Niobrara River near Gordon, Nebraska
06457500

LOCATION

Latitude and Longitude

42.63992, -102.2107

Road Log

On left bank approximately 321 feet upstream from bridge on State Highway 27, four miles downstream from Rush Creek and eleven miles south of Gordon.

Equipment Details

Recording Gage

Sutron CBS bubbler flow meter with a Satlink DCP housed in a 30 by 30 inch look in type shelter. Flow meter is connected to stream using an open end orifice.

External Gage

Staff gage is enameled staff gage plate (0.00-5.82 ft) attached to sawed off steel I-beam (old bridge piling) along left bank of channel 46 feet upstream from the open end orifice.

Bench Mark and Reference Marks

U.S.C. & G.S. benchmark No. S-75, elevation 3465.62 six feet above mean sea level was used to establish datum of gage. A standard bronze tablet in a concrete post 0.3 mile south of Highway 27 river bridge, 34 feet east of center line of highway, near a group of four trees, 46 feet west of the largest tree in the group and 31½ feet south of a single tree.

R.M. #1, #2, #3, #4 #5, #8, #9, and #10 Destroyed.

R.M. #6 - "X" filed in top of sawed off steel bridge piling 27 feet upstream and 13 feet stream ward from gage. Elevation of 4.24 from levels dated May 2, 2019.

Elevation of 4.24 from levels dated November 21, 2022.

R.M. #7 - Top of southeast corner of I-beam piling on which staff gage is attached. Elevation of 4.22 from levels dated May 2, 2019 (Used as Origin).

Elevation of 4.22 from levels dated November 21, 2022. (Used as Origin).

R.M. #11- X Top I-Beam 13 ft. West 4 ft. South of station. Elevation of 8.03 with levels dated May 2, 2019.

Elevation of 8.02 from levels dated November 21, 2022.

Staff Gage was shot by levels May 2, 2019 and checked at 5.82 feet.

Staff Gage was shot by levels November 21, 2022 and checked at 5.82 feet.

Hydrology

Drainage Area

4,290 sq mi, approximately.

Channel and Control

The channel is fairly wide and shallow (approximately 41 feet across in the vicinity of the station) and the gage sits on a gradual curve. The left bank is high and not subject to overflow. The right bank is low and subject to overflow during medium stages around gage 3.50-4.00. The bed of the stream is composed of shifting sand. Under-laying this is a solid shale bottom which limits the extent of scour. The greatest depths are found along the left bank. There is no permanent low-water control. Channel control prevails at all stages and continual shifting can be expected.

Discharge Measurements

At low and medium stages (below 2.90 gage for open water) wading measurements can be made near gage. At high stages measurements can be made from the highway bridge below the gage. Wading section is good. Measuring conditions at the bridge are good to fair. Extreme caution should be exercised when making wading measurements after high water. The left side of the channel sometimes scours out four feet or more during high water.

Extremes for Period of Record

1945-1993 maximum discharge, 9,130 cfs May 21, 1962, gage height 5.25 feet.

Minimum daily discharge, 16 cfs on Dec. 20, 1966.

Point of Zero Flow

Very hard to determine as there is no permanent low water control and continual shifting in the streambed.

Seasonal Flow

Stream flow is constant throughout the year. Irrigation from stream and wells may affect flow during the irrigation period (May through September). Partial or complete ice cover may occur periodically from November through March.

Accuracy

Records rated as fair for open water and poor under ice condition, if once monthly measuring schedule is followed.

Cooperation

Station operated in cooperation with Upper Niobrara White Natural Resources District.

The Field work and data assembly is done by state employees.

Establishment and History

On August 24, 1928 Staff gage established on bridge four miles downstream at different datum from present gage. Generaly read twice daily thru June 30, 1932 by Alvin D. Johns, Gordon NE.

On December 3, 1945, Water stage recorder installed by Jim Lind and Tom Goolsby and has been operating continuously except for the period from Sept. 20 thru Nov. 1, 1955 when the shelter was moved to the Niobrara River at the Wyoming-Nebraska State Line.

On November 2, 1955, Another 48-inch steel shelter was installed and station placed back in operation (missing discharge record for period filled in by estimating).

On December 3, 1945 to Mar. 24, 1970 at datum 2.0 foot higher.

On March 24, 1970 to July 29, 1982 at datum 1.0 foot higher.

On September 8, 1982, a Sta-Com manometer was installed.

On October 29, 1990, the 48-inch steel shelter was cut off near ground level. Sheet of solid metal welded to top of 48-inch CMP well covering opening. Forty-eight inch CMP shelter welded to solid metal covering.

On October 1, 1992, the State of Nebraska took over operation of the gage. Site was measured quarterly from 1993-2004.

On April 19, 2004, an ISCO was installed and bi-monthly measurements are made. During summer months and times of administration weekly measurements are made as needed.

On August 18, 2011 48-inch CMP was replaced with a 3’ by 3’ look-in type shelter,

On August 19, 2011 ISCO equipment was then re-installed into the new shelter.

On August 24, 2011, Datum was lowered 1 foot due to channel conditions.

On March 15, 2016 and new equipment was installed. The new equipment is Sutron CBS bubbler flow meter with a Satlink DCP radio to provide near real time information via satellite one hour transmissions with 15-minute data blocks.

On November 21, 2022 datum was lowered .71 foot due to channel conditions.

Revision History

Original prepared:	11/23/45	D.D.Lewis
Revised:	03/05/68	S.M.Christensen
Revised:	08/26/77	E.K.Steele
Revised:	03/09/94	T.A. Mitchell
Revised:	10/16/09	A.S. Leisy
Revised:	08/01/11	A.S. Leisy

Revised:	11/20/13	Trevor J. Massey
Revised:	01/09/17	Stjepan Figuric
Revised:	04/19/18	Jeff Nichols
Revised:	10/30/2019	T. Stephens
Revised:	11/30/2023	K.Schwager