Young Environmental Consulting Group, LLC

SITE LOCATION: CSAH 61-Flying Cloud Drive

PURPOSE: Construction Stormwater Site Visit on behalf of the Lower Minnesota River Watershed District (LMRWD)

DATE & TIME: 19 November 2018, 0830-1100

INSPECTOR: Sarah Duke Middleton, Water Resources Scientist
Young Environmental Consulting Group, LLC

WEATHER: 20°F, overcast, winds 5-10 mph.

SITE CONDITIONS: Ground is firm, but not frozen. Light snow covering the site, 1 inch or less.

PHASE: Active construction including removal of existing material and construction of walls; prep for bridge construction (predominately in the middle section of project).

DISCUSSION

Prior to the site inspection, I met with Nathan Bren (project manager, Ames Construction) and Zachary Rothstein (PE for Hennepin County, construction division). We had a brief discussion on project updates. Nathan stated that since my last visit additional BMPs have been installed. He did not elaborate on their location, but I assume he is referring to BMPs in and around an existing creek (see photos 31 and 32).

Zachary indicated that the MPCA issued a response letter to the project that related to their site visit in July. The letter was received last week and detailed five noncompliance issues. He stated that four of the five issues have already been addressed, but the fifth (deposition in the wetland areas) is outstanding. A technical team is reviewing options for removal.

INSPECTION NOTES

Recent cold weather has led to firm soil across the site. This change provided easier access to active construction areas with my vehicle and to downslope sections along the project's southern perimeter (on foot).

This site visit revealed failure of BMPs, with the majority concentrated along the project's southern border. Work has been done to further stabilize a creek near the Richard T. Anderson Conservation Area (see photos 31 and 32); however, most areas in need of maintenance appeared untouched since the November 6, 2018, site visit.

On the project's western end, on the north side of the road (near the construction trailers), dewatering is taking place. This activity was noted during the November 6 site visit. The dewatering setup has changed since that time; specifically, the hose used is no longer attached to the filter bag. On November 19, the hose was positioned on top of the filter bag, with a slow but steady stream of brown fluid coming out. The dewatering area is in what appears to be a wetland. A brown plume, originating from the hose, is present in the water and

extends for several feet. For a visual of this area, see photos 12 through 15, as well as the segment 1 aerial photo. The presence of brown fluid beneath the accumulated snow on the filter bag suggests the hose has been in this position for more than a few hours. The last documented snowfall in the area was 1 to 2 days ago.

Before I begin each site visit, Nathan requests that I notify him about any concerning discoveries. After documenting the dewatering site, I gave him a courtesy call and described the dewatering setup. I did not offer any mitigation direction but merely suggested that he should visit the area.

See the attached photo log for documentation of current site conditions.

RECOMMENDATIONS

Lower Minnesota River Watershed District:

- Attend the next project meeting to present the District's concerns about erosion and sediment management of the project as well as the potential negative effects to adjacent water and natural resources.

Project Team/Site Supervisor:

- Numerous BMPs appear to have failed. Review site conditions (slope, drainage, etc.), and provide and install appropriate BMPs for site conditions and anticipated seasonal precipitation.
- Culverts draining stormwater: Culverts on the northern side of the road receive drainage from nearby construction activity. Without BMPs in place, sediment-laden stormwater flows directly into the culvert and outputs into Rice Lake or other down-gradient water features. See the following photos for reference: 3, 10, 11, 20–22, 39–41, 49–52, and 56–59.
- Actively maintain and install all site BMPs per regulatory requirements, design, and installation specifications.
- Remove construction debris and trash from the site (used oil bottles, fiber, rope, food waste, etc.).

NEXT PROJECT SITE VISIT

The next site visit will take place on Monday, December 3, or Tuesday, December 4, 2018, unless otherwise directed by the LMRWD.

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PHOTO LOG

The following photographs were taken during the site visit on Monday, November 19, 2018. All photos show a red arrow indicating north and a text box indicating the general location of Rice Lake. Aerial photos of the project site are incorporated to designate where site features are located/photographed.

Due to the linear nature of the project, the site has been divided into four segments (see aerial photo ->). The photo log will highlight locations of site features at the segment level.

SEGMENT 1

Photo No.: 1

Location: 44°48’49.38”N 93°31’57.49”W

BMPs Present: Two rows of silt fence; geotextile blanket.

Description: Right-of-way (ROW) conditions.

	Photo No.: 2 Location: 44°48’50.11”N 93°31’53.65”W BMPs Present: Two rows of silt fence; sandbags at base of culvert Description: Downslope side of culvert; removing stormwater discharge from the site (see photo 3 for upslope view).
	Photo No.: 3 Location: 44°48’50.48”N 93°31’53.97”W BMPs Present: None visible. Description: Upslope view of stormwater culvert (see photo 2 for downslope).

Photo No.: 4

Location: 44°48’56.76”N 93°31’26.63”W

BMPs Present: Two rows of silt fencing (not visible in photo), biologs, Erosion and Sediment Control (ESC) blanket.

Description: BMPs present but failing. Large gaps in ESC blanket are areas of slop erosion.

Photo No.: 5

Location: 44°48’56.86”N 93°31’25.69”W

BMPs Present: ESC blanket, biologs, two rows of silt fencing (not visible in photo).

Description: ESC blanket has failed to secure slopes. Most of the ESC blanket no longer makes consistent contact with the soil. At the base of the slope sediments are accumulating.

Photo No.: 6

Location: 44°48’56.85”N 93°31’25.53”W

BMPs Present: Two rows of silt fence, ESC blanket, biologs

Description: Failing ESC blanket

Photo No.: 7

Location: 44°48’58.32”N 93°31’20.66”W

BMPs Present: ESC blanket, two rows of silt fencing, biologs, sandbags at base of culvert

Description: Culvert stabilized with BMPs.

Photo No.: 8

Location: 44°48’58.86”N 93°31’17.47”W

BMPs Present: Two rows of silt fencing, ESC blanket

Description: The ESC blanket is no longer anchored to the soil and is falling down the slope. Sediments are accumulating at the base of the slope.

Photo No.: 9

Location: 44°48'59.69"N 93°31'18.09"W

BMPs Present: Rock check

Description: Construction on north side of ROW. Stormwater is channeled along the ditch and meets a rock check.

Photo No.: 10

Location: 44°48'58.42"N 93°31'22.22"W

BMPs Present: Hydromulch, rock check

Description: Drainage of stormwater on the northern side of the ROW. Water drains from the base (beneath wooden planks), top and side slopes of the retaining wall and routes into the channel. Clean gravel is present suggesting at one time a defined rock check was present; it appears to no longer be effective. It is unclear if the plywood is construction debris or an energy dissipation method to supplement the washed-out rock check.

The blue arrows indicate the general path of stormwater flow. See photo 11 for a downslope view of the rock check/plywood.

Photo No.: 11

Location: 44°48'58.45"N 93°31'22.28"W

BMPs Present: Rock check

Description: This is the downslope image of photo 10. All stormwater drains to the tall grass after traveling through a second rock check. A culvert was not visible in or around the tall grass.

Photo No.: 12

Location: 44°48'55.11"N 93°31'37.09"W

BMPs Present: None visible

Description: Dewatering set up. Water appears to be drawn from this area and run through the hose for dewatering farther west on the ROW.

Photo No.: 13

Location: 44°48'55.07"N 93°31'37.53"W

BMPs Present: Unused filter bag

Description: This is the end-of-hose side of the dewatering operation. The hose is not attached to the filter bag; rather it is on top of it. Water is flowing slowly, but steadily out of the hose. The brown liquid is apparent for several feet into the wetland area.

Photo No.: 14

Location: 44°48'54.92"N 93°31'37.78"W

BMPs Present: Unused filter bag

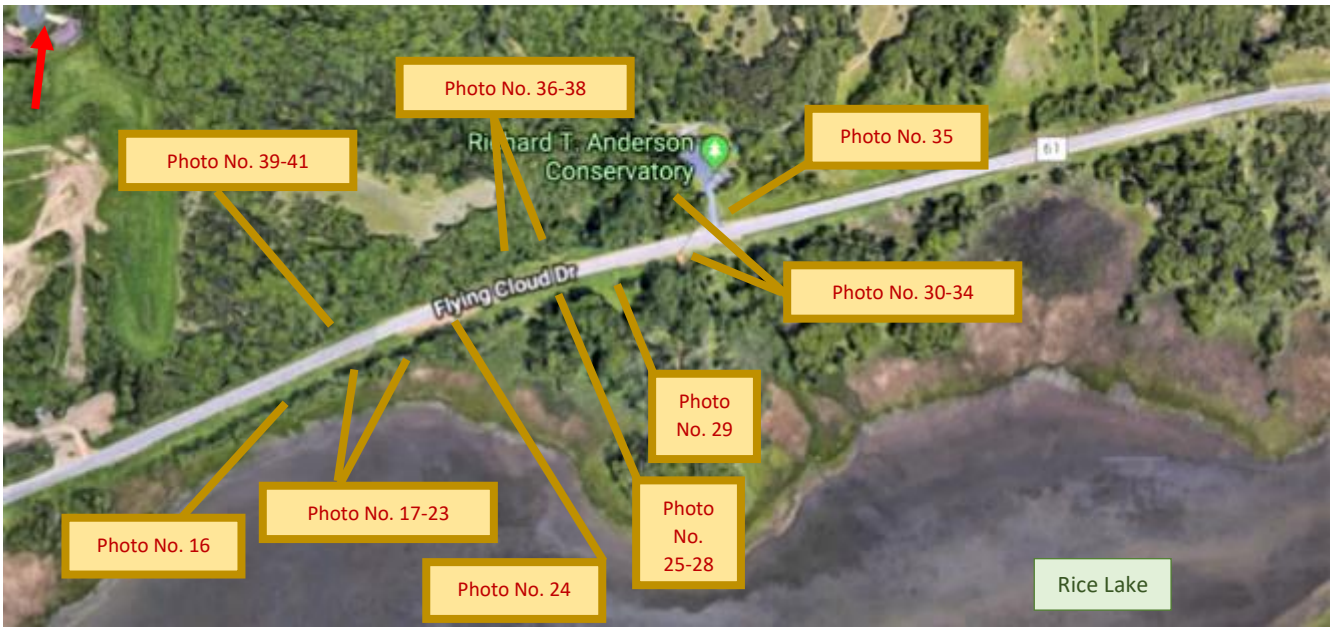
Description: Another view of the dewatering end-of-hose.

Photo No.: 15

Location: 44°48'54.92"N 93°31'37.78"W

BMPs Present: Unused filter bag

Description: Close up photo of the hose. Ripples around hose are from the steady stream of brown liquid flowing out of it.



SEGMENT 2

Photo No.: 16

Location: 44°49'00.98"N 93°31'11.63"W

BMPs Present: Two rows of silt fence; vegetative buffer

Description: Section of ROW along Rice Lake. Soils are stable.

	Photo No.: 17 Location: 44°49'02.27"N 93°31'07.09"W BMPs Present: Biologs, ESC blanket Description: BMPs are used to stabilize large soil piles on the south side of the ROW.
	Photo No.: 18 Location: 44°49'03.07"N 93°31'05.03"W BMPs Present: Biologs and ESC blanket. Not visible in photo – two rows of silt fencing at the base of the slope. Description: Side view of large soil pile depicted in photo 17. Miscellaneous construction debris is also present in this area.

Photo No.: 19

Location: 44°49’01.26”N 93°31’09.76”W

BMPs Present: Two rows of silt fence; ESC blanket

Description: Base of slope (see photos 17 & 18 for top of slope). Waves in ESC blanket indicate erosion beneath BMP with sediment pooling just before the silt fence. See photos 20 –22 for additional images of the culvert

Photo No.: 20

Location: 44°49’01.92”N 93°31’06.65”W

BMPs Present: Several rows of silt fencing; sand bags; ESC blanket

Description: Large culvert outlet near Rice Lake. BMP conditions suggest large volumes of water were discharged at one point. See photos 21 – for additional images in relation to the lake.

See photos 39-41 for the upslope inlet (it is assumed, but not confirmed that the two are connected).

Photo No.: 21

Location: 44°49'01.97"N 93°31'06.90"W

BMPs Present: Several rows of silt fence; sand bags

Description: Flow path of stormwater as it entered Rice Lake. BMPs did not withstand volume of water and failed.

Blue arrows indicate path of water.

Photo No.: 22

Location: 44°49'01.97"N 93°31'06.90"W

BMPs Present: Several rows of silt fencing; ESC blanket; sand bag berm in culvert

Description: Side view of the outlet with contributing side slopes. ESC blanket was installed upslope of the silt fencing but has been compromised via erosion. Sediment is filling silt fence adjacent to the culvert.

An unknown, light-colored substance has solidified in the bottom of the culvert. It's coloring appears much lighter than surrounding areas where sediment has accumulated (ex: adjacent silt fence). See photos 39-41 for inlet and similar light-colored sediments.

	Photo No.: 23 Location: 44°49’02.11”N 93°31’05.66”W BMPs Present: Biolog; ESC Blanket Description: Erosion on slope after failure of ESC blanket.
	Photo No.: 24 Location: 44°49’03.47”N 93°31’03.96”W BMPs Present: Two rows of silt fence; vegetative buffer Description: Stable soils along Rice Lake.

Photo No.: 25

Location: 44°49’04.05”N 93°30’58.35”W

BMPs Present: One row of silt fencing with t-posts; one row of silt fencing with jersey barrier backing; biologs over top of culvert outlet.

Description: Base of slope where culvert outlets into Rice Lake. See photo 28 for another photo of the unidentified substance.

Photo No.: 26

Location: 44°49’03.60”N 93°30’58.78”W

BMPs Present: One row of silt fencing with t-posts; one row of silt fencing with jersey barrier backing; biologs over top of culvert outlet.

Description: Base of slope where culvert outlets into Rice Lake. Some erosion is evident – see rills upslope of culvert.

See photo 36 for upstream inlet on northern side of ROW.

	Photo No.:27 Location: 44°49’03.57”N 93°30’58.90”W BMPs Present: Silt fencing; biolog; sandbags Description: Close up of culvert outlet. Some sediment present at outer lip of culvert. Sand bags appear to have shifted since their original installation. See photo 36 for upstream inlet on northern side of ROW.
	Photo No.: 28 Location: 44°49’03.76”N 93°30’59.21”W BMPs Present: One row of silt fencing with t-posts; one row of silt fencing with jersey barrier backing Description: Unidentified substance. No path of origin or runoff from this point – substance is concentrated in this area.

Photo No.: 29

Location: 44°49’03.95”N 93°30’56.00”W

BMPs Present: One row of silt fence with metal t-posts; a second row of silt fencing supported by jersey barriers.

Description: Washout at the top of the slope.

Photo No.: 30

Location: 44°49’05.20”N 93°30’52.95”W

BMPs Present: Two rows of silt fencing; riprap

Description: Downstream southern outlet of unknown creek into Rice Lake.

	Photo No.: 31 Location: 44°49'05.35"N 93°30'52.71"W BMPs Present: Silt fence with jersey barrier backing or t-posts; riprap; plastic sheeting covering bare soils. Description: Inlet of southern culvert (see photo 30 for southern outlet) and outlet of northern culvert. New BMPs installed since last visit to site on 6 November 2018.
	Photo No.: 32 Location: 44°49'05.98"N 93°30'52.90"W BMPs Present: Silt fence with jersey barrier backing or t-posts; riprap; plastic sheeting covering bare soils. Description: Unknown creek is stabilized with riprap along bottom. Very little sediment is present. Side slopes are covered in a large plastic sheet.

Photo No.: 33

Location: 44°49'06.89"N 93°30'53.30"W

BMPs Present: Silt fence backed with t-posts; silt fencing backed with jersey barriers; ESC blanket; biologs

Description: Northern culvert inlet that channels unknown creek through project area. ESC blanket is in poor condition with many areas of exposed soil.

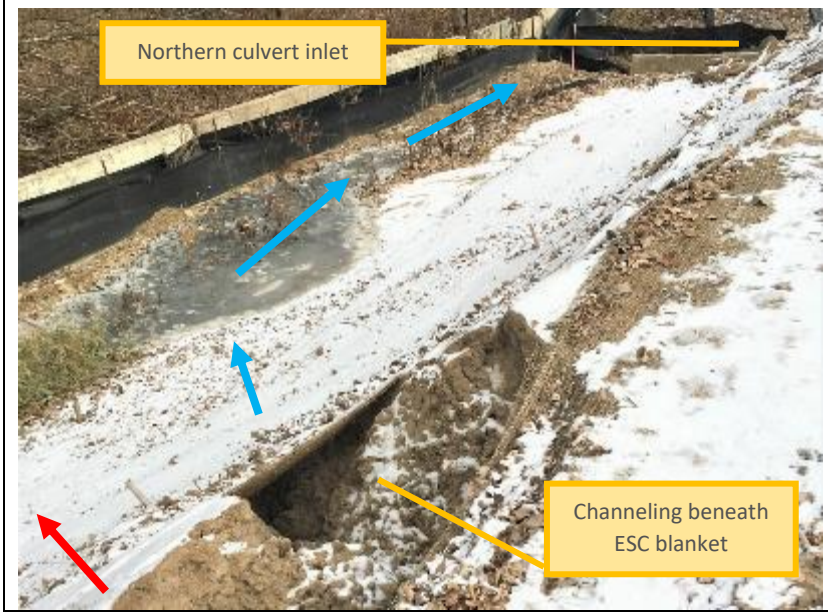


Photo No.: 34

Location: 44°49'06.36"N 93°30'53.66"W

BMPs Present: Silt fence backed with t-posts; silt fencing backed with jersey barriers; ESC blanket

Description: Deep channeling beneath ESC blanket. Water has pooled in channels and leads to the northern culvert inlet (see photo 33). During site visit the pooling water was frozen.

Blue arrows depict flow of water to the northern culvert inlet.

Photo No.: 35

Location: 44°49’06.11”N 93°30’51.50”W

BMPs Present: Riprap; filter fabric; small settling basin

Description: Northern side of ROW with a riprap filter strip, leading to a fabric filter and a small settling basin.

Photo No.: 36

Location: 44°49’05.54”N 93°30’58.96”W

BMPs Present: ESC blanket; silt fencing with jersey barrier

Description: Deep channeling beneath ESC blanket. Sediment has pooled at the base of the slope, in several cases leading to the culvert inlet.

Water from the wetland north of the ROW is flowing over the jersey barriers and into the inlet. See photo 26 and 27 for outlet culvert on southern side of ROW, leading to Rice Lake.

	Photo No.: 37 Location: 44°49’05.85”N 93°30’58.53”W BMPs Present: ESC blanket; silt fencing with jersey barrier Description: Water flowing from the west, into the culvert (see photo 36 for another view of the area).
	Photo No.: 38 Location: 44°49’04.64”N 93°31’00.36”W BMPs Present: Silt fence with jersey barrier backing and a second row with metal t-posts. Description: Water flowing west to east along the northern edge of the ROW. Leads to area/outlet in photos 37 and 36. Water flow has cut into the northern bank; it is unclear if this is a result of the construction activity or a preexisting condition.

Photo No.: 39

Location: 44°49’02.32”N 93°31’10.03”W

BMPs Present: None visible

Description: Northern side of ROW along ditch line. Stormwater flows along this area, pools (see photo 40), and drains via a buried inlet (see photo 41). The blue arrows illustrate the drainage route.

The lighter-colored sediments in this photo are similar to those accumulating in the large outlet in photo 22. This culvert seems to be directly north of the outlet in photos 20- 22.

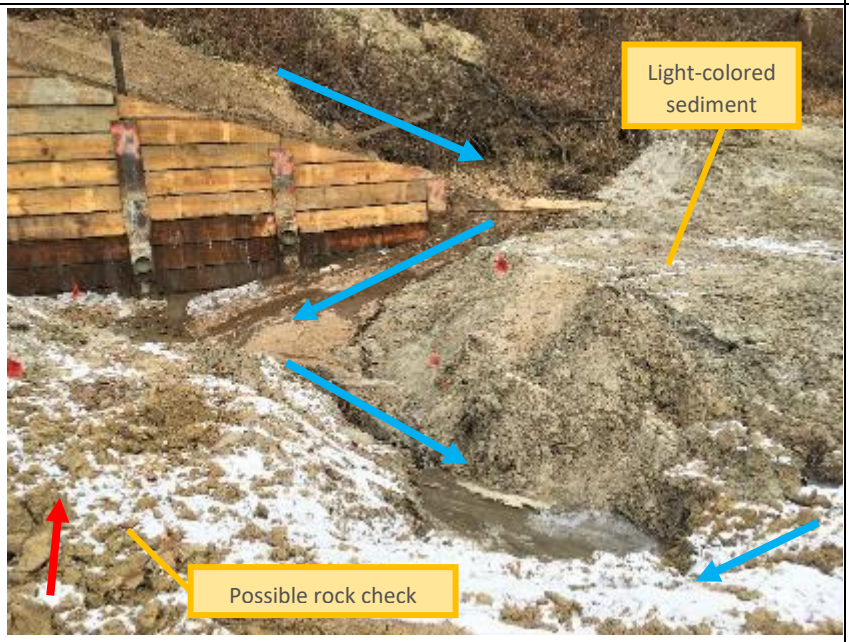


Photo No.: 40

Location: 44°49’02.14”N 93°31’09.96”W

BMPs Present: None clearly visible, but possible rock check that has washed out (?)

Description: Continuation of photo 39, spanning westward. This photo shows the general ‘collection’ or pooling area for stormwater prior to entering the buried inlet (see photo 41).

Photo No.: 41

Location: 44°49'02.22"N 93°31'09.92"W

BMPs Present: None visible

Description: Inlet for stormwater from photo 39 and 40. The culvert is nearly invisible due to an accumulation of debris around the opening.

During the 6th November 2018 site visit there were moderate-to-heavy rains. This culvert was draining large volumes of water. Its appearance has not altered since that visit, so it is assumed that the inlet still functions to some extent.

Photos 20- 22 of this log depicts an outlet that lies directly south of this inlet. It is assumed that the two are connected.

SEGMENT 3

Photo No.: 42

Location: 44°49’10.30”N 93°29’58.23”W

BMPs Present: Biologs; ESC blanket

Description: Roadway, flanked by large soil piles on the northern and southern perimeters. Both sides are covered in ESC blanket. Biologs appear to have been removed recently in anticipation of excavator work on the southern side of the ROW.

Photo No.: 43

Location: 44°49’09.89”N 93°29’58.63”W

BMPs Present: Two rows of silt fence, rock check, ESC blanket

Description: Downslope of photo 42 roadway construction. Area is largely stabilized, but some sedimentation has occurred.

	Photo No.: 44 Location: 44°49’10.35”N 93°29’57.22”W BMPs Present: None visible Description: Northern side of ROW graded.
	Photo No.: 45 Location: 44°49’09.29”N 93°29’49.11”W BMPs Present: Rock check Description: Stormwater inlet on the northern side of the ROW. See photo 46 for the southern ROW outlet.

Photo No.: 46

Location: 44°49’08.72”N 93°29’49.22”W

BMPs Present: Rock check; silt fence

Description: Stormwater outlet on the southern side of the ROW. See photo 45 for the northern ROW inlet. It is unclear if the rock present is solely an energy dissipation BMP, or if a settling basin was also intended.

Photo No.: 47

Location: 44°49’08.69”N 93°29’49.11”W

BMPs Present: Silt fence; vegetative buffer

Description: Southern side of ROW. Stable with prevalent vegetation.

Photo No.: 48

Location: 44°49’08.76”N 93°29’43.29”W

BMPs Present: Vegetative buffer; silt fence

Description: Southern side of ROW stable and covered in vegetation.

SEGMENT 4

Photo No.: 49

Location: 44°49’07.17”N 93°29’35.78”W

BMPs Present: None visible

Description: Drainage on the north side of the ROW into a large concrete culvert. This photo illustrates the drainage and surround landscape that flow into the culvert. See photo 50 for a view of the inlet.

Black soil at the top of the photo is recently graded.

Photo No.:50

Location: 44°49’07.67”N 93°29’35.90”W

BMPs Present: None visible

Description: Large concrete inlet on north side of ROW. See photo 51 for southern outlet.

Photo No.: 51

Location: 44°49’05.86”N 93°29’36.23”W

BMPs Present: None visible

Description: Southern outlet (see photo 50 for northern inlet). The area around the culvert was graded recently, but slight channeling has begun to redevelop. Nongraded areas demonstrate a clear flow of water from the outlet.

Photo No.: 52

Location: 44°49’06.01”N 93°29’36.34”W

BMPs Present: Silt fence

Description: Flow (now frozen) continues downslope from the culvert outlet (see photo 51) to the silt fence and off the project.

The silt fence is torn where the flow hits the fabric. The span of fabric no longer touches the ground and is held together with several zip ties.

	Photo No.: 53 Location: 44°49’05.86”N 93°29’25.09”W BMPs Present: Hydromulch Description: Northern side of ROW.
	Photo No.: 54 Location: 44°49’05.67”N 93°29’25.20”W BMPs Present: None visible Description: North and south sides of Flying Cloud Drive. Area has been graded in a tiered fashion. No areas of erosion were evident.

	Photo No.: 55 Location: 44°49’07.00”N 93°29’18.94”W BMPs Present: Possible hydromulch Description: Retention pond on north side of ROW with a dewatering setup. Possible hydromulch application on graded hillside.
	Photo No.: 56 Location: 44°49’06.89”N 93°29’14.63”W BMPs Present: None visible Description: Large water conveyance feature on north side of ROW. See photos 57-59 for downslope outlets. It is assumed, but not confirmed, that the outlets directly south are connected to this conveyance system.

Photo No.: 57

Location: 44°49’05.52”N 93°29’13.79”W

BMPs Present: Possible filter fabric (?), but no longer effective

Description: One of three downslope outlets directly south of the water conveyance system (see photo 56). This culvert is the closest to active construction (see part of red storage container at top of photo), residing on the south side of the ROW, near the top of the slope.

See photo 58 and 59 for the two additional culverts further down the slope.

Photo No.: 58

Location: 44°49’05.52”N 93°29’13.79”W

BMPs Present: fabric; silt fence

Description: Culvert from photo 57 drains directly down this slope, into a second culvert. Sediments have accumulated along the flow route. The second culvert is long and metal, and outlets at the silt fence (see photo 59).

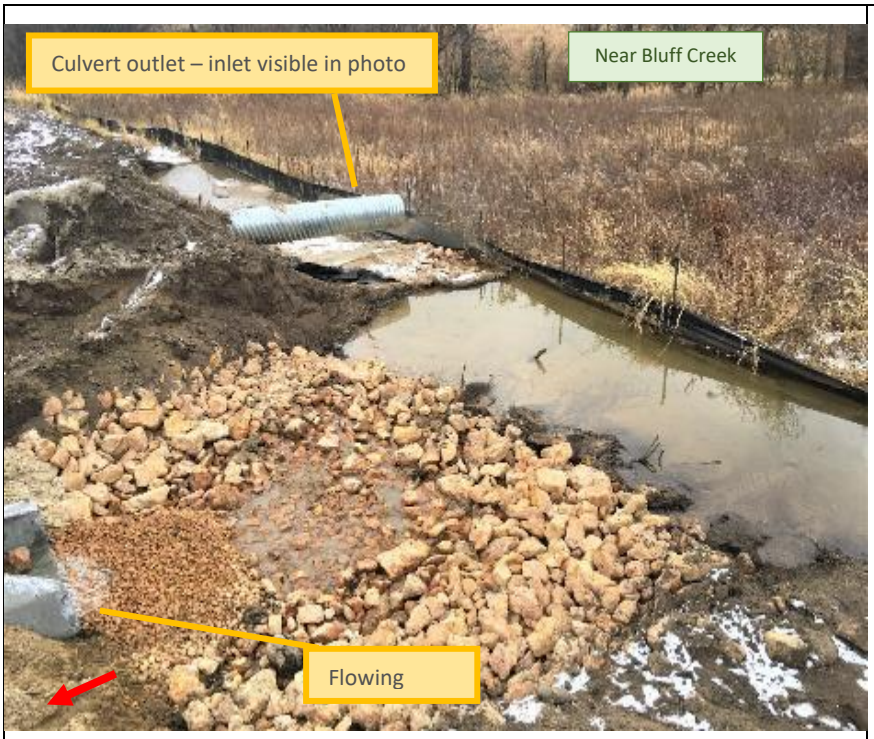


Photo No.: 59

Location: 44°49’05.57”N 93°29’14.48”W

BMPs Present: Riprap; silt fence

Description: Two culverts at the base of the slope. Both outlets have multiple sizes of riprap to dissipate energy. Water is actively flowing out of the concert culvert (the largest of the three outlets).

The silt fence sits low in several places. The depth of the pooling water is unknown, but a minimum of 4-6”.

Photo No.: 60

Location: 44°49’05.14”N 93°29’00.51”W

BMPs Present: Two rows of silt fence.

Description: Southern side of the ROW. The slope is graded with sparse vegetation at its base, just before the silt fencing. No erosion is evident.

Unidentified water feature is visible to the south of the silt fencing.

	Photo No.: 61 Location: 44°49’05.70”N 93°29’00.65”W BMPs Present: Hydromulch/vegetation Description: North side of ROW stabilized with hydromulch that has had some germination and growth. Rills have begun to develop in the seeded area.
	Photo No.: 62 Location: 44°49’06.04”N 93°28’52.23”W BMPs Present: ESC Blanket; biologs; riprap; vegetation Description: A stormwater pond stabilized with ESC blanket and seeded. Vegetation became established in the area prior to freezing. The culvert is stabilized with riprap and surrounded by biologs.