

# Faribault County, Minnesota County Ditch #44 East Main Staff Repair Report

November 2022

**FARIBAULT COUNTY**  
*Drainage Dept*

Phone 507.526.2388  
415 South Grove Street, Suite 8  
Blue Earth, MN 56013  
[www.co.faribault.mn.us/drainage](http://www.co.faribault.mn.us/drainage)



## CD44 East Main Repair

### BACKGROUND

Faribault County Ditch #44 (CD44) is a combination open ditch and tile system with its outlet to the East Branch of the Blue Earth River east of the City of Frost, MN. The East Main and its branches consists of all tile and drains lands in Rome Township Sections 1 and 2. The East Main was originally established with County Ditch #42, but because its outlet is to the CD44 open ditch (unlike all other infrastructure on CD42), it was made part of the CD44 system during the last redetermination of benefits. Several repairs have been needed on the East Main tile in recent years. Excavation and televising have revealed shallow, cracked clay tile and sediment accumulation (Figure 1). Landowners have asked the Drainage Department to investigate repair options for the East Main.



**Figure 1.** Excavation of the East Main and televising showed that the tile is out of repair. Cracked tile and sediment accumulation prevented a full investigation of the tile.



### LEGAL RECORD

The legal record of the East Main and its branches is not clear on what was exactly constructed. The final order establishing the system called for several changes to the East Main, including the location of the outlet. However, the final order did not address changes to the branches that would undoubtedly occur because of the outlet change. Figure 2 shows the establishment map for the East Main and its branches. Drainage Department staff have utilized supplementary documents in the legal record (e.g. pay applications) and site investigations to piece together what actually was constructed during the original establishment. Appendix A shows the supposed location of the East Main and its branches as it was originally constructed.

There are some major changes between the establishment map and the supposed location of the tile. Branch 21E was planned to be a short stub of tile off the East Main, but the change in the outlet of the East Main made it unnecessary. Although not spelled out in the final order, there is no evidence that Branch 21E was constructed. The other change is Branch 17E and Branch 17E+30. These branches of tile are located on the establishment map but were not part of the original design of the system. These branches were likely constructed for future development for the City of Frost.

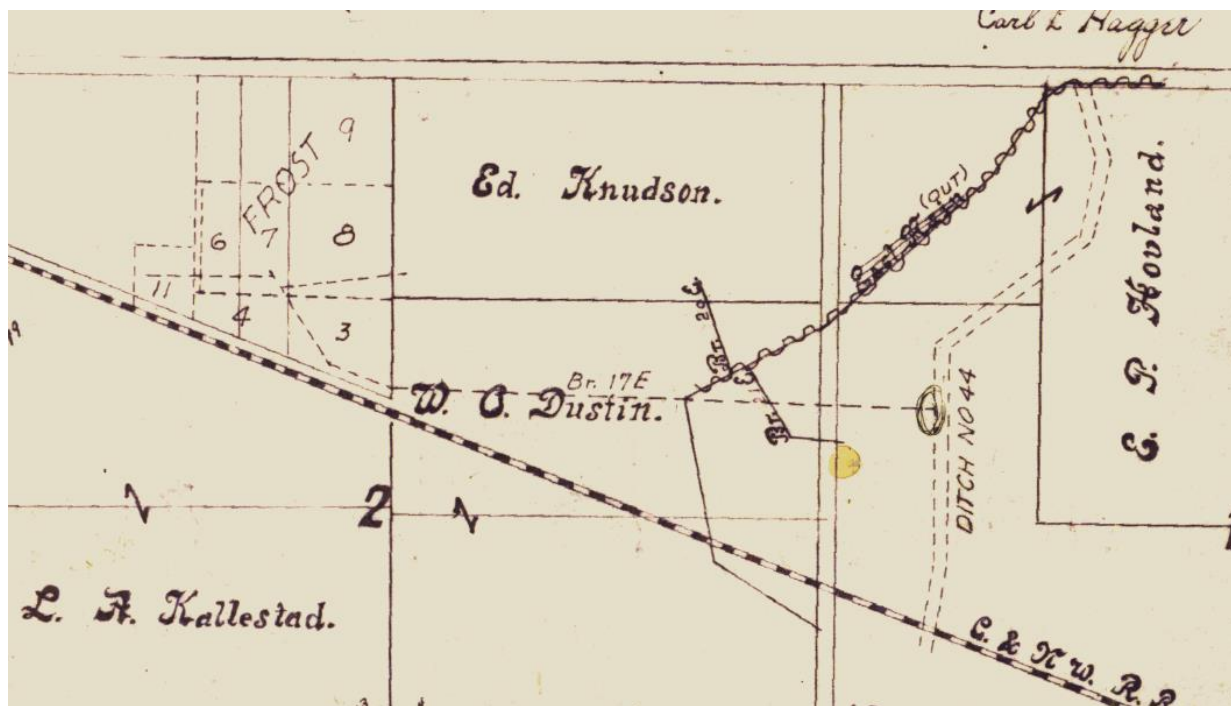


Figure 2. Excerpt of the CD42 establishment map reflecting the change of the East Man outlet.

## DATA COLLECTION

Site survey, televising, private tile maps, maps from the City of Frost, landowner testimony, LiDAR, and the legal record were used to map the supposed centerline of the East Main and its branches.

## PROPOSED REPAIR DETAILS

The land use and topography of the East Main watershed has changed drastically since the original construction of the East Main. The largest change is the stormwater and sewer infrastructure constructed by the City of Frost in 1999, which consisted of an open ditch and storage ponds. This infrastructure effectively eliminates the need for Branch 17E, Branch 17E+30, and the portion of the East Main south of the railroad. These changes should be considered when developing repair options for the East Main.

The proposed repair focuses on the lower 1,400 linear feet of the East Main and Branch 20E. Survey of the East Main suggests that the East Main tile had a grade of 0.29%, giving it a drainage coefficient of well over 0.5 inches per day. The proposed repair will re-design the system to a lower drainage coefficient to gain cover over the tile. The target drainage coefficient will be 0.5 inches per day for the East Main (Table 1). Branch 20E will be installed at a grade of 0.10% to maintain as much cover as possible. The proposed drainage coefficient for Branch 20E is significantly less than 0.5 inches per day.

Table 1. Proposed East Main and Branch 20E drainage coefficients (D.C.).

Station	Area (Ac)	Slope	Existing Tile Size	Repair Tile Size	Repair D.C. (in/day)
<b>East Main</b>					
0+00	180	0.10%	18"	18"	0.478
10+00	125	0.14%	18"	15"	0.500
<b>Branch 20E</b>					
0+00	71	0.10%	10"	10"	0.246

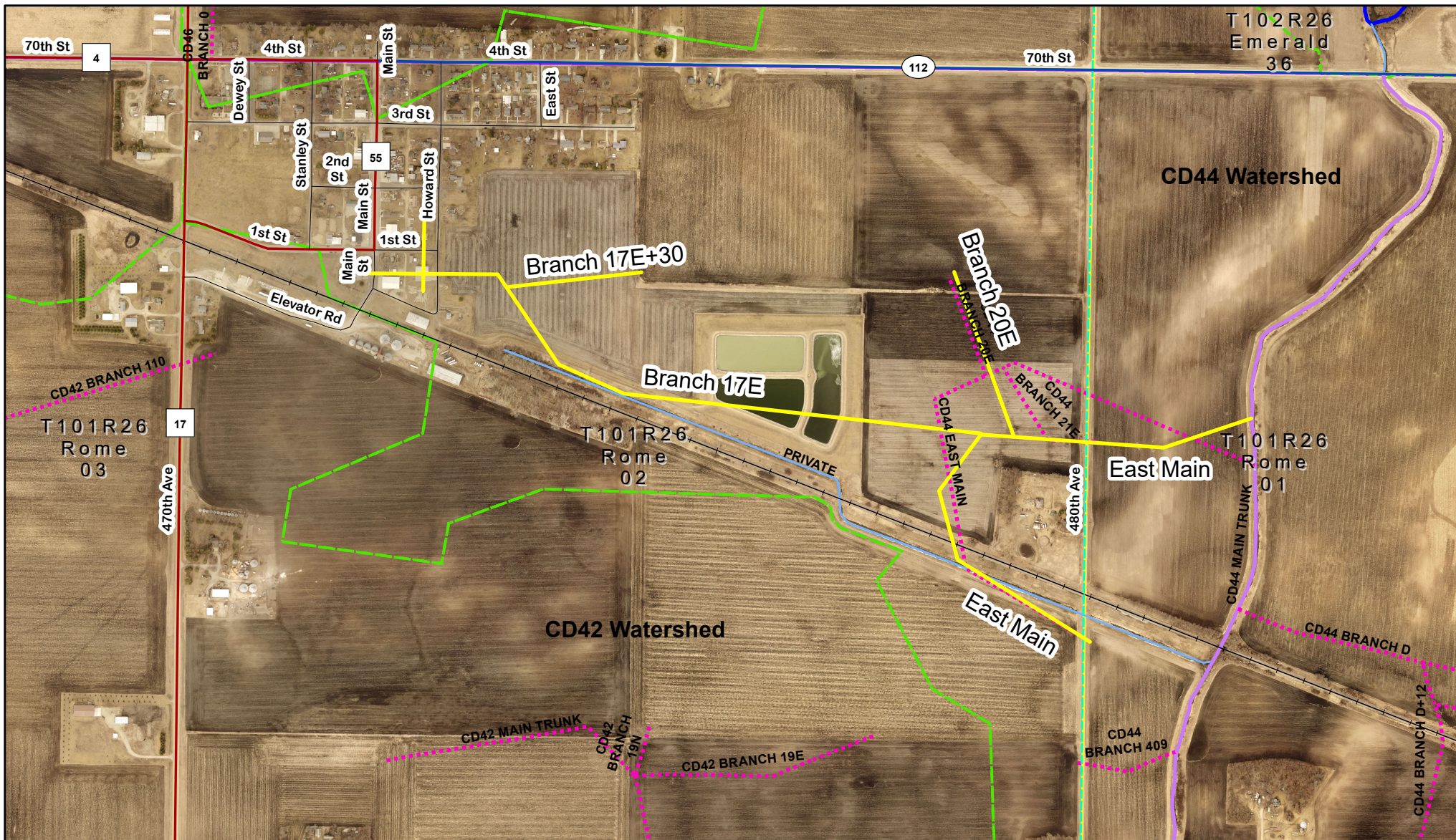
**ESTIMATED COST**

Item	Unit	Quant	County Est Unit Price	County Est Amount
Mobilization	LS	1	\$ 2,000.00	\$ 2,000.00
F&I 18" Gasketed Non-Perforated Dual Wall Tile	LF	1000	\$ 30.50	\$ 30,500.00
F&I 15" Gasketed Non-Perforated Dual Wall Tile	LF	400	\$ 23.00	\$ 9,200.00
F&I 10" Gasketed Non-Perforated Dual Wall Tile	LF	900	\$ 19.00	\$ 17,100.00
Granular Pipe Foundation	Ton	40	\$ 40.00	\$ 1,600.00
18" Drop Intake	EA	2	\$ 1,200.00	\$ 2,400.00
18" Tile Outlet (Riprap, Rodent Guard, Restore Bank)	EA	1	\$ 1,000.00	\$ 1,000.00
Connect Existing Private Tile (4 - 8" Tile)	EA	5	\$ 300.00	\$ 1,500.00
Connect Existing Tile (10-18")	EA	2	\$ 600.00	\$ 1,200.00
Abandon Clay Tile	LS	1	\$ 500.00	\$ 500.00
Tile Investigation	HR	3	\$ 90.00	\$ 270.00
Open Cut and Restore Gravel Road	LS	1	\$ 1,500.00	\$ 1,500.00
Contingency 10%				\$ 6,877.00
				<b>\$ 75,647.00</b>

**APPENDICES**

Appendix A: Map of Existing Tile  
Appendix B: Proposed Repair Map  
Appendix C: Proposed Repair Profile





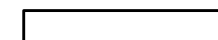
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## Mapped and Supposed Location Of East Main Tile

### Appendix A

### Legend

- County Open Ditch
- ⋯ County Tile
- ⋯ Watershed Boundary
- Supposed Tile Location



1 inch = 800 feet



Disclaimer: Faribault County and Faribault County SWCD do not warrant or guarantee accuracy of the GIS data. The data is meant for reference purposes only and should not be used for official decisions. The data contained in the maps were compiled from the best available records that could be found and may contain errors or omissions.





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## East Main Proposed Repair

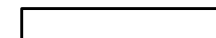
## Appendix B

### Legend

Watershed Boundary

Tile Repair

Existing County Tile



1 inch = 300 feet



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Appendix C

East Main Profile

