



Le Sueur County, MN

Thursday, January 31, 2019

Board Meeting

Item 2

Le Sueur - Scott JD4

Staff Contact:

Ditch # LS-S JD 4

Last Lien 1981

Balance as of 12-18-18

AMOUNT
-100,874.³³

EXPENSES: (last 5 yrs)

AMOUNT

Rinke Noonan (Drainage Ret. Drainage Issues)	2,063.47
Houston Engineering (Data Base Fee, Software Maint)	378.48
I+S Group (Prof. Services)	4,502.50
LSCSWD (Ditch Inspector, MISC. Exp.)	2,861.97
Selly Excavating (Clean, Repair, Tile)	46,159.50
Retka Tiling (Tile Work)	4,249.55
LSC Hwy (Culvert Work)	4,466.96
Goldstar Ag (culvert)	1,622.00
Scott's Helicopter (spraying)	480.00
SK TRUCKING + EXC. (Clean Dozer)	4,330.00
Empire Pipe (Tile work)	2920.00
MISC (publish, posting)	917.60

74,952.⁰³ / 5 yrs =
 \$14,990.⁴⁶ / year
 x 2 years

 29,980.⁹²
 + 100,874.³³

TOTAL

74,952.⁰³

\$ 130,855.²⁵
 to be collected
 LSC - 119,115.⁷⁷
 SC - 11,739.⁴⁸

	<u>Base</u>	<u>Lien %</u>	<u>Total \$</u>	<u>Difference</u>
LSC	84,965	140%	118,951. ⁰⁰	} ≈ (100. ⁰⁹)
SC	10,176	116%	11,804. ¹⁶	

*This is to reflect a \$ 2,262.⁰³ remitted by Scott Co. on 1/31/17

**Auditor's Tabular Assessment Statement *(1) For the Creation of a Fund to be used for the Repair of *(2) For the Repair of Le Sueur-Scott Joint County
Ditch No.4 in the County of Le Sueur Minnesota**

***If the lien is for the Creation of a fund to be used for repairs in the future strike out (2). If the lien is for repairs already made strike out (1).**

Names of the Owners of all Lands and the Names of all Public Roads, Corporate Roads and Railroads that are Assessed for the Repair of said Ditch.	Description of each Parcel of Land to be Assessed for the Repair of said Ditch as it Appears from Original Lien Statement for Construction of said Ditch.	Section	Township	Range	Number of acres in each tract according to assessment rolls and tax list.	Estimated number of acres benefited.	Amount that each tract of land and each public road, corp-orate road and rail-road was benefitted by the construction of said ditch.	Amount that each tract of land and each public road, corp-orate road and rail-road is liable for and must pay for the repair of such ditch.	2019 Lien: 140% for Le Sueur County parcels, 116% for Scott County parcels (different % to reflect a \$2,263.03 payment remitted by Scott County on 1/31/17), 5 years, 4% interest, \$10 minimum Board Date: 1/31/19 Filing Date: 12/16/19
					Acres	Acres	Dollars	Dollars	
Le Sueur County									
Elizabeth Niesen	W 25 ac of NW 1/4 of NW 1/4	5	112	24	25.00	17.00	1190.00	\$ 1,666.00	03.005.0100
Thomas W Adamek Trust & Mary Adamek Trust	E 15 ac of NW 1/4 of NW 1/4 & NE 1/4 of NW 1/4	5	112	24	55.00	46.00	3361.00	\$ 4,705.40	03.005.0200
Fogarty Farm LLC % Kevin Fogarty	E 1/2 of SW 1/4 less 8.75 ac & SE 1/4 of NW 1/4	5	112	24	111.25	78.80	2625.62	\$ 3,675.87	03.005.7500
Kevin & Mary Jo Fogarty	8.75 ac of E 1/2 of SW 1/4	5	112	24	8.75	6.20	206.38	\$ 288.93	03.005.7600
Fogarty Farm LLC % Kevin Fogarty	SW 1/4 of NW 1/4 & W 1/2 of SW 1/4 less 6.25 ac	5	112	24	113.75	82.47	3984.95	\$ 5,578.93	03.005.0400
Christian & Michelle Stay	5 ac of W 1/2 of SW 1/4	5	112	24	5.00	3.63	175.40	\$ 245.56	03.005.0300
Kevin & Mary Jo Fogarty	1.25 ac of W 1/2 of SW 1/4	5	112	24	1.25	0.90	43.65	\$ 61.11	03.005.7600
Joseph P & Jean Murphy	W 1/2 of W 1/2 of NW 1/4	6	112	24	40.00	36.00	2450.00	\$ 3,430.00	03.006.0100
LeRoy J & Patricia Schwartz Living Trust	E 1/2 of W 1/2 of NW 1/4	6	112	24	40.00	32.00	2256.00	\$ 3,158.40	03.006.0200
LeRoy & Patricia Schwartz Living Trust	E 1/2 of NW 1/4	6	112	24	80.00	71.00	4103.00	\$ 5,744.20	03.006.0200
Terry & Melissa Schwartz Trust	Beg 672.25 ft E of N 1/4 cor, th S 701.24 ft, th E 542.32 ft to centerline of 243rd Ave, th SW'ly along said line 2148 ft +/- to S line of NE 1/4, th W 334.55 ft, th N 2616.12 ft to beg	6	112	24	40.28	40.28	2574.08	\$ 3,603.71	03.006.2510
Woestehoff Family Farm LLC c/o David & Krista Woestehoff	Comm at N 1/4 cor, th E 672.25 ft, th S 701.24 ft, th E 542.32 ft to centerline of 243rd Ave, said point being the point of beg, th SW'ly along said centerline 2148 +/- to S line of NE 1/4, th E 2312.72 ft, th N1891.82 ft, th W 1443.47 ft to beg	6	112	24	86.45	43.72	2793.92	\$ 3,911.49	03.006.2520
Charles J & Marie T Retka Trust	N 1/2 of SE 1/4	6	112	24	80.00	32.00	2602.00	\$ 3,642.80	03.006.5000
Charles J & Marie T Retka Trust	N 1/2 of S 1/2 of SE 1/4 less 2.76 ac & S 20 ac of E 30 ac of N 120 ac of SW 1/4	6	112	24	57.24	30.08	1713.59	\$ 2,399.03	03.006.5500
Daniel J Sullivan	1.76 ac of N 1/2 of S 1/2 of SE 1/4	6	112	24	1.76	0.92	52.41	\$ 73.37	03.006.5100
Charles J & Marie T Retka Trust	W 3/4 of N 120 ac of SW 1/4 & NE 1/4 of NE 1/4							\$ 1,177.60	03.006.7500
Amelia Fogarty Trust	S 1/2 of S 1/2 of SE 1/4 less 3.21 ac & S 40 ac of SW 1/4	6	112	24	76.79	31.68	1895.04	\$ 2,653.06	03.006.5300

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					Acres	Acres	Dollars	Dollars	
Dennis C & Jeanne Baumann	3.21 ac of S 1/2 of S 1/2 of SE 1/4	6	112	24	3.21	1.32	78.96	\$ 110.54	03.006.5400
Curtis & Barbara Koeppe	W 1/2 of NW 1/4 less 4 ac	7	112	24	76.00	34.20	725.80	\$ 1,016.12	03.007.8000
Wade M & Mandy Lsimonette	4 ac of W 1/2 of NW 1/4	7	112	24	4.00	1.80	38.20	\$ 53.48	03.007.7500
Curtis & Barbara Koeppe	E 1/2 of NW 1/4 less 11.5 ac in SW cor	7	112	24	68.50	41.00	2046.00	\$ 2,864.40	03.007.0100
Curtis & Barbara Koeppe	SW 1/4 of NE 1/4	7	112	24	40.00	18.00	684.00	\$ 957.60	03.007.2800
Amelia Fogarty Trust	N 1/2 of NE 1/4 less .87 ac	7	112	24	79.13	51.13	3984.21	\$ 5,577.89	03.007.2500
Dennis C & Jeanne Baumann	That part of NW 1/4 of NE 1/4 beg 724.15 ft E of N 1/4 cor Sec 7, th S 75 ft, E 516.78 ft, NW to N line of NE 1/4, th W to beg	7	112	24	0.87	0.87	67.79	\$ 94.91	03.007.2600
Luke Retka	SE 1/4 of NE 1/4	7	112	24	40.00	22.00	1494.00	\$ 2,091.60	03.007.2700
Eugene & Emil Meger Jr	W 1/2 of NW 1/4 less 630 x 210 ft in SW cor & NE 1/4 of NW 1/4	8	112	24	117.00	29.00	2026.00	\$ 2,836.40	03.008.0100
Joseph P & Jean Murphy	E 117.75 ac of NE 1/4 less 2.50 ac	1	112	25	115.25	115.25	1585.60	\$ 2,219.84	12.001.3500
Wayne J Averbek	S 273.42 ft of E 398.45 ft of SE 1/4 of NE 1/4 less S 200 ft of E 326 ft	1	112	25	1.00	1.00	13.76	\$ 19.26	12.001.3600
Wayne J Averbek	That part of SE 1/4 of NE 1/4 beg at E 1/4 cor of sec 1, th W 326 ft, N 200 ft, E 326 ft, S 200 ft to beg	1	112	25	1.50	1.50	20.64	\$ 28.90	12.001.3600
Lyle F & Harriet Wagner Trust	That part of SE 1/4 lying S of N R/W of LS-Scott Joint Ditch #4	1	112	25	88.42	88.42	1829.19	\$ 2,560.87	12.001.6000
Lyle F & Harriet Wagner	That part of SE 1/4 lying N of LS-Scott Joint Ditch #4	1	112	25	71.58	71.58	1480.81	\$ 2,073.13	12.001.6100
Larry Krentz et al	E 1/2 of NW 1/4 less 7.17 ac & W 1/4 of NE 1/4 & N 1/2 of SE 1/4 of SW 1/4	1	112	25	132.83	132.83	3683.19	\$ 5,156.47	12.001.1100
Cory R & Jessica J Hafemann	That part of E 1/2 of NW 1/4 beg 1801.38 ft E of NW cor of Sec 1, th E 40.10 ft, SE 1582.95 ft, E 201.88 ft, S 482 ft, W 517.52 ft, N 482 ft, E 275.54 ft, NW 1582.95 ft to beg	1	112	25	7.17	7.17	198.81	\$ 278.33	12.001.1000
Charles J & Marie T Retka Trust	S 1/2 of SE 1/4 of SW 1/4	1	112	25	20.00	20.00	1158.00	\$ 1,621.20	12.001.8500
Harley & Connie Loewe Trusts & Robert & Judith Loewe Trusts	W 1/2 of SW 1/4 & SW 1/4 of NW 1/4	1	112	25	120.00	39.00	760.00	\$ 1,064.00	12.001.1500
Alden E & Mary Hardwick	E 1/2 of SE 1/4	2	112	25	80.00	36.00	2565.00	\$ 3,591.00	12.002.5000
Randy Oldenburg & Jane Breggeman Trust	SW 1/4 of NE 1/4 & W 1/2 of SE 1/4 less 1.91ac	2	112	25	118.09	50.09	2616.24	\$ 3,662.74	12.002.2700
Randy Oldenburg & Jane Breggeman Trust	That part of NW 1/4 of SE 1/4 beg 1708.81 ft N & 1817.72 ft W of SE cor of Sec 2, th W 253 ft N 328							\$ 139.66	12.002.3000
William D & Tammie Kessler	SE 1/4 of NW 1/4 less 5.4 ac & E 1/2 of SW 1/4	2	112	25	114.60	42.00	2772.00	\$ 3,880.80	12.002.0300
Lillian Tiegs Estate	NW 1/4 of SW 1/4	2	112	25	40.00	12.00	186.00	\$ 260.40	12.002.0200

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Joseph & Mary Scanlan	SW 1/4 of SW 1/4 less 5 ac in NW cor	2	112	25	35.00	35.00	864.50	\$ 1,210.30	12.002.7500
Daniel & Rachel Shepherd	W 389 ft of N 560 ft of SW 1/4 of SW 1/4	2	112	25	5.00	5.00	123.50	\$ 172.90	12.002.7600
Richard G & Patricia Laabs	N 100 ac of NE 1/4	11	112	25	100.00	31.00	1124.00	\$ 1,573.60	12.011.2500
Lyle W Laabs	S 60 ac of NE 1/4	11	112	25	60.00	20.00	384.00	\$ 537.60	12.011.2610
Lyle W Laabs	W 50 ac of N 1/2 of SE 1/4	11	112	25	50.00	10.00	242.00	\$ 338.80	12.011.2600
Myra A Nagel & Gloria J Brandt	E 100 ac of NW 1/4	11	112	25	100.00	48.00	2442.00	\$ 3,418.80	12.011.0200
Lois A Hafemann	That part of SW 1/4 Beg 465 ft N of S 1/4 cor of Sec 11, th N 2159.71 ft, W 1495.72 ft, S 2625.95 ft, E 1283.48 ft, N 465.28 ft, E 237.08 ft to beg	11	112	25	87.99	87.65	3972.49	\$ 5,561.49	12.011.8900
James J Legg & Mary Dvorak	That part of SE 1/4 of SW 1/4 beg at S 1/4 cor of sec, th W to C.L. of JD #4, th N'y along C.L. to pt, th E to pt on N & S C.L. of sec, th S 465 ft to beg	11	112	25	2.35	2.35	106.51	\$ 149.11	12.011.8550
Charles J & Marie T Retka Trust	E 1/2 of NW 1/4 less 5.45 ac	12	112	25	74.75	30.00	1417.00	\$ 1,983.80	12.012.0100
Louis A Geronime	Beg at SW cor of E 1/2 of NW 1/4, th E 719 ft, N 330 ft, W 719 ft, S 330 ft to beg	12	112	25	5.45	2.00	4.00	\$ 10.00	12.012.0200
Charles J & Marie T Retka Trust	W 1/2 of NW 1/4	12	112	25	80.00	33.00	1128.00	\$ 1,579.20	12.012.0100
Valerian P & Barbara Miller	E 1/2 of NE 1/4	12	112	25	80.00	41.00	1334.00	\$ 1,867.60	12.012.2500
Valerian P & Barbara Miller	W 1/2 of NE 1/4	12	112	25	80.00	11.00	728.00	\$ 1,019.20	12.012.2600
Charles J & Marie T Retka Trust	NE 1/4 of SE 1/4	12	112	25	40.00	2.00	80.00	\$ 112.00	12.012.7500
Le Sueur County Hwy Dept	CR #118	11	112	25			2100.00	\$ 2,940.00	12.999.7777
Le Sueur County Hwy Dept	CR #119	2	112	25			1320.00	\$ 1,848.00	12.999.7777
Le Sueur County Hwy Dept	CSAH #11	1	112	25			1280.00	\$ 1,792.00	12.999.7777
Town of Derrynane	Road Benefits in NE 1/4	6	112	24			430.00	\$ 602.00	03.999.8888
Town of Derrynane	Road Benefits in S 1/2 of NE 1/4	7	112	24			60.00	\$ 84.00	03.999.8888
State of MN DOT	TH 19		112	24			500.00	\$ 700.00	12.998.0005 (random parcel assigned to)
State of MN DOT	TH 19		112	24			200.00	\$ 280.00	12.998.0005 (rando parcel assigned to)
Scott County									
MURPHY TIMOTHY J & LISA L	NW1/4 of SW1/4	31	113	24	43.50	19.00	\$ 672.00	\$ 779.52	19310060
MURPHY JOHN E & MARY A	SW1/4 of SW1/4	31	113	24	43.50	22.00	\$ 1,076.00	\$ 1,248.16	10290110
MURPHY JOHN E & MARY A	NE1/4 of SW1/4	31	113	24	43.50	19.00	\$ 672.00	\$ 779.52	10290110
MURPHY JOHN E & MARY A	SE1/4 of SW1/4	31	113	24	40.00	32.00	\$ 2,614.00	\$ 3,032.24	10290110
O'BRIEN KENNETH F & JUDY C	SW1/4 of SE1/4	31	113	24	40.00	5.00	\$ 368.00	\$ 426.88	19310040

Le Sueur County

Board Meeting 1/31/2019

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O'BRIEN KENNETH F & JUDY C	SE1/4 of SE1/4 W17.5 ac	31	113	24	17.50	3.00	\$ 64.00	\$ 74.24	19310040	
NEISEN ELIZABETH	SE1/4 of SE1/4 E22.5 ac	31	113	24	22.50	8.00	\$ 172.00	\$ 199.52	19310070	
NEISEN ELIZABETH	SW1/4 of SW1/4	32	113	24	40.00	24.00	\$ 654.00	\$ 758.64	19320010	
NEISEN ELIZABETH	SE1/4 of SW1/4	32	113	24	37.00	29.00	\$ 2,004.87	\$ 2,325.65	19320010	
SCHOKNECHT GERALD L & MARY & S	SE1/4 of SW1/4	32	113	24	3.00	1.00	\$ 69.13	\$ 80.19	19320020	
ALLISON HOFFMAN FAMILY LIMITED PARTNERSHIP	NW1/4 of SW1/4	32	113	24	40.00	4.00	\$ 164.00	\$ 190.24	19320030	
ALLISON HOFFMAN FAMILY LIMITED PARTNERSHIP	NE1/4 of SW1/4	32	113	24	40.00	4.00	\$ 296.00	\$ 343.36	19320030	
MURPHY JOSEPH & JEAN MARIE	SE1/4 of SE1/4	36	113	25	40.00	8.00	\$ 80.00	\$ 92.80	19360180	
MINNESOTA STATE HIGHWAY 19	St Hwy #19					0.00	\$ 700.00	\$ 812.00	Road	
Totals								95141.00	\$ 130,759.56	

FEASIBILITY STUDY FOR:

JOINT COUNTY DITCH 4:

LE SUEUR & SCOTT COUNTIES, MINNESOTA

REPORT FOR:
Le Sueur County Drainage Authority
181 W. Minnesota St.
Le Center, MN 56057
507.357.4879

FROM:
Chuck Brandel, PE
Principal + Senior Civil Engineer
ISG
115 E. Hickory Street, Suite 300
Mankato, MN 56001
507.387.6651
chuck.brandel@is-grp.com



ISG

ARCHITECTURE + ENGINEERING + ENVIRONMENTAL + PLANNING



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Project Scope

At your request, I+S Group (ISG) completed a preliminary review of Le Sueur and Scott County Joint County Ditch No. 4 (JCD 4). The scope included an examination of the existing JCD 4, as well as recommendations for repairing and improving the existing open ditch and tile system. Maps of the JCD 4 watershed and existing public open ditch and tile system is shown on the attached exhibits and is referenced herein.

It should be noted that some general assumptions were made during this analysis and minimal survey information was gathered. ISG received the original watershed maps, showing the tile locations and sizes from Le Sueur County for the JCD 4 system. Additional information may or may not modify our findings, but it is not anticipated that a significant change to our recommendation would result. If you or any land owners have tile maps or any other information that can aid us in future work, please feel free to share this information with us. A future survey will be necessary to verify these assumptions.

Watershed

Le Sueur and Scott County Joint County Ditch No. 4 open ditch lies in Tyrone and Derrynane Township of Le Sueur County, Minnesota. The mainline open ditch drains from the NE $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 6 of Derrynane Township and flows southwest where it outlets into Forest Prairie Creek in the SE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 11 of Tyrone Township.

The JCD 4 watershed consists primarily of gently rolling agricultural land which provides drainage to approximately 3,467 total acres. The watershed includes land from Sections 31 and 32 of Belle Plaine Township and Section 36 of Blakeley Township of Scott County as well as Sections 5, 6, 7 and 8 of Derrynane Township and Sections 1, 2, 11 and 12 of Tyrone Township of Le Sueur County. County Ditch No. 70 of Le Sueur County provides drainage to approximately 1,657 acres which drains into the JCD 4 system through Branch H open ditch in the NE $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 11 of Tyrone Township. Elevations within the entire watershed range from approximately 905 to 1027 Mean Sea Level (MSL) according to county LIDAR data.

The hydrologic soil classification for the land in the JCD 4 watershed is predominantly type "C/D," which is considered as a dual hydrological soil group. This means that this soil has the potential to be adequately drained. The "D" in this group corresponds to the soil having over 40 percent clay and restricted water movement. The "C" is named the drained condition. That means if adequately drained, the soil would have moderately high runoff potential when thoroughly wet.

History

Le Sueur and Scott County Joint County Ditch No. 4 was originally constructed in 1958 with minor repairs completed throughout the years and no known improvements. The original construction consisted of approximately 24,620 linear feet of open ditch as well as approximately 30,105 linear feet of buried tile. There are approximately nine culvert crossings throughout the entire length of the mainline open ditch.

Existing Conditions

The open ditch channel contains a typical trapezoidal channel designed to convey both surface and subsurface tile water throughout the watershed. Based on the original profiles, the open ditch slopes range from 0.04% to 0.49%. In most areas, existing tile outlets from both public branches and private tiles outlet near the bottom of the ditch. During rain events, the open ditch fills with water, covering the tile outlets and creates forced outlets. In some cases during larger rain events, the water depth in the channel is high enough to restrict the flow of the tiles and cause water to back up into the adjacent fields.

Drainage Capacity

The information in this document has been prepared with the original JCD 4 alignment map. A close representation of the JCD 4 watershed was created using this information in conjunction with LiDAR contours, Minnesota DNR Watershed lines, aerial photographs and USGS Stream-Stats.



The capacity of agricultural tile is expressed as a drainage coefficient, in inches per day (in/day), and is defined as the depth of water over the entire area of the upstream watershed that a tile can drain in a 24-hour period. For a system like JCD 4, the Natural Resources Conservation Service (NRCS) recommends a drainage coefficient of 0.50 to 0.75 in/day for buried tile and 1.0 in/day for open ditches. See Table 1 below for open ditch summary and Table 2 below for the existing tile inventory breakdown.

Table 1: Existing Open Ditch Drainage Capacities

Crossing #	Location	Existing Type	Existing Material	Existing Size (in)	Existing Rise x Span (in)	Existing Slope (%)	Drainage Area (Acres)	Existing Drainage Coefficient (in/day)
1	Main - Field Crossing	ARCH CULVERT	CMP	-	63 x 87	1.25%	5123	1.34
2	Main - TWP 118	ARCH CULVERT	CMP	-	63 x 87	2.06%	4947	1.79
3	Main - Field Crossing	ROUND CULVERT	CMP	60	-	1.00%	3051	1.06
4	Main - Field Crossing	ROUND CULVERT	CMP	60	-	1.83%	2754	1.59
5	Main - TWP 119	ROUND CULVERT	RCP	54	-	0.30%	2454	1.05
6	Main - Field Crossing	ROUND CULVERT	CMP	54	-	0.42%	2407	0.65
7	Main - Field Crossing	ROUND CULVERT	CMP	54	-	0.83%	1929	1.16
8	Main - Field Crossing	ROUND CULVERT	CMP	54	-	0.56%	1528	1.19
9	Main - CSAH 11	ROUND CULVERT	RCP	54	-	0.31%	1486	1.77
10	Main - Field Crossing	ROUND CULVERT	CMP	42	-	2.50%	482	4.10

Table 2: Existing Tile Drainage Capacity

Area	Existing Size (in)	Existing Slope (%)	Drainage Area (Acres)	Existing Drainage Coefficient (in/day)
Main	18	0.22%	460.0	0.26
	18	0.20%	441.2	0.25
	18	0.17%	409.7	0.25
	10	0.20%	103.1	0.23
Branch A	8	0.30%	13.9	1.14
	6	0.90%	9.5	1.34
Branch B	10	0.40%	229.4	0.14
	10	0.20%	228.6	0.10
Branch C	8	0.10%	75.6	0.12
	6	0.40%	65.4	0.13
Branch D	18	0.12%	402.8	0.22
	18	0.08%	286.7	0.25
	12	0.50%	275.4	0.22
Branch D-1	8	0.10%	27.5	0.33
Branch E	8	0.10%	44.7	0.20
	6	0.10%	43.9	0.10
Branch F	10	0.10%	202.1	0.08
Branch L	16	0.06%	209.8	0.21
	14	0.08%	207.3	0.17
	14	0.06%	187.3	0.17
	12	0.06%	178.6	0.12
	8	0.06%	100.9	0.07
	6	0.06%	96.1	0.03
Branch J	18	0.30%	468.3	0.29
	16	0.30%	468.2	0.21
	14	0.30%	289.5	0.24
	10	0.10%	75.2	0.22
	6	0.40%	25.2	0.34
Branch J-1	12	0.30%	138.1	0.34
	10	1.10%	130.7	0.42
	14	0.10%	129.3	0.31
	12	0.15%	114.5	0.29
	8	0.10%	96.4	0.09
Branch J-2	6	0.20%	10.7	0.56
Branch J-3	6	0.75%	18.2	0.64
Branch J-4	10	0.10%	3.3	5.04
Branch J-5	10	0.10%	130.8	0.13
Branch K	14	0.10%	254.7	0.16
	12	0.10%	226.8	0.12
	10	0.10%	201.8	0.08
	8	0.10%	200.1	0.05

The majority of the existing crossings of JCD 4 are above the NRCS recommended drainage coefficient values while majority of the existing tiles are below the recommended drainage coefficient.

Proposed Conditions

It is recommended that eventually the entire system should be repaired or improved. The repaired tile would be installed following the existing tile alignments matching the existing tile slopes and elevations. Options to improve the existing system were considered along with the costs for repairing the system. All improvement options are sized to achieve at least a drainage coefficient of 0.50 in/day for underground tiles and 1.0 in/day for open ditch crossings.

Repair Option 1

It is proposed in repair option 1 to clean the entire mainline open ditch, repair any of the culvert crossings within the open ditch that are below the NRCS recommended drainage coefficient and repair the mainline buried tile. The repair will consist of cleansing approximately 2,025 feet of 18-foot bottom open ditch, 1,300 feet of 8-foot bottom open ditch, 2,700 feet of 6-foot bottom open ditch and 20,375 feet of 4-foot bottom open ditch as well as 3,156 feet of 18-inch tile and 1,624 feet of 10-inch tile. The repair will also consist of replacing culvert crossing #6 with a 54-inch RCP culvert.

Repair Option 2

It is proposed in repair option 2 to clean the entire mainline open ditch, repair any of the culvert crossings within the open ditch that are below the NRCS recommended drainage coefficient and repair the mainline buried tile. The repair will consist of cleansing approximately 2,025 feet of 18-foot bottom open ditch, 1,300 feet of 8-foot bottom open ditch, 2,700 feet of 6-foot bottom open ditch and 20,875 feet of 4-foot bottom open ditch as well as 8,156 feet of 18-inch tile, 5,550 feet of 15-inch tile, 3,550 feet of 12-inch tile, 5,699 feet of 10-inch tile, 2,625 feet of 8-inch tile and 2,146 feet of 6-inch tile. The repair will also consist of replacing culvert crossing #6 with a 54-inch RCP culvert.

Improvement Option 1

It is proposed in improvement option 1 clean the entire mainline open ditch, repair any of the culvert crossings within the open ditch that are below the NRCS recommended drainage coefficient and repair the mainline buried tile. The repair will consist of cleansing approximately 2,025 feet of 18-foot bottom open ditch, 1,300 feet of 8-foot bottom open ditch, 2,700 feet of 6-foot bottom open ditch and 20,375 feet of 4-foot bottom open ditch as well as 3,156 feet of 24-inch tile and 1,624 feet of 18-inch tile. The improvement will also consist of replacing culvert crossing #6 with a 54-inch RCP culvert.

Improvement Option 2

It is proposed in improvement option 2 to clean the entire mainline open ditch, repair any of the culvert crossings within the open ditch that are below the NRCS recommended drainage coefficient and repair the mainline buried tile. The repair will consist of cleansing approximately 2,025 feet of 18-foot bottom open ditch, 1,300 feet of 8-foot bottom open ditch, 2,700 feet of 6-foot bottom open ditch and 20,875 feet of 4-foot bottom open ditch as well as 15,956 feet of 24-inch tile, 3,527 feet of 18-inch tile, 4,874 feet of 15-inch tile, 2,175 feet of 12-inch tile and 1,490 feet of 10-inch tile. The improvement will also consist of replacing culvert crossing #6 with a 54-inch RCP culvert.

These options are summarized on *the Improvement Maps* attached with this report. The repair option and improvement option described above are a sample size of what can be done to repair or improve this system. Any and all branches can be added or removed as another option to best suit the landowners involved.

Multi-Purpose Drainage Management

Multi-purpose drainage management incorporates Best Management Practices (BMPs) which utilize effective measures aimed at reducing sediment and nutrient loading, and improving water quality. These BMPs are divided into three areas: preventative measures, control measures, and treatment measures. Preventative measures that can be applied throughout the watershed include crop rotation, cover crops, residue management, and nutrient management. These measures are aimed at controlling sediment,

minimizing erosion and nutrient loss, and sustaining the soils health, all without dramatically changing the current land use of the landscape.

Control measures are practices aimed at improving water quality directly associated with the flow of water by reducing peak flows, providing in stream storage, sedimentation, and nutrient uptake. Examples of control measures include alternative intake structures, grassed waterways, two stage ditches, water control structures, and controlled subsurface drainage. These practices are directly linked to the conveyance of subsurface tile water or open channel ditch flow.

The function of treatment measures is to improve water quality by directly removing sediment and nutrients from the subsurface or surface water flow throughout a watershed. Examples of treatment measures include surge basins (storage ponds), filter/buffer strips, wetland restorations, woodchip bioreactors, and water and sediment control basins (WASCOBs). These practices may be incorporated to either the public or private drainage systems.

Conservative drainage practices, such as controlled drainage systems, provide an option for improving the water quality and reduce peak flow rates within a drainage system. Through utilization of control structures, these systems are designed to allow agricultural producers to regulate water levels in their fields. The water level in the ground can be lowered during planting and harvest seasons and allowed to rise during the growing season. Water and nutrients stored in the soil during the growing season can then be used by the crops during drier periods, potentially increasing yields.

Cost/Separable Maintenance

When a separable portion of a larger system is in need of repair, the drainage statute, M.S.103E.215, subd. 6, allows the separation of the cost of repair from the cost of improvement of the project. The condition of the existing system should be investigated further to discern the eligibility for separable maintenance costs. If it is determined that the system is in disrepair, separable maintenance costs can be applied to the project including the difference in costs associated between pipe/ditch replacement and pipe/ditch improvement. Separable maintenance for this system includes standard open ditch cleaning, rip rap outlet protection on all tile outlets, seeding (buffer and sideslopes), and standard tile installation.

A cost estimate was prepared for the above outline options for improvement to the system, as summarized in Table 3. The cost estimate summary includes the separable maintenance, improvement cost, and net benefit for each option.

Table 3: Cost Estimate Summary

PROPOSED OPTION #1 IMPROVEMENT COST SUMMARY

Area	Separable Maintenance	Improvement Cost	Net Cost
Main Open Ditch	\$ 215,435	\$ 217,139	\$ 1,704
Main Tile	\$ 175,725	\$ 215,195	\$ 39,470
Subtotal without Road Crossings	\$ 391,160	\$ 432,334	\$ 41,174
Road Authority Cost	\$ 17,127	\$ 17,127	\$ -
Damages Paid To Road Authority	\$ 3,065	\$ 4,365	\$ 1,300
Total	\$ 411,352	\$ 453,826	\$ 42,474
		Subtotal Landowner Costs	\$ 436,699
		Net Costs	\$ 25,346
		Redetermination of Benefits Costs	\$ 20,799
		Permanent Damages (Buffer Strip Acquisition)	\$ 121,946
		Total Project Costs for Landowners	\$ 579,444

PROPOSED OPTION #2 IMPROVEMENT COST SUMMARY

Area	Separable Maintenance	Improvement Cost	Net Cost
Main Open Ditch	\$ 215,435	\$ 217,139	\$ 1,704
Main Tile	\$ 175,725	\$ 216,911	\$ 41,186
Branch B Tile	\$ 16,415	\$ 22,621	\$ 6,206
Branch C Tile	\$ 23,533	\$ 31,055	\$ 7,522
Branch D Tile	\$ 69,299	\$ 87,515	\$ 18,216
Branch E Tile	\$ 24,325	\$ 26,041	\$ 1,716
Branch F Tile	\$ 11,273	\$ 13,649	\$ 2,376
Branch H Open Ditch	\$ 38,565	\$ 62,325	\$ 23,760
Branch L Tile	\$ 137,266	\$ 195,478	\$ 58,212
Branch J Tile	\$ 295,526	\$ 353,870	\$ 58,344
Branch J-1 Tile	\$ 82,410	\$ 91,520	\$ 9,110
Branch J-5 Tile	\$ 10,089	\$ 13,653	\$ 3,564
Branch K Tile	\$ 74,106	\$ 88,175	\$ 14,069
Potential Storage - 4.25 AC	\$ -	\$ 75,578	\$ 75,578
Subtotal without Road Crossings	\$ 1,173,967	\$ 1,495,530	\$ 321,563
Road Authority Cost	\$ 60,664	\$ 60,664	\$ -
Damages Paid To Road Authority	\$ 11,049	\$ 23,729	\$ 12,680
Total	\$ 1,245,680	\$ 1,579,923	\$ 334,243
		Subtotal Landowner Costs	\$ 1,519,258
		Net Costs	\$ 273,578
		Redetermination of Benefits Costs	\$ 20,799
		Permanent Damages (Buffer Strip Acquisition)	\$ 121,946
		Total Project Costs for Landowners	\$ 1,662,003

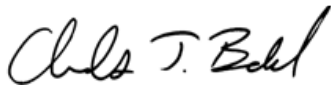
Recommendation

Currently, the existing tile system has a lower capacity than what is recommended by the NRCS. Upgrading the tile system would increase the capacity of the system to a drainage coefficient over 0.50 in/day for buried tile and 1.0 in/day for open ditch crossings. The system is approximately 60-years old, which is half the life expectancy for ditch systems like JCD 4. These improvements would be a public benefit and contribute to the public welfare of this area.

This scenario assumes that the project is completed publically through Le Sueur County and utilizing Minnesota Statute 103E. If the project was completed privately, some of the administration costs could be saved, but would require 100% agreement with everyone in the watershed that is affected.

At this point we would recommend keeping the project as a public project as only 26% of the affected landowners would need to sign the petition to move forward. We would appreciate the opportunity to discuss this in greater detail and to potentially meet with a group of landowners to discuss. Please contact us with questions or comments.

Sincerely,



Chuck Brandel, PE

Civil Engineer/Principal

Enclosures

**LE SUEUR & SCOTT COUNTY
JOINT COUNTY DITCH No. 4**



PROPOSED OPTION #1 IMPROVEMENT COST SUMMARY

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Main Open Ditch	\$ 215,435	\$ 217,139	\$ 1,704
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Total	\$ 411,352	\$ 453,826	\$ 42,474
		Subtotal Landowner Costs	\$ 436,699
		Net Costs	\$ 25,346
		Redetermination of Benefits Costs	\$ 20,799
		Permanent Damages (Buffer Strip Acquisition)	\$ 121,946
		Total Project Costs for Landowners	\$ 579,444

**LE SUEUR & SCOTT COUNTY
JOINT COUNTY DITCH No. 4**



PROPOSED OPTION #2 IMPROVEMENT COST SUMMARY

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Branch D Tile	\$ 69,299	\$ 87,515	\$ 18,216
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Branch K Tile	\$ 74,106	\$ 88,175	\$ 14,069
Potential Storage - 4.25 AC	\$ -	\$ 75,578	\$ 75,578
Subtotal without Road Crossings	\$ 1,173,967	\$ 1,495,530	\$ 321,563
Road Authority Cost	\$ 60,664	\$ 60,664	\$ -
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Total	\$ 1,245,680	\$ 1,579,923	\$ 334,243
		Subtotal Landowner Costs	\$ 1,519,258
		Net Costs	\$ 273,578
		Redetermination of Benefits Costs	\$ 20,799
		Permanent Damages (Buffer Strip Acquisition)	\$ 121,946
		Total Project Costs for Landowners	\$ 1,662,003



SEPARABLE MAINTANENCE (REPAIR)

Main Open Ditch

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 6,830.00	\$ 6,830
102	DITCH CLEANING (18' WIDE DITCH BOTTOM)	LF	2,025	\$ 4.50	\$ 9,113
103	DITCH CLEANING (8' WIDE DITCH BOTTOM)	LF	1,300	\$ 2.75	\$ 3,575
104	DITCH CLEANING (6' WIDE DITCH BOTTOM)	LF	2,700	\$ 2.25	\$ 6,075
105	DITCH CLEANING (4' WIDE DITCH BOTTOM)	LF	20,375	\$ 2.00	\$ 40,750
106	18-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	3	\$ 860.00	\$ 2,580
107	15-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	1	\$ 752.00	\$ 752
108	10-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	2	\$ 680.00	\$ 1,360
109	8-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	3	\$ 635.00	\$ 1,905
110	16.5' BUFFER STRIP SEEDING (SEED MIX: BUFFER BLEND WITH TYPE 3 MULCH)	AC	20.00	\$ 1,165	\$ 23,300
111	SIDESLOPE SEEDING (SEED MIX: BUFFER BLEND WITH BFM)	AC	12.12	\$ 3,353	\$ 40,642
112	BUFFER STRIP MOWING	AC	20.00	\$ 85	\$ 1,700
113	WEED SPRAYING	AC	32.12	\$ 150	\$ 4,818
Total					\$ 143,400
10% Unforeseen					\$ 14,340
Subtotal					\$ 157,740
TEMPORARY DAMAGES		AC	20.0	\$ 650	\$ 13,000
County Administration Costs					\$ 3,155
Topographic Survey					\$ 19,455
Reports, Plans and Specifications					\$ 9,465
Construction Staking & Administration					\$ 12,620
Total Main Open Ditch Repair Cost					\$ 215,435

Main Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 5,950.00	\$ 5,950
102	TILE INVESTIGATION	HR	10	\$ 106.50	\$ 1,065
103	18-INCH AGRICULTURAL TILE	LF	3156	\$ 24.60	\$ 77,638
104	10-INCH AGRICULTURAL TILE	LF	1624	\$ 16.00	\$ 25,984
105	CONNECT EXISTING 18-INCH TILE	EA	1	\$ 871.50	\$ 872
106	INSTALL DROP INTAKE (18-INCH)	EA	5	\$ 1,085	\$ 5,425
107	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	20	\$ 400	\$ 8,000
Total					\$ 125,000
10% Unforeseen					\$ 12,500
Subtotal					\$ 137,500
TEMPORARY DAMAGES		AC	16.5	\$ 650	\$ 10,725
County Administration Costs					\$ 2,750
Topographic Survey					\$ 5,500
Reports, Plans and Specifications					\$ 8,250
Construction Staking & Administration					\$ 11,000
Total Main Tile Repair Cost					\$ 175,725



SEPARABLE MAINTANENCE (REPAIR)

Branch B Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 550.00	\$ 550
102	TILE INVESTIGATION	HR	2	\$ 106.50	\$ 213
103	10-INCH AGRICULTURAL TILE	LF	525	\$ 16.00	\$ 8,400
105	INSTALL DROP INTAKE (18-INCH)	EA	1	\$ 1,085	\$ 1,085
106	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	3	\$ 400	\$ 1,200
Total					\$ 11,500
10% Unforeseen					\$ 1,150
Subtotal					\$ 12,650
TEMPORARY DAMAGES		AC	1.9	\$ 650	\$ 1,235
County Administration Costs					\$ 253
Topographic Survey					\$ 506
Reports, Plans and Specifications					\$ 759
Construction Staking & Administration					\$ 1,012
Total Branch B Tile Repair Cost					\$ 16,415

Branch C Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 780.00	\$ 780
102	TILE INVESTIGATION	HR	2	\$ 106.50	\$ 213
103	8-INCH AGRICULTURAL TILE	LF	700	\$ 14.60	\$ 10,220
104	6-INCH AGRICULTURAL TILE	LF	200	\$ 12.00	\$ 2,400
105	INSTALL DROP INTAKE (18-INCH)	EA	1	\$ 1,085	\$ 1,085
106	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	4	\$ 400	\$ 1,600
Total					\$ 16,300
10% Unforeseen					\$ 1,630
Subtotal					\$ 17,930
TEMPORARY DAMAGES		AC	3.1	\$ 650	\$ 2,015
County Administration Costs					\$ 359
Topographic Survey					\$ 718
Reports, Plans and Specifications					\$ 1,076
Construction Staking & Administration					\$ 1,435
Total Branch C Tile Repair Cost					\$ 23,533



SEPARABLE MAINTANENCE (REPAIR)

Branch D Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 2,340.00	\$ 2,340
102	TILE INVESTIGATION	HR	4	\$ 106.50	\$ 426
103	18-INCH AGRICULTURAL TILE	LF	900	\$ 24.60	\$ 22,140
104	12-INCH AGRICULTURAL TILE	LF	1100	\$ 16.75	\$ 18,425
105	CONNECT EXISTING 8-INCH TILE	EA	1	\$ 315.50	\$ 316
106	INSTALL DROP INTAKE (18-INCH)	EA	2	\$ 1,085	\$ 2,170
107	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	8	\$ 400	\$ 3,200
Total					\$ 49,100
10% Unforeseen					\$ 4,910
Subtotal					\$ 54,010
TEMPORARY DAMAGES		AC	6.9	\$ 650	\$ 4,485
County Administration Costs					\$ 1,081
Topographic Survey					\$ 2,161
Reports, Plans and Specifications					\$ 3,241
Construction Staking & Administration					\$ 4,321
Total Branch D Tile Repair Cost					\$ 69,299

Branch D-1 Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 810.00	\$ 810
102	TILE INVESTIGATION	HR	2	\$ 106.50	\$ 213
103	8-INCH AGRICULTURAL TILE	LF	900	\$ 14.60	\$ 13,140
104	INSTALL DROP INTAKE (18-INCH)	EA	1	\$ 1,085	\$ 1,085
105	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	4	\$ 400	\$ 1,600
Total					\$ 16,900
10% Unforeseen					\$ 1,690
Subtotal					\$ 18,590
TEMPORARY DAMAGES		AC	3.1	\$ 650	\$ 2,015
County Administration Costs					\$ 372
Topographic Survey					\$ 744
Reports, Plans and Specifications					\$ 1,116
Construction Staking & Administration					\$ 1,488
Total Branch D-1 Tile Repair Cost					\$ 24,325

Branch E Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 370.00	\$ 370
102	TILE INVESTIGATION	HR	1	\$ 106.50	\$ 107
103	8-INCH AGRICULTURAL TILE	LF	100	\$ 14.60	\$ 1,460
104	6-INCH AGRICULTURAL TILE	LF	325	\$ 12.00	\$ 3,900
105	INSTALL DROP INTAKE (18-INCH)	EA	1	\$ 1,085	\$ 1,085
106	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	2	\$ 400	\$ 800
Total					\$ 7,800
10% Unforeseen					\$ 780
Subtotal					\$ 8,580
TEMPORARY DAMAGES		AC	1.5	\$ 650	\$ 975
County Administration Costs					\$ 172
Topographic Survey					\$ 344
Reports, Plans and Specifications					\$ 515
Construction Staking & Administration					\$ 687
Total Branch E Tile Repair Cost					\$ 11,273



SEPARABLE MAINTANENCE (REPAIR)

Branch F Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 1,290.00	\$ 1,290
102	TILE INVESTIGATION	HR	3	\$ 106.50	\$ 320
103	10-INCH AGRICULTURAL TILE	LF	1300	\$ 16.00	\$ 20,800
105	INSTALL DROP INTAKE (18-INCH)	EA	2	\$ 1,085	\$ 2,170
106	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	6	\$ 400	\$ 2,400
Total					\$ 27,000
10% Unforeseen					\$ 2,700
Subtotal					\$ 29,700
TEMPORARY DAMAGES		AC	4.5	\$ 650	\$ 2,925
County Administration Costs					\$ 594
Topographic Survey					\$ 1,188
Reports, Plans and Specifications					\$ 1,782
Construction Staking & Administration					\$ 2,376
Total Branch F Tile Repair Cost					\$ 38,565

Branch H Open Ditch

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 120.00	\$ 120
102	DITCH CLEANING (4' WIDE DITCH BOTTOM)	LF	500	\$ 2.00	\$ 1,000
103	16.5' BUFFER STRIP SEEDING (SEED MIX: BUFFER BLEND WITH TYPE 3 MULCH)	AC	0.38	\$ 1,165	\$ 441
104	SIDESLOPE SEEDING (SEED MIX: BUFFER BLEND WITH BFM)	AC	0.23	\$ 3,353	\$ 770
105	BUFFER STRIP MOWING	AC	0.38	\$ 85	\$ 32
106	WEED SPRAYING	AC	0.61	\$ 150	\$ 91
Total					\$ 2,454
10% Unforeseen					\$ 245
Subtotal					\$ 2,700
TEMPORARY DAMAGES		AC	0.4	\$ 650	\$ 260
County Administration Costs					\$ 54
Topographic Survey					\$ 27
Reports, Plans and Specifications					\$ 162
Construction Staking & Administration					\$ 216
Total Branch H Open Ditch Repair Cost					\$ 3,419

Branch L Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 4,610.00	\$ 4,610
102	TILE INVESTIGATION	HR	7	\$ 106.50	\$ 746
103	18-INCH AGRICULTURAL TILE	LF	500	\$ 24.60	\$ 12,300
104	15-INCH AGRICULTURAL TILE	LF	1700	\$ 21.00	\$ 35,700
105	12-INCH AGRICULTURAL TILE	LF	1100	\$ 16.75	\$ 18,425
106	8-INCH AGRICULTURAL TILE	LF	200	\$ 14.60	\$ 2,920
107	6-INCH AGRICULTURAL TILE	LF	781	\$ 12.00	\$ 9,372
108	INSTALL DROP INTAKE (18-INCH)	EA	5	\$ 1,085	\$ 5,425
109	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	18	\$ 400	\$ 7,200
Total					\$ 96,700
10% Unforeseen					\$ 9,670
Subtotal					\$ 106,370
TEMPORARY DAMAGES		AC	14.8	\$ 650	\$ 9,620
County Administration Costs					\$ 2,128
Topographic Survey					\$ 4,255
Reports, Plans and Specifications					\$ 6,383
Construction Staking & Administration					\$ 8,510
Total Branch L Tile Repair Cost					\$ 137,266



SEPARABLE MAINTANENCE (REPAIR)
Branch J Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 9,990.00	\$ 9,990
102	TILE INVESTIGATION	HR	15	\$ 106.50	\$ 1,598
103	18-INCH AGRICULTURAL TILE	LF	3600	\$ 24.60	\$ 88,560
104	15-INCH AGRICULTURAL TILE	LF	2350	\$ 21.00	\$ 49,350
105	10-INCH AGRICULTURAL TILE	LF	1550	\$ 16.00	\$ 24,800
106	6-INCH AGRICULTURAL TILE	LF	840	\$ 12.00	\$ 10,080
107	CONNECT EXISTING 12-INCH TILE	EA	1	\$ 494.50	\$ 495
108	CONNECT EXISTING 10-INCH TILE	EA	2	\$ 447.50	\$ 895
109	CONNECT EXISTING 6-INCH TILE	EA	2	\$ 281.00	\$ 562
110	INSTALL DROP INTAKE (18-INCH)	EA	9	\$ 1,085	\$ 9,765
111	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	34	\$ 400	\$ 13,600
Total					\$ 209,700
10% Unforeseen					\$ 20,970
Subtotal					\$ 230,670
TEMPORARY DAMAGES		AC	28.8	\$ 650	\$ 18,720
County Administration Costs					\$ 4,614
Topographic Survey					\$ 9,227
Reports, Plans and Specifications					\$ 13,841
Construction Staking & Administration					\$ 18,454
Total Branch J Tile Repair Cost					\$ 295,526

Branch J-1 Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 2,760.00	\$ 2,760
102	TILE INVESTIGATION	HR	3	\$ 106.50	\$ 320
102	15-INCH AGRICULTURAL TILE	LF	900	\$ 21.00	\$ 18,900
103	12-INCH AGRICULTURAL TILE	LF	1000	\$ 16.75	\$ 16,750
104	10-INCH AGRICULTURAL TILE	LF	400	\$ 16.00	\$ 6,400
105	8-INCH AGRICULTURAL TILE	LF	350	\$ 14.60	\$ 5,110
106	INSTALL DROP INTAKE (18-INCH)	EA	3	\$ 1,085	\$ 3,255
107	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	11	\$ 400	\$ 4,400
Total					\$ 57,900
10% Unforeseen					\$ 5,790
Subtotal					\$ 63,690
TEMPORARY DAMAGES		AC	9.2	\$ 650	\$ 5,980
County Administration Costs					\$ 1,274
Topographic Survey					\$ 2,548
Reports, Plans and Specifications					\$ 3,822
Construction Staking & Administration					\$ 5,096
Total Branch J-1 Tile Repair Cost					\$ 82,410



**SEPARABLE MAINTANENCE (REPAIR)
 Branch J-5 Tile**

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 340.00	\$ 340
102	TILE INVESTIGATION	HR	1	\$ 106.50	\$ 107
103	10-INCH AGRICULTURAL TILE	LF	296	\$ 16.00	\$ 4,736
104	INSTALL DROP INTAKE (18-INCH)	EA	1	\$ 1,085	\$ 1,085
105	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	2	\$ 400	\$ 800
Total					\$ 7,100
10% Unforeseen					\$ 710
Subtotal					\$ 7,810
TEMPORARY DAMAGES		AC	1.1	\$ 650	\$ 715
County Administration Costs					\$ 157
Topographic Survey					\$ 313
Reports, Plans and Specifications					\$ 469
Construction Staking & Administration					\$ 625
Total Branch J-5 Tile Repair Cost					\$ 10,089

Branch K Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 2,490.00	\$ 2,490
102	TILE INVESTIGATION	HR	3	\$ 106.50	\$ 320
103	15-INCH AGRICULTURAL TILE	LF	900	\$ 21.00	\$ 18,900
104	12-INCH AGRICULTURAL TILE	LF	1000	\$ 16.75	\$ 16,750
105	10-INCH AGRICULTURAL TILE	LF	400	\$ 16.00	\$ 6,400
106	INSTALL DROP INTAKE (18-INCH)	EA	3	\$ 1,085	\$ 3,255
107	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	10	\$ 400	\$ 4,000
Total					\$ 52,200
10% Unforeseen					\$ 5,220
Subtotal					\$ 57,420
TEMPORARY DAMAGES		AC	8.0	\$ 650	\$ 5,200
County Administration Costs					\$ 1,149
Topographic Survey					\$ 2,297
Reports, Plans and Specifications					\$ 3,446
Construction Staking & Administration					\$ 4,594
Total Branch K Tile Repair Cost					\$ 74,106

TOTAL REPAIR COST

	Main Open Ditch	\$ 215,435
	Main Tile	\$ 175,725
	Branch B Tile	\$ 16,415
	Branch C Tile	\$ 23,533
	Branch D Tile	\$ 69,299
	Branch E Tile	\$ 24,325
	Branch F Tile	\$ 11,273
	Branch H Open Ditch	\$ 38,565
	Branch L Tile	\$ 137,266
	Branch J Tile	\$ 295,526
	Branch J-1 Tile	\$ 82,410
	Branch J-5 Tile	\$ 10,089
	Branch K Tile	\$ 74,106
COMPLETE REPAIR COST		\$ 1,173,967



PROPOSED OPTION #1 IMPROVEMENT

Main Open Ditch

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 6,900.00	\$ 6,900
102	DITCH CLEANING (18' WIDE DITCH BOTTOM)	LF	2,025	\$ 4.50	\$ 9,113
103	DITCH CLEANING (8' WIDE DITCH BOTTOM)	LF	1,300	\$ 2.75	\$ 3,575
104	DITCH CLEANING (6' WIDE DITCH BOTTOM)	LF	2,700	\$ 2.25	\$ 6,075
105	DITCH CLEANING (4' WIDE DITCH BOTTOM)	LF	20,375	\$ 2.00	\$ 40,750
106	24-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	1	\$ 1,265.00	\$ 1,265
107	18-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	3	\$ 860.00	\$ 2,580
108	15-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	1	\$ 752.00	\$ 752
109	10-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	2	\$ 680.00	\$ 1,360
110	8-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	3	\$ 635.00	\$ 1,905
111	16.5' BUFFER STRIP SEEDING (SEED MIX: BUFFER BLEND WITH TYPE 3 MULCH)	AC	20.00	\$ 1,165	\$ 23,300
112	SIDESLOPE SEEDING (SEED MIX: BUFFER BLEND WITH BFM)	AC	12.12	\$ 3,353	\$ 40,642
113	BUFFER STRIP MOWING	AC	20.00	\$ 85	\$ 1,700
114	WEED SPRAYING	AC	32.12	\$ 150	\$ 4,818
Total					\$ 144,735
10% Unforeseen					\$ 14,474
Subtotal					\$ 159,209
TEMPORARY DAMAGES		AC	20.0	\$ 650	\$ 13,000
County Administration Costs					\$ 3,185
Topographic Survey					\$ 19,455
Reports, Plans and Specifications					\$ 9,553
Construction Staking & Administration					\$ 12,737
Total Main Open Ditch Improvement Cost					\$ 217,139

Main Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 7,380.00	\$ 7,380
102	TILE INVESTIGATION	HR	10	\$ 106.50	\$ 1,065
103	24-INCH AGRICULTURAL TILE	LF	3156	\$ 29.20	\$ 92,155
104	18-INCH AGRICULTURAL TILE	LF	1624	\$ 24.60	\$ 39,950
105	CONNECT EXISTING 18-INCH TILE	EA	1	\$ 871.50	\$ 872
106	INSTALL DROP INTAKE (18-INCH)	EA	5	\$ 1,085	\$ 5,425
107	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	20	\$ 400	\$ 8,000
Total					\$ 154,900
10% Unforeseen					\$ 15,490
Subtotal					\$ 170,390
TEMPORARY DAMAGES		AC	16.5	\$ 650	\$ 10,725
County Administration Costs					\$ 3,408
Topographic Survey					\$ 6,816
Reports, Plans and Specifications					\$ 10,224
Construction Staking & Administration					\$ 13,632
Total Main Tile Improvement Cost					\$ 215,195

TOTAL IMPROVEMENT COST

				Main Open Ditch	\$ 217,139
				Main Tile	\$ 215,195
COMPLETE IMPROVEMENT COST					\$ 432,334



PROPOSED OPTION #2 IMPROVEMENT

Main Open Ditch

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 6,900.00	\$ 6,900
102	DITCH CLEANING (18' WIDE DITCH BOTTOM)	LF	2,025	\$ 4.50	\$ 9,113
103	DITCH CLEANING (8' WIDE DITCH BOTTOM)	LF	1,300	\$ 2.75	\$ 3,575
104	DITCH CLEANING (6' WIDE DITCH BOTTOM)	LF	2,700	\$ 2.25	\$ 6,075
105	DITCH CLEANING (4' WIDE DITCH BOTTOM)	LF	20,375	\$ 2.00	\$ 40,750
106	24-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	1	\$ 1,265.00	\$ 1,265
107	18-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	3	\$ 860.00	\$ 2,580
108	15-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	1	\$ 752.00	\$ 752
109	10-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	2	\$ 680.00	\$ 1,360
110	8-INCH TILE OUTLET (20 LF OF PIPE & RIPRAP ON GEOTEXTILE FABRIC)	EA	3	\$ 635.00	\$ 1,905
111	16.5' BUFFER STRIP SEEDING (SEED MIX: BUFFER BLEND WITH TYPE 3 MULCH)	AC	20.00	\$ 1,165	\$ 23,300
112	SIDESLOPE SEEDING (SEED MIX: BUFFER BLEND WITH BFM)	AC	12.12	\$ 3,353	\$ 40,642
113	BUFFER STRIP MOWING	AC	20.00	\$ 85	\$ 1,700
114	WEED SPRAYING	AC	32.12	\$ 150	\$ 4,818
Total					\$ 144,735
10% Unforeseen					\$ 14,474
Subtotal					\$ 159,209
TEMPORARY DAMAGES		AC	20.0	\$ 650	\$ 13,000
County Administration Costs					\$ 3,185
Topographic Survey					\$ 19,455
Reports, Plans and Specifications					\$ 9,553
Construction Staking & Administration					\$ 12,737
Total Main Open Ditch Improvement Cost					\$ 217,139

Main Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 7,440.00	\$ 7,440
102	TILE INVESTIGATION	HR	10	\$ 106.50	\$ 1,065
103	24-INCH AGRICULTURAL TILE	LF	3156	\$ 29.20	\$ 92,155
104	18-INCH AGRICULTURAL TILE	LF	1624	\$ 24.60	\$ 39,950
105	CONNECT EXISTING 24-INCH TILE	EA	1	\$ 1,232.50	\$ 1,233
106	CONNECT EXISTING 18-INCH TILE	EA	1	\$ 871.50	\$ 872
107	INSTALL DROP INTAKE (18-INCH)	EA	5	\$ 1,085	\$ 5,425
108	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	20	\$ 400	\$ 8,000
Total					\$ 156,200
10% Unforeseen					\$ 15,620
Subtotal					\$ 171,820
TEMPORARY DAMAGES		AC	16.5	\$ 650	\$ 10,725
County Administration Costs					\$ 3,437
Topographic Survey					\$ 6,873
Reports, Plans and Specifications					\$ 10,310
Construction Staking & Administration					\$ 13,746
Total Main Tile Improvement Cost					\$ 216,911



PROPOSED OPTION #2 IMPROVEMENT

Branch B Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 780.00	\$ 780
102	TILE INVESTIGATION	HR	2	\$ 106.50	\$ 213
103	18-INCH AGRICULTURAL TILE	LF	525	\$ 24.60	\$ 12,915
105	INSTALL DROP INTAKE (18-INCH)	EA	1	\$ 1,085	\$ 1,085
106	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	3	\$ 400	\$ 1,200
Total					\$ 16,200
10% Unforeseen					\$ 1,620
Subtotal					\$ 17,820
TEMPORARY DAMAGES		AC	1.9	\$ 650	\$ 1,235
County Administration Costs					\$ 357
Topographic Survey					\$ 713
Reports, Plans and Specifications					\$ 1,070
Construction Staking & Administration					\$ 1,426
Total Branch B Tile Improvement Cost					\$ 22,621

Branch C Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 1,050.00	\$ 1,050
102	TILE INVESTIGATION	HR	2	\$ 106.50	\$ 213
103	15-INCH AGRICULTURAL TILE	LF	700	\$ 21.00	\$ 14,700
104	12-INCH AGRICULTURAL TILE	LF	200	\$ 16.75	\$ 3,350
105	INSTALL DROP INTAKE (18-INCH)	EA	1	\$ 1,085	\$ 1,085
106	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	4	\$ 400	\$ 1,600
Total					\$ 22,000
10% Unforeseen					\$ 2,200
Subtotal					\$ 24,200
TEMPORARY DAMAGES		AC	3.1	\$ 650	\$ 2,015
County Administration Costs					\$ 484
Topographic Survey					\$ 968
Reports, Plans and Specifications					\$ 1,452
Construction Staking & Administration					\$ 1,936
Total Branch C Tile Improvement Cost					\$ 31,055



PROPOSED OPTION #2 IMPROVEMENT

Branch D Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 3,000.00	\$ 3,000
102	TILE INVESTIGATION	HR	4	\$ 106.50	\$ 426
103	24-INCH AGRICULTURAL TILE	LF	900	\$ 29.20	\$ 26,280
104	18-INCH AGRICULTURAL TILE	LF	1100	\$ 24.60	\$ 27,060
105	CONNECT EXISTING 10-INCH TILE	EA	1	\$ 447.50	\$ 448
106	CONNECT EXISTING 8-INCH TILE	EA	1	\$ 315.50	\$ 316
107	INSTALL DROP INTAKE (18-INCH)	EA	2	\$ 1,085	\$ 2,170
108	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	8	\$ 400	\$ 3,200
Total					\$ 62,900
10% Unforeseen					\$ 6,290
Subtotal					\$ 69,190
TEMPORARY DAMAGES		AC	6.9	\$ 650	\$ 4,485
County Administration Costs					\$ 1,384
Topographic Survey					\$ 2,768
Reports, Plans and Specifications					\$ 4,152
Construction Staking & Administration					\$ 5,536
Total Branch D Tile Improvement Cost					\$ 87,515

Branch D-1 Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 870.00	\$ 870
102	TILE INVESTIGATION	HR	2	\$ 106.50	\$ 213
103	10-INCH AGRICULTURAL TILE	LF	900	\$ 16.00	\$ 14,400
104	INSTALL DROP INTAKE (18-INCH)	EA	1	\$ 1,085	\$ 1,085
105	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	4	\$ 400	\$ 1,600
Total					\$ 18,200
10% Unforeseen					\$ 1,820
Subtotal					\$ 20,020
TEMPORARY DAMAGES		AC	3.1	\$ 650	\$ 2,015
County Administration Costs					\$ 401
Topographic Survey					\$ 801
Reports, Plans and Specifications					\$ 1,202
Construction Staking & Administration					\$ 1,602
Total Branch D-1 Tile Improvement Cost					\$ 26,041

Branch E Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 460.00	\$ 460
102	TILE INVESTIGATION	HR	1	\$ 106.50	\$ 107
103	12-INCH AGRICULTURAL TILE	LF	425	\$ 16.75	\$ 7,119
105	INSTALL DROP INTAKE (18-INCH)	EA	1	\$ 1,085	\$ 1,085
106	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	2	\$ 400	\$ 800
Total					\$ 9,600
10% Unforeseen					\$ 960
Subtotal					\$ 10,560
TEMPORARY DAMAGES		AC	1.5	\$ 650	\$ 975
County Administration Costs					\$ 212
Topographic Survey					\$ 423
Reports, Plans and Specifications					\$ 634
Construction Staking & Administration					\$ 845
Total Branch E Tile Improvement Cost					\$ 13,649



PROPOSED OPTION #2 IMPROVEMENT

Branch F Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 2,150.00	\$ 2,150
102	TILE INVESTIGATION	HR	3	\$ 106.50	\$ 320
103	24-INCH AGRICULTURAL TILE	LF	1300	\$ 29.20	\$ 37,960
105	INSTALL DROP INTAKE (18-INCH)	EA	2	\$ 1,085	\$ 2,170
106	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	6	\$ 400	\$ 2,400
Total					\$ 45,000
10% Unforeseen					\$ 4,500
Subtotal					\$ 49,500
TEMPORARY DAMAGES		AC	4.5	\$ 650	\$ 2,925
County Administration Costs					\$ 990
Topographic Survey					\$ 1,980
Reports, Plans and Specifications					\$ 2,970
Construction Staking & Administration					\$ 3,960
Total Branch F Tile Improvement Cost					\$ 62,325

Branch H Open Ditch

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 120.00	\$ 120
102	DITCH CLEANING (4' WIDE DITCH BOTTOM)	LF	500	\$ 2.00	\$ 1,000
103	16.5' BUFFER STRIP SEEDING	AC	0.38	\$ 1,165	\$ 441
104	SIDESLOPE SEEDING	AC	0.23	\$ 3,353	\$ 770
105	BUFFER STRIP MOWING	AC	0.38	\$ 85	\$ 32
106	WEED SPRAYING	AC	0.61	\$ 150	\$ 91
Total					\$ 2,454
10% Unforeseen					\$ 245
Subtotal					\$ 2,700
TEMPORARY DAMAGES		AC	0.4	\$ 650	\$ 260
County Administration Costs					\$ 54
Topographic Survey					\$ 27
Reports, Plans and Specifications					\$ 162
Construction Staking & Administration					\$ 216
Total Branch H Open Ditch Improvement Cost					\$ 3,419

Branch L Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 6,710.00	\$ 6,710
102	TILE INVESTIGATION	HR	9	\$ 106.50	\$ 959
103	24-INCH AGRICULTURAL TILE	LF	3300	\$ 29.20	\$ 96,360
104	18-INCH AGRICULTURAL TILE	LF	981	\$ 24.60	\$ 24,133
108	INSTALL DROP INTAKE (18-INCH)	EA	5	\$ 1,085	\$ 5,425
109	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	18	\$ 400	\$ 7,200
Total					\$ 140,800
10% Unforeseen					\$ 14,080
Subtotal					\$ 154,880
TEMPORARY DAMAGES		AC	14.8	\$ 650	\$ 9,620
County Administration Costs					\$ 3,098
Topographic Survey					\$ 6,196
Reports, Plans and Specifications					\$ 9,293
Construction Staking & Administration					\$ 12,391
Total Branch L Tile Improvement Cost					\$ 195,478



PROPOSED OPTION #2 IMPROVEMENT
Branch J Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 12,090.00	\$ 12,090
102	TILE INVESTIGATION	HR	17	\$ 106.50	\$ 1,811
103	24-INCH AGRICULTURAL TILE	LF	5950	\$ 29.20	\$ 173,740
104	12-INCH AGRICULTURAL TILE	LF	1550	\$ 16.75	\$ 25,963
105	10-INCH AGRICULTURAL TILE	LF	840	\$ 16.00	\$ 13,440
106	CONNECT EXISTING 18-INCH TILE	EA	1	\$ 871.50	\$ 872
107	CONNECT EXISTING 15-INCH TILE	EA	1	\$ 644.50	\$ 645
108	CONNECT EXISTING 12-INCH TILE	EA	1	\$ 494.50	\$ 495
109	CONNECT EXISTING 10-INCH TILE	EA	2	\$ 447.50	\$ 895
110	CONNECT EXISTING 6-INCH TILE	EA	2	\$ 281.00	\$ 562
111	INSTALL DROP INTAKE (18-INCH)	EA	9	\$ 1,085	\$ 9,765
112	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	34	\$ 400	\$ 13,600
Total					\$ 253,900
10% Unforeseen					\$ 25,390
Subtotal					\$ 279,290
TEMPORARY DAMAGES		AC	28.8	\$ 650	\$ 18,720
County Administration Costs					\$ 5,586
Topographic Survey					\$ 11,172
Reports, Plans and Specifications					\$ 16,758
Construction Staking & Administration					\$ 22,344
Total Branch J Tile Improvement Cost					\$ 353,870

Branch J-1 Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 3,100.00	\$ 3,100
102	TILE INVESTIGATION	HR	6	\$ 106.50	\$ 639
102	15-INCH AGRICULTURAL TILE	LF	2550	\$ 21.00	\$ 53,550
106	INSTALL DROP INTAKE (18-INCH)	EA	3	\$ 1,085	\$ 3,255
107	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	11	\$ 400	\$ 4,400
Total					\$ 65,000
10% Unforeseen					\$ 6,500
Subtotal					\$ 71,500
TEMPORARY DAMAGES		AC	8.8	\$ 650	\$ 5,720
County Administration Costs					\$ 1,430
Topographic Survey					\$ 2,860
Reports, Plans and Specifications					\$ 4,290
Construction Staking & Administration					\$ 5,720
Total Branch J-1 Tile Improvement Cost					\$ 91,520



PROPOSED OPTION #2 IMPROVEMENT
Branch J-5 Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 470.00	\$ 470
102	TILE INVESTIGATION	HR	1	\$ 106.50	\$ 107
103	18-INCH AGRICULTURAL TILE	LF	296	\$ 24.60	\$ 7,282
104	INSTALL DROP INTAKE (18-INCH)	EA	1	\$ 1,085	\$ 1,085
105	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	2	\$ 400	\$ 800
Total					\$ 9,800
10% Unforeseen					\$ 980
Subtotal					\$ 10,780
TEMPORARY DAMAGES		AC	1.1	\$ 650	\$ 715
County Administration Costs					\$ 216
Topographic Survey					\$ 432
Reports, Plans and Specifications					\$ 647
Construction Staking & Administration					\$ 863
Total Branch J-5 Tile Improvement Cost					\$ 13,653

Branch K Tile

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 3,020.00	\$ 3,020
102	TILE INVESTIGATION	HR	2	\$ 106.50	\$ 213
103	24-INCH AGRICULTURAL TILE	LF	1350	\$ 29.20	\$ 39,420
104	18-INCH AGRICULTURAL TILE	LF	625	\$ 24.60	\$ 15,375
106	INSTALL DROP INTAKE (18-INCH)	EA	2	\$ 1,085	\$ 2,170
107	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	8	\$ 400	\$ 3,200
Total					\$ 63,400
10% Unforeseen					\$ 6,340
Subtotal					\$ 69,740
TEMPORARY DAMAGES		AC	6.9	\$ 650	\$ 4,485
County Administration Costs					\$ 1,395
Topographic Survey					\$ 2,790
Reports, Plans and Specifications					\$ 4,185
Construction Staking & Administration					\$ 5,580
Total Branch K Tile Improvement Cost					\$ 88,175

Potential Storage - 4.25 AC

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 2,590.00	\$ 2,590
102	TILE INVESTIGATION	HR	3	\$ 106.50	\$ 320
103	COMMON EXCAVATION	CY	13,769.85	\$ 3.00	\$ 41,310
104	INSTALL STRUCTURE S-1 WITH GALVINIZED GRATE	LS	1	\$ 3,850.00	\$ 3,850
106	RIPRAP WITH GEOTEXTILE FABRIC	CY	100	\$ 62	\$ 6,200
Total					\$ 54,300
10% Unforeseen					\$ 5,430
Subtotal					\$ 59,730
TEMPORARY DAMAGES		AC	6.0	\$ 650	\$ 3,900
County Administration Costs					\$ 1,195
Topographic Survey					\$ 2,390
Reports, Plans and Specifications					\$ 3,584
Construction Staking & Administration					\$ 4,779
Total Potential Storage - 4.25 AC Improvement Cost					\$ 75,578



PROPOSED OPTION #2 IMPROVEMENT

TOTAL IMPROVEMENT COST

	Main Open Ditch	\$	217,139
	Main Tile	\$	216,911
	Branch B Tile	\$	22,621
	Branch C Tile	\$	31,055
	Branch D Tile	\$	87,515
	Branch E Tile	\$	26,041
	Branch F Tile	\$	13,649
	Branch H Open Ditch	\$	62,325
	Branch L Tile	\$	195,478
	Branch J Tile	\$	353,870
	Branch J-1 Tile	\$	91,520
	Branch J-5 Tile	\$	13,653
	Branch K Tile	\$	88,175
	Potential Storage - 4.25 AC	\$	75,578
COMPLETE IMPROVEMENT COST			\$ 1,495,530



ROAD CROSSING SUMMARY - OPTION #1

Crossing	Road Authority	Repair Cost With Road	Repair Cost Without Road	Improvement Cost	Road Authority Cost (Difference of Repair Cost With Road and Repair Cost Without Road)	Damages Paid To Road Authority (Difference of Improvement Cost and Road Authority Cost)
MAIN						
County Road 5	COUNTY	\$ 20,192	\$ 3,065	\$ 21,492	\$ 17,127	\$ 4,365
TOTAL		\$ 20,192	\$ 3,065	\$ 21,492	\$ 17,127	\$ 4,365
STATE ROAD AUTHORITY TOTAL		\$ -	\$ -	\$ -	\$ -	\$ -
COUNTY ROAD AUTHORITY TOTAL		\$ 20,192	\$ 3,065	\$ 21,492	\$ 17,127	\$ 4,365
TOWNSHIP ROAD AUTHORITY TOTAL		\$ -	\$ -	\$ -	\$ -	\$ -

ROAD CROSSING SUMMARY - OPTION #2

Crossing	Road Authority	Repair Cost With Road	Repair Cost Without Road	Improvement Cost	Road Authority Cost (Difference of Repair Cost With Road and Repair Cost Without Road)	Damages Paid To Road Authority (Difference of Improvement Cost and Road Authority Cost)
MAIN						
County Road 5	COUNTY	\$ 20,192	\$ 3,065	\$ 21,492	\$ 17,127	\$ 4,365
BRANCH J						
County Road 5	COUNTY	\$ 20,192.00	\$ 3,064.91	\$ 21,492.00	\$ 17,127.09	\$ 4,364.91
County Road 6	COUNTY	\$ 19,917.00	\$ 2,756.91	\$ 21,492.00	\$ 17,160.09	\$ 4,331.91
County Road 6	COUNTY	\$ 11,412.00	\$ 2,161.91	\$ 19,917.00	\$ 9,250.09	\$ 10,666.91
TOTAL		\$ 71,713	\$ 11,049	\$ 84,393	\$ 60,664	\$ 23,729
STATE ROAD AUTHORITY TOTAL		\$ -	\$ -	\$ -	\$ -	\$ -
COUNTY ROAD AUTHORITY TOTAL		\$ 71,713	\$ 11,049	\$ 84,393	\$ 60,664	\$ 23,729
TOWNSHIP ROAD AUTHORITY TOTAL		\$ -	\$ -	\$ -	\$ -	\$ -



ROAD CROSSINGS

MAINLINE TILE REPAIR COST WITH ROAD - COUNTY ROAD 5

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 800.00	\$ 800
102	BORE 18-INCH TILE	LF	50	\$ 255.00	\$ 12,750
103	INSTALL DROP INTAKE (18-INCH)	EA	2	\$ 1,085.00	\$ 2,170
TOTAL					\$ 15,720
10% CONTINGENCY					\$ 1,572
SUBTOTAL					\$ 17,292
County Administration Costs					\$ 400
Reports, Plans and Specifications					\$ 1,100
Construction Staking & Administration					\$ 1,400
ESTIMATED MAINLINE TILE REPAIR COST WITH ROAD - COUNTY ROAD 5					\$ 20,192

MAINLINE TILE REPAIR WITHOUT ROAD - COUNTY ROAD 5

Item No.	Item	Unit	Quantity	Unit Price	Amount
201	MOBILIZATION	LS	1	\$ 200.00	\$ 200
202	18-INCH AGRICULTURAL TILE	LF	50	\$ 24.60	\$ 1,230
203	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	2	\$ 400.00	\$ 800
TOTAL					\$ 2,230
10% CONTINGENCY					\$ 223
SUBTOTAL					\$ 2,453
County Administration Costs					\$ 100
Reports, Plans and Specifications					\$ 200
Construction Staking & Administration					\$ 200
TEMPORARY DAMAGES		AC	0.17	\$ 650	\$ 112
ESTIMATED MAINLINE TILE REPAIR WITHOUT ROAD - COUNTY ROAD 5					\$ 3,065

MAINLINE TILE IMPROVEMENT COST - COUNTY ROAD 5

Item No.	Item	Unit	Quantity	Unit Price	Amount
301	MOBILIZATION	LS	1	\$ 800.00	\$ 800
302	BORE 24-INCH TILE	LF	50	\$ 275.00	\$ 13,750
303	INSTALL DROP INTAKE (18-INCH)	EA	2	\$ 1,085.00	\$ 2,170
TOTAL					\$ 16,720
10% CONTINGENCY					\$ 1,672
SUBTOTAL					\$ 18,392
County Administration Costs					\$ 400
Reports, Plans and Specifications					\$ 1,200
Construction Staking & Administration					\$ 1,500
ESTIMATED MAINLINE TILE IMPROVEMENT COST - COUNTY ROAD 5					\$ 21,492



ROAD CROSSINGS

BRANCH J TILE REPAIR COST WITH ROAD - COUNTY ROAD 5

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 800.00	\$ 800
102	BORE 18-INCH TILE	LF	50	\$ 255.00	\$ 12,750
103	INSTALL DROP INTAKE (18-INCH)	EA	2	\$ 1,085.00	\$ 2,170
TOTAL					\$ 15,720
10% CONTINGENCY					\$ 1,572
SUBTOTAL					\$ 17,292
County Administration Costs					\$ 400
Reports, Plans and Specifications					\$ 1,100
Construction Staking & Administration					\$ 1,400
ESTIMATED BRANCH J TILE REPAIR COST WITH ROAD - COUNTY ROAD 5					\$ 20,192

BRANCH J TILE REPAIR WITHOUT ROAD - COUNTY ROAD 5

Item No.	Item	Unit	Quantity	Unit Price	Amount
201	MOBILIZATION	LS	1	\$ 200.00	\$ 200
202	18-INCH AGRICULTURAL TILE	LF	50	\$ 24.60	\$ 1,230
203	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	2	\$ 400.00	\$ 800
TOTAL					\$ 2,230
10% CONTINGENCY					\$ 223
SUBTOTAL					\$ 2,453
County Administration Costs					\$ 100
Reports, Plans and Specifications					\$ 200
Construction Staking & Administration					\$ 200
TEMPORARY DAMAGES		AC	0.17	\$ 650	\$ 112
ESTIMATED BRANCH J TILE REPAIR WITHOUT ROAD - COUNTY ROAD 5					\$ 3,065

BRANCH J TILE IMPROVEMENT COST - COUNTY ROAD 5

Item No.	Item	Unit	Quantity	Unit Price	Amount
301	MOBILIZATION	LS	1	\$ 800.00	\$ 800
302	BORE 24-INCH TILE	LF	50	\$ 275.00	\$ 13,750
303	INSTALL DROP INTAKE (18-INCH)	EA	2	\$ 1,085.00	\$ 2,170
TOTAL					\$ 16,720
10% CONTINGENCY					\$ 1,672
SUBTOTAL					\$ 18,392
County Administration Costs					\$ 400
Reports, Plans and Specifications					\$ 1,200
Construction Staking & Administration					\$ 1,500
ESTIMATED BRANCH J TILE IMPROVEMENT COST - COUNTY ROAD 5					\$ 21,492



ROAD CROSSINGS

BRANCH J TILE REPAIR COST WITH ROAD - COUNTY ROAD 6

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 800.00	\$ 800
102	BORE 15-INCH TILE	LF	50	\$ 250.00	\$ 12,500
103	INSTALL DROP INTAKE (18-INCH)	EA	2	\$ 1,085.00	\$ 2,170
TOTAL					\$ 15,470
10% CONTINGENCY					\$ 1,547
SUBTOTAL					\$ 17,017
County Administration Costs					\$ 400
Reports, Plans and Specifications					\$ 1,100
Construction Staking & Administration					\$ 1,400
ESTIMATED BRANCH J TILE REPAIR COST WITH ROAD - COUNTY ROAD 6					\$ 19,917

BRANCH J TILE REPAIR WITHOUT ROAD - COUNTY ROAD 6

Item No.	Item	Unit	Quantity	Unit Price	Amount
201	MOBILIZATION	LS	1	\$ 100.00	\$ 100
202	15-INCH AGRICULTURAL TILE	LF	50	\$ 21.00	\$ 1,050
203	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	2	\$ 400.00	\$ 800
TOTAL					\$ 1,950
10% CONTINGENCY					\$ 195
SUBTOTAL					\$ 2,145
County Administration Costs					\$ 100
Reports, Plans and Specifications					\$ 200
Construction Staking & Administration					\$ 200
TEMPORARY DAMAGES		AC	0.17	\$ 650	\$ 112
ESTIMATED BRANCH J TILE REPAIR WITHOUT ROAD - COUNTY ROAD 6					\$ 2,757

BRANCH J TILE IMPROVEMENT COST - COUNTY ROAD 6

Item No.	Item	Unit	Quantity	Unit Price	Amount
301	MOBILIZATION	LS	1	\$ 800.00	\$ 800
302	BORE 24-INCH TILE	LF	50	\$ 275.00	\$ 13,750
303	INSTALL DROP INTAKE (18-INCH)	EA	2	\$ 1,085.00	\$ 2,170
TOTAL					\$ 16,720
10% CONTINGENCY					\$ 1,672
SUBTOTAL					\$ 18,392
County Administration Costs					\$ 400
Reports, Plans and Specifications					\$ 1,200
Construction Staking & Administration					\$ 1,500
ESTIMATED BRANCH J TILE IMPROVEMENT COST - COUNTY ROAD 6					\$ 21,492



ROAD CROSSINGS

BRANCH J TILE REPAIR COST WITH ROAD - COUNTY ROAD 6

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 500.00	\$ 500
102	BORE 6-INCH TILE	LF	50	\$ 125.00	\$ 6,250
103	INSTALL DROP INTAKE (18-INCH)	EA	2	\$ 1,085.00	\$ 2,170
TOTAL					\$ 8,920
10% CONTINGENCY					\$ 892
SUBTOTAL					\$ 9,812
County Administration Costs					\$ 200
Reports, Plans and Specifications					\$ 600
Construction Staking & Administration					\$ 800
ESTIMATED BRANCH J TILE REPAIR COST WITH ROAD - COUNTY ROAD 6					\$ 11,412

BRANCH J TILE REPAIR WITHOUT ROAD - COUNTY ROAD 6

Item No.	Item	Unit	Quantity	Unit Price	Amount
201	MOBILIZATION	LS	1	\$ 100.00	\$ 100
202	6-INCH AGRICULTURAL TILE	LF	50	\$ 12.00	\$ 600
203	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	2	\$ 400.00	\$ 800
TOTAL					\$ 1,500
10% CONTINGENCY					\$ 150
SUBTOTAL					\$ 1,650
County Administration Costs					\$ 100
Reports, Plans and Specifications					\$ 100
Construction Staking & Administration					\$ 200
TEMPORARY DAMAGES		AC	0.17	\$ 650	\$ 112
ESTIMATED BRANCH J TILE REPAIR WITHOUT ROAD - COUNTY ROAD 6					\$ 2,162

BRANCH J TILE IMPROVEMENT COST - COUNTY ROAD 6

Item No.	Item	Unit	Quantity	Unit Price	Amount
301	MOBILIZATION	LS	1	\$ 800.00	\$ 800
302	BORE 15-INCH TILE	LF	50	\$ 250.00	\$ 12,500
303	INSTALL DROP INTAKE (18-INCH)	EA	2	\$ 1,085.00	\$ 2,170
TOTAL					\$ 15,470
10% CONTINGENCY					\$ 1,547
SUBTOTAL					\$ 17,017
County Administration Costs					\$ 400
Reports, Plans and Specifications					\$ 1,100
Construction Staking & Administration					\$ 1,400
ESTIMATED BRANCH J TILE IMPROVEMENT COST - COUNTY ROAD 6					\$ 19,917



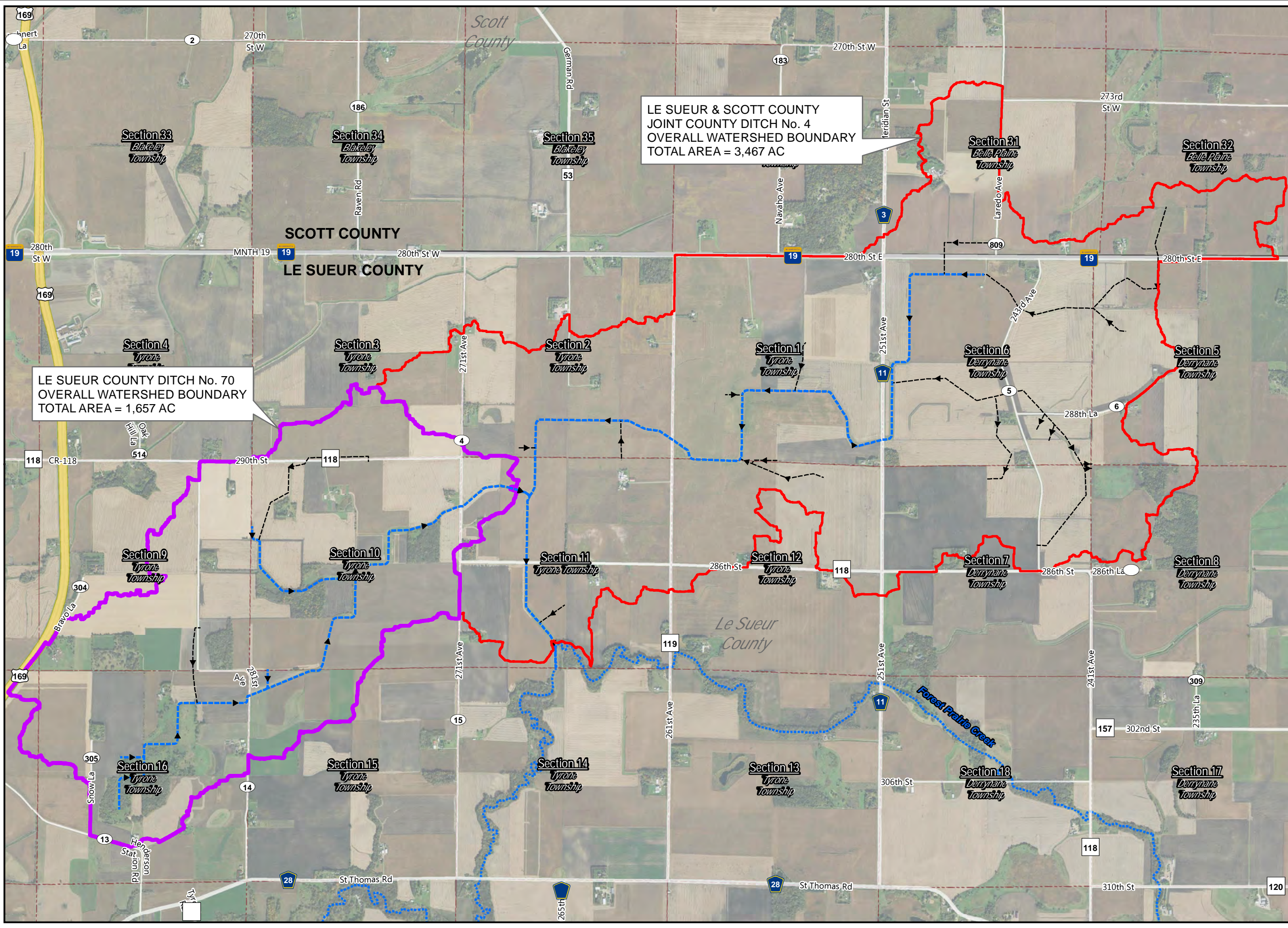
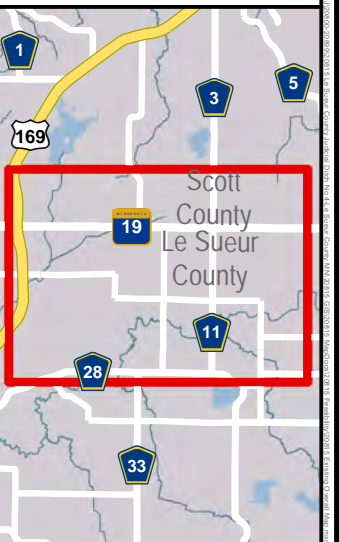
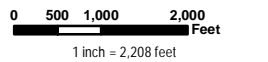
Existing
Overall Watershed
Map
Joint County Ditch
No. 4 and
County Ditch No. 70
Le Sueur and Scott
County, Minnesota
Thursday, September 07, 2017

- Legend**
- JCD 4 Watershed
 - CD70 Watershed
 - JCD 4 System**
 - TYPE**
 - EXISTING OPEN DITCH
 - EXISTING TILE

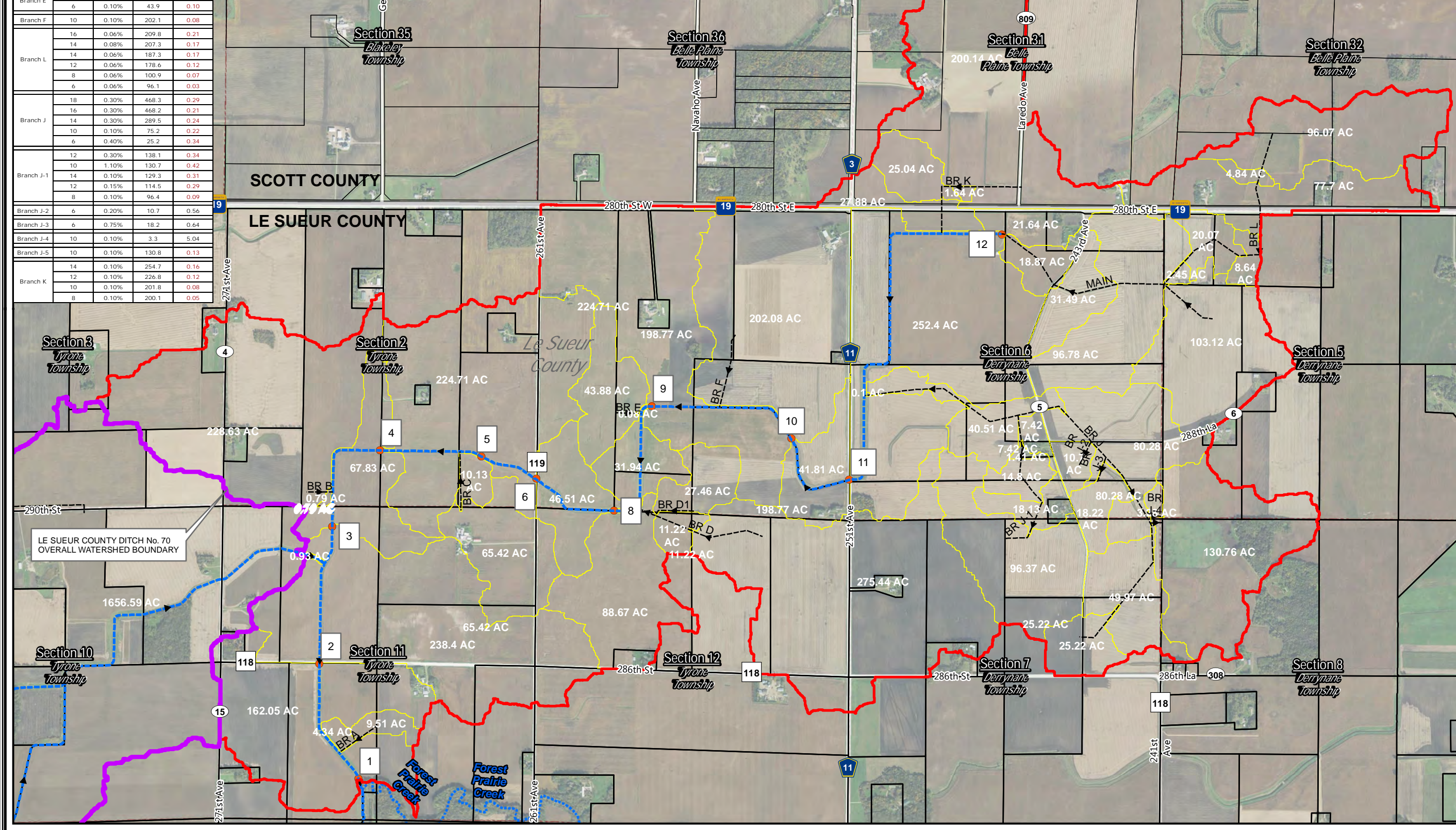
PN: 17-20815

Source:

- Orthophotograph (Le Sueur County, 2016)
- Tile/Ditch (Le Sueur County, 11/21/2016)
- Parcels (Le Sueur County, 2/4/2016)
- Lakes (MN DNR, July, 2008)
- Major Stream (MN DNR, July 2008)
- Counties (MN DNR, July 2013)
- PLSS (MnGeo/USGS)



Area	Existing Size (in)	Existing Slope (%)	Drainage Area (Acres)	Existing Drainage Coefficient (in/day)	Crossing #	Location	Existing Type	Existing Material	Existing Size (in)	Existing Rise x Span (in)	Existing Slope (%)	Drainage Area (Acres)	Existing Drainage Coefficient (in/day)									
Main	18	0.22%	460.0	0.26	1	Main - Field Crossing	ARCH CULVERT	CMP	-	63 x 87	1.25%	5123	1.34									
	18	0.20%	441.2	0.25																		
	18	0.17%	409.7	0.25																		
	10	0.20%	103.1	0.23																		
Branch A	8	0.30%	13.9	1.14										3	Main - Field Crossing	ROUND CULVERT	CMP	60	-	1.00%	3051	1.06
	6	0.90%	9.5	1.34																		
Branch B	10	0.40%	229.4	0.14										5	Main - TWP 118	ROUND CULVERT	RCP	54	-	0.30%	2454	1.05
	10	0.20%	228.6	0.10																		
Branch C	8	0.10%	75.6	0.12										6	Main - Field Crossing	ROUND CULVERT	CMP	54	-	0.42%	2407	0.65
	6	0.40%	65.4	0.13																		
Branch D	18	0.12%	402.8	0.22	8	Main - Field Crossing	ROUND CULVERT	CMP	54	-	0.83%	1929	1.16									
	18	0.08%	286.7	0.25																		
Branch D-1	12	0.50%	275.4	0.22	9	Main - CSAH 11	ROUND CULVERT	RCP	54	-	0.31%	1486	1.77									
	8	0.10%	27.5	0.33																		
Branch E	8	0.10%	44.7	0.20	10	Main - Field Crossing	ROUND CULVERT	CMP	42	-	2.50%	482	4.10									
	6	0.10%	43.9	0.10																		
Branch F	16	0.06%	209.8	0.21	16	Main - Field Crossing	ROUND CULVERT	CMP	-	-	-	-	-									
	14	0.08%	207.3	0.17																		
14	0.06%	187.3	0.17																			
12	0.06%	178.6	0.12																			
8	0.06%	100.9	0.07																			
6	0.06%	96.1	0.03																			
Branch J	18	0.30%	468.3	0.29										18	Main - Field Crossing	ROUND CULVERT	CMP	-	-	-	-	-
	16	0.30%	468.2	0.21																		
Branch J-1	14	0.30%	289.5	0.24										14	Main - Field Crossing	ROUND CULVERT	CMP	-	-	-	-	-
	10	0.10%	75.2	0.22																		
Branch J-2	6	0.40%	25.2	0.34	6	Main - Field Crossing	ROUND CULVERT	CMP	-	-	-	-	-									
	12	0.30%	138.1	0.34																		
Branch J-3	10	1.10%	130.7	0.42	10	Main - Field Crossing	ROUND CULVERT	CMP	-	-	-	-	-									
	14	0.10%	129.3	0.31																		
Branch J-4	12	0.15%	114.5	0.29	12	Main - Field Crossing	ROUND CULVERT	CMP	-	-	-	-	-									
	8	0.10%	96.4	0.09																		
Branch J-5	6	0.20%	10.7	0.56	6	Main - Field Crossing	ROUND CULVERT	CMP	-	-	-	-	-									
	6	0.75%	18.2	0.64																		
Branch K	10	0.10%	3.3	5.04	10	Main - Field Crossing	ROUND CULVERT	CMP	-	-	-	-	-									
	10	0.10%	130.8	0.13																		
Branch K-1	14	0.10%	254.7	0.16	14	Main - Field Crossing	ROUND CULVERT	CMP	-	-	-	-	-									
	12	0.10%	226.8	0.12																		
Branch K-2	10	0.10%	201.8	0.08	10	Main - Field Crossing	ROUND CULVERT	CMP	-	-	-	-	-									
	8	0.10%	200.1	0.05																		



LE SUEUR & SCOTT COUNTY
JOINT COUNTY DITCH No. 4
OVERALL WATERSHED BOUNDARY
TOTAL AREA = 3,467 AC

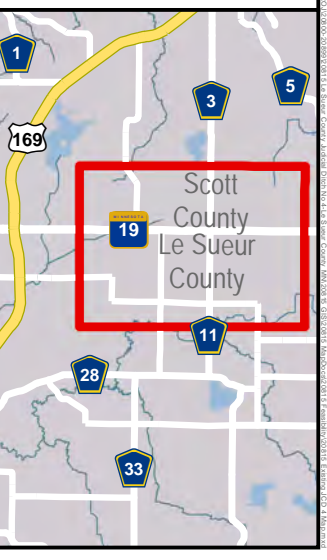


Existing JCD No. 4
Watershed Map
Joint County Ditch
No. 4 and
County Ditch No. 70
Le Sueur and Scott
County, Minnesota
Thursday, September 07, 2017

- Legend**
- CD70 Watershed
 - JCD 4 Watershed
 - JCD 4 System TYPE
 - EXISTING OPEN DITCH
 - EXISTING TILE
 - Culvert Crossings
 - Subcatchments
 - Parcels

PN: 17-20815
Source:
Orthophotograph (Le Sueur County, 2016)
Tile/Ditch (Le Sueur County, 11/21/2016)
Parcels (Le Sueur County, 2/4/2016)
Lakes (MN DNR, July, 2008)
Major Stream (MN DNR, July 2008)
Counties (MN DNR, July 2013)
PLSS (MnGeo/USGS)

0 395 790 1,580 Feet
1 inch = 1,667 feet





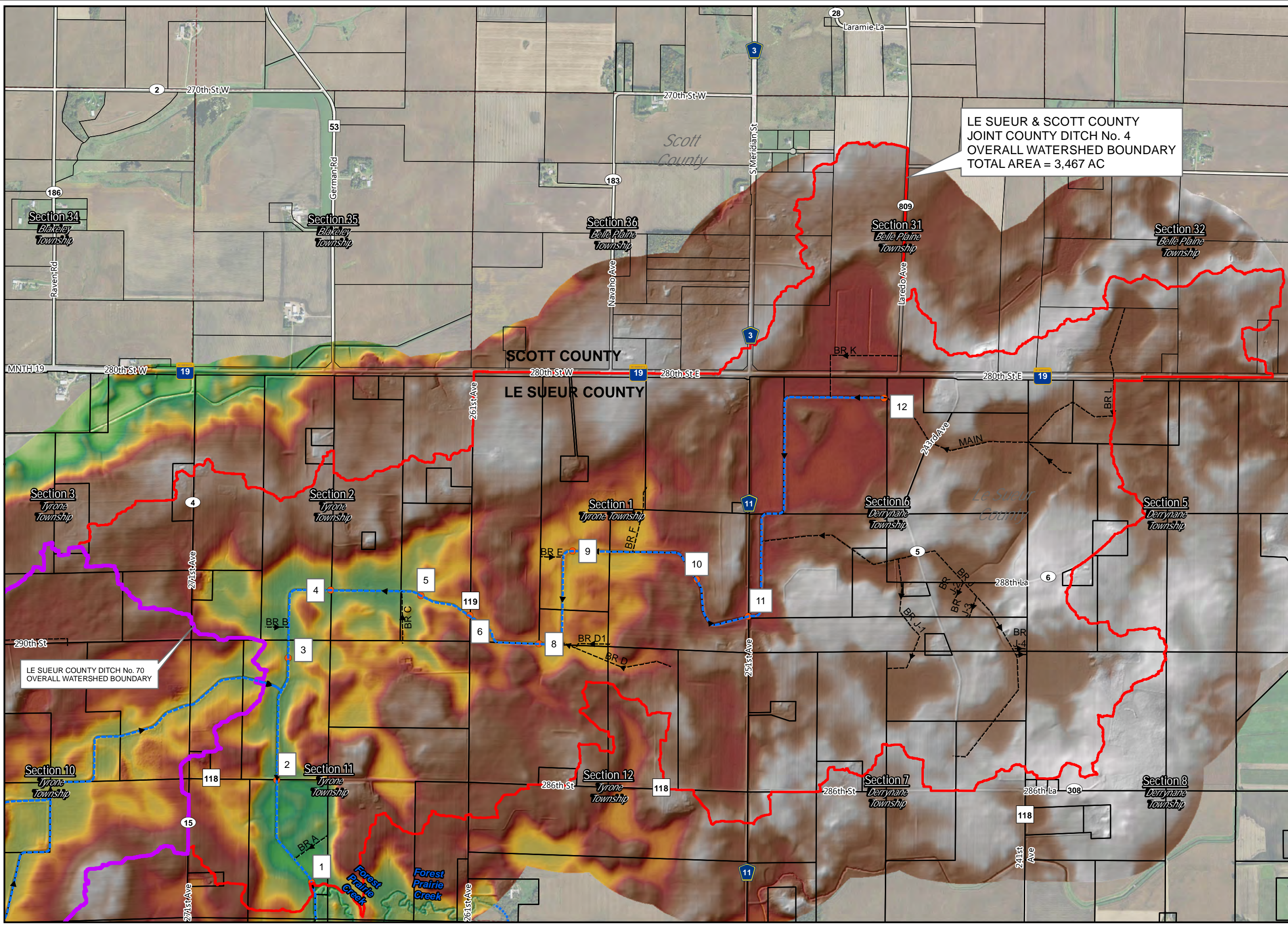
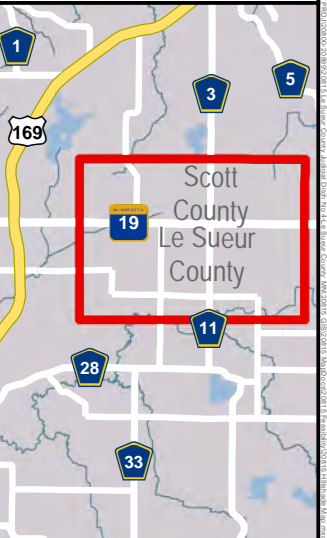
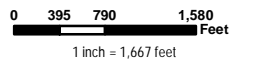
Existing Hillshade Map
 Joint County Ditch No. 4 and
 County Ditch No. 70
 Le Sueur and Scott
 County, Minnesota
 Thursday, September 07, 2017

- Legend**
- █ CD70 Watershed
 - █ JCD 4 Watershed
 - JCD 4 System**
 - EXISTING OPEN DITCH
 - EXISTING TILE
 - Culvert Crossings
 - Parcels
 - DEM**
 - Value**
 - High : 1027.14
 - Low : 905.694

PN: 17-20815

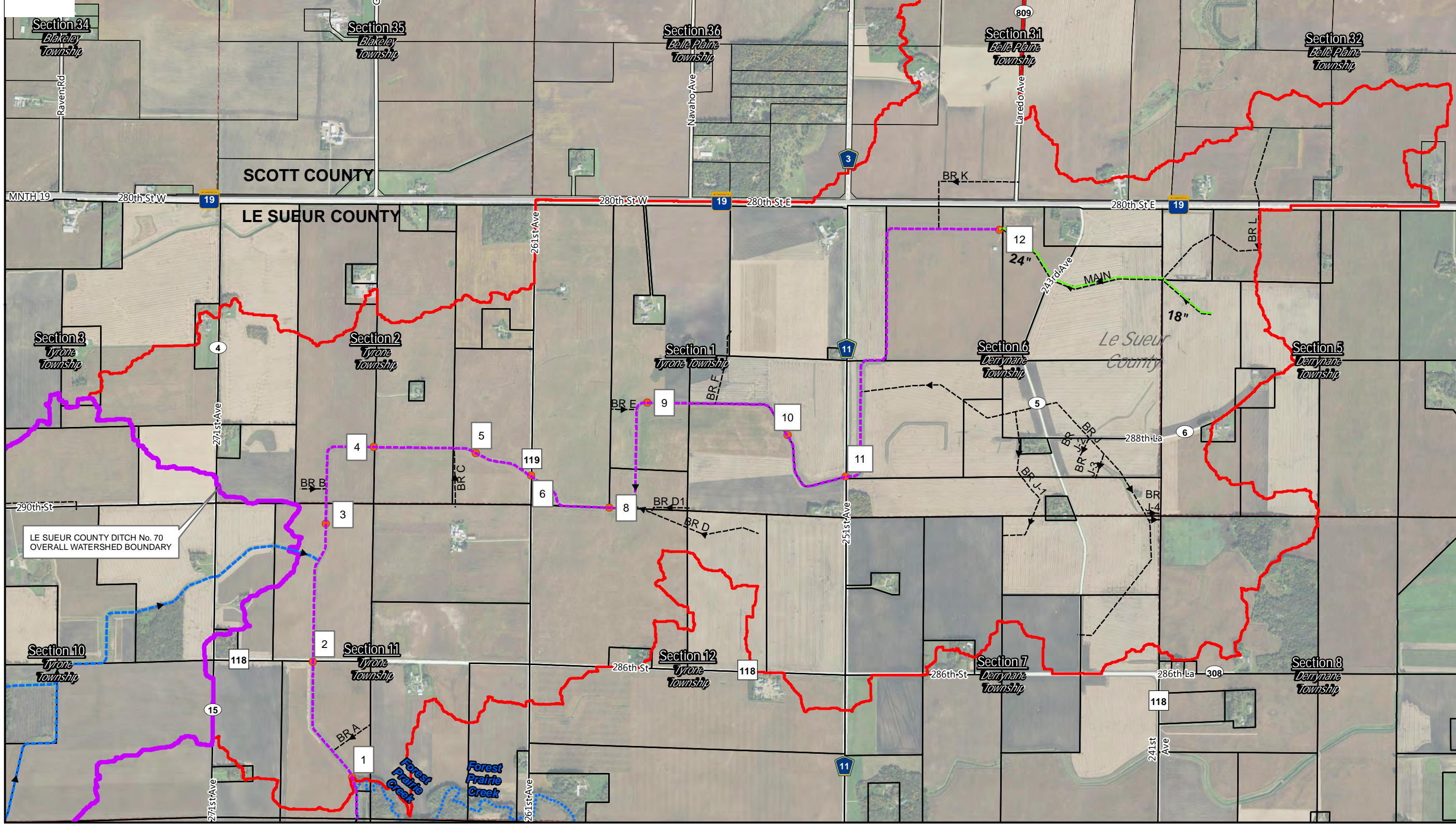
Source:

- Orthophotograph (Le Sueur County, 2016)
- Tile/Ditch (Le Sueur County, 11/21/2016)
- Parcels (Le Sueur County, 2/4/2016)
- Lakes (MN DNR, July, 2008)
- Major Stream (MN DNR, July 2008)
- Counties (MN DNR, July 2013)
- PLSS (MnGeo/USGS)



Area	Existing Size (in)	Proposed Size (in)	Existing Slope (%)	Proposed Slope (%)	Drainage Area (Acres)	Existing Drainage Coefficient (in/day)	Proposed Drainage Coefficient (in/day)
Main	18	24	0.22%	0.20%	460.0	0.26	0.52
	18	24	0.20%	0.20%	441.2	0.25	0.55
	18	24	0.17%	0.15%	409.7	0.25	0.51
	10	15	0.20%	0.15%	103.1	0.23	0.58

Crossing #	Location	Proposed Type	Proposed Material	Proposed Size (in)	Proposed Rise x Span (in)	Proposed Slope (%)	Drainage Area (Acres)	Proposed Drainage Coefficient (in/day)
6	Main - Field Crossing	ROUND CULVERT	RCP	54	-	0.30%	2407	1.07



Proposed Option #1 Watershed Map
 Joint County Ditch No. 4 and County Ditch No. 70
 Le Sueur and Scott County, Minnesota
 Thursday, September 07, 2017

Legend

- CD70 Watershed
- JCD 4 Watershed

JCD 4 System

TYPE

- EXISTING TILE
- Culvert Crossings

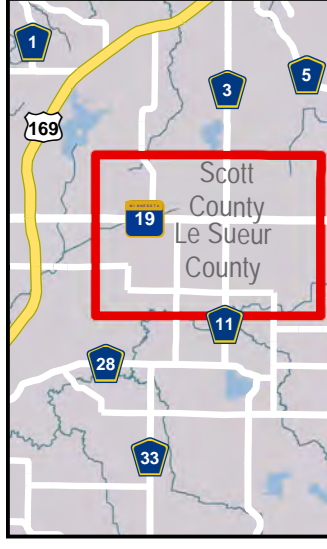
Proposed Option 1

TYPE

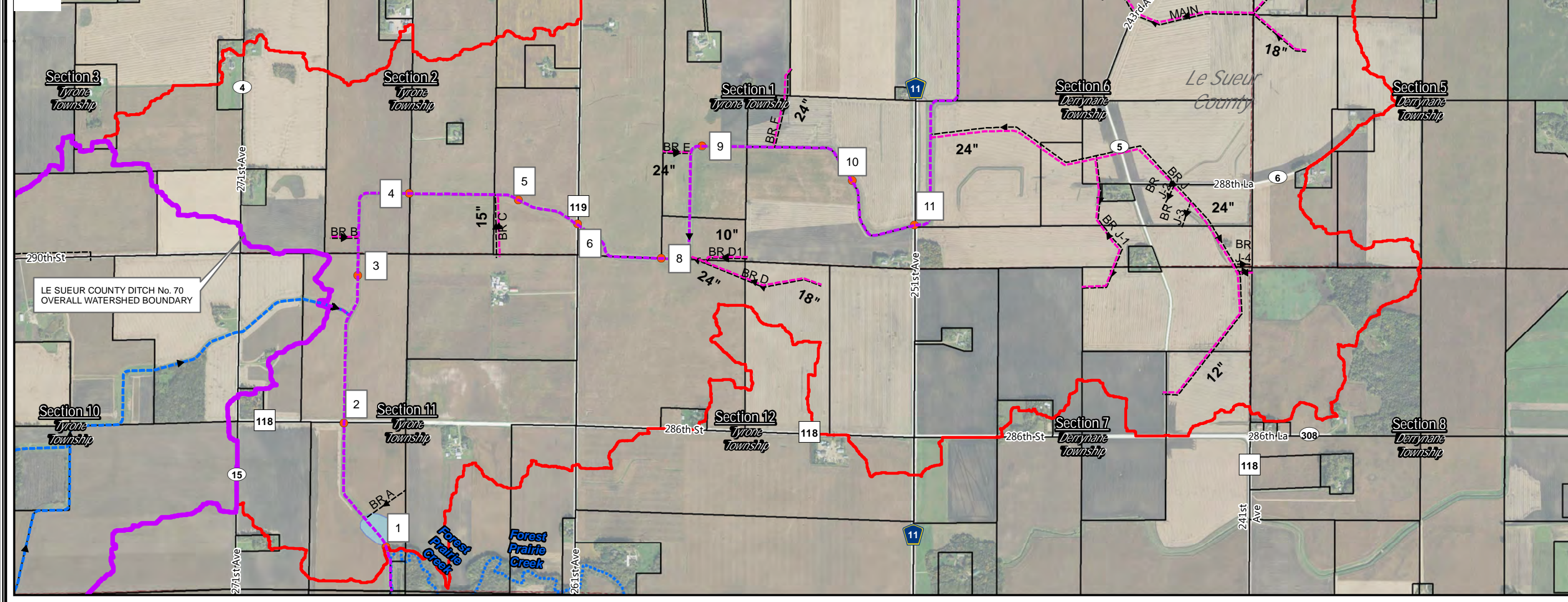
- OPEN DITCH CLEANING
- PROPOSED TILE
- Parcels

PN: 17-20815
 Source:
 Orthophotograph (Le Sueur County, 2016)
 Tile/Ditch (Le Sueur County, 11/21/2016)
 Parcels (Le Sueur County, 2/4/2016)
 Lakes (MN DNR, July, 2008)
 Major Stream (MN DNR, July 2008)
 Counties (MN DNR, July 2013)
 PLSS (MnGeo/USGS)

0 395 790 1,580 Feet
 1 inch = 1,667 feet



Area	Existing Size (in)	Proposed Size (in)	Existing Slope (%)	Proposed Slope (%)	Drainage Area (Acres)	Existing Drainage Coefficient (in/day)	Proposed Drainage Coefficient (in/day)	Crossing #	Location	Proposed Type	Proposed Material	Proposed Size (in)	Proposed Rise x Span (in)	Proposed Slope (%)	Drainage Area (Acres)	Proposed Drainage Coefficient (in/day)		
Main	18	24	0.22%	0.20%	460.0	0.26	0.52	6	Main - Field Crossing	ROUND CULVERT	RCP	54	-	0.30%	2407	1.07		
	18	24	0.20%	0.20%	441.2	0.25	0.55											
	18	24	0.17%	0.15%	409.7	0.25	0.51											
	10	15	0.20%	0.15%	103.1	0.23	0.58											
Branch B	10	18	0.40%	0.20%	229.4	0.14	0.49											
	10	18	0.20%	0.20%	228.6	0.10	0.49											
Branch C	8	15	0.10%	0.10%	75.6	0.12	0.65											
	6	12	0.40%	0.15%	65.4	0.13	0.50											
Branch D	18	24	0.12%	0.15%	402.8	0.22	0.52											
	18	24	0.08%	0.08%	286.7	0.25	0.53											
	12	18	0.50%	0.30%	275.4	0.22	0.50											
Branch D-1	8	10	0.10%	0.10%	27.5	0.33	0.60											
Branch E	8	12	0.10%	0.10%	44.7	0.20	0.60											
	6	12	0.10%	0.10%	43.9	0.10	0.61											
Branch F	10	24	0.10%	0.05%	202.1	0.08	0.60											
Branch L	16	24	0.06%	0.05%	209.8	0.21	0.58											
	14	24	0.08%	0.05%	207.3	0.17	0.58											
	14	24	0.06%	0.05%	187.3	0.17	0.64											
	12	24	0.06%	0.05%	178.6	0.12	0.68											
	8	18	0.06%	0.05%	100.9	0.07	0.56											
Branch J	6	18	0.06%	0.05%	96.1	0.03	0.58											
	18	24	0.30%	0.20%	468.3	0.29	0.52											
	16	24	0.30%	0.20%	468.2	0.21	0.52											
	14	24	0.30%	0.10%	289.5	0.24	0.59											
	10	12	0.10%	0.20%	75.2	0.22	0.51											
Branch J-1	6	10	0.40%	0.10%	25.2	0.34	0.66											
	12	15	0.30%	0.20%	138.1	0.34	0.50											
	10	15	1.10%	0.20%	130.7	0.42	0.53											
	14	15	0.10%	0.20%	129.3	0.31	0.53											
Branch J-5	12	15	0.15%	0.15%	114.5	0.29	0.52											
	8	15	0.10%	0.10%	96.4	0.09	0.51											
	10	18	0.10%	0.10%	130.8	0.13	0.61											
Branch K	14	24	0.10%	0.10%	254.7	0.16	0.67											
	12	24	0.10%	0.05%	226.8	0.12	0.53											
	10	24	0.10%	0.05%	201.8	0.08	0.60											
	8	18	0.10%	0.15%	200.1	0.05	0.49											



Proposed Option #2
Watershed Map
 Joint County Ditch No. 4 and County Ditch No. 70
 Le Sueur and Scott County, Minnesota
 Tuesday, September 12, 2017

Legend

Proposed Option 2

TYPE

- OPEN DITCH CLEANING
- PROPOSED TILE
- CD70 Watershed
- JCD 4 Watershed

JCD 4 System

TYPE

- EXISTING TILE
- Culvert Crossings
- Potential Storage
- Parcels

PN: 17-20815
 Source:
 Orthophotograph (Le Sueur County, 2016)
 Tile/Ditch (Le Sueur County, 11/21/2016)
 Parcels (Le Sueur County, 2/4/2016)
 Lakes (MN DNR, July, 2008)
 Major Stream (MN DNR, July 2008)
 Counties (MN DNR, July 2013)
 PLSS (MnGeo/USGS)

