

## Turkey Creek near Dannebrog, Nebraska 06784800

### LOCATION

#### *Latitude and Longitude*

41.15714, -98.55699

#### *Road Log*

Located on the left bank 25 ft. downstream from State Highway 11 bridge 2.8 miles north of Dannebrog, NE or 4.4 miles south of State Highway 92.

#### *Nearby Features*

The streamgaging station is located downstream from several canal return spillways of Farwell Irrigation District and 10 miles upstream of the confluence with the Middle Loup River.

### Equipment Details

#### *Recording Gage*

Instruments include a Sutron Satlink3 datalogger with GOES transmitter, CF Bubbler, and Dome Antenna with GPS, powered by a 12-volt battery and solar panel. This equipment is housed in a 4' x 4' Topeka style shelter on a steel frame approximately 41' east of the center line of the highway and 105' north of the center of Turkey Creek. The bubble tube is encased in 1¼ inch plastic tubing and streamward end is in 1¼ inch pipe. Open orifice can be adjusted vertically and is supported by two T-posts driven vertically into the streambed near left bank and upstream side of bridge.

#### *External Gage*

The reference gage is a wire-weight gage mounted on the upstream side of the bridge, located at station 91' on upstream guard rail. Check-bar elevation is 26.68 ft., gage datum, levels of 10-11-2023.

Upper crest-stage gage is College Park type gage (1¼ inch pipe) mounted on upstream side of left bridge pier, located at station 43' on upstream guard rail. The aluminum indicator is 16.60 ft. long and marked and drilled at 0.5 ft. intervals and flagged at 2.0 ft. intervals. The top of the indicator is at 28.14 ft., gage datum as determined by levels of 10-11-2023.

#### *Bench Mark and Reference Marks*

R.M. #1, 2, and 3 have been destroyed by bridge work.

R.M. #5: Standard brass tablet set in concrete 46 ft. east (downstream) from gage house. Elevation is 27.22 ft., gage datum, as determined by levels on 10-11-2023.

R.M. #4: Head of 3/8" lag screw in downstream side of power pole 0.5 ft. above ground level. Power pole is 106 ft. left and 135 ft. upstream of left downstream corner of bridge. Elevation is 29.05 ft., gage datum, as determined by levels on 10-11-2023.

R.M. #6: is standard brass tablet set in left downstream concrete handrail. Elevation is 28.96 ft., gage datum, as determined by levels on 10-11-2023.

R.M. #7 (Basic) is a brass Nebraska Roads pin set in the left upstream wingwall. Elevation is 26.01 ft., gage datum, as determined by levels on 10-11-2023.

R.M. #8 is a chiseled "X" in the Southwest gage house base leg. Elevation is 24.28 ft., gage datum, as determined by levels on 10-11-2023.

R.P. is a chiseled ⌘ on upstream concrete handrail three feet left of wire-weight gage and 45 ft. right of crest-stage gage. Elevation is 28.21 ft., gage datum, as determined by levels on 10-11-2023.

The datum of gage is 1,871.182 ft. above North American Vertical Datum of 1988 as determined by the levels ran on September 2, 2014 by the Survey Crew for the Nebraska Department of Natural Resources. Prior to converting the elevation to NAVD 88, the gage datum was 1,870.35 ft. above NGVD 29.

## Hydrology

### *Drainage Area*

The streamgage has a drainage area of 66.2 square miles.

### *Channel and Control*

The streambed is composed of soft silt. The channel was straightened when the new highway and bridge were constructed. The channel is straight for approximately 1,000 ft. downstream and 500 ft. upstream. The banks slope gradually and there is a definite overflow plain in the vicinity of the gage. Three 36" culverts were rocked into place for cattle crossing 300' downstream of the gage in July 2015 (damaged in March 2019 flood).

### *Discharge Measurements*

Low flow can be measured by wading in the vicinity of the bridge. Medium and high flows are measured from the upstream or downstream side of the bridge. High wading measurements may be difficult due to the very soft silty bottom.

### *Floods*

ACTION STAGE: 15.0 FT

FLOOD STAGE: 17.0 FT

MODERATE STAGE: 21.0 FT

MAJOR STAGE: 26.0 FT

Values provided by NWS as of November 13, 2018.

The southern portions of the farm properties north of the gage will begin to flood at 17.0 feet. At 21.0 feet, flood waters reach the bottom of the Highway 11 bridge. Water crosses Highway 11 at 26.0 feet.

### *Extremes for Period of Record*

Peak discharge measured was 3,890 cubic feet per second, March 13, 2019, gage height 20.74 feet; peak computed discharge and maximum gage height 4,400 cubic feet per second, March 14, 2019, gage height 21.24 feet; no flow May 17-20, 1966.

### *Point of Zero Flow*

Variable, changes with conditions of scour and fill, unknown after March 2019 flood.

### *Winter Flow*

During winter period complete ice cover may be expected.

### *Regulation and Diversions*

Due to canal return spillways and pumping, by the Farwell Irrigation District and individual appropriators, flows during irrigation season may fluctuate erratically.

### *Accuracy*

Discharge measurements are usually made every four weeks. Records can be considered good except those for winter period, which are fair to poor.

## **Establishment and History**

Recording gage was established on May 2, 1966, and discontinued on Sept. 30, 1970.

Auxiliary crest-stage was established on May 2, 1966, and removed on Nov. 13, 1970, at the following location: Lat. 41° 09' 27", Long. 98° 31' 05", in SW ¼ NW ¼ Sec. 30, T 14 N., R. 10 W., Howard County, 3.2 miles northeast of Dannebrog and 5 miles above mouth.

Crest-stage gage was established on Nov. 13, 1970, at present site.

Recording gage was established at same site and datum on Oct. 11, 1978.

A second crest-stage gage, to record lower peaks, was established on May 18, 1982, and destroyed at an unknown date.

The Nebraska Department of Water Resources assumed operation of the gage as of August 11, 1994.

Digital water-stage recorder and Stevens A-35 water-stage recorder were removed on Nov. 22, 1994.

Stevens A-71 water-stage recorder was installed on Nov. 22, 1994.

Water Gage II 2.25 was installed on July 24, 1997.

The Nebraska Department of Water Resources name was changed to Nebraska Department of Natural Resources as of July 1, 2000.

On December 24, 2003, Design Analysis Water Log Series Model H-500XL was installed.

Installed Goes Satellite Antenna on April 15, 2005.

Installed Rain gage on May 3, 2005.

Installed a Design Analysis H-3553-15 pressure bubbler system and removed the following: Safe purge II, A-71 pen recorder, G2 monometer, and nitrogen pressure tank; on February 22, 2011.

The NDNR Survey Crew established the gage datum to the North American Vertical Datum of 1988 on September 2, 2014. The gage datum is 1,871.182 ft. above NAVD 88.

The gage house was moved from a dilapidated wood frame onto a steel frame 5' East and 1' South of its original position on 10/30/2014.

Installed Sutron Satlink3 datalogger with GOES transmitter, CF Bubbler, and dome antenna with GPS on April 1, 2022. Removed Waterlog H-500XL, H-222 DASE, H-3553, Yagi antenna, and GPS.

## Revision History

Original description prepared: 05-09-66 G. G. Jamison

Revised: 11-19-70 H. D. Stephens

Revised: 10-19-78 K. H. Calver

Revised: 07-02-82 K. H. Calver

Revised: 11-09-87 R. B. Swanson

Revised: 02-12-92 R. B. Swanson

Revised: 11-29-93 R. A. Drudik

Revised: 04-20-94 R. A. Drudik

Revised: 05-24-95 D. L. Studnicka

Revised: 02-16-96 D.L. Studnicka

Revised: 01-11-99 D.L. Studnicka

Revised: 01-16-02 D.L. Studnicka

Revised: 02-23-03 D.L. Studnicka

Revised: 10-25-04 D.L. Studnicka

Revised: 05-03-05 D.L. Studnicka

Revised: 10-16-08 D.L. Studnicka

Revised: 08-22-12 S.R. Kolar

Revised: 01-02-13 P.J. Breitreutz

Revised: 02-04-14 P.J. Breitreutz

Revised: 04-10-15 P.J. Breitreutz

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Revised: 11-21-17 P.J. Breitreutz

Revised: 05-06-19 P.J. Breitreutz

Revised: 06-11-20 P.J. Breitreutz

Revised: 04-01-22 P.J. Breitreutz

Revised: 10-11-23 P.J. Breitreutz