

Iowa Water Quality Monitors (2004)

A. Background Information (n=8)

1. A majority (75%) of the respondents indicated that they expected to learn about bacterial sampling and monitoring. The remainder of respondents indicated a desire to increase their awareness of the environment and water quality during the program.
2. Five of the respondents indicated that they were interested in participating in this project due to the information that they could learn from it. One respondent said that they were interested in using this information to assist them in their grade school. Another respondent was interested to gain knowledge that would help them in their research. One respondent wanted to increase their environmental awareness.
3. 75% of the respondents indicated that they planned to incorporate the data that they collected into their watershed planning activities. One respondent intended to write a paper for independent study, and one respondent wanted to review the urban watershed.
4. 88% of the respondents would like to see the database presented to the public and published. One respondent did not answer the question.
5. All of the respondents had water monitor training prior to the program. The IOWATER program trained six of the respondents, two have been trained in general water chemistry.
6. Sampling experience was equivalent across the board. The respondents indicated that 25% had sampled less than 10 times, 25% sampled 10-50 times, 25% sampled 51-100 times, and 25% had sampled more than 101 times.
7. All of the respondents indicated that they had experience in water quality monitoring in the major categories listed (i.e. macro invertebrates, stream habitat, stream flow, turbidity, *E. coli* bacteria, nutrients, and dissolved oxygen).
8. Three of the respondents were under the age of 24, while the remaining five were between the ages of 35-64.
9. The respondent's gender consisted of 63% males and 37% female.
10. Half (50%) of the respondents had some college experience, while the remaining half (50%) had earned a bachelor, graduate or professional degree.
11. Three respondents indicated that they are students, one indicated they earned their living through farming fishing or forestry, and one was an educator. Three respondents indicated other occupations.
12. None of the respondents indicated that they were color blind.

B. Background Information and Participant Knowledge

Although it is impossible to draw conclusions about the effects of the WQM program due to the low number of responses, it is possible to suggest trends in the responses. Below are trends observed in the responses.

It seems that all participant knowledge was related to water monitoring experience. The two participants with the highest scores on the “Current Knowledge” section had sampled water 101 or more times prior to the program. While the participants with the lowest score on the “Current Knowledge” section were the only participants who had sampled fewer than 10 times prior to the program.

Education, in the formal sense (i.e. years of schooling), seems to play a part in participant knowledge. The participants with the highest scores have received a bachelor or graduate degree. The three remaining participants with the lowest scores are currently attending college.

Table 1.

Participant knowledge found in columns 2-4. Participant background information found in columns 5-11.

1	2	3	4	5	6	7	8	9	10	11
ID	Know Index	Before%	After %	Prior Training	Sampling Experience	V or P	Age	Gender	Ed.	Color Impair
IA0401	17	88	97	2	4	P	4	1	7	1
IA0402	9	84	84	2	1	V	2	1	3	1
IA0403	9	62	84	2	1	V	1	1	3	1
IA0404	11	84	97	2	3	V	6	2	3	1
IA0405	14	81	88	2	2	V	5	1	7	1
IA0406	14	84	97	2	2	V	5	2	7	1
IA0407	17	90	97	2	4	P	5	1	7	1
KF	15	88	97	2	3	P	2	2	6	1

Know Index = (Prior Training x 2) + Sampling Experience + [V x 1; P x 2] + Ed.

Before % = Percent of “Current Knowledge” questions answered correctly before program

After % = Percent of “Current Knowledge” questions answered correctly after program

Prior Training: 1 = No; 2 = Yes

Sampling Experience (Number of samples drawn):	1 = Less than 10
	2 = 10 – 50
	3 = 51 – 100
	4 = 101 or more

V or P: V = Majority of responses to Q7 indicate Volunteer experience;
P = Professional

Gender: 1 = male; 2 = female

Age:	1 = 18 or under
	2 = 19 – 24
	3 = 25 – 34
	4 = 35 – 44
	5 = 45 – 54
	6 = 55 – 64
	7 = 65 – 74
	8 = 75 or over

Education:	1 = Some High School
	2 = High School or equivalent
	3 = Some College
	4 = Technical Degree
	5 = Associate Degree
	6 = Bachelor Degree
	7 = Graduate or Professional Degree

Color Impairment: 1 = No; 2 = Yes

C. Overall Impressions of Training

- All of the participants rated the training as “Very Good” (100%).
- All of the participants rated the quality of the educational materials used during the training as “Very Good” (100%).
- All of the participants rated the quality of the materials provided as “Very Good” (100%).
- All of the participants rated the quality of the instruction as “Very Good” (100%).
- All of the participants rated the length of time for the training as “Just Right” (100%).
- Almost half of the participants indicated that they had heard about volunteer opportunities in water quality monitoring through IOWATER ads.
- All of the participants “strongly agreed” with the statement: “the training met my expectations.”
- All of the participants “agreed” with the statement: “I am satisfied with the training that I have received”.
- All of the participants “strongly agreed” with the statement: “I would recommend the training to other volunteers”.
- All of the participants “strongly agreed” with the statement: “I look forward to putting my new knowledge to use in monitoring *E. coli* bacteria”.

D. Background Information for Volunteer Water Quality Monitors

1. What do you expect to learn from the water monitoring training?

ID	Response
IA0401	Techniques for bacteria monitoring. Identification of sites with bacteria contamination.
IA0402	Learn more about bacteria and how to take water samples
IA0403	An idea of qualities of water that should be of concern, and why they should be of concern. Also how high/low quality of water Iowa has.
IA0404	Better and more consistent methods of bacterial monitoring.
IA0405	Another method of bacterial sampling.
IA0406	Different ways to detect bacterial contamination of local waters.
IA0407	Increased awareness of the environment.
KF	How to run E.coli samples in the lab.

2. Briefly describe why you are interested in participating in this project?

ID	Response
IA0401	Interested in learning new techniques.
IA0402	This seems interesting and is an inter-disciplinary project and it is what I'm interested in for grade school.
IA0403	I will be conducting research all summer long in this area. I like environmental science and outdoors. Also I am from Iowa so this is about my home.
IA0404	Ongoing interest in Iowa's water quality.
IA0405	Learn new techniques and apply them.
IA0406	Curiosity of techniques and results, and if the information can do anyone any good.
IA0407	Because it is important environmentally.
KF	I am interested in learning how to take a sample and evaluate E.coli levels, i.e. to see how lab work is done.

3. What do you intend to do with the data that you collect?

ID	Response
IA0401	Correlate with physical and chemical parameters.
IA0402	Write a paper for my independent study.
IA0403	Most likely write up the data and probably present it to others.
IA0404	Submit to Iowa's University Hygienic Lab.
IA0405	Submit to a database.
IA0406	Give it to the IOWATER program and it's cooperators.
IA0407	Review my urban watershed.
KF	Use the data to help IGS members determine monitoring sites with high E.coli levels.

4. What else would you like to see done with the data?

ID	Response
IA0401	Identification of problem sites.
IA0402	Be presented.
IA0403	Relate the data to things that most people can understand and let the general public know about the quality of their water systems.
IA0404	Publication.
IA0405	Used for baseline.
IA0406	Possibly be used to help develop a program where volunteer data can be used for more official uses.
IA0407	Statistically review volunteer data for precession and accuracy.
KF	

5. Do you have prior training in water monitoring? **100% Yes** **0% No**

If yes, briefly describe training:

ID	Response
IA0401	IOWATER, work with DNR, city of Cedar Rapids drinking water.
IA0402	Water chemistry lab – collected water samples in a creek.
IA0403	In general chemistry we monitored dissolved oxygen, pH, conductivity, turbidity, ect., of local Cedar Rapids creeks for a few weeks.
IA0404	IOWATER Level 1 and 2 training.
IA0405	IOWATER Level 1 and 2 training.
IA0406	IOWATER Level 1 and 2 training.
IA0407	PHD in chemistry, IOWATER Level 1 and 2 training. 20+ years in water sampling
KF	I have training in collecting water samples (bacteria, nutrients, pesticides) from WMS section of IGS.

6. If you have experience in monitoring water quality, approximately how many times have you sampled?

n=8

25%	Less than 10
25%	10-50
25%	51-100
25%	101 or more

7. Please check the circles that most closely describe your experience in water quality monitoring. (n=8)

Volunteer Professional

Experience in Monitoring:

Macro invertebrates	80%	20%
Stream Habitat	80%	20%
Stream flow	50%	50%
Turbidity	63%	37%
<i>E. coli</i> bacteria	60%	40%
Nutrients	57%	43%
Dissolved Oxygen	62%	38%
Other: Metals, cyanide, pH, phenols, pesticides, chloride, oil, phosphate	50%	50%

8. What is your age? (n=8)

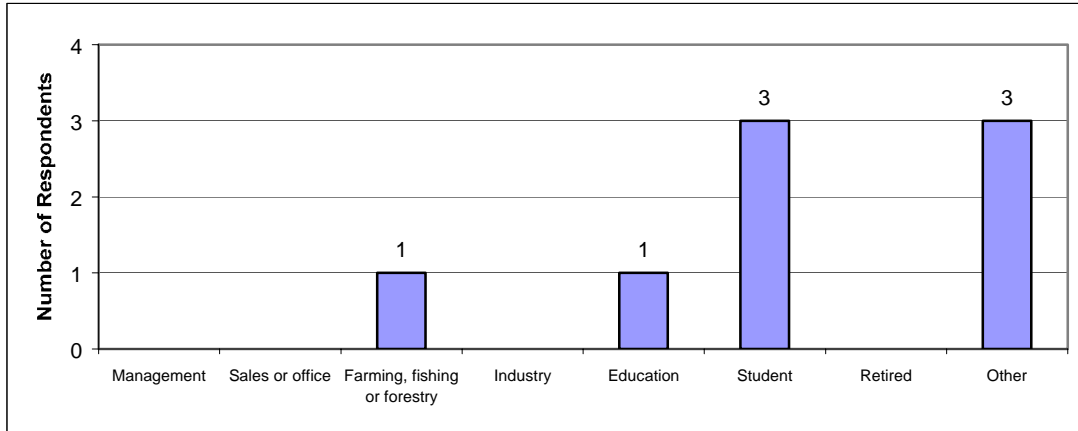
12%	18 or under
25%	19-24
0%	25-34
13%	35-44
37%	45-54
13%	55-64
0%	65-74
0%	75 years or over

9. What is your gender? (n=8) **63% Male 37% Female**

10. What is the highest level of education you have completed? (n=8)

0%	Some High School
0%	High School or equivalent
50%	Some College
0%	Technical Degree
0%	Associate Degree
12%	Bachelor Degree
38%	Graduate or Professional Degree

11. What is your present occupation? (check all that apply) (n=8)



12. Making bacterial counts requires the ability to interpret color data. To the best of your knowledge, do you have color impairment (also called color blindness)? (n=8)

0% Yes

100% No

E. Quality and Effectiveness of Training

Your overall impressions of the training. (n=5)

Please rate the overall quality of the training.

100% Very Good	0% Good	0% Poor	0% Very Poor	0% Don't Know
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Please rate the quality of the educational materials used during the training.

100% Very Good	0% Good	0% Poor	0% Very Poor	0% Don't Know
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Please rate the quality of the materials provided to participants.

100% Very Good	0% Good	0% Poor	0% Very Poor	0% Don't Know
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Please rate the quality of the instruction.

100% Very Good	0% Good	0% Poor	0% Very Poor	0% Don't Know
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Please rate the length of time for the training.

0% Too Short	100% Just Right	0% Too Long	0% Far Too Long	0% Don't Know
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What would be the ideal length of time for this training?

- **40% 3-4 hours**
- **20% As is**
- **40% No comment**

What part of the training was *most* useful or valuable to you?

- **Actual testing**
- **Color slides**
- **Hands on – try the methods**
- **Hands on in the lab**

What part of the training was the *least* useful or valuable to you?

- **Background about E. coli due to previous knowledge**
- **None**
- **Nothing**

What additional topics should be covered?

- **No response**

What topics could be emphasized less?

- **No response**

Approximately how many miles did you travel to attend this training?

- **80% “0” miles**
- **20% 7-8 miles**

How did you first hear about volunteer opportunities in water quality monitoring?

- 40% IOWATER ads
- 20% 2001
- 40% No response

Please identify any obstacles you faced while learning to use each kit.

Coliscan® Easy Gel kit (not incubated):

- Have not done
- None
- Reading colony colors

Coliscan® Easy Gel kit (incubated):

- Reading the colonies
- Reading the colony colors
- Not my favorite
- None

3M™ Petrifilm™ kit:

- Getting accurate 1ml, care not to cut gel
- Lowering the plastic correctly and smoothing out
- Nothing – great kit
- Small colonies

Colisure® Method kit with the IDEXX Quanti-Tray/2000™:

- Not contamination of bottle during dilution
- Not to touch inside of tray while opening
- Nothing – looks good
- None

Your Reactions to the Training

	Strongly Agree	Agree	Disagree	Strongly Disagree	Don't Know/ Not Sure
The training met my expectations.	100%	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with the training that I have received.	100%	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would recommend the training to other volunteers.	100%	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I look forward to putting my new knowledge to use in monitoring <i>E. coli</i> bacteria.	100%	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments:

- Great introduction!
- Looking for the whole program.

F. Volunteer Assessment of Test Kits Aggregate Results

Please rank the kits from 1 to 4 in order of learning, with 1 being the easiest and 4 being the most difficult.

Kit	Mean	Median	Range
Coliscan® Easy Gel kit (not incubated)	3.50	4.00	2
Coliscan® Easy Gel kit (incubated)	2.60	3.00	1
3M™ Petrifilm™ kit	1.80	2.00	2
Colisure® Method kit with the IDEXX Quanti-Tray/2000™	2.00	1.00	3

Please identify any obstacles you faced while learning to use each kit.

Coliscan® Easy Gel kit (not incubated):

- Have not done
- No problems
- Reading colony colors

Coliscan® Easy Gel kit (incubated)

- Reading the colonies
- Reading the colony colors
- Not my favorite
- No problems

3M™ Petrifilm™ kit

- Getting accurate 1ml, care not to cut gel
- Lowering the plastic correctly and smoothing out
- Nothing – great kit
- Small colonies

Colisure® Method kit with the IDEXX Quanti-Tray/2000™

- Not contamination of bottle during dilution
- Not to touch inside of tray while opening
- Nothing – looks good
- No problems

Iowa – Volunteer assessment of test kits
End of Training

Aggregate Results

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- No problems
- Reading colony colors

Coliscan® Easy Gel kit (incubated)

- Reading the colonies
- Reading the colony colors
- Not my favorite
- No problems

3M™ Petrifilm™ kit

- Getting accurate 1ml, care not to cut gel
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