

MPDM Chapter 3 Engineering and Environmental Considerations

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Chapter 3 Subcommittee Members

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- Nathan Kestner, DNR
- Nick Gervino, MPCA
- Rebecca Kluckhohn, Wenck
- Rob Sip, MDA
- Ron Mortenson, Meeker County
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Primary Purposes of Chapter 3

- Guidance to Engineers in completing their duties
- Guidance to regulators on what should be in an Engineer's Report
- Inform stakeholders (D.A., regulators, viewers, landowners, etc.) of the Engineer's role and basis for their recommendation
- Guidance to Drainage Authority on what to expect and request from their Engineer

What has changed since 1991?



What has changed since 1991?

2016 Minnesota Statutes

CHAPTER 103E. DRAINAGE

Section	Headnote
	GENERAL PROVISIONS
103E.005	DEFINITIONS.
103E.011	DRAINAGE AUTHORITY POWERS.
103E.015	CONSIDERATIONS BEFORE DRAINAGE WORK IS DONE
103E.021	DITCHES MUST BE PLANTED WITH PERENNIAL VEGETATION
103E.025	PROCEDURE FOR DRAINAGE PROJECT THAT AFFECTS AREA USED FOR CONSERVATION.
103E.031	CONNECTION WITH DRAINS IN ADJOINING STATES.

STATUTES



AG PRACTICES



TECHNOLOGY



REGULATION



COMMUNICATION



PRIORITIES

Major Changes to MPDM Chapter 3

- Environmental Considerations
 - 103E.015 considerations
 - Potentially applicable regulatory requirements
 - Water Quality / TMDL
- Repair Reports / As Constructed and Subsequently Improved Condition (ACSIC)
- Resources
 - Links
 - Checklists
 - Sample Reports

Points of Emphasis in Update

- Reflect changes in law
- Consistent language
 - “May” or “should” vs. “must” or “shall”
- Consistent with current engineering practice
- Guidance, not rule!

CHAPTER 3 CHANGES

AUDITOR'S TABULAR ASSESSMENT STATEMENT IN THE MATTER OF THE PETITION OF HANS
HANSON AND OTHERS FOR REPAIRS OF COUNTY DITCH NO. 31, OF ANOKA COUNTY, MINN.

Name of the Owners of Lands and Roads that are assessed for the Repairs of Ditch.	Description of Each Parcel Assessed for the Repairs.	Sec.	Twp.	Rng.	Amount of Original Assessment of Benefits by Construction.	Amount to be paid for Repairs Under Petition.
Beattie W. Brown (E $\frac{1}{2}$) August Turmwald (W $\frac{1}{2}$)	N $\frac{1}{2}$ of NW $\frac{1}{4}$	1	32	22	\$65.00	\$65.66
Hans Hanson	SW $\frac{1}{4}$ of NW $\frac{1}{4}$	1	32	22	45.00	45.45
Philip Rousch	SE $\frac{1}{4}$ of NW $\frac{1}{4}$	1	32	22	10.00	10.10
Alex & Emma C. Swanson	E $\frac{1}{2}$ of SW $\frac{1}{4}$	1	32	22	23.00	23.24
Andrew Hanson	W $\frac{1}{2}$ of SW $\frac{1}{4}$	1	32	22	135.00	136.36
Alex & Emma C. Swanson	SW $\frac{1}{2}$ of SE $\frac{1}{4}$	1	32	22	5.00	5.05
Hans Hanson	N $\frac{1}{2}$ of NE $\frac{1}{4}$	2	32	22	18.00	18.18
Hans & Sophia Hanson	S $\frac{1}{2}$ of NE $\frac{1}{4}$	2	32	22	8.00	8.08
Ivan Anderson	SW $\frac{1}{4}$	2	32	22	30.00	30.32
Andrew Hanson	N $\frac{1}{2}$ of SE $\frac{1}{4}$	2	32	22	20.00	20.20
Andrew Kunahire	S $\frac{1}{2}$ of SE $\frac{1}{4}$	2	32	22	30.00	30.32



Introduction

Roles and Responsibilities of the Engineer

- Technical expertise



- Technical application of drainage law;
- Surveying;
- Hydrology and hydraulics;
- Culvert, roadway, and structural design;
- Construction plan development;
- Construction management and observation;
- Erosion and sediment control design;
- Wetland delineation;
- Water quality analysis;
- Communication/liaison between drainage authority and other decision-makers and/or reviewers;
- Environmental review and permitting; and
- Soil and water conservation.

.....and many others

Introduction

Roles and Responsibilities of the Engineer

- Understanding of drainage law
- Understanding and addressing applicable regulatory requirements
- Evaluating nine 103E.015 considerations
- Key technical advisor for the drainage authority



Introduction

103E.015 Considerations

- Scope of the Engineer's evaluation of these nine criteria can substantially affect the cost of the Engineer's Report(s)
- Inadequate scope can lead to:
 - DNR and/or BWSR recommending report to be amended
 - Drainage Authority requesting an amendment
 - Challenges to a Drainage Authority decision

Bottom line: Drainage Authority and the Engineer need early coordination on the scope of the evaluation necessary for the project

Specific Environmental Considerations

NEW!



Specific Environmental Considerations

General

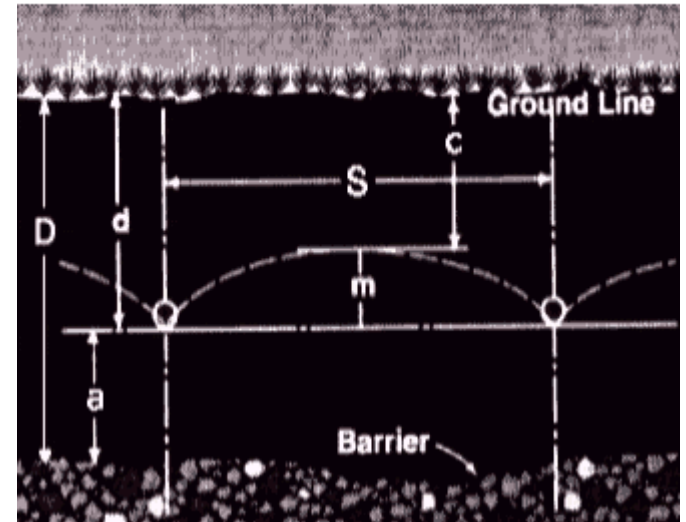
- Roles of Engineer and Regulatory Reviewer
- Pertinent regulations (table)
- Overviews about pertinent regulations w/links
- Contact info (link)
- Early Coordination

Table 1: Pertinent Regulations

Agency	Local Regs.	State Regs.
Local Government		
Townships	Ordinances	Minn. Stat. 160.20
Counties	Ordinances	Minn. Stat. 103E , Minn. Stat. 160.20
Watershed Districts	WD Rules	Minn. Stat. 103E , Minn. Stat. 103D.335
State Agencies		
BWSR	Rules	WCA (Minn. R. 8420 , Minn. Stat. 103G).

Specific Environmental Considerations Wetlands

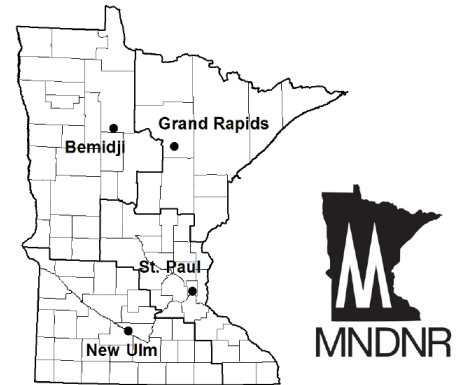
- Wetland Conservation Act (WCA)
- Clean Water Act (CWA)
- Swampbuster
- Evaluating, Avoiding, or Mitigating Wetland Impacts
- Downgradient Wetland Effects



Specific Environmental Considerations

Public Waters

- Work in public waters
- Links to DNR site
- Checklist



Specific Environmental Considerations

Other

- Environmental Review
- Threatened and Endangered Species
- Water Quality
 - NPDES
 - State Standards and Goals



Subcommittee Topics

Cumulative Impacts

Issue: Can/should the Engineer consider cumulative hydrology/hydraulic/water quality impacts?

Consensus: In role as advisor to Drainage Authority (and advocate for benefitting landowners) – No.

However, 103E.015 considerations apply for “drainage projects” and County or Watershed District may “wear other hats”

“HATS” A COUNTY OR WATERSHED DISTRICT BOARD WEARS

**ZONING
AUTHORITY**

**LOCAL WATER
PLANNER**

**TAXING
AUTHORITY**

ROAD AUTHORITY

**LOCAL GOV.
UNIT (LGU)**

**RESPONSIBLE
GOV. UNIT (RGU)**



DRAINAGE AUTHORITY

How a Drainage Authority May Consider Cumulative Impacts (under a different hat)

- *Water planning implementation plans*
- *Rules (e.g., maximum drainage coefficient, culvert sizing)*
- *Cost share programs*
- *Regional projects*
- *Multi-purpose drainage management projects*

Preliminary Survey and Engineer's Preliminary Report



Preliminary Survey and Engineer's Preliminary Report

Considerations

- Be clear on scope!
- Consider alternatives as appropriate
- Watch for cost vs. petitioner's bond
- Advisory report(s)



Detailed Survey and Engineer's Final Report

- Address advisory reports
- Address requested changes from preliminary hearing
- Add detail necessary for staking and construction



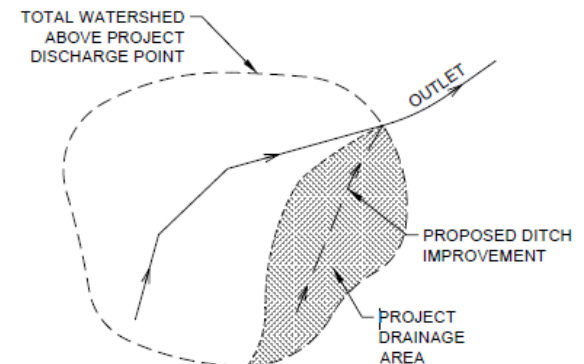
Adequacy of Outlet



Adequacy of Outlet Basic Requirements

- No loss of function to downstream drainage outlets
- No excessive scour/deposition of sediment
- No flood damages, *unless compensation is made*

Note: These are more or less unchanged from 1991



Subcommittee Topics

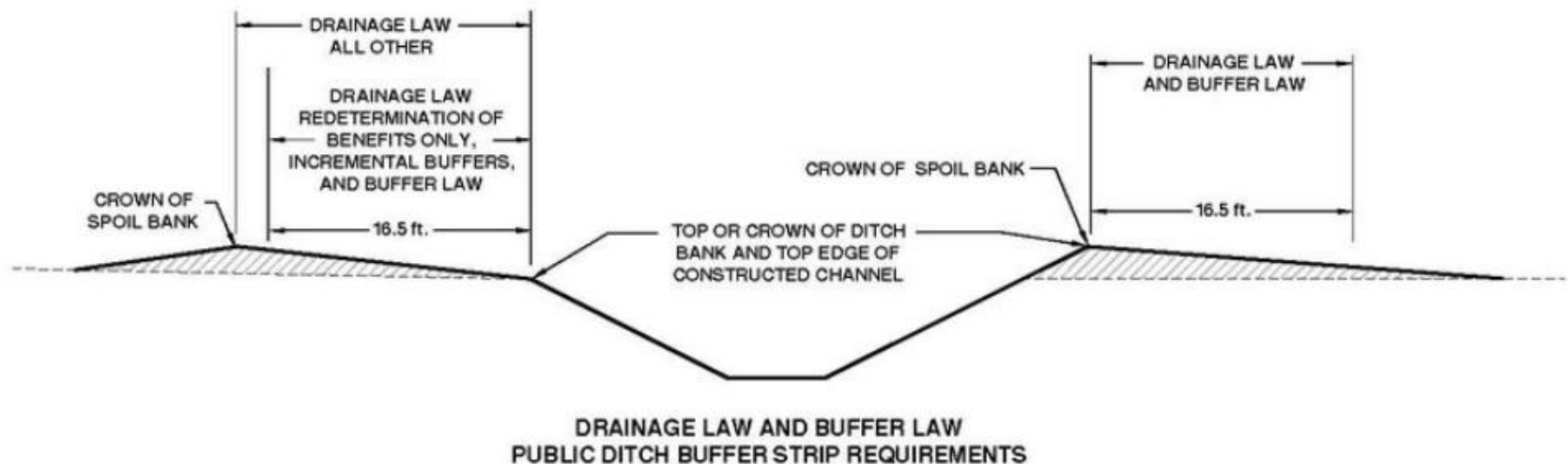
Adequacy of Outlet

Issue: How far downstream does the Engineer need to consider downstream for adequacy? $\frac{1}{4}$ mile? 1 mile? 10 miles?

Consensus: No one-size-fits-all solution. Engineer needs to use judgement.

New Drainage Systems, Improvements, Laterals, and Other Modifications of Drainage System

- Engineering requirements
- Example reports (Appendix)
- Buffer strip requirements



Repair/Maintenance of Drainage System

- Defining “repair”major vs minor vs petitioned vs maintenance
- Content in a repair report
- Contracting and levying for a repair
- Determining As-Constructed and Subsequently Improved Condition (ACSIC)



Repair/Maintenance of Drainage Systems

Determination of the As-Built Condition

- For Repairs and/or Reestablishment of Drainage System Records
- Test pits
- Soil Borings
- Culvert Comparison
- Cut Sheets
- Drainage Records Modernization



Questions?



