

## North Platte River at Mitchell, Nebraska 06679500

### LOCATION

#### *Latitude and Longitude*

41.92684 -103.8136

#### *Road Log*

Scotts Bluff County, on right bank 10 feet downstream from bridge on State Highway No. 29, about 1.0 mile south of U.S. Highway 26 in Mitchell, NE.

### Equipment Details

#### *Recording Gage*

The gage is a Sutron constant bubbler with DCP platform to transmit the gage data in a real time mode with 1-hour transmissions of data. This equipment connected to stream with sand point orifice.

Real-time data accessed through the internet at <https://nednr.nebraska.gov/RealTime>

#### *External Gage*

Wire-weight located on downstream side of bridge. Check bar elevation is 19.25 feet.

#### *Bench Mark and Reference Marks*

**R.M.'s #1, R.M. # 2, R.M. # 3, R.M.#4, and R.M. # 7 destroyed.**

**R.M. #5** is "X" chiseled on north rim of concrete caisson (remains of old 36 inch concrete gage well) 60 feet downstream from right bridge abutment. Elevation of 12.24 feet to gage datum from last run levels dated 09/17/2010.

**R.M. #6** is "X" chiseled in downstream concrete curb 15 feet right of third pier from right end of bridge abutment. Elevation of 18.98 feet to gage datum from levels dated 09/14/2017.

**R.M. #8** is "X" chiseled in bolt head on support that attaches bridge rail to concrete curbing on downstream side of bridge at first support from right abutment. Elevation of 19.14 feet to gage datum from levels dated 09/14/2017.

**R.M. #9** A standard bronze tablet in a concrete post 36 feet east and 22 feet south of shelter door handle near electric power pole. Origin for levels dated 09/17/2010 with given elevation of 11.02 to gage datum. (Origin)

**Wire-weight-check bar** elevation 19.25 feet. Elevation of 19.25 feet to gage datum from levels dated 09/14/2017.

## Hydrology

### *Drainage Area*

24,300 square miles, approximately 22,300 square miles contributes directly to surface runoff.

### *Channel and Control*

The streambed is composed of shifting sand and gravel and no well-defined control exists. Channel is straight above and below bridge with no obstructions other than the several short stub pilings. Both banks are low and heavily wooded. Overflow will occur. Occasional ice cover during severe winters.

### *Discharge Measurements*

Low flows may be waded near the gage. High flows measured from the downstream side of the concrete bridge. One main channel prevails when flow is in normal banks. Current may have varying angles in measuring section. Wading measurements are good and bridge measurements are poor because of number of spans, style of piers and numerous old pilings in and above measuring section.

### *Floods*

Maximum discharge during period of record, 27,500 cubic feet per second June 3, 1909 (gage height, 6.45 feet datum then in use, from graph based on gage readings), from rating curve extended above 17,000 cubic feet per second.

### *Extremes for Period of Record*

Peak discharge 27,500 cubic feet per second June 3, 1909, gage height 6.45 feet, datum then in use; maximum gage height 7.80 feet May 29, 1984; minimum daily discharge 54 cubic feet per second May 3, 1965.

### *Point of Zero Flow*

Not determined

### *Winter Flow*

Ice formation during severe cold season.

### *Regulation and Diversions*

Seasonal regulation by reservoir system in Wyoming. Daily regulation by irrigation diversions. Irrigation diversion both above and below station.

### *Accuracy*

Records good for stages that can be waded and fair to poor for higher stages or periods of ice effect.

## Establishment and History

For detailed history of gages in use prior to Sept. 26, 1952 see Field Section Description (Form 9-197) dated 6-24-52 (corrected) by C. V. Burns. Located in Bridgeport Field Office record file.

On Sept. 26, 1952, the recorder shelter and well attached to the downstream end of the fourth bridge pier from the right or south abutment of the bridge at datum (3,928.3 feet MSL).

During the period Apr. 11 to Aug. 31, 1960, the gage removed from bridge during construction work on bridge piers. During this period, the staff gage used to obtain stage record. The CMP well and timber shelter were reattached to the downstream end of the third bridge pier from the right or south abutment and A-35 recorder activated on Aug. 31, 1960, and at same datum of staff then in use. May 27, 1960 to Aug. 24, 1971 at datum 2.00 feet higher.

On Jan. 6, 1967, a Fisher-Porter digital recorder installed in shelter to operate independently of the A-35 recorder.

Aug. 25, 1971, to May 18, 1992, at datum 1.00 feet higher.

On July 19, 1979, a 5 feet x 5 feet x 8 feet precut metal shelter was assembled and placed over a 48-inch CMP well on right bank 10 feet downstream from highway bridge. Fisher and Porter digital and Stevens A-35 recorder were installed to operate independent of each other and activated on this date. Instruments set to reference point on instrument shelf. Elevation of reference point and length of graduated steel tape was 9.51 feet to gage datum. The outside gage was an enameled staff on a 2 inch x6 inch timber bolted to grader blade and driven in streambed a few feet streamward from right bank at intakes. Datum was not changed and all existing reference marks, R.M. #5 and R.M. #6 used to establish elevation of R.P. Reference mark #7 established on this date.

On Nov. 14, 1983, the shelter removed from 48-inch CMP well, moved 50 feet south, and placed on a platform base. A Sta-Com manometer installed. Gas purge system connected to the stream with a sandpoint orifice. Manometer connected to digital and A-35 recorder by direct chain drive and operated independent of each other.

On June 14, 1990, the Fisher and Porter digital recorder replaced with a Telog data logger. Both instruments activated by Sta-Com manometer. Datum lowered 1.00 foot on May 18, 1992 to 3928.3 feet Mean Sea Level. This done to avoid negative gage height readings.

On September 18, 1995, all instruments removed and replaced with an ISCO Model 4230 Bubbler Flow Meter. The instrument connected to stream with sandpoint orifice.

On March 8, 2016, the ISCO Model 4230 Bubbler Flow Meter removed and new equipment installed.

## Revision History

**Original description prepared by: O.V.P. Stout assisted by R.H. Willis**

Revised by: O.V.P. Stout & R.H. Willis

02-04-1910

Revised by: F. F. LeFever	02-22-1932
Revised by: F. F. LeFever	10-12-1935
Revised by: R. Follensbee	08-12-1936
Revised by: R. Follensbee	04-03-1940
Revised by: C. V. Burns	04-24-1952
Revised by: J. W. Vassos & G. G. Jamison	10-27-1972
Revised by: J. W. Vassos	01-09-1985
Revised by: J. W. Vassos	02-11-1993
Revised by: J. W. Vassos	02-20-1996
Revised by: T. L. Hayden	02-05-1998
Revised by: J. W. Vassos	01-14-1999
Revised by: J. W. Vassos	01-10-2001
Revised by: J.W. Vassos	01-30-2002
Revised by: J.W. Vassos	02-07-2003
Revised by: A Leisy	09/28/2009
Revised by: S. Wright	03/31/2011
Revised by: J.A. Marburger	12/21/2016
Revised by: J.A. Marburger	11/27/2017
Revised by: J.A. Marburger	02/22/2019