

DITCH INSPECTION REPORT

CD04

DRAFT

STEARNS COUNTY MINNESOTA

August 17, 2019

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Adopted by Stearns County Board of Commissioners acting as Drainage Authority <DATE>

DITCH INSPECTION REPORT

CD04

Introduction

Stearns County is the Drainage Administrator for County Ditch 04(CD4) located in Avon and St. Wendel Townships. CD4 is an open ditch system that is approximately 5.2 miles in length, and contains approximately 2,848 benefitted acres. CD4 is not public waters, but does drain into Spunk Creek. A brief history CD4 is as follows:

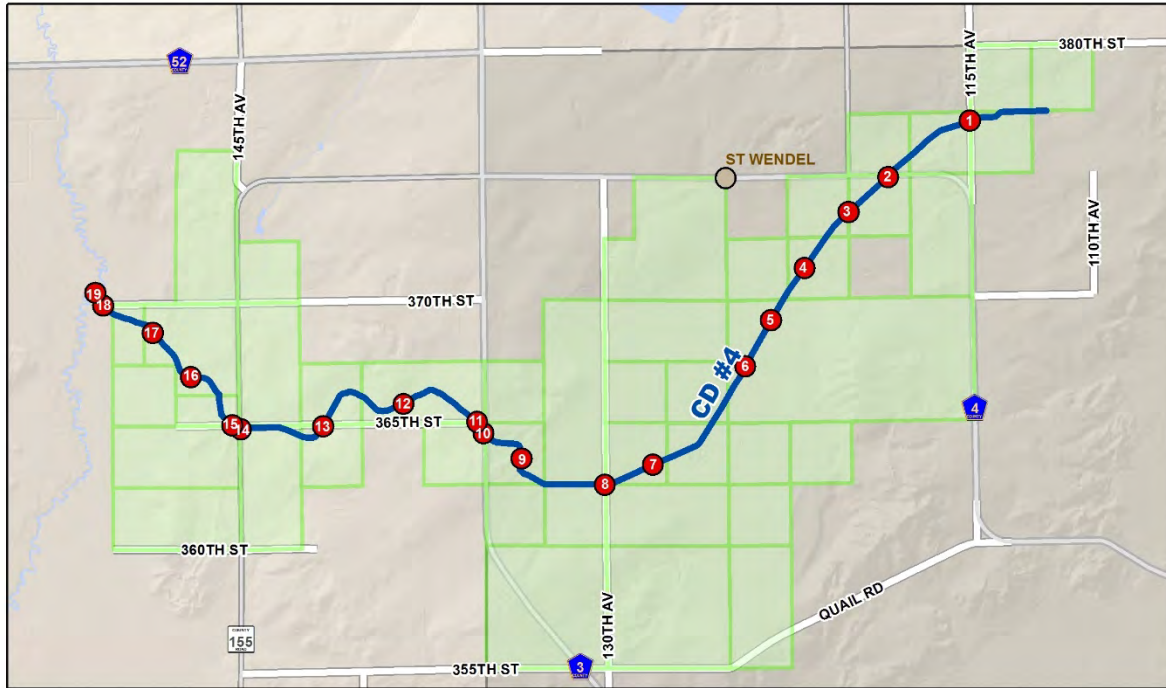
1. November 15, 1898: CD4 was established
2. 1904: A repair was completed on the ditch
3. 1952-1953: The St. Wendel Township portion of the ditch was cleaned
4. 2009: The culvert under Township Road 130th Avenue was replaced.
5. August 2, 2017: The Stearns County Survey Crew removed debris and dead fall from a portion of the ditch.
6. 2019: The Drainage Authority adopted a resolution to follow the procedures of MN103E to reestablish and correct the drainage system record (Reestablishment)

Stearns County Division of Land Management began an inspection on 6/2/2017 after being contacted by a property owner in regards to a possible repair of the ditch. The following report contains an inspection of the entire ditch.



Inspection

The field inspection was completed by the Stearns County Survey Crew from June 2016 through the present. The inspection of the CD4 is shown from East to West, which follows the flow of the ditch. The crossing locations are as shown below.



1. Public Crossing: Township Road – 115th Avenue
- 1a Private Crossing: PID: 33.21845.0000
2. Public Crossing: County State Aid Highway No.4
3. Private Crossing: PID: 33.21851.0000
4. Private Crossing: PID: 33.21853.0000
5. Private Crossing: PID: 33.21880.0000
6. Private Crossing: PID: 33.21881.0000
7. Private Crossing: PID: 33.21874.0000
8. Public Crossing: Township Road 130th Avenue
9. Private Crossing: PID: 33.21878.0050
10. Public Crossing: County State Aid Highway No. 3
11. Public Crossing: Township Road - 365th Street
12. Private Crossing: PID: 03.00864.0025
13. Public Crossing: Township Road - 365th Street
14. Public Crossing: County Road No. 155
15. Public Crossing: Township Road - 365th Street
16. Private Crossing: PID: 03.00845.0000
17. Private Crossing: PID: 03.00846.0000
18. Private Crossing: PID: 03.00848.0000

Analysis

Visual inspection of County Ditch 4 and each crossing shows it to be mostly functioning, however, Each private there are concerns with multiple locations that may require repair to optimize flow. During inspection, the following observations were made:

- Brush and vegetation are present in the ditch, but the flow of the ditch remains unobstructed.
- There are multiple ditch crossings that should be monitored. These culverts are either failed, failing, or the elevation of the culvert appears to obstruct water.
- There is at least one beaver dam in the ditch.

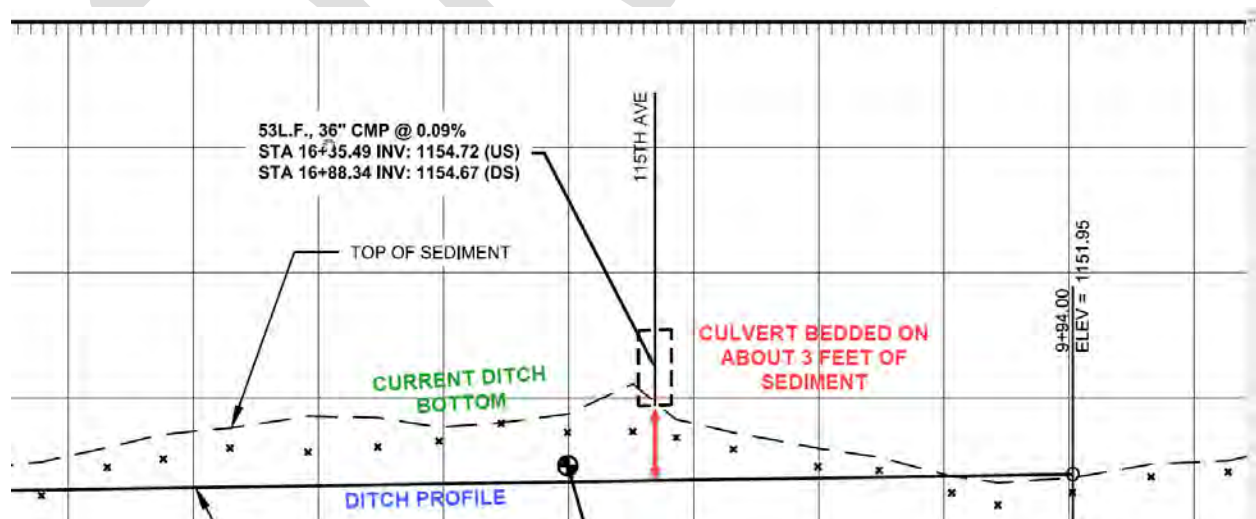
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Inspection Section 1

This portion of the ditch inspection was completed on a crossing under 115th Avenue, which is a Township Road. The ditch was flowing, however, there is a large amount of vegetation and brush. The west side of the culvert contained a beaver grate in order to prevent the culvert from being plugged by beavers. The crossing information is as follows:

- Culvert: 36 inch Corrugated Metal Pipe
 - East invert (Upstream Invert) = 1154.72 feet
 - West invert (Downstream Invert) = 1154.67 feet

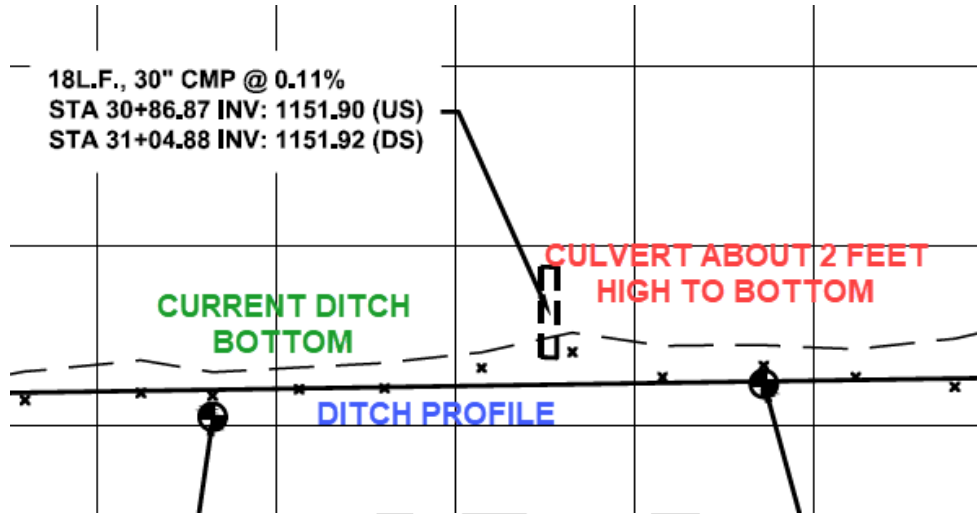
The ditch and crossing are in working condition however engineer profile shows the culvert to be about 3 feet higher than profile.



Inspection Section 1a

This ditch observation was completed on a private crossing located on PID 33.21845.0000. The crossing is higher than the ditch bottom and should be considered for lowering if work occurs upstream.

- Culvert: 30 inch Corrugated Metal Pipe
 - East invert (Upstream Invert) = 1151.90 feet
 - West invert (Downstream Invert) = 1151.92 feet



Inspection Section 2

This portion of the ditch inspection was completed on a crossing under County State Aid Highway No. 4. The ditch was flowing into the culvert. The crossing information is as follows:

- Culvert: 42 inch Reinforced Concrete Pipe
 - North Invert (Upstream Invert) = 1151.13 feet
 - South Invert (Downstream Invert) = 1151.44 feet

The ditch and crossing are in working condition.



Crossing under County State Aid Highway No. 4 looking northeast

Crossing under County State Aid Highway No. 4 looking southwest



Crossing under County State Aid Highway No. 4 view of culvert.

Inspection Section 3

This ditch observation was completed on a private crossing located on PID 33.21851.0000. The field crossing contained approximately 50 inches of standing water, and the culvert was clean of sediment. Brush could be seen in the ditch looking up and down stream of the crossing. The crossing information is as follows:

- Culvert: 48 inch Corrugated Metal Pipe
 - East Invert (Upstream Invert) = 1147.91 feet
 - West Invert (Downstream Invert) = 1147.58 feet

The ditch and crossing are in working condition.



Private Crossing looking northeast



Private Crossing looking southwest

Inspection Section 4

This portion of the ditch inspection was completed on a private crossing located on property PID 33.21853.0000. The culvert within the field crossing has failed. The top of the pipe has either been crushed or has rusted away, and the invert remained in place. The approach is impassible and needs to be repaired. The crossing information is as follows:

- Culvert: Size and type is unknown
 - North Invert (Upstream Invert) = 1148.53 feet
 - South Invert (Downstream Invert) = 1148.58 feet

This crossing restricts the flow of the ditch and needs to be repaired.



Private Crossing looking south



Private Crossing looking north

Inspection Section 5

This portion of the ditch inspection was completed on a private crossing located on property PID 33.21880.0000. The field crossing has approximately 4 inches of water on north side of the crossing and approximately 2 feet of water on the south side. The crossing information is as follows:

- Culvert: 36 in Corrugated Metal Pipe
 - North Invert (Upstream Invert) = 1150.91 feet
 - South Invert (Downstream Invert) = 1149.20 feet

The ditch is functioning at this location; however, the culvert has 1.71 feet of drop from the north invert to the south invert and that is reason for concern. This culvert will need additional work once it fails.



Private Crossing looking north



Private Crossing
looking south

Inspection Section 6

This portion of the ditch inspection was completed on a private crossing located on property PID 33.21881.0000. The crossing information is as follows:

- Culvert: 36 in Corrugated Metal Pipe
 - North Invert (Upstream Invert) = 1148.63 feet
 - South Invert (Downstream Invert) = 1148.28 feet

The ditch and crossing are in working condition.



Private Crossing looking north



Private Crossing looking south

Inspection Section 7

This portion of the ditch inspection was completed on a private crossing located on property PID 33.21874.0000. During the inspection completed on August 1, 2017 it was noted that there was no water in ditch. On another inspection completed on August 16, 2017 there was approximately 30 inches of water in the culvert. The crossing information is as follows:

- Culvert: 30 inch Corrugated Metal Pipe
 - East Invert (Upstream Invert) = 1147.03 feet
 - West Invert (Downstream Invert) = 1147.19 feet

The ditch and crossing are in working condition at this location.



Private Crossing looking southwest,
southwest of crossing



Private Crossing looking northeast,
northeast of crossing



Private Crossing looking northeast



Private Crossing looking southwest

Inspection Section 8

This portion of the ditch inspection was completed on the crossing under 130th Avenue, Township Road, located in the Southeast Quarter of Section 7, T125N, R29W. On August 1, 2017 there was no water in ditch. On August 16, 2017, after a seasonal rainfall, we again inspected this crossing, and we noted water on the east side but not on the west side. The engineers profile indicates the crossing is installed about 2 feet higher than engineered bottom. The culvert in combination with the wetland immediately upstream combine to give the appearance of holding water. This area should continue to be monitored. The crossing information is as follows:

- Culvert: 48 inch Corrugated Metal Pipe
 - Placed in 2009
 - East Invert (Upstream Invert) = 1149.32 feet
 - West Invert (Downstream Invert) = 1149.52 feet



130th Avenue looking west



130th Avenue looking east

Inspection Section 9

This portion of the ditch inspection was completed on a private crossing located on property PID 33.21878.0050. The crossing contains a box culvert with a bridge over the top. The crossing information is as follows:

- Culvert: 8 feet by 6.5 feet Concrete Box Culvert
 - South Invert (Upstream Invert) = 1149.76 feet
 - North Invert (Downstream Invert) = 1148.96 feet

The ditch and crossing are in working order at this crossing.



Private crossing looking north



Private crossing looking south



Private



Private crossing looking south

Inspection Section 10

This portion of the ditch inspection was completed on the crossing under CSAH 3, located in the Southeast Quarter of Section 12, T125N, R30W. The ditch contained brush in-between CSAH 3 and 365th Street; however, the brush did not seem to impede water flow. The crossing information is as follows:

- Culvert: 48 inch Reinforced Concrete Pipe
 - East Invert (Upstream Invert) = 1148.03 feet
 - West Invert (Downstream Invert) = 1148.45 feet

The crossing and the ditch are in working order, however, if the Highway Department ever planned work on CSAH 3, the Drainage Authority may desire to evaluate the install elevation of the culvert.



CSAH 3 looking east

CSAH 3 looking west



Inspection Section 11

This portion of the ditch inspection was completed on the easterly crossing of CD4 under 365th Street, Township Road, located near the East Quarter Corner of Section 12, T125N, R30W. This inspection was completed from the road due to current conditions. The culvert within the crossing was repaired in 2008. The crossing information is as follows:

- Culvert: 48 inch Corrugated Metal Pipe
 - South Invert (Upstream Invert) 1147.89 feet
 - North Invert (Downstream Invert) = 1147.70 feet

The ditch and crossing are in working condition.



365th Street looking south



365th Street looking north

Inspection Section 12

This portion of the ditch inspection was completed on PID 03.00864.0020. The crossing is utilized as the driveway for the property. The crossing information is as follows:

- Culvert: 48 inch Corrugated Metal Pipe
 - East Invert (Upstream Invert) = 1145.89 feet
 - West Invert (Downstream Invert) = 1146.02 feet

The ditch and crossing are in working order. Even though there is brush within the ditch channel, it does not appear to be impeding the flow of water.



Private crossing looking east



Private crossing looking west

Inspection Section 13

This portion of the ditch inspection was completed on the westerly crossing of CD4 under 365th Street, Township Road, Located in the Northwest Quarter of Section 12, T125N, R30W. This inspection was completed from the road due to current conditions. The crossing information is as follows:

- Culvert: 48 inch Corrugated Metal Pipe
 - North Invert (Upstream Invert) = 1132.54 feet
 - South Invert (Downstream Invert) = 1132.82 feet

The ditch and crossing are in working order. Even though there is brush within the ditch channel, it does not appear to be impeding the flow of water.



365th Street looking south



365th Street looking north

Inspection Section 14

This portion of the ditch inspection was completed on crossing under County Road No. 155, located in Section 11 and 12, T125N, R30W. This inspection was completed from the road due to current conditions. There is sediment within the culvert and collection on the ends. The sediment at the end of the culvert contains growing grass. The crossing information is as follow:

- Culvert: 60 inch Reinforced Concrete Pipe
 - East Invert (Upstream Invert) = 1118.60 feet
 - West Invert (Downstream Invert) = 1119.10 feet

Even though there is vegetation within the ditch channel, it does not appear to be impeding the flow of water. The culvert and crossing are in working order.



County Road No. 155 looking east



County Road No. 155 looking West

Inspection Section 15

This portion of the ditch inspection was completed on a crossing under 365th St., located on the dead end west of County Road No. 155, which is in Section 11, T125N, R30W. This inspection was completed from the road due to current conditions. A new culvert was placed by the township in 2015. The crossing information is as follows:

- Culvert: 60 inch Corrugated Metal Pipe
 - South Invert (Upstream Invert) = 1118.05 feet
 - North Invert (Downstream Invert) = 1117.79 feet

The ditch and crossing are in working condition.

365th Street looking south



365th Street looking north



365th Street culvert

Inspection Section 16

This portion of the ditch inspection was completed on a private crossing on PID 03.00845.0000. This inspection was completed from the crossing due to current conditions. The crossing information is as follows:

- Culvert: 30 inch Metal Pipe
 - East Invert (Upstream Invert) = 1112.47 feet
 - West Invert (Downstream Invert) = 1112.30 feet

The ditch and crossing are in working condition.



Private crossing east end culvert



Private crossing west end culvert

Inspection Section 17

This ditch observation was completed on a private crossing located on PID 33.21851.0000. The crossing information is as follows:

- Culvert: 36 inch Corrugated Metal Pipe
 - Southeast Invert (Upstream Invert) = 1108.81 feet
 - Northwest Invert (Downstream Invert) = 1109.83 feet

It appears that there is an issue with the culvert; however, the water still flows through the culvert.



Private crossing looking east



Private crossing looking west



Private crossing west end of the culvert

Inspection Section 18

This portion of the ditch inspection was completed on a private crossing PID: 03.00848.0000. This inspection was completed from the field crossing due to current conditions. The crossing information is as follows:

- Culvert: 36 inch Corrugated Metal Pipe
 - South Invert (Upstream Invert) = 1105.88 feet
 - North Invert (Downstream Invert) = 1105.86 feet

The ditch and the crossing are in working order.



Private crossing looking south



Private crossing looking north

Inspection Section 19

This portion of the ditch inspection was completed where the ditch flows into Spunk Creek PID: 03.00718.0000. The ditch appears to flow unimpeded into the ditch; however, there is a beaver dam downstream that should be removed.



Location where CD4 enters into Spunk Creek

Inspection Report Conclusion

- These areas of concern are numbered based on the map on page 2 of this report:
 - Inspection Area 4 contains a crossing that warrants further investigation
 - Inspection Area 5 contains a crossing that warrants further investigation
 - Inspection Area 8 contains a crossing that warrants further investigation
 - Inspection Area 17 contains a crossing that should be monitored
 - The beaver dam directly downstream from end point of the ditch may need further attention.
 - The reestablishment of records process now provides an as constructed and subsequently improved profile which indicates several ditch crossings may possibly be obstructing flow most notably, Inspection Area's 1 and 8.

The ditch continues to function in its current conditions but high crossing culverts maybe be limiting drainage. At this point, the above issues warrant further investigation and if deemed necessary a repair plan may be necessary.