

DEVELOPMENT OF THE IOWA DRAINAGE LAW MANUAL

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16. Abstract <p>Although Iowa has some of the most productive agricultural land in the nation, it also maintains a very extensive road network. Consequently, landowners and roadway officials often must deal with drainage issues affecting private lands and public highways. However, many individuals are unfamiliar with legal drainage requirements, practices, and procedures, which can result in misunderstandings concerning maintenance responsibilities for drainage facilities, sometimes leading to litigation. To assist property owners, public agencies, and others with interest in better understanding drainage maintenance responsibilities, a reference manual was developed to describe Iowa's drainage laws and offer interpretations in a clear and concise manner.</p> <p>To develop a comprehensive drainage manual, researchers identified and reviewed current available literature. These resources described pertinent drainage issues and presented explanations of legal responsibilities. The literature review included manuals and guides from Iowa, surrounding states, and federal agencies.</p> <p>Researchers developed a survey to assess the needs and interests of potential users of an Iowa drainage law manual. Survey responses were used to identify common problems and concerns among individuals who encounter drainage issues on a regular basis. Issues mentioned in the survey responses included interpretation of drainage laws and commonly encountered questions relating to public improvements and private interests. Many individuals, including county engineers, stated interest in specific topics such as maintenance and/or diversion of drainage, landowner issues, and upstream and downstream impacts. Overall, the survey provided researchers with valuable information regarding drainage issues, problems, current policies, and concerns. A comprehensive manual of Iowa drainage law will assist agencies and individuals in interpreting current code requirements and in implementing effective and beneficial solutions when dealing with drainage issues.</p>			
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EXECUTIVE SUMMARY

The state of Iowa has been blessed with some of the most productive agricultural land in the nation but also boasts of a very extensive road network. Consequently, landowners and roadway officials often must deal with drainage issues affecting private lands and public highways. However, many individuals are unfamiliar with legal drainage requirements, practices, and procedures. Misunderstandings of maintenance responsibilities for drainage facilities can occur, sometimes resulting in litigation. To assist property owners, public agencies, and others with interest in better understanding drainage maintenance responsibilities, a reference manual was developed to describe Iowa's drainage laws and offer interpretations in a clear and concise manner.

To develop a comprehensive drainage manual, researchers identified and reviewed current available literature. These resources described pertinent drainage issues and presented explanations of legal responsibilities. The literature review included manuals and guides from Iowa, surrounding states, and federal agencies.

Researchers developed a survey to assess the needs and interests of potential users of an Iowa drainage law manual. Survey responses were used to identify common problems and concerns among individuals who encounter drainage issues on a regular basis. Issues mentioned in the survey responses included interpretation of drainage laws and commonly encountered questions relating to public improvements and private interests. Many individuals, including county engineers, stated interest in specific issues such as maintenance and/or diversion of drainage, landowner issues, and upstream and downstream impacts. Overall, the survey provided researchers with valuable information regarding drainage issues, problems, current policies, and concerns. A comprehensive manual of Iowa drainage law will assist agencies and individuals in interpreting current code requirements and in implementing effective and beneficial solutions when dealing with drainage issues.

1. INTRODUCTION

The state of Iowa contains some of the most productive agricultural land on earth. Achieving proper drainage of this land is imperative for effective farming operations and maximum productivity. An extensive system of drains and ditches have been installed and maintained in Iowa to assist in efficient row crop productivity. The Code of Iowa extensively describes requirements and responsibilities for drainage of land, both rural and urban.

In addition to its agricultural achievements, Iowa also boasts of a highly developed surface transportation system, particularly in rural areas. The construction and continued maintenance of this network of roadways can occasionally result in impacts on established drainage patterns from adjacent private property. In addition, residential and commercial development of rural land surrounding larger communities often results in substantial modifications in existing drainage patterns.

Background

The rights of private landowners and public roadway authorities in matters of natural drainage can be confusing, especially for the public, which has infrequent contact with these types of laws. According to Illinois Drainage Law, “the basic principle of the law of natural drainage is that landowners take whatever advantages or inconveniences of drainage nature places upon their land” (Uchtmann and Gehris 1997). However, the definition of “nature” can vary and the impact of drainage on land and highways, both upstream and downstream, can result in conflicts and disagreements.

Problem Statement

Many landowners and roadway agencies are often not familiar with legal requirements pertaining to desired drainage improvements or with restrictions concerning impacts on adjacent land or public rights-of-way from those improvements. Misunderstandings of maintenance responsibilities for drainage facilities are common, sometimes resulting in litigation. Public transportation agencies, landowners, and others are often in need of a clear and concise summary of Iowa drainage law, including both common law and code provisions. Administrative and engineering staffs in Iowa’s counties, cities, and state department of transportation are frequently confronted with questions relating to drainage and the law. Transportation agencies, landowners, and the general public would benefit from a manual that clearly describes Iowa’s drainage laws and interpretations.

Project Objective

The objective of this research was to develop a manual of drainage law specific to the state of Iowa. The research team’s goal was to create a reference guide that would be useful and easily understood by private landowners, interested agencies, and government officials.

Report Organization

This report is organized into the following chapters:

Chapter 1 (this chapter) is a brief introduction and description of the problem, the need for research, the objective of the project, and an overview of this report.

Chapter 2 is a literature review performed by researchers before manual development began. The purpose of the literature review was to identify and examine existing drainage law resources available to private landowners and government agencies.

Chapter 3 describes the methodology and results of a survey that was distributed to the manual's intended audience. Researchers concluded that surveying the potential users would be important in determining the most relevant drainage issues and desired manual features.

Chapter 4 describes the process by which the manual was developed.

Chapter 5 presents conclusions and recommendations.

2. LITERATURE REVIEW

Background

The initial tasks undertaken for this research project were the identification and review of currently available literature pertinent to the topic of surface drainage laws and interpretation. Examination of these materials provided researchers with an appreciation of important issues and concerns relating to drainage law and information that should be included in a reference manual.

Overview

Authors in many of Iowa's neighboring states (Minnesota, Illinois, North Dakota, and South Dakota) have produced publications that summarize and analyze pertinent drainage legal issues. In addition, several reports on drainage and drainage law in Iowa have been published over the years, but none has specifically provided a comprehensive reference of general value for a broad audience. The most recent edition of *Parrott's Manual of Road and Drainage Laws of Iowa* provides a compilation of applicable Iowa Code references. However, the Parrott manual does not include Administrative Code provisions or a review of common/case law decisions, which will be important parts of comprehensive drainage law manual.

This literature review outlines key aspects of currently available drainage law publications from Iowa, neighboring states, and nationally.

Other useful references can be found on page 21 of this report.

Summary of Currently Available Drainage Law References

This section summarizes drainage references and is divided into the following sections:

1. Drainage law publications from several states surrounding Iowa including Minnesota, North Dakota, South Dakota, and Illinois
2. Federal or general drainage publications from various agencies including the U. S. Highway Research Board (USHRB), the American Association of State Highway and Transportation Officials (AASHTO), and the American Society of Civil Engineers (ASCE).
3. Iowa drainage law references from state, university, private agencies and authors.

State Drainage Law Publications

The following resources are from Iowa's surrounding states including Minnesota, North Dakota, South Dakota, and Illinois.

Minnesota

Minnesota Public Drainage Manual. U.S. Environmental Protection Agency and Minnesota Department of Natural Resources, St. Paul, Minnesota, 1991.

The purpose of the *Minnesota Public Drainage Manual* is to educate those who work with or are affected by drainage laws, standardize procedures concerning drainage code, and reduce the conflicts and court battles that develop over aspects of drainage projects. The manual is intended to assist agencies that work with drainage systems, including county board of commissioners, joint county authorities, and watershed district board of managers.

To contextualize current legal responsibilities, the Minnesota manual describes the history of Minnesota drainage laws and focuses on five main time frames, all of which lead to key developments in the state's current drainage laws. Other laws affecting drainage are also explained, including the Food Security Act of 1985, Federal Wetlands and Related Regulations, and Watershed Districts.

The manual includes a section that details initiating a drainage project. Topics addressed include filing procedures for a petitioner, petitioner liability, alternatives for accomplishing drainage, how jurisdiction is obtained, and types of hearings. Also covered are construction of a drainage project, including surface and subsurface project requirements, and payment for the system.

The *Minnesota Public Drainage Manual* dedicates a chapter to Engineering and Environmental Review. The purpose is to promote consistency in surveys, engineering, and environmental investigations of proposed drainage systems. The manual also promotes standardization of the state agency review process of engineering documents as well as emphasizing the critical role of the review of environmental issues in public drainage proceedings. The goal of this manual is to provide a forum for enhanced communication among the public and all professional disciplines associated with drainage in Minnesota.

Understanding Minnesota Public Drainage Law: An Overview of Decision-Makers. Association of Minnesota Counties, St. Paul, Minnesota, 1997.

This manual is a supplementary publication to the *Minnesota Public Drainage Manual* and offers a brief summary of key drainage law information.

Features of this reference include a review of the history of drainage laws in Minnesota from the late 1960s, when public policy shifted toward conservation. The document also describes drainage systems and explains how those facilities may be under the jurisdiction of one of several drainage authorities. Types of drainage projects and the petition process are also described.

North Dakota

Johnson, Jerome E., Lynn L. Schloesser, and Robert K. Rushing. *North Dakota Drainage Law*. Department of Agricultural Economics, North Dakota State University, Fargo, North Dakota; School of Law, University of North Dakota, Grand Forks, North Dakota, 1979.

North Dakota Drainage Law states, "...The North Dakota Supreme Court has declared that the common law doctrine of reasonable use is the standard guide under which liability for damages from drainage will be determined." The common law doctrine of reasonable use is described in more detail and examples of the interpretation are provided.

This document includes a section describing categories and types of waters, including surface and subsurface issues. It also describes statutes that allow North Dakota officials to require landowners to obtain a permit to drain water from land as well as explaining the permit application process.

South Dakota

Deering, Harold H. Jr., and Diane Best. *A Review of South Dakota Drainage Law*. Natural Resources Division, Office of the Attorney General, South Dakota, Pierre, South Dakota, 1996.

A Review of South Dakota Drainage Law was created to provide a general outline of South Dakota drainage law for county commissioners and other interested persons. The document includes a brief review of drainage cases decided by the South Dakota Supreme Court to illustrate how particular disputes have been resolved. It also examines various provisions of the statutory drainage process that became effective on July 1, 1985, to provide some insight as to how individual statutes relate to each other. The publication also briefly presents some relevant federal considerations that could impact county drainage issues.

Illinois

Uchtmann, D.L., and Bernard Gehris. *Illinois Drainage Law*. College of Agricultural, Consumer and Environmental Sciences, University of Illinois, Urbana, Illinois, 1997. web.aces.uiuc.edu/vista/pdf_pubs/DRAINAGE98.PDF. Accessed March 2004.

The *Illinois Drainage Law* which can be accessed as an online resource, was developed to clarify Illinois drainage law for both county commissioners and private landowners. This resource is especially useful in providing definitions of commonly used terms and in differentiating between the rights of private landowners and public highway authorities in matters of natural drainage. Additionally, the document provides examples to further explicate the meaning of Illinois drainage law.

Federal or General Publications

***Drainage Law.* U.S. Highway Research Board, National Research Council, Washington, D.C., 1964.**

The section of *Drainage Law* titled “Legal Aspects of Backwater from Culverts” addresses the effects of ponding immediately upstream of culverts and examines the problem of liability for damages to private property. It cites several actual and hypothetical cases that illustrate at least three special conditions: 1) flooding caused only by natural runoff in excess of the design flood for the structure; 2) a progressive increase in runoff caused by urbanization of the watershed; 3) increased runoff caused by physical changes within the watershed, such as drainage improvements or diversion of flow from outside drainage areas. The legal responsibility for flood damages in each case is examined in the light of case histories. Finally, some guidelines are developed to assist the highway drainage engineer in dealing with these problems.

***Model Drainage Manual 1991.* American Association of State Highway and Transportation Officials, Washington, D.C., 1991.**

The intent of this manual is to provide information and guidance on the engineer’s role in the legal aspects of highway drainage but it is not intended as a substitute for legal counsel. The manual covers drainage law issues, including flood insurance and construction in flood hazard areas, navigation and construction in navigable waters, water pollution control, environmental issues, protection of fish and wildlife, and coastal zone management.

***AASHTO Guidelines for the Legal Aspects of Highway Drainage. Vol. V.* American Association of State Highway and Transportation Officials, Washington, D.C., 1992.**

This manual is almost identical to the *Model Drainage Manual*. The publication’s objective is to emphasize the importance of legal aspects of highway drainage including promotion of natural drainage, avoidance of damage that could be reasonably avoided, and education about evolving drainage laws.

***Reinke, C.E., and R.C. Allison. State Water Laws: Effect on Engineering Solutions. Legal, Institutional and Social Aspects of Irrigation and Drainage and Water Resources Planning and Management.* American Society of Civil Engineers, New York. July, 1978.**

This manual provides an overview of state water laws and explains the difference between thirty-one generally eastern states that control abstraction and use of surface water by application of riparian rights law, and nineteen western states that apply the doctrine of prior appropriation.

Massey, D.T. *Drainage Laws and Organizations: Planning Now for Irrigation and Drainage in the 21st Century*. American Society of Civil Engineers, New York. July 1988.

This document provides an overview of various drainage laws and drainage organizations. Special attention is paid to the Food Security Act of 1985, which prohibits farmers from receiving USDA farm program incentives or benefits if they convert wetlands to crop production after December 23, 1985.

Maxwell, J.A. and J.J. Waiti. *Midwest Allocation of Irrigation Water: How Efficient and Equitable? Legal, Institutional and Social Aspects of Irrigation and Drainage and Water Resources Planning and Management*. American Society of Civil Engineers, New York. July, 1978.

This manual primarily addresses irrigation issues in Midwest states, but does not include a discussion of transportation issues. However the reference does feature an Iowa-specific section.

Iowa Publications

Erbe, Norman A., and Daniel T. Flores. *Iowa Drainage Laws (Annotated)*. Iowa Bulletin No. 6. Iowa Highway Research Board, Ames, Iowa, 1957.

This publication features an annotated compilation of pertinent sections of the 1954 Iowa code pertaining to drainage law. The reference was primarily intended for use by the Iowa Highway Commission, boards of supervisors, and county engineers in the administration of roadway and drainage systems. Acts of the 56th General Assembly are also included for information.

***Parrott's Manual of Road and Drainage Laws of Iowa*. Matt Parrott and Sons Company, Waterloo, Iowa, 2001.**

This standard reference presents a verbatim reprint of all sections of the Iowa code pertinent to road and drainage laws. The acts of the 76th General Assembly are included. This commonly used reference is updated periodically to provide an excellent printed reference for state and local agencies.

Sherman, Jay J. *Drainage Districts in Iowa: A Study in Local Administration*. Ph.D. dissertation. University of Iowa, Iowa City, Iowa, 1924.

Although somewhat dated at this time, this publication includes some relevant information, especially details related to drainage districts. This is an excellent historical reference for drainage laws up to 1924.

***An Engineering Study to Update the Iowa Transportation Law (Annotated)*. Iowa Highway Research Board, Project HR-234A, January 1995.**

This report describes numerous cases that involve a variety of drainage laws, especially those that address the rights of riparian owners and bridge maintenance.

College of Law, The University of Iowa. *Legal Study Prepared for the Cities and Counties of Iowa Participating in the Iowa Urban Storm Water Management Program.* Iowa City, Iowa, 1982.

This publication references case law, primarily focusing on storm and surface water control. It presents a copy of the Model Storm and Surface Water Control Ordinance as well as the doctrine of surface water management in Iowa. This study discusses municipal duties and liabilities related to the control of storm and surface water.

Iowa Drainage Guide. Special Report 13. Cooperative Extension Service, Iowa State University, Ames, Iowa, March 1987.

This guide was prepared to provide recommendations for drainage improvements installed on Iowa's agricultural land. It is intended to provide legal, soil management, and engineering information to farmers, engineers, contractors, farm planners, and others associated with drainage system planning, construction, and management.

3. SURVEY METHODOLOGY

Introduction

To develop a complete and useful manual addressing Iowa drainage law, researchers surmised that the needs and concerns of potential users of this resource must be determined. A review of current literature provided some guidance but a survey of county, city and state agencies, drainage districts, and hydraulic engineering consultants proved most valuable. Survey results were analyzed to determine common drainage problems and concerns including such issues as confusing Iowa code provisions and frequently encountered questions regarding drainage impacts on roadway construction and maintenance.

Survey Design

The goal of the survey was to determine opinions about current drainage law and existing resources and was distributed to those who frequently interact with these issues. The survey questions were designed to solicit the following specific information:

- Organization/group information
- Primary responsibility for drainage
- Preference of manual format and context
- Frequently encountered drainage-related questions or problems
- Procedures used to address common drainage issues
- Documentation and legal procedures
- Opinions about specific drainage issues (e.g. sanitary outlets, natural drainage)
- Drainage district issues
- Drainage references currently used
- Problems related to interpretation and understanding of the Iowa Code

These topics were summarized into direct questions for response. In total, 14 questions were developed: 3 multiple answer, 6 multiple choice, and 5 written response. A solicitation for case studies to be possibly featured in the manual was also included.

Data Collection

In September 2003, the 14-question survey was distributed, primarily electronically, to all Iowa county engineers and county auditors, 75 cities with populations over 3000, 20 metro planning directors, 51 hydraulic consulting engineers, 8 Iowa DOT central office staff, 27 Iowa DOT field office staff, 40 Iowa Secondary Road Maintenance Supervisors Association members, and 23 advisory committee members. In all, 442 surveys were sent to professionals working directly or indirectly with Iowa drainage law issues.

To simplify the analysis of group needs and behaviors, the two Iowa DOT groups were consolidated. Because no metro planning directors chose to respond to the survey, that group is not included in the analysis.

Responses were collected through March 2004 and entered into a database for analysis. Survey data were filtered and sorted according to various criteria such as drainage problem/issue, organization/group, and survey question. Forms were created to summarize data and were used to create charts and graphs to facilitate analysis.

Of the 442 surveys, 127 were returned for an overall response rate of 29%. The number of responses from each group is shown in Table 1. The highest number of responses was received from county engineers, which is the group that deals most frequently with drainage issues. The low overall response rate could be anticipated since many locations of the state, particularly in urban areas, do not perceive drainage as a major issue of concern.

Table 1. Number of total respondents by group

Group	Total respondents
Cities	19
County auditors	23
County engineers	53
DOT	9
Drainage districts	5
Hydraulic consultants	8
ISRMSA	10

Data Analysis, Evaluation, and Results

Overview

The survey featured multiple choice, written response, and multiple answer questions. In addition to the survey response discussion that follows, most questions included space for offering additional comments, and many respondents took advantage of this opportunity. These comments provided supplemental insight of common practices of those dealing with drainage issues and the law. Following is a summarization of each question or group of questions and response results. Complete results of the survey data are presented in Appendix B.

Question 1: What drainage issues are commonly encountered by your agency and/or what topics would be particularly beneficial to you if addressed in a drainage law manual?

For Question 1, respondents checked listed issues that had been encountered and/or were felt important for inclusion in a drainage manual. Figure 1 shows the percentage for each selected issue.

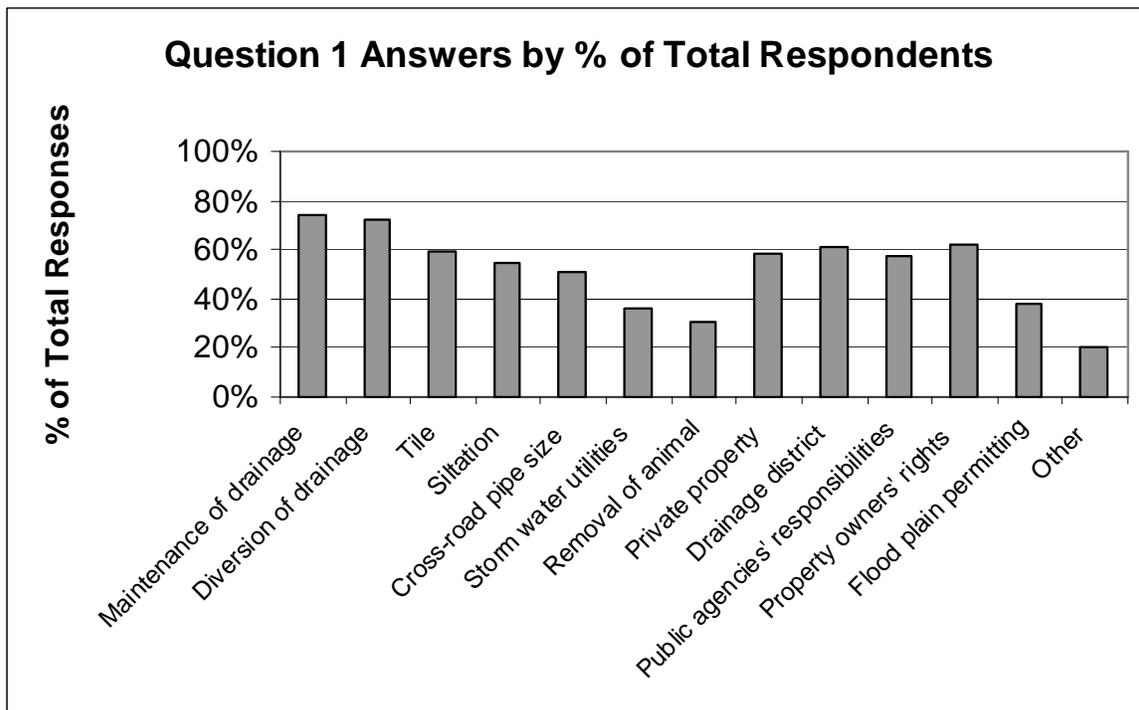


Figure 1. Question 1 answers by percent of total respondents

Figure 1 shows that of the 13 issues listed, respondents indicated that “maintenance of drainage” and “diversion of drainage” were the two most commonly encountered issues that should be addressed in a drainage manual. Of the total respondents, 74% indicated that maintenance of drainage was a common issue, and 72% indicated that drainage diversion was a frequent problem.

Other topics with a high percentage of responses included property owners’ rights (62%), drainage districts concerns (61%), tiling (59%), private property (58%), and siltation (55%). Issues that were entered under the “Other” category included erosion problems and the impact of a landowner’s drainage practices on upstream and downstream properties.

Although “Maintenance of drainage” was chosen as the highest ranked issue overall, different groups emphasized a variety of issues. Table 2 shows the highest ranked issue for each group.

Table 2. Highest ranked issue by group

Group	Highest ranked issue
Cities	Maintenance of drainage
County Engineers	Diversion of drainage
County Auditors	Maintenance of drainage
DOTs	Drainage Districts and private drainage crossings in roadways
Drainage Districts	Maintenance of drainage, Siltation, Removal of Animal-caused obstructions

Question 2: Please provide 1-3 of the most frequently encountered drainage-related questions or specific problems encountered by your agency, if applicable.

Question 2 requested a written response. Similar topics were grouped into the following categories:

- Downstream impacts
- Diverting natural drainage
- Private property
- Tiling
- Drainage district issues
- Other

Although these groups are similar or identical to those found in Question 1, individual responses provided unique insight into regularly encountered drainage issues and problems. Over 80% of the total respondents answered Question 2, suggesting that these drainage issues and problems are commonly encountered.

Questions 3–6

Questions 3–6 were designed to gather data about methods used to deal with drainage issues and problems. Table 3 shows the number of responses for each question.

Table 3. Questions 3–6 response totals

Question	No. of responses
Question 3: Has your agency developed any methods or policies for dealing with common drainage issues?	38
Question 4: Has your agency experienced a unique or noteworthy solution to a drainage problem that you would be willing to share as a helpful case study?	15
Question 5: Does your agency use standard agreement forms for documentation of drainage related issues with property owners?	26
Question 6: As related to drainage, has your agency faced any legal claims in the recent past or are any issues currently in litigation?	14

Many of the respondents who marked “Yes and I am willing to share” on Questions 3–6 were subsequently contacted for additional information.

53% of respondents did not think their agency had experienced a unique or noteworthy solution to a drainage problem, similar to the number of respondents (49%) that do not use standard agreement forms for documentation of drainage-related issues with property owners.

Very few respondents (11%) reported that any legal claims had been filed in the recent past, although 10% of respondents were uncertain about this. Half of the respondents from the DOT reported that that agency had been involved in a legal claim related to drainage.

Question 7: What procedures does your agency follow when encountering a sanitary (septic) outlet in a public right-of-way?

When asked about procedures the agency followed when a sanitary (septic) outlet was encountered in public right-of-way, 31 respondents said they referred the problem to the county sanitarian or health department, 8 said they place the responsibility on the landowner, and 20 respondents said they either looked the other way, didn’t report the problem unless absolutely necessary, or did not know how to proceed.

Question 8: How has your agency addressed drainage issues where natural drainage passes through subdivisions or incorporated areas where no easements are held by the agency?

Many respondents did not indicate any experience dealing with situations where natural drainage passed through subdivisions or incorporated areas where no easements existed. Of those having experience, reactions were varied. Some said they simply ignore the problem and let property owners take responsibility, while others require that drainage easements be established in subdivisions.

Question 9: What procedures have you followed to add land to an existing drainage district? Has that action been cost-effective?

Many respondents did not have experience with adding land to an existing district. The few who had experience referred to the Code of Iowa, which describes procedures allowing boards or trustees discretion to undertake expansion of drainage districts when shown to be beneficial and cost-effective.

Question 10: What procedures have you followed to relinquish drainage district control when more than 25% of the drainage area is annexed by a city?

Few respondents indicated any experience in relinquishing drainage district control to cities. Some referred to the Iowa code for guidance, while others cited their own procedures, including approval by the supervisors or trustees and a resolution by the receiving city or town. Upon approval, pertinent drainage district assets are transferred to the urban jurisdiction.

Question 11: What currently available references are most helpful to you in addressing drainage issues?

Agencies have access to a number of drainage law references. According to the survey results, the most useful resource is the Iowa Code. The Iowa Drainage Guide, Parrott's Manual, and the Natural Resources Conservation Service were also helpful to about 20% of respondents. Approximately 12% of respondents did not use a reference or had not found any specific source to be helpful.

The Iowa Code is the most common source of information for most survey respondents, but other documents and guides are also important. Figures 2–5 show the percentage of group preferences for each reference.

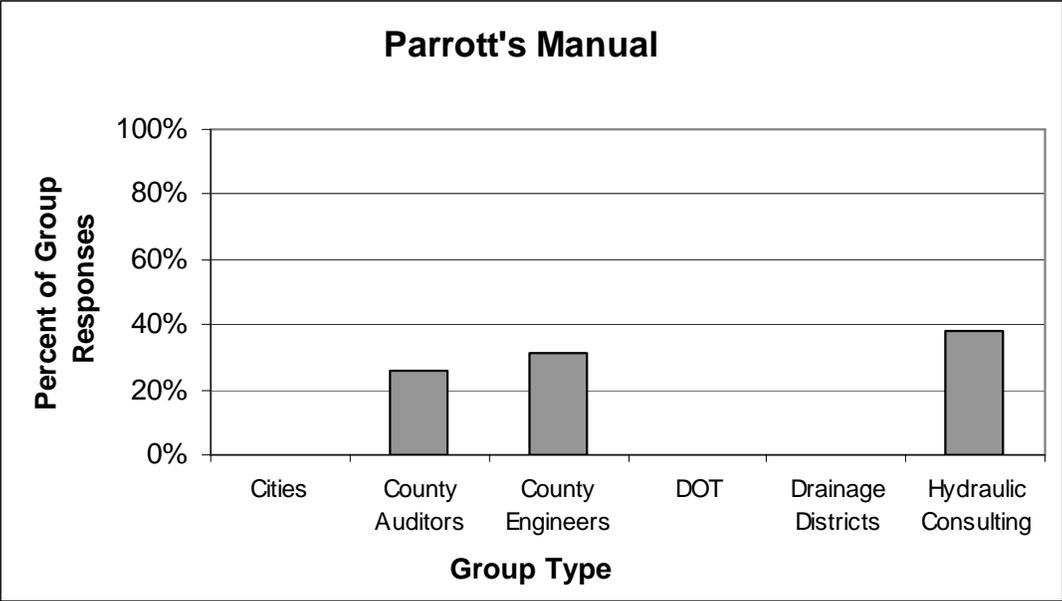


Figure 2. Percent of group responses for use of Parrott’s Manual

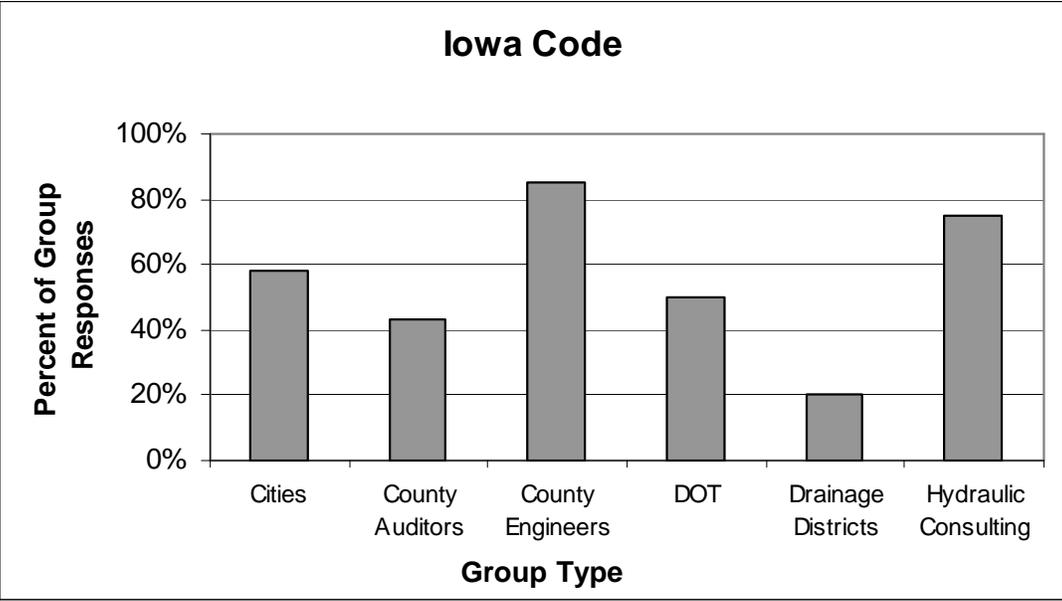


Figure 3. Percent of group responses for use of the Iowa Code

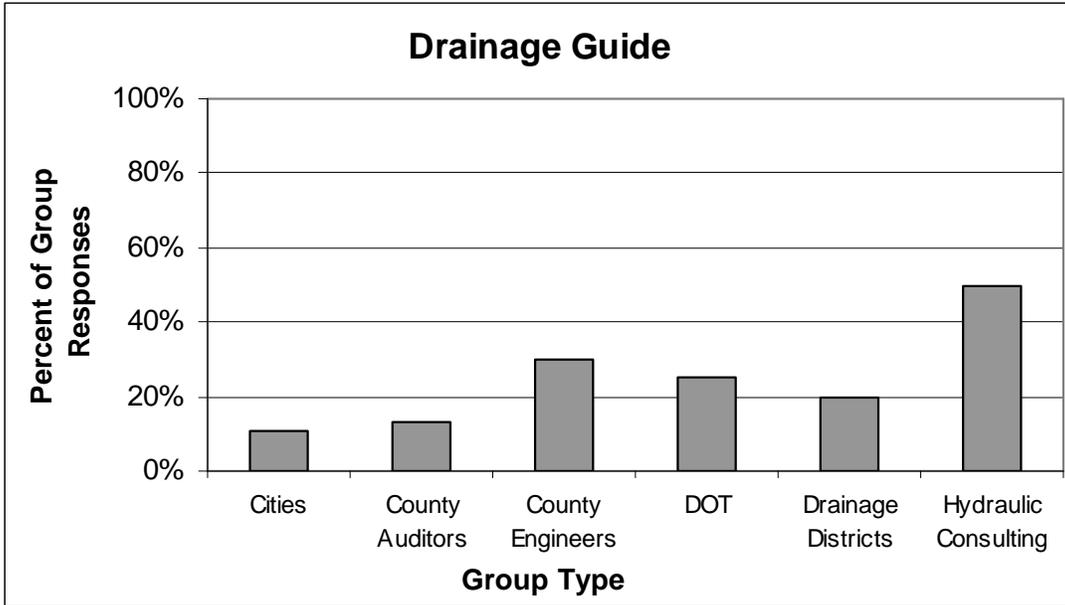


Figure 4. Percent of group responses for use of the Iowa Drainage Guide

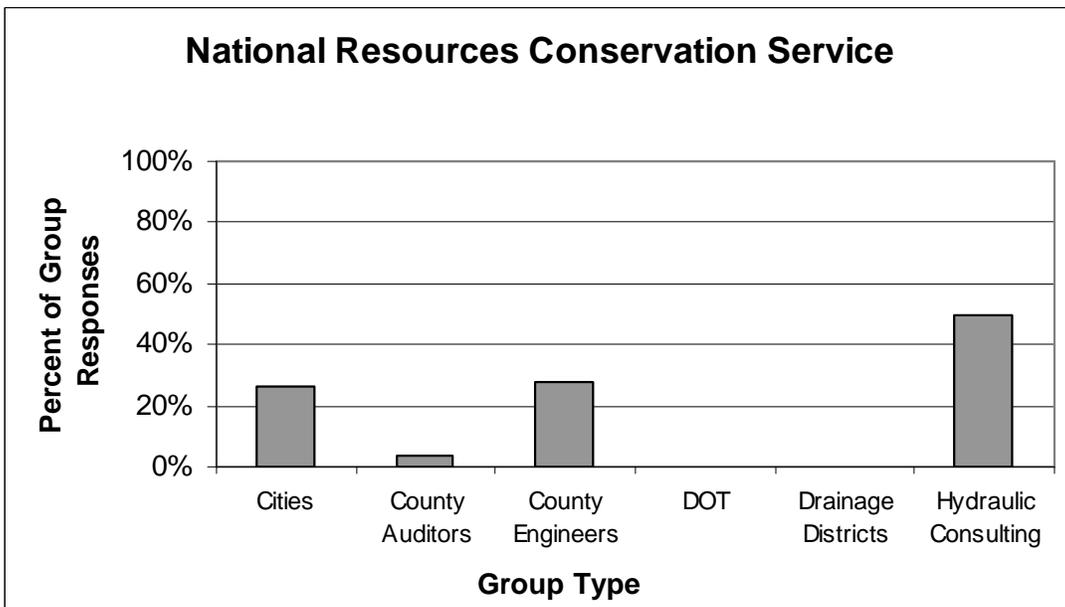


Figure 5. Percent of group responses for use of the National Resources Conservation Service

All of the groups use the Iowa Code more than any other guide. County engineers and hydraulic consultants, in particular, use all of the references available, but primarily rely on the Iowa Code. Other groups, such as the survey respondents from the Iowa DOT, only rely on the Iowa Code and Iowa Drainage Guide for information.

Question 12: Have you found any specific Iowa Code sections particularly confusing or difficult to interpret?

Seventeen individuals responded to Question 12, many indicating that several sections of the Iowa Code relating to drainage are confusing in some way. Specific sections that are considered ambiguous or difficult to understand include chapters 468, 455, and 314.

Question 13: What features of a drainage manual would be of greatest benefit to you?

Most respondents said they would benefit from a drainage manual. Suggestions for features to include were explanation of code provisions in clear language, answers to frequently encountered questions, summarized case law in an easily understood presentation, and a glossary of common drainage terms.

Question 14: What format would you prefer for a drainage law manual?

Over half of the total respondents (51%) would like to receive the manual in print form, 22% prefer a CD-ROM, and 27% would request both a print and electronic format. Only 5% of respondents said they were not interested in receiving a copy of the manual. For specific format, 44% of respondents would prefer a 3-ring binder (compared to only 7% who requested a coil bound manual). For those who preferred to receive an electronic copy, 31% requested a CD-ROM, and 13% wanted an electronic document available on the web.

Conclusion

The survey results provided researchers with valuable information regarding drainage issues, problems, policies, and concerns commonly encountered. The responses strongly indicate that a drainage manual should benefit interested agencies and individuals in interpreting Iowa drainage law and implementing the most effective methods of dealing with drainage issues.

4. MANUAL DEVELOPMENT

Introduction

The purpose of this research project, as envisioned by the Iowa Highway Research Board, was to develop a comprehensive, easy to understand reference on drainage law in the state of Iowa. The document would be clear and concise and of value to public agencies, especially those in rural areas, and private interests as well. However, it was not intended that this drainage law manual would be a substitute for qualified legal advice.

Approach to Manual Development

To develop this drainage law reference, researchers first undertook a thorough review of current similar documents in states adjoining Iowa. Available past research and reports of a related nature, both from Iowa and across the nation were also reviewed. A summary of the information contained in these resources is presented elsewhere in this report.

A major concern for researchers was identification of issues and difficulties commonly faced by potential users of the drainage law manual. To accomplish this task, two courses were followed. The first was the formation of an advisory committee to recommend topics and issues to address in the manual as well as to review articles and sections in draft form. This group, consisting of professionals with a vested interest in matters related to drainage law, represented a wide variety of public agencies and private organizations. Counties, cities, federal agencies, drainage districts, Iowa Department of Transportation, and consultants were represented on this committee and the input provided was invaluable. A listing of advisory committee members is included elsewhere in this report. Also of great value to the integrity of manual contents, especially from a legal perspective, was the review and recommendations provided by practicing attorneys with experience in drainage law applications. Presentation of pertinent requirements and guidance from the Iowa code and interpretations provided by the courts in case law decisions were also deemed to be beneficial inclusions for the drainage law manual. Summaries and reviews of these sources were undertaken by an attorney.

The second method used by the researchers to collect topics and issues of concern for potential users, was a survey. Description of the survey methodology and a summary of results are included in the previous section and the appendix of this report. From the survey results, needs and common problems were identified, frequently encountered problems recognized, and preference for a manual format determined.

Manual Contents

Contents of the completed drainage law reference guide include summaries of pertinent sections of the Iowa Code, administrative code, case law, and selected federal code. Also presented are responses to frequently encountered problems, examples of solutions to difficult situations, miscellaneous related topics, a glossary of common terms, useful references, and an appendix with supporting information. The actual table of contents is shown as follows:

TABLE OF CONTENTS

Introduction, Disclaimer, Observations of a Drainage Attorney

Frequently Asked Questions

Examples of Practical Solutions

Summary of Iowa Law Related to Drainage

 Iowa Constitution Summary

 Code of Iowa Summary

 Iowa Administrative Code Summary

Iowa Case Law

Federal Statutes and Case Law

Articles

 Storm Water Management

 Wetlands and Mitigation

 Drainage Easements and Agreements

Resources

 Locating Historic Photos and Maps

 Websites

Glossary of Common Drainage Terms

References

Appendix A: Sample Documents

Appendix B: Iowa Code Annotated General Index: Drainage and Levee Districts, Drains and Drainage

Copies of the completed drainage law reference guide was distributed to potential users in the format preferred, either a three-ring printed copy or CD-ROM. A copy of this resource is also included on the Center for Transportation Research and Education (CTRE) web site at www.ctre.iastate.edu/

5. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The investigations, survey results, literature review, and discussions with advisory committee members and others allowed researchers to draw several conclusions regarding drainage issues in the state of Iowa, including the following:

- Problems associated with drainage are common in most rural areas of Iowa.
- Public emphasis and interest may be shifting from wetland elimination for agricultural use to preservation and restoration.
- Many agencies don't have definitive answers or procedures for dealing with drainage problems, particularly those related to private property.
- There is a need for a comprehensive and easy to use drainage law reference.
- The Iowa Code and Parrott's Manual are the references most commonly used by agencies and individuals in Iowa for drainage matters.
- Despite legal concerns, few local agencies report any actual claims or litigation experience.
- Definitive answers to many questions and conflicts regarding drainage cannot be found in the Code of Iowa or other legal references. Common sense and good judgment must be applied to determine equitable solutions in some situations.

Recommendations

The researchers offer the following recommendations when dealing with drainage issues, particularly those involving private property.

- Rely on historic data, including maps, aerial photos, etc. to aid in analyzing problems.
- Seek the advice of experienced engineers and other professionals, especially the Natural Resources Conservation Service.
- Always look for solutions to problems that benefit all parties involved.
- Consider collaboration with other agencies in dealing with common drainage problems and use 28E agreements when appropriate.
- Consult with an experienced attorney for advice when legal questions arise.
- Use the *Iowa Drainage Law Manual* as a major reference.
- Update the *Iowa Drainage Law Manual* periodically.

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**APPENDIX A:
DRAINAGE MANUAL SURVEY FORM**

Please complete this survey to assist in the development of a

Manual of Iowa Drainage Law

(Return instructions provided at the end of this survey.)

RESPONDENT INFORMATION

(Personal information will remain confidential.)

Please provide the following information.

Your name (optional):

Your title:

Name of your agency/company/association:

Complete contact information (optional):

Does your agency have staff whose primary responsibilities include drainage issues?

Yes, myself

Yes, someone else. *Please provide name and contact information:*

No

Are you interested in receiving a copy of the *Iowa Drainage Manual* when completed?

Yes: a printed copy OR a CD

No

DRAINAGE ISSUES

- 1. What drainage issues are commonly encountered by your agency and/or what topics would be particularly beneficial to you if addressed in a drainage law manual? (Choose as many as applicable.)**

- Maintenance of drainage
- Diversion of drainage and alteration of existing drainage patterns
- Tile (agency responsibilities, parallel tile lines and connection thereto, etc.)
- Siltation
- Cross-road pipe size impacts from upstream development
- Storm water utilities
- Removal of animal-caused obstructions
- Private property for maintenance (right of entry, payment for damages, etc.)
- Drainage district and private drainage crossings of roadways
- Public agencies' responsibilities to drainage districts
- Property owners' rights
- Flood plain permitting
- Other issue(s)/topic(s):

- 2. Please provide 1–3 of the most frequently encountered drainage-related questions or specific problems encountered by your agency, if applicable.**

- 3. Has your agency developed any methods or policies for dealing with common drainage issues?**

- Yes, and I am willing to share those (please include contact information on page 1)
- Yes, but I am not able to share those
- No
- I don't know
- Not applicable

4. Has your agency experienced a unique or noteworthy solution to a drainage problem that you would be willing to share as a helpful case study?

Yes (please include contact information on page 1)

No

I don't know

Not applicable

5. Does your agency use standard agreement forms for documentation of drainage-related issues with property owners?

Yes, and I am willing to share those (please include contact information on page 1)

Yes, but I am not able to share those

No

I don't know

Not applicable

6. As related to drainage, has your agency faced any legal claims in the recent past or are any issues currently in litigation?

Yes. *Please describe as completely as possible:*

No

I don't know

Not applicable

Additional DRAINAGE ISSUES

(Please answer as completely as possible or indicate "NA" if not applicable.)

7. What procedures does your agency follow when encountering a sanitary (septic) outlet in a public right-of-way?

8. How has your agency addressed drainage issues where natural drainage passes through subdivisions or incorporated areas where no easements are held by the agency?
9. What procedures have you followed to add land to an existing drainage district? Has that action been cost-effective?
10. What procedures have you followed to relinquish drainage district control when more than 25% of the drainage area is annexed by a city?

DRAINAGE LAW REFERENCE

11. What currently available references are most helpful to you in addressing drainage issues? *(Choose as many as applicable.)*

- Parrott's Manual
- Iowa Code
- Iowa Drainage Guide
- Natural Resources Conservation Service
- Other reference(s):
- No references have been found helpful
- Never used a reference

12. Have you found any specific Iowa Code sections particularly confusing or difficult to interpret?

Yes. *Please list by chapter and section or provide a description of topics:*

No

Never referred to the Iowa Code

13. What features of a drainage manual would be of greatest benefit to you? (*Choose as many as applicable.*)

Code provisions summarized in easy-to-understand language

Case law summarized in an easy-to-apply context

Answers to frequently encountered questions

Case studies (common problems and solutions)

Glossary of drainage law terms

Other feature(s):

Would not benefit from drainage manual

14. What format would you prefer for a drainage law manual? (*Choose one.*)

3-ring binder

Coil bound

Paperback book style binding

Electronic document on Web

Electronic document on CD

Other format:

No preference

P 486-0705

Please complete and return to Tom McDonald by December 18.

By email: tmcdonal@iastate.edu

By fax: 515-294-0467

By postal mail: **fold such that the address above appears, tape closed**

Questions? **Call 515-294-6384**

Thank You!

By returning this survey, you acknowledge that it is voluntary and consent to your responses being part of this research effort. Your identity will remain confidential.

**APPENDIX B:
COMPLETE DRAINAGE MANUAL SURVEY RESULTS**

Combined Responses to Survey Questions

Q01 What drainage issues are commonly encountered by your agency and/or what topics would be particularly beneficial to you if addressed in a drainage law manual?

	Total Responses	Percent
Maintenance of drainage	94	74%
Diversion of drainage	92	72%
Tile	75	59%
Siltation	70	55%
Cross-road pipe size	65	51%
Storm water utilities	46	36%
Removal of animals	39	31%
Private property	74	58%
Drainage district	77	61%
Public agencies' responsibilities	72	57%
Property owners' rights	79	62%
Flood plain permitting	48	38%
Other	25	20%

Q02 Please provide 1-3 of the most frequently encountered drainage-related questions or specific problems encountered by your agency, if applicable.

	Total Responses	Percent
Responses received	102	80%

Q03 Has your agency developed any methods or policies for dealing with common drainage issues?

	Total Responses	Percent
Yes, and I am willing to share those	37	29%
Yes, but I am not able to share those	7	6%
No	52	41%
I don't know	7	6%
Not applicable	4	3%

Q04 Has your agency experienced a unique or noteworthy solution to a drainage problem that you would be willing to share as a helpful case study?

	Total Responses	Percent
Yes (please include contact info)	15	12%
No	67	53%
I don't know	18	14%
N/A	3	2%

Q05 Does your agency use standard agreement forms for documentation of drainage-related issues with property owners?

	Total Responses	Percent
Yes, and I am willing to share those	25	20%
Yes, but I am not able to share those	7	6%
No	62	49%
I don't know	10	8%
Not applicable	3	2%

Q06 As related to drainage, has your agency faced any legal claims in the recent past or are any issues related currently in litigation?

	Total Responses	Percent
Yes (please describe)	14	11%
No	81	64%
I don't know	13	10%
N/A	1	1%

Q07 What procedures does your agency follow when encountering a sanitary (septic) outlet in a public right-of-way?

	Total Responses	Percent
Responses received	95	75%

Q08 How has your agency addressed drainage issues where natural drainage passes through subdivisions or incorporated areas where no easements are held by the agency?

	Total Responses	Percent
Responses received	93	73%

Q09 What procedures have you followed to add land to an existing drainage district? Has that action been cost-effective?

	Total Responses	Percent
Responses received	93	73%

Q10 What procedures have you followed to relinquish drainage district control when more than 25% of the drainage area is annexed by a city?

	Total Responses	Percent
Responses received	93	73%

Q11 What currently available references are most helpful to you in addressing drainage issues?

	Total Responses	Percent
Parrott's Manual	26	20%
Iowa Code	78	61%
Iowa Drainage Guide	28	22%
N. R. C. S.	25	20%
Other reference(s):	13	10%
No references found helpful	7	6%
Never used a reference	7	6%

Q12: Have you found any specific Iowa code sections particularly confusing or difficult to interpret?

	Total Responses	Percent
Yes, please list chapter and section	26	20%
No	47	37%
Never referred to the Iowa Code	13	10%

Q13: What features of a drainage manual would be of greatest benefit to you?

	Total Responses	Percent
Code provisions, summarized	90	71%
Case law, summarized	82	65%
Frequently encountered questions	92	72%
Case studies	82	65%
Glossary of drainage law terms	66	52%
Other features	8	6%
Would not benefit from a manual	2	2%

Q14: What format would you prefer for a drainage law manual?

	Total Responses	Percent
3-ring binder	56	44%
Coil bound	9	7%
Paperback book style binding	4	3%
Electronic document-Web	17	13%
Electronic document-CD	39	31%
Other format:	5	4%
No Preference	9	7%

Summary of Responses to Selected Survey Questions

Q02: Please provide 1–3 of the most frequently encountered drainage-related questions or specific problems encountered by your agency, if applicable.

The respondents listed several topics of concern as follows:

- | | |
|--|--------------------|
| • diversion of drainage | 25 times |
| • tile crossings and outlets | 23 times |
| • increased flow, erosion, and silt from developments | 17 times |
| • maintenance of ditches and tile | 15 times |
| • siltation | 13 times |
| • drainage districts, cost assessments | 6 times |
| • downstream obstructions | 5 times |
| • wetlands, mitigation, flood plain permitting | 5 times |
| • feedlots and septic outlets; erosion; other miscellaneous issues | Fewer than 5 times |

Q07: What procedures does your agency follow when encountering a sanitary (septic) outlet in a public right-of-way?

Contacting the health department representative or county sanitarian was most common, with 31 responses. Not applicable, working with the property owner, and other were grouped with a total of 23 responses. Of the respondents, 4 agencies indicated having no experience with the topic and 8 stated the matter was not addressed when encountered.

Q08: How has your agency addressed drainage issues where natural drainage passes through subdivisions or incorporated areas where no easements are held by the agency?

Most respondents (45) indicated having no experience in this issue. However, 8 stated that flowage easements were pursued and 4 others indicated this was a potential problem area, but the agency had no solution.

Q09: What procedures have you followed to add land to an existing drainage district? Has that action been cost-effective?

The Code of Iowa was cited as a reference source by 7 respondents, while 4 others use annexation for this purpose and 2 use another process. The procedure used in their agency was felt to be not cost effective by 3 respondents. The majority of respondents (50) had no experience with the issue or did not know what procedures would be used to add land to a drainage district.

Q10: What procedures have you followed to relinquish drainage district control when more than 25% of the drainage area is annexed by a city?

Most responses, 57, indicated having no experience with the matter or did not know of the proper procedure to be used. However, the Iowa Code is used for guidance by 6 responding agencies.

Q12: Have you found any specific Iowa Code sections particularly confusing or difficult to interpret?

A majority (31) of respondents did not find the Iowa Code confusing or difficult to interpret, while 10 indicated they did not use the Code as a reference. However, 14 respondents cited specific sections as problematic, including Sections 314.7: Trees-Ingress of Egress-Drainage, 468.57: Installment Payments-Waiver, 468.132: Improvement of Common Outlet-Notice of Hearing, 468.133: Commissioners to Apportion Benefits-Interest Prohibited, 468.134: Time of Report-Notice of Hearing, 468.135: Report and Review-Appeal, 468.621: Drainage in Course of Natural Drainage-Reconstruction-Damages, and 468.622: Drainage Connection with Highway.