

## Stinking Water Creek near Palisade, Nebraska 06835000

### LOCATION

#### *Latitude and Longitude*

40.37291, -101.1169

#### *Road Log*

Hayes County, Hydrologic Unit 10250006, on right bank 25 feet downstream from 96-inch CMP, 1¼ mile upstream from mouth, and 1 3/4 mile northwest of Palisade, NE.

The gage is reached by driving north out of Palisade on Highway 25A, turn left on the first county road, **Ave. 359A**, (about .2-mile north of Palisade) and travel about .75-mile north, turn west on **Rd 727** and go about .60-mile, turn north on **Ave 359** and go about .50-mile to gage.

#### *Nearby Features*

A “stilling basin” has been formed on the downstream side of the county road culvert at the gage site due to erosion caused by Stinking Water Creek passing through a 96 inch corrugated, metal culvert. This stilling basin is approximately 50 feet wide and 60 feet long in area, after sixty feet, the “pool” immediately transitions to a 10-foot-wide channel which sharply bends to the left.

### Equipment Details

#### *Recording Gage*

Sutron Satlink data logger and transmitter is connected to the A-35 graphic water-stage recorder with a shaft encoder. All equipment is housed in a Lincoln standard 48-inch CMP well and shelter. Graphic recorder is equipped with a graduated float tape, which is set to read the same as the inside weight tape gage. Two heat lamps protect the well from freezing during the winter.

#### *External Gage*

**Reference gage is an inside gage** which consists of weighted steel tape and adjustable reference point on instrument shelf. Length of tape from zero mark to bottom of weight, and elevation of **reference point is 18.00 feet**. Outside gage consists of a cantilever style wire weight on the right bank, near the gage house catwalk.

#### *Bench Mark and Reference Marks*

Datum of gage is 2,742.09 feet above mean sea level NAVD88 May 27, 2014.

The following elevations are given in feet above gage datum.

Top of conical roof on shelter	23.4
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Top of culvert pipe shelter	22.3
Top of instrument shelf	18.1
R.P. on instrument shelf	18.0
Floor of instrument shelter	15.2
Well door sill	10.5
Top of concrete bottom in well	0.7

The well is connected to the stream by two 3-inch galvanized iron intake pipes, each equipped with flushing device.

The following elevations are given in feet above gage datum:

CL upper intake pipe (well end)	3.6
CL lower intake pipe (well end)	1.6

**RM 1, 2,3; 4 and 7** have been destroyed.

**R.M. #5:** Standard brass tablet set in concrete 1 foot shoreward (south) and 3 feet upstream (west) from gage house. Elevation, 10.44 feet, gage datum. (Levels 07/19/2021)

**R.M. #6:** Lag bolt in Power pole (pole with electric meter for gage house), 100 feet south of gage house. Elevation, 10.72 feet, gage datum. (Levels 07/19/2021. Origin)

**R.M. #8:** Rebar rod set in concrete on top of a dike east of gage house and is marked by an 18-inch T-Post witness post set 1-foot north of RM #8. 52.54 feet east of the east side of the gage house. 12.4 feet south of west-east fence line. 10.7 feet west of north-south fence line. Elevation 12.325 feet, gage datum. (Levels 07/19/2021.)

**U.S.C. & G.S., C-159:** A standard disc set in a concrete post projecting about 1 foot above ground surface, 42 feet north of centerline of C.B. & Q. railroad track, 24 feet south of centerline of a graveled road (Old U.S. Hwy. 6), 178 feet east of the intersection of this road and the C.B. & Q. railroad track, and 5 feet south of a line of power poles, 6 miles west of railroad station at Palisade, in the SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 35, T5N, R34W, in Hayes County, NE. Elevation, 30.87 feet, gage datum.

## Hydrology

### Drainage Area

1,500 square miles, approximately, of which about 380 square mile contributes directly to surface runoff.

### Channel and Control

A shallow gravel riffle about 60 feet below the gage is the controlling section at low stages; at medium and high stages, channel control will prevail.

### *Discharge Measurements*

Low water measurements are made by wading in the vicinity of the gage. Maximum wading stage at this location is about 5.20 feet, gage datum. High water measurements are made from a privately owned bridge one mile downstream located in a pasture, or from top of County Road department 96" CMP on the downstream end. All necessary safety precautions should be exercised when measuring from these locations.

### *Floods*

Maximum discharge during period of record was 3,030 cubic feet per second June 17, 1956, gage height, 11.30 feet, from rating curve extended above 1,200 cubic feet per second on basis of slope-area measurement of peak flow.

### *Extremes for Period of Record*

Peak discharge 3,030 cubic feet per second on June 17, 1956, gage height 11.30 feet; minimum daily discharge 2.3 cubic feet per second August 31, 2012.

### *Point of Zero Flow*

1.41± feet.; variable.

### *Winter Flow*

Stage-discharge relation will be affected by formation of ice during periods of extremely cold weather.

### *Regulation and Diversions*

Some diversions for irrigation upstream from gage.

### *Accuracy*

Records of stage are good and measuring conditions are good. During periods of normal flow shifts are moderate. Open-water records are good and ice-affected records are poor.

## **Establishment and History**

Miscellaneous discharge measurements have been made at this site for a number of years by Nebraska State hydrographers; the results are published in the biennial report of the State Engineer.

From Oct. 1, 1940 to Sept. 30, 1950, a continuous recording gage was operated on Stinking Water Creek near Wauneta, about 13 mi upstream from present site. Record for this site and the present site are not considered comparable.

Recording gage established Oct. 5, 1949, by U.S. Geological Survey.

From Oct. 5, 1949 to present; gage consist of a stilling well with a Stevens water-stage recorder. May 1962 to Sept. 30, 1967, sediment and bed load samples collected. January 5, 1967 to April 13, 1995, A Fisher-Porter digital water-stage recorder was used. June 29, 1976 to present, A Stevens telemark was installed by the Bureau of Reclamation. A 12-volt

Solar panel charging system was installed May 1985. Electrical service to the gage was installed Sept. 1991.

Station operated by U.S. Geological Survey from Oct. 5, 1949 to Sept. 30, 1993. The station operated by Nebraska Dept. of Water Resources since Oct. 1, 1993.

October 8, 2003 a Sutron Satlink logger and transmitter was installed by the Nebraska Dept. of Natural Resources to provide real-time gage height information.

May 22 & 23, 2018 the outside gage which consisted of a wire weight attached to the left, downstream side of the bulkhead support for a 96" culvert was removed. A cantilever style wire weight was installed on the right bank near the gage house catwalk to replace the bulkhead wire weight.

## Revision History

Original description prepared by: G.L. Whitaker 04-05-1951

Revised by: V.F. Pearce 04-22-1963

Revised by: M.M. Gilbert 04-25-1967

Revised by: M.M. Gilbert 06-03-1977

Revised by: R.C. Beard 01-05-1987

Revised by: R.B. Swanson 03-06-1988

Revised by: F.J. Jelinek 06-03-1993

Revised by: R.K. Oaklund 08-10-1993

Revised by: B.D. Edgerton 03-28-2000

Revised by: D. Gunderson 02-19-2003

Revised by: D. Gunderson 02-11-2005

Revised by: D. Gunderson 01-29-2007

Revised by: D. Gunderson 02-08-2011

Revised by: D. Gunderson 05-20-2013

Revised by: D. Gunderson 03-25-2015

Revised by: D. Gunderson 11-30-2016

Revised by: D. Gunderson 11/2/2018

Revised by: D. Gunderson 11/1/2021