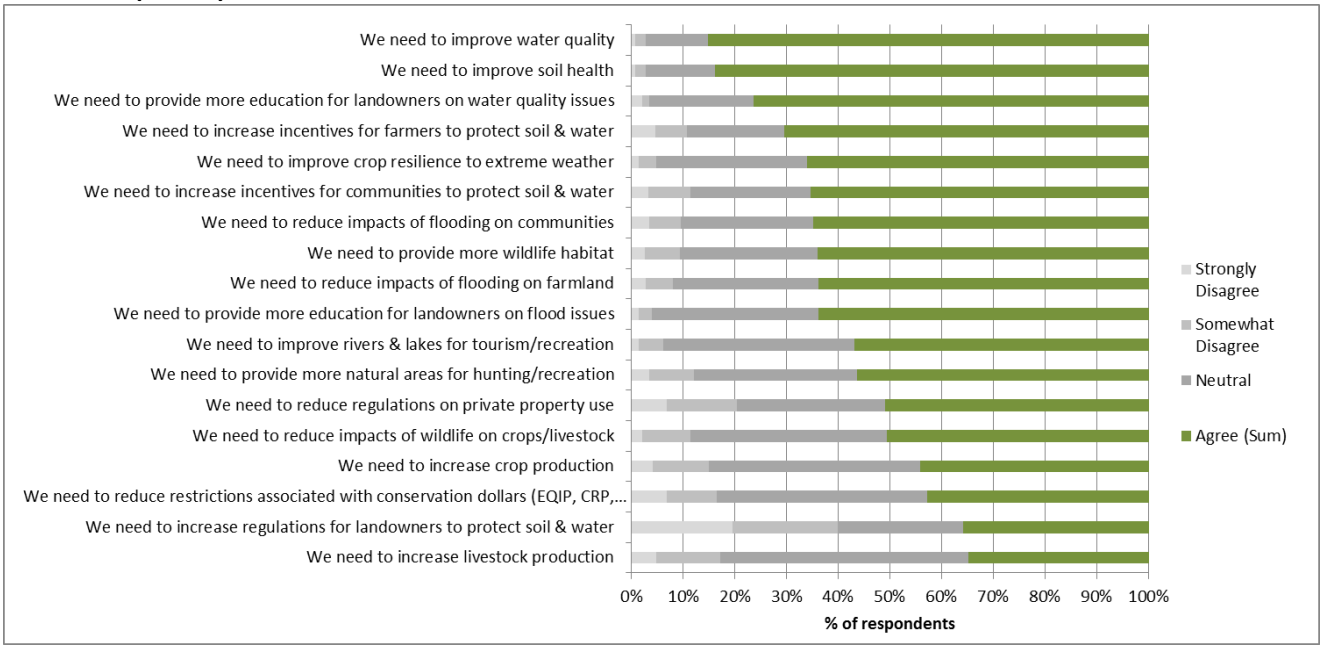


Figure 15. Percent of those surveyed who either "Somewhat" or "Strongly Disagreed" with Statements Presented (n=151)

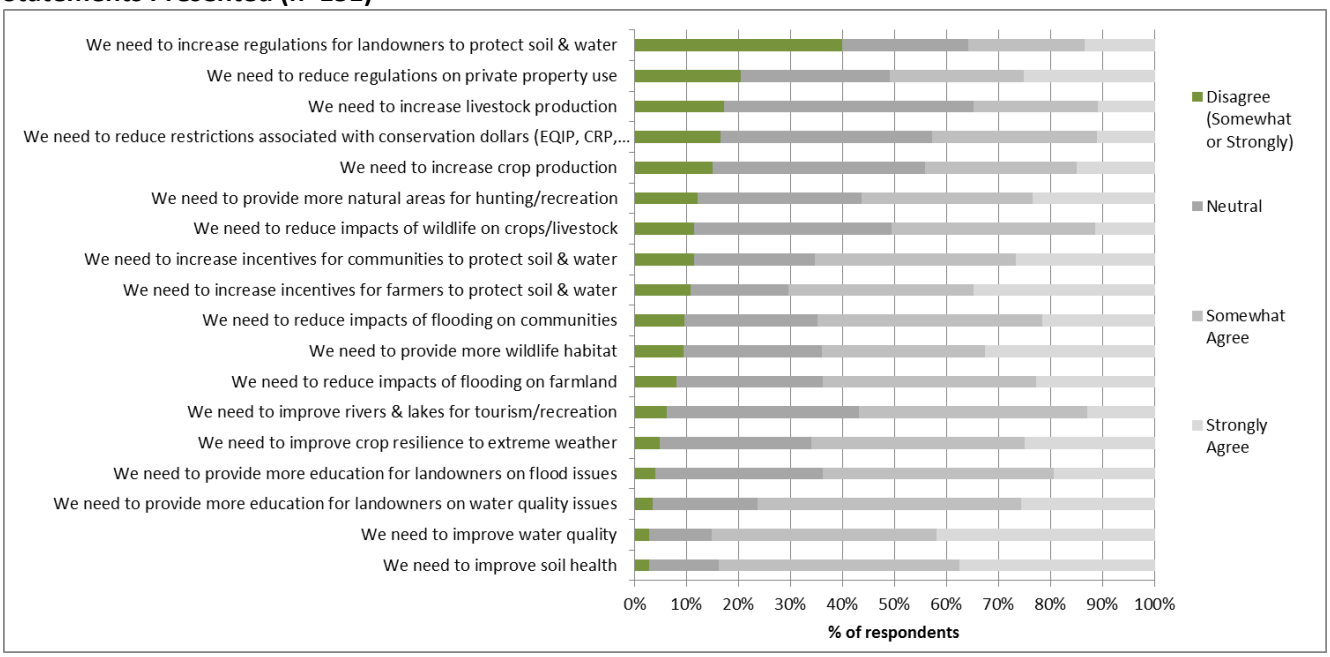


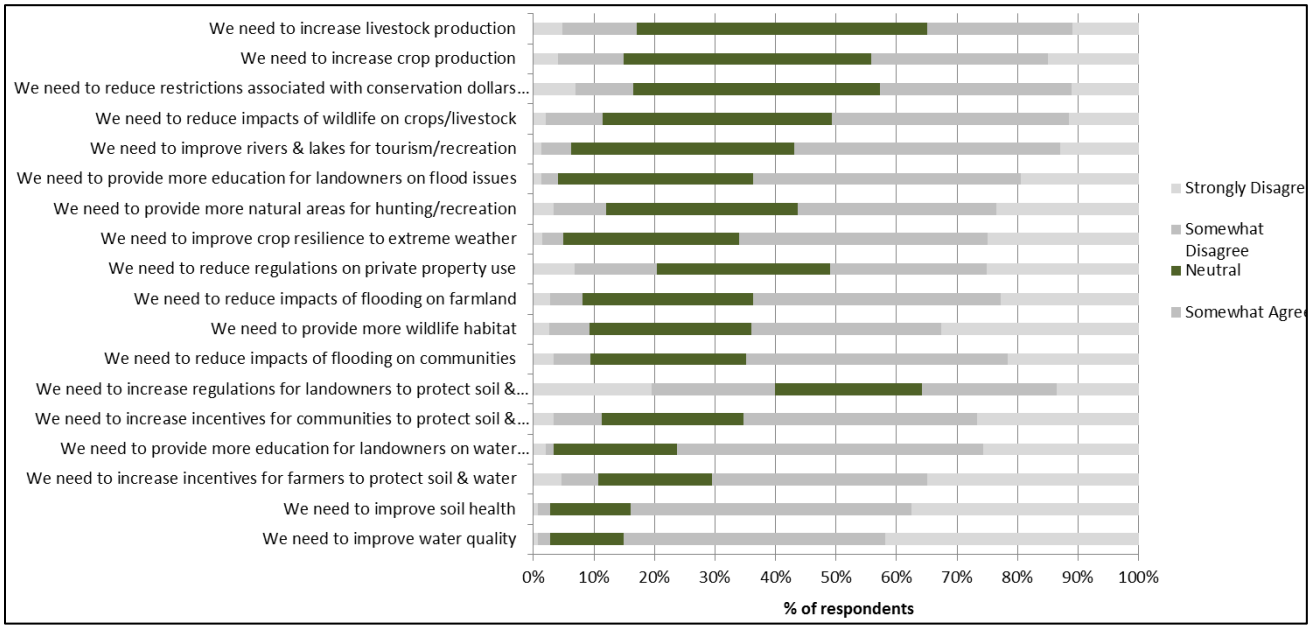
Figure 16 shows the proportion of those surveyed who indicated their sentiments were neutral on the statements provided. Responses of "Neutral" ranged from a high of 48 percent, to a low of 12 percent,

but regardless, were a fairly common response. It is unclear why, but it may be the case that some individuals were unfamiliar with the topic. For example, some participants may not be familiar with "conservation dollars" or programs such as EQIP or CRP.

Overall, the greatest percentage of those surveyed who indicated "Neutral" sentiments on the following statements (Figure 17) are as follows:

- *We need to increase livestock production* (48%)
- *We need to increase crop production* (41%)
- *We need to reduce restrictions associated with conservation dollars* (EQIP, CRP, etc.) (41%)
- *We need to reduce impacts of wildlife on crops/livestock* (38%)

Figure 16. Percent of those surveyed who were "Neutral" on the Statements Presented (n=151)



In further analysis of these statements, the responses of farmers and non-farmers were compared to one another to determine if there were striking similarities or contrasts between the two groups. Statements that received the greatest percentage of agreement (either somewhat or strongly) from survey participants were identified (Table 19). It is interesting that both groups strongly supported the statements "*We need to improve soil health*," "We need to improve water quality," and "*We need to provide more education for landowners on water quality issues.*" The groups diverged from one another on statements pertaining to incentives (for both farmers and communities), wildlife habitat, and education about flooding.

Table 19. Comparison of Statements receiving "Somewhat" or Strongly Agree" Statements: Farmers v. non-Farmers

Rank	Farmers (n=84)	Non-farmers (n=67)
1	We need to improve soil health (82%)	We need to improve water quality (80%)
2	We need to improve water quality (79%)	We need to provide more education for landowners on water quality issues (77%)
3	We need to increase incentives for farmers to protect soil & water (66%)	We need to provide more wildlife habitat (75%)
4	We need to provide more education for landowners on water quality issues (66%)	We need to improve soil health (74%)
5	We need to increase incentives for communities to protect soil & water (61%)	We need to provide more education for landowners on flood issues (71%)

Those surveyed were provided the opportunity to write in "Other" things they may be concerned about. The following comments were received:

- *Erosion from improper farming*
- *I am sick and tired of all the environmentalists always blaming the farmers for all of the pollution when it also comes from many other places!!!!*
- *Global warming is just a way to try to control us. It is in Gods hand.*
- *Competence of those in power to do something about these problems*
- *Land being taken out of conservation practices for row crop farming, increase in hog confinement, tearing out old fence rows, chemicals on rural residential lawns, poor farming practices*

Iowa's Nutrient Reduction Strategy

Iowa's Nutrient Reduction Strategy is a new policy designed to provide data and a framework for reduction of nutrients in Iowa's waterbodies by urban and agricultural sources. The Policy has been the source of increased funding for voluntary conservation measures, and additionally, some heated debate on the anticipated effectiveness of the policy. Due to the fact that the policy's success depends heavily on the willingness of Iowa producers to engage in "voluntary, but not optional" practices on their farms, it was important to ask those who took this survey about the policy. It was surprising to learn that 70 percent of survey participants indicated that they had *not* heard about Iowa's Nutrient Reduction Strategy (Tale 20).

Table 20. Have you heard of "Iowa's Nutrient Reduction Strategy?"

Response	Count	(%)
Yes	41	25.2
No	114	69.9
No response	8	4.9
Total	163	100

There does appear to be noteworthy difference in familiarity of the policy between farmers and non-farmers (Table 21), as 90 percent of non-farmers were unfamiliar, compared to a much lower (but disappointing) 60 percent of farmers who reported being unfamiliar with the policy.

Table 21. Have you heard of "Iowa's Nutrient Reduction Strategy?" Farmers v. Non-farmers

	Farmers		Non-farmers	
Response	***Count***	***(%)***	***Count***	***(%)***
Yes	33	40.2	7	9.9
No	49	59.8	64	90.1
No response	3	3.5	2	2.7
Total	85	100	73	100

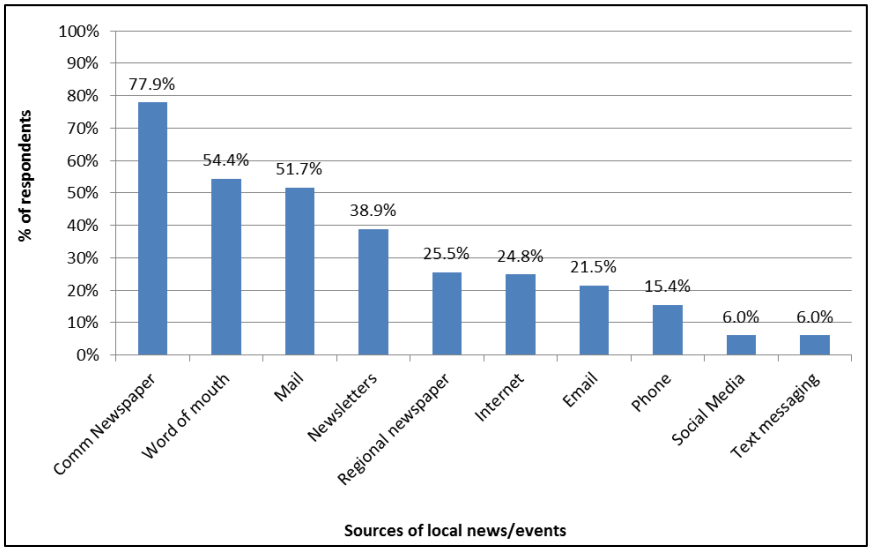
Sources of Information

The final questions in the survey asked for input about resources watershed landowners and residents rely on for news and information about local events, and sources they trust for information about conservation topics. This information is useful as the watershed (and other conservation organizations) expand their outreach and programming in the watershed.

Sources of Local News and Events

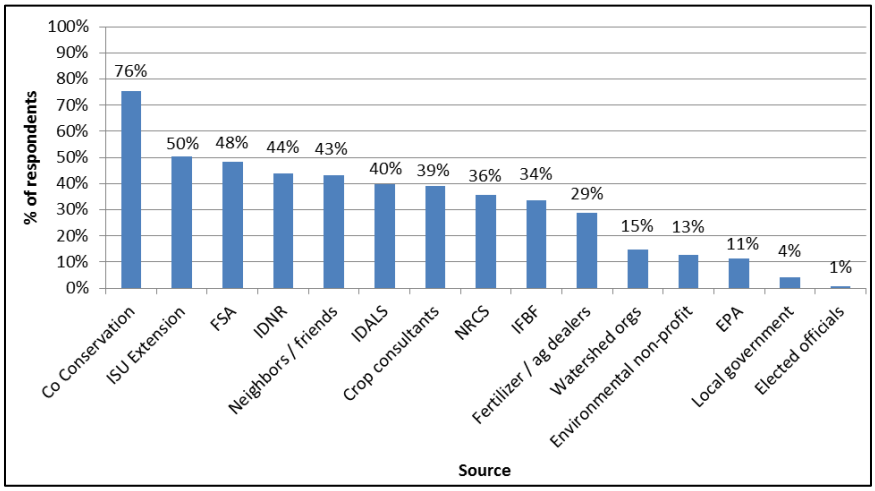
Among those surveyed, community newspapers were the most common (78%) resource of local news and events for watershed landowners (Figure 17). Word of mouth was the second most common resource.

Figure 17. Which of the following sources do you rely on *the most* for your information about local events? (check all that apply) (n=149)



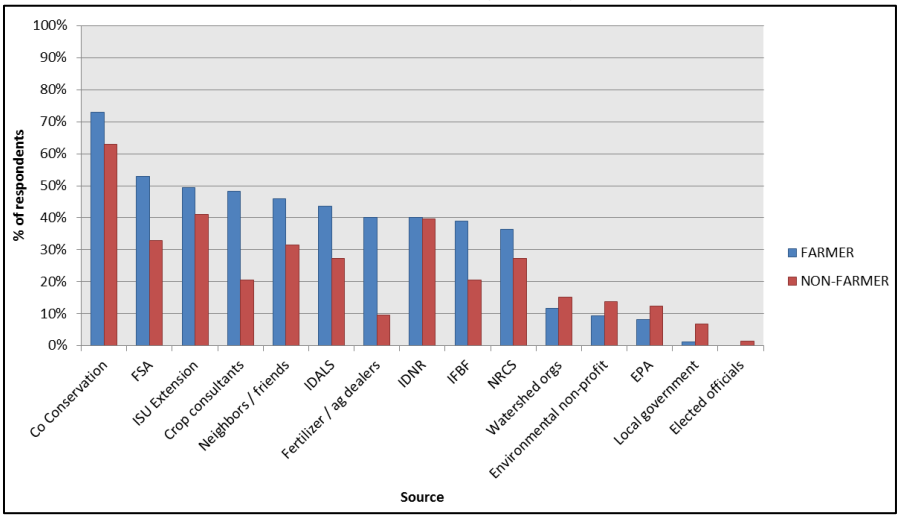
Although 12 percent of those surveyed chose not to answer the question, those surveyed who did indicated that County Conservation (76%), Iowa State University Extension (50%) and the Farm Service Agency (48%) were their most trusted sources of information about conservation at home or on the farm (Figure 17). Five survey participants also commented that radio and television resources were also resources they rely upon. These important resources were unintentionally overlooked during survey design.

Figure 18. Which of the following sources do you trust for information about conservation at home and / or on the farm? (select all that apply) (n=143)



Assuming that there may be a difference between resources relied on by farmers versus their non-farming peers, the data was slip between the two groups (Figure 18). Comparing the two groups, the top three resources farmers chose were County Conservation (73%), Farm Service Agency (53%), and ISU Extension (49%). Non-farmers also identified County Conservation (63%), ISU Extension (41%), but diverged from their farming peers by identifying Iowa Department of Natural Resources as their third highest relied upon resource (40%). Iowa's Department of Natural Resources, however, was 4th amongst the farmers surveyed. Farmers also understandably rely significantly more on fertilizer and agricultural dealers (30 percent difference), and crop consultants (28 percent difference) than their non-farming peers. Periodicals were also mentioned in the comments as an additional resource utilized by watershed landowners for news about conservation.

Figure 19. Sources Trusted for Information about Conservation at Home and on the Farm: Farmers v. non-Farmers (n=143)



Comments

To keep the survey focused; those surveyed were given little opportunity to comment until the very end of it. A few questions, however, provided opportunities for write-in responses to question; for example, providing an "other" variable one felt is responsible for Iowa's water quality issues. The following is a compilation of the (largely unedited[4]) comments received at the end of the survey:

- *Good Luck! Volunteer efforts are better than top down regulation particularly egress is the EPA and COE and their proposed rewrite of the regulaitons (sic) concerning Waters of the US (WOTUS). Ephemeral drains and waterways are NOT WOTUS.*

- *Would like to see results (name, address)*

- *There are only a few farms that need a closer look at, because what they get paid for is not working and all the care about is the money they can get for rent, they have more and bigger ditches then (sic) ever. It seems like the bigger the farmer is the more they look the other way or maybe they don't have enough time to check and see how their new plan is working. Few people do not care about what or how they do things they only worry about money they can make, and the problem only gets worse, and cost more in the long run to fix. Greed is our worst enemy*

- *Smith Creek has a continual flow of tires, glass and junk coming down it from somewhere.*
- *We are currently involved in the CSP program. Voluntary participation and education are more acceptable than forced participation. Seed money to enhance new concepts works!*

- *You need more waterways no-till oats- hay and pasture, terracing, dry ponds, cover crops*

- *Don't forget mother nature rules. Whatever you do if the ground is soaked wet and you get a 6" rain you are going to have floods.*

- *Cost share for waterways and terraces very important also dry ponds very useful like to put in buffer strips if they pay enough will check into it.*

- *What does my income have to do with the watershed or schooling*

- *3/4 of the people who are going on and on about how the farmers are ruining the environment know very little about what they are talking about. But yet they are getting all of the headlines and the general public is believeing (sic) it. These people use information that is 10-15 years old to back up their information. In the last 15-20 years the farmers have made great strides in soil*

[4] The extent of editing was limited to correction of spelling when needed to clarify writer's intentions, and punctuation was added to separate sentences from one another in print.

conservation but when you get 4-6 inches of rain in 10-12 hours, it doesn't matter what you have done. There will be erosion.

- *From your map, I have no idea which, if any, of my farms are in your project!*
- *Neighbors septic contaminating waterway- county won't act as redy dye doesn't show. No recourse with county won't repeat test. Water flows to Old Man's Creek polluted. Serious flaws in the system right?*
- *1-4 lakes upstream would have the largest impact on flooding, water quality, and recreation in my opinion.*
- *The water in Wellman still sucks. It's embarrassing to not be able to drink water and having to buy bottled water. The times we have to boil water is way too frequent. The flooding occurs too often as well.*
- *I wish people would stop and look back at the long range history of our weather patterns and educate themselves on the fact that these events have happened before and will in fact happen again. Everything on earth happens in cycles, instead of looking at a snapshot in time and get all up in the air about things, and try to keep mother nature from taking her course*
- *I am happy to be involved with the English River Watershed. Please keep me on the mailing list or call me (name & phone number).*
- *Go find another witch hunt. We do not need more regulations from the government! What political organization is behind this?*
- *I think tiling farm fields should be restricted. More and more people are tiling all their cropland which causes rainwater to quickly run out of farmland into creeks and stream then on to larger fivers causing floods. Years ago before farmers tiled their fields there were a lot less damaging floods. Another factor that contributes to flooding is cleaning out and straightening small creeks and waterways, damming up small creeks and waterways would slow rainwater from entering streams and rivers thus preventing a lot of floods and lots of water damage. We cannot change the weather, but we can change how we react to it.*
- *We are all truly renting our land from future generations, and if we don't practice land stewarship (sic) who will. Too many people are only worried about the $$ and not what we leave for our children and grandchildren.*

- *Conservation and protecting water quality should be voluntary with encentives (sic) rather than more regulations. If EPA gets the clean water act passed they will make us all lawbreakers. Common sense goes a long way to solving watershed problems.*

- *Iowa Nutrient Reduction Strategy is more bad policy. By giving in to Bad Science by EPA and others you will tie the hands of the farmers trying to make a living and feed this country. The hypoxia zone has NOT been proven to be caused by ag nutrient run-off. By giving in the Evironmental (sic) bullies and dictators you cripple the American farmer. Do you think I'm spending money on fertilizer to watch it wash away- who is the stupid one here. I'm tired of Environmental Elitist pushing us around. I'm also tired of low level bureaucrats abusing their power. That's what Iowa Nutrient Reduction Strategy will lead to. Less government interference will help stop starving in third world nations- less expensive food. If you really want someone's opinion- who has worked with thousands of acres for decades-not just read a book or taken a class-call me at (name, address, phone number)*

- *The ground around my property is in a trust. When it first was rented by the trust officer the renter took all the fences and waterways out. It is not flat ground. Then they had the water ways redone. The water ways are washed out so badly you could hide most 4 wheelers in them. It is now in CRP, but the damage has already been done. All the trust wants is the money; they don't care about the rest. There needs to be some kind of rules they need to follow.*

- *What is this really about? Way to long- and no apparent goal. Who wasted their time on this?*

- *I am not sure what the mission of the ERW is. I have not been able to find a mission statement on your website. As farmers we have the county NRCS and FSA offices to work with and design conservation measures for our farms. Question #16 we are not going to control temp., severe weather, drought or 8" rain. There are certain weather events we have to accept. We don't need people and businesses to build in flood plains then complain about the effects of a flood.*

- *I am waiting for the official from the NRCS who decides whether you own a wetland or not so I can tile.*

- *This year will mark the first year out of the last five my neighbor didn't spread hog manure on his river bottom ground just to have it wash away in the spring flood. This seems like something that should stopped. It seems like the English has become a toilet bowl with all of the tiling that has occurred in the last few years. When it rains it flushes and floods and soon after it runs to a trickle. Seems like exactly what any sensible person would predict would happen if all the fields are tiled.*

- *Thanks for doing watershed work- we need to feel responsible for every drop of water that leaves our property and consider what it might be carrying.*

Resources

1. *Agriculture, Environment, and Recreation in Iowa: A Survey of Iowa Residents*. J. Gordon Arbuckle Jr, Associate Professor/Extension Sociologist, Department of Sociology, Iowa State University. 2011

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3. Browning, Rufus P. *San Francisco Watershed Management Plans Public Opinion Survey Repor*t; Public Research Institute and San Francisco State University. 1994

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6. Iowa Learning Farms. *Water Issues in Iowa: Watershed-based Community Assessment Toolkit*. www.extension.iastate.edu/ilf. 2014

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