
***Lake Thunderbird TMDL Monitoring Plan Implementation:
Sample Year (SY) 2019- July Report***



SY2019 Monthly Report

Lake Thunderbird TMDL Monitoring Plan Implementation:

July 2019 Monitoring Report

Oklahoma Water Resources Board
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SUMMARY OF JULY WATER QUALITY SAMPLING

Sampling for July 2019 occurred on the twenty-ninth of July and was considered a base flow collection. Water samples were collected at nine locations, with the exception of LT-1 as a result of pool conditions. Discharge measurements were not collected due to low water levels. Mesonet data shows 0.02 inches of precipitation occurring on the twenty-ninth, and no precipitation in the 72 hours prior to sampling, or in the 72 hours after the sampling event. The total rainfall amount in Norman for the month of July was 0.17 inches. All water level gauges were operational for the month, with the exception of LT-1 due to equipment malfunction.

RESULTS

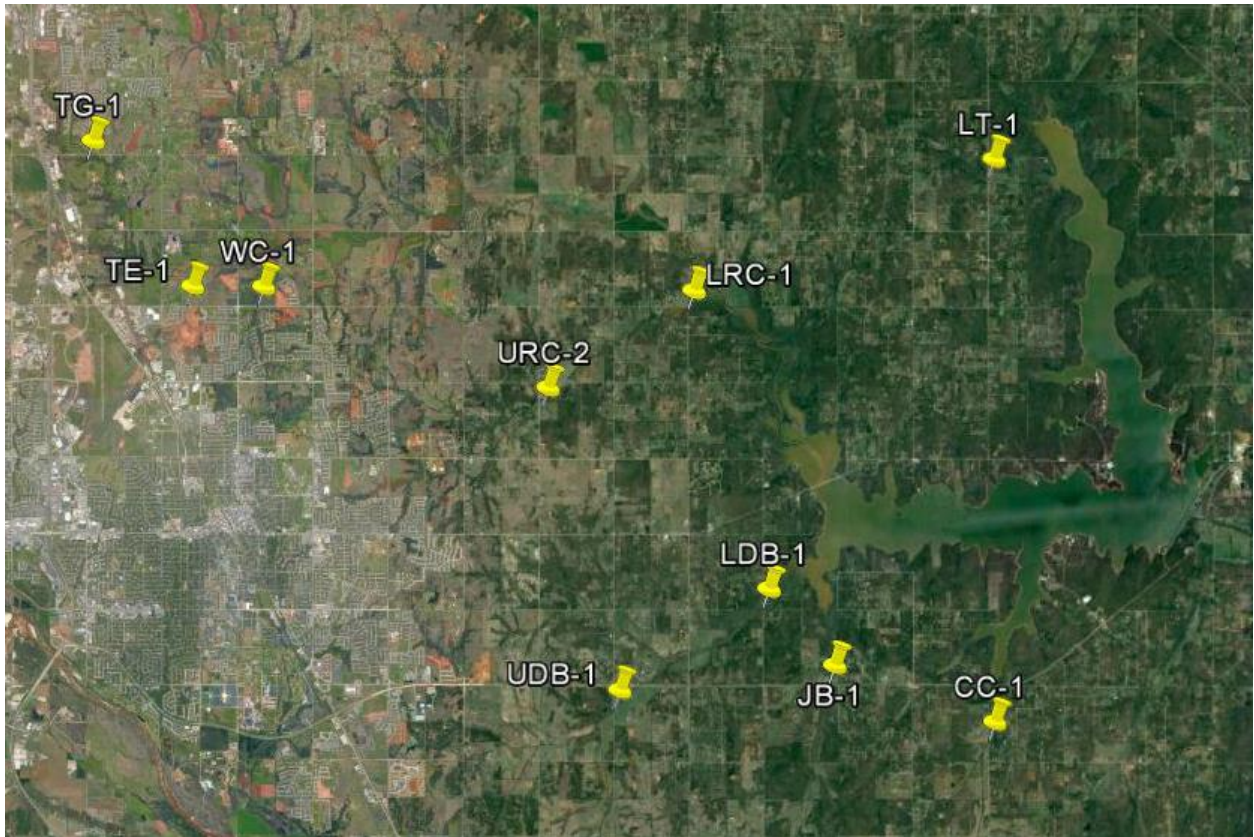


Figure 1 Monitoring Station Map

Monitoring Location ID	Monitoring Location Name	Date	Time	Field Crew	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/l)	pH	Specific Conductance (mS/cm)	Turbidity (NTU)	Notes
CC-1	Clear Creek	07-29-2019	9:50	SD	24.39	9.52	8.14	627	4	Orifice buried, changed dcp. Low stream stage/high filamentous algae, so no flow taken
JB-1	Jim Blue Creek	07-29-2019	10:45	SD	24.50	2.56	7.78	962	11	
LDB-1	Lower Dave Blue Creek	07-29-2019	11:10	SD	25.74	4.81	8.09	947	27	
LRC-1	Lower Rock Creek	07-29-2019	12:05	SD	24.56	4.68	8.09	802	8	Orifice not buried. Changed dcp
LT-1	Lake Laterals	07-29-2019	11:35	SD	N/A	N/A	N/A	N/A	N/A	Did not sample. Small isolated pool on ds and us
TE-1	Little River Tributary	07-29-2019	14:10	SD	25.49	1.81	8.05	1202	5	
TG-1	Little River Tributary	07-29-2019	14:45	SD	28.28	8.82	8.14	1251	5	
UDB-1	Upper Dave Blue Creek	07-29-2019	9:05	SD	23.70	4.95	7.81	974	6	Changed dcp
URC-2	Upper Rock Creek	07-29-2019	12:45	SD	25.33	5.73	7.62	932	8	Changed dcp
WC-1	Woodcrest Creek	07-29-2019	13:40	SD	26.32	7.65	7.56	1110	7	Orifice buried, changed dcp

Table 1 Field Data Form

Monitoring Location ID	Monitoring Location Name	Nitrate and Nitrite (mg/l)	Kjeldahl Nitrogen (mg/l)	Phosphorus (mg/l)	Total Suspended Solids (mg/l)
CC-1	Clear Creek	0.06	0.19	0.024	<5.0
JB-1	Jim Blue Creek	0.05	0.97	0.163	6
LDB-1	Lower Dave Blue Creek	0.08	0.68	0.073	12
LRC-1	Lower Rock Creek	<0.05	0.26	0.035	<5.0
LT-1	Lake Laterals	N/A	N/A	N/A	N/A
TE-1	Little River Tributary	<0.05	0.49	0.031	<5.0
TG-1	Little River Tributary	<0.05	0.43	0.040	<5.0
UDB-1	Upper Dave Blue Creek	0.10	0.23	0.028	<5.0
URC-2	Upper Rock Creek	<0.05	0.34	0.045	<5.0
WC-1	Woodcrest Creek	<0.05	0.16	0.026	<5.0

Table 2 Laboratory Analysis Summary

Monitoring Location Name	Nitrate and Nitrite (mg/l)	Kjeldahl Nitrogen (mg/l)	Phosphorus (mg/l)	Total Suspended Solids (mg/l)
Field Blank	<0.05	<0.10	<0.010	<5.0
Duplicate	0.06	0.18	0.024	<5.0
Duplicate RPD	0%	5.41%	0%	0%

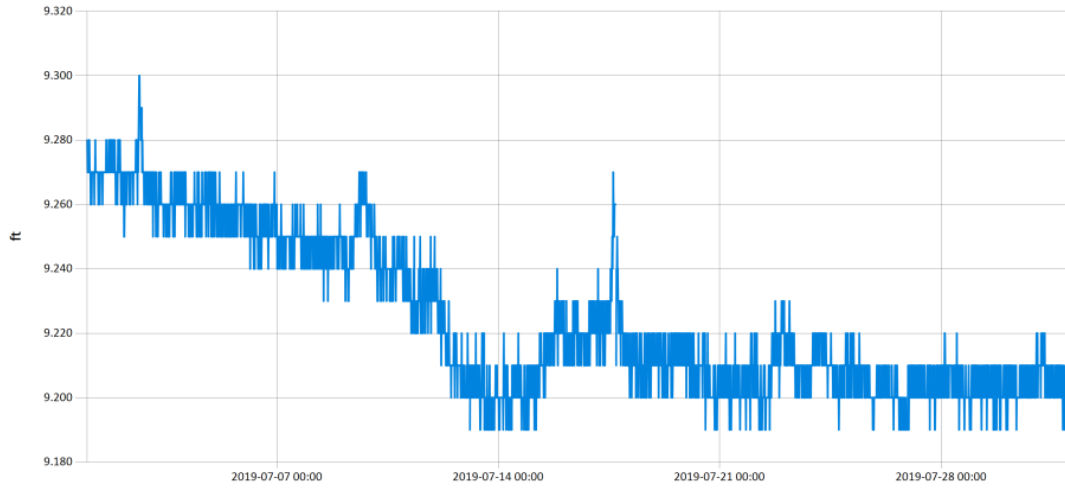
Table 3 QA/QC Data

Quality assurance/quality control (QA/QC) of the data includes a field blank and duplicate sample from each collection event, and is qualified by the OWRB. Relative Percent Difference (RPD) of the duplicate sample can be categorized into four levels, where Level 1 likely has no QA issues and Level 4 has major QA issues, and should be used with caution.

Monitoring Location ID	Monitoring Location Name	Discharge (cfs)	Stream Stage (ft)
CC-1	Clear Creek	0.90	20.47
JB-1	Jim Blue Creek	0.54	15.95
LDB-1	Lower Dave Blue Creek	2.65	16.14
LRC-1	Lower Rock Creek	9.58	18.23
LT-1	Lake Laterals	N/A	N/A
TE-1	Little River Tributary	6.75	12.36
TG-1	Little River Tributary	1.08	9.20
UDB-1	Upper Dave Blue Creek	0.06	17.22
URC-2	Upper Rock Creek	0.02	11.79
WC-1	Woodcrest Creek	0.02	7.75

Table 4 Station Discharge Summary

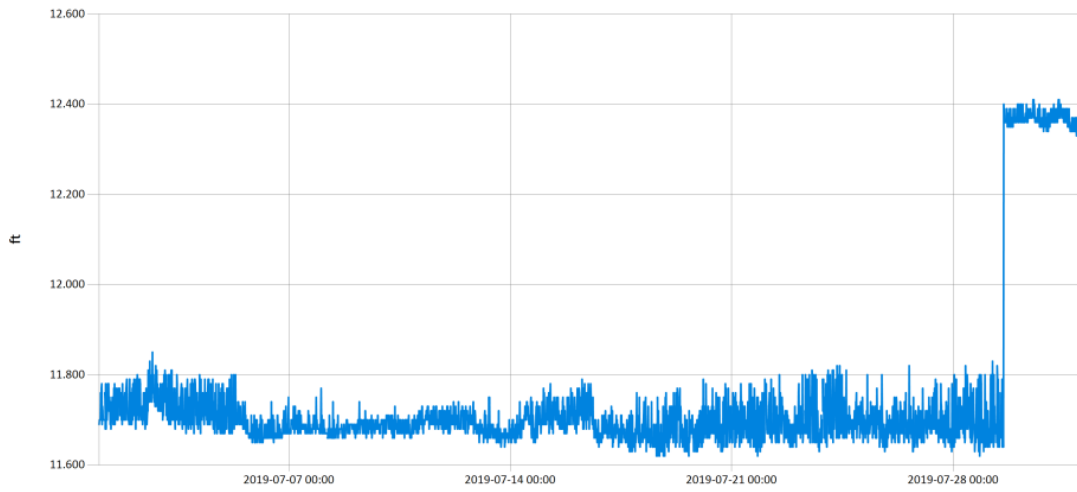
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— Stage@TG-1

Figure 2 Monthly Hydrograph TG-1

Period Selected: 2019-07-01 00:00 - 2019-07-31 23:59 Utc Offs et: -06:00



— Stage@TE-1

Figure 3 Monthly Hydrograph TE-1

Period Selected: 2019-07-01 00:00 - 2019-07-31 23:59

Utc Offset: -06:00

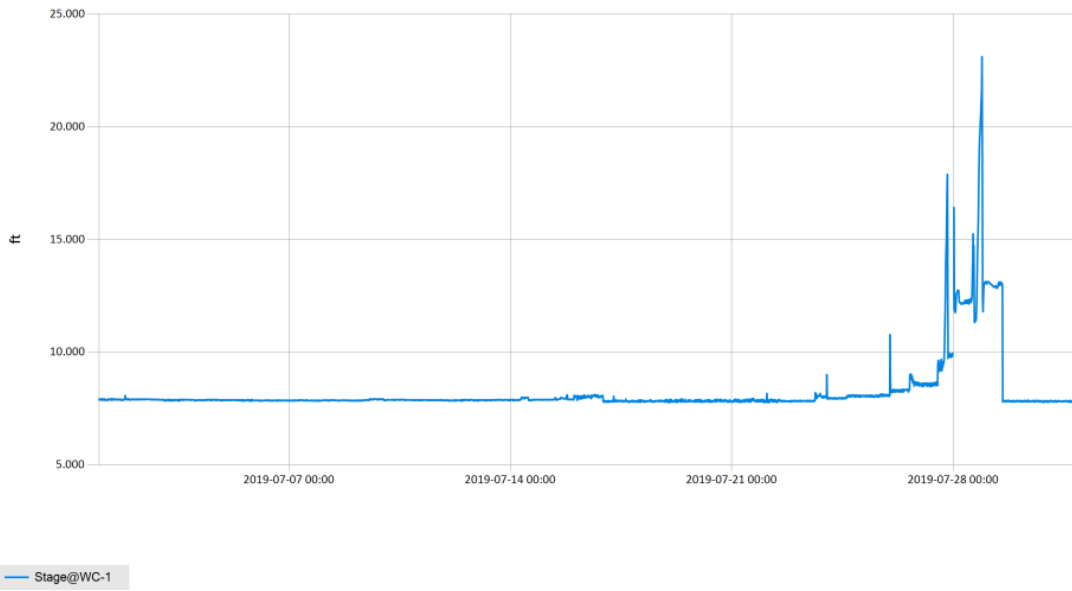


Figure 4 Monthly Hydrograph WC-1

Period Selected: 2019-07-01 00:00 - 2019-07-31 23:59

Utc Offset: -06:00

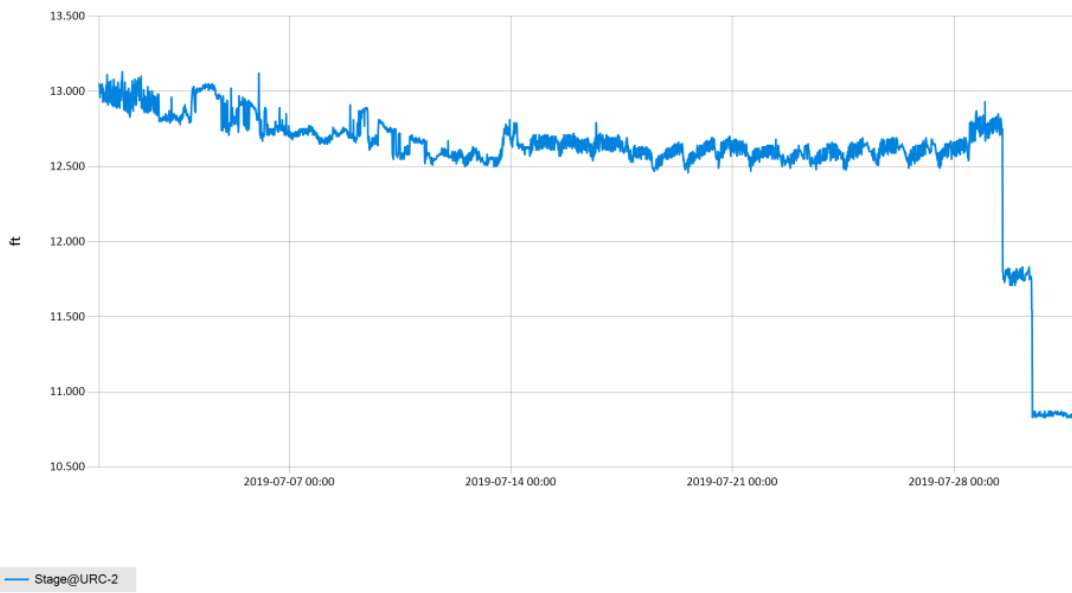


Figure 5 Monthly Hydrograph URC-2

Period Selected: 2019-07-01 00:00 - 2019-07-31 23:59 Utc Offs et: -06:00

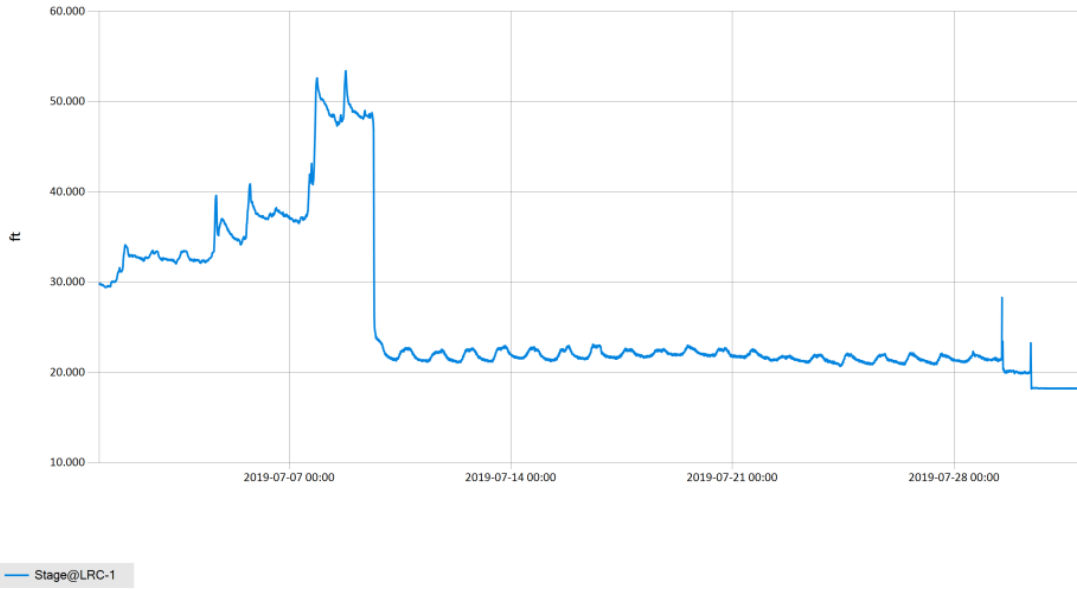


Figure 6 Monthly Hydrograph LRC-1

Period Selected: 2019-07-01 00:00 - 2019-07-31 23:59 Utc Offs et: -06:00

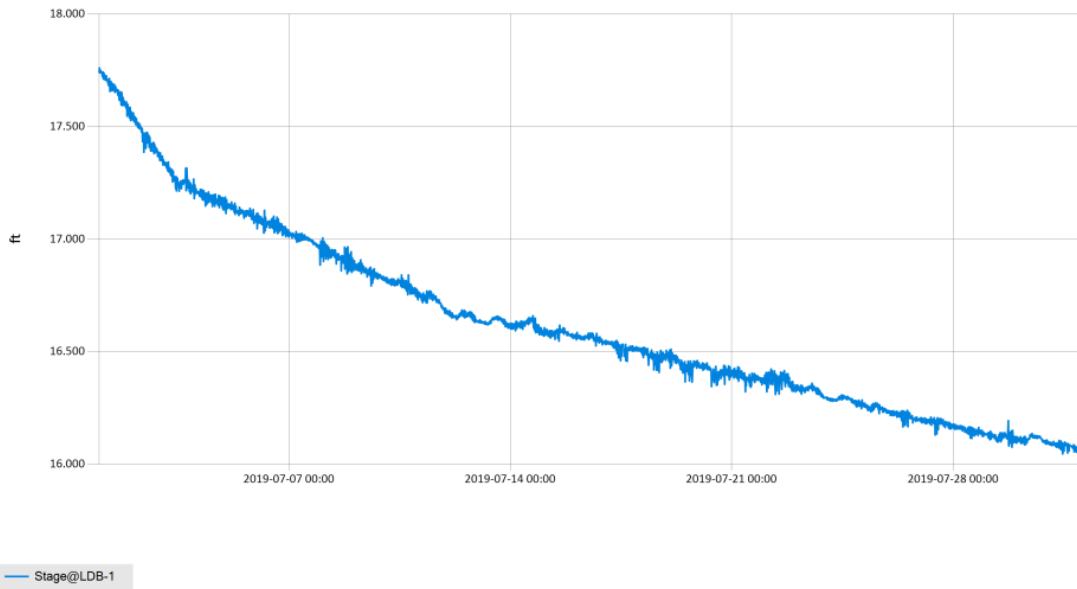


Figure 7 Monthly Hydrograph LDB-1

Period Selected: 2019-07-01 00:00 - 2019-07-31 23:59

Utc Offs et: -06:00

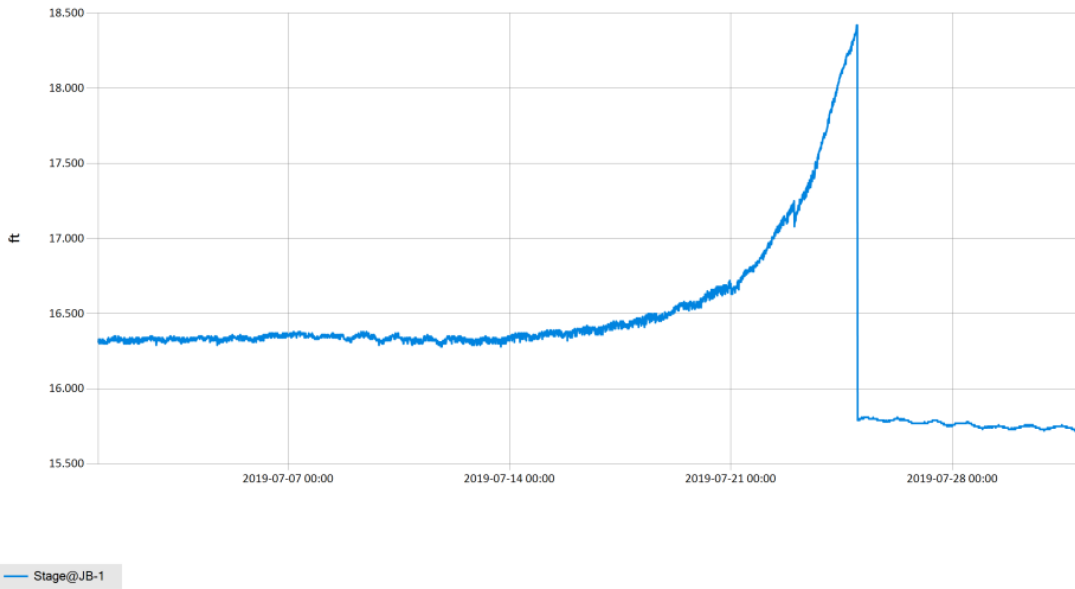


Figure 8 Monthly Hydrograph JB-1

Period Selected: 2019-07-01 00:00 - 2019-07-31 23:59

Utc Offs et: -06:00

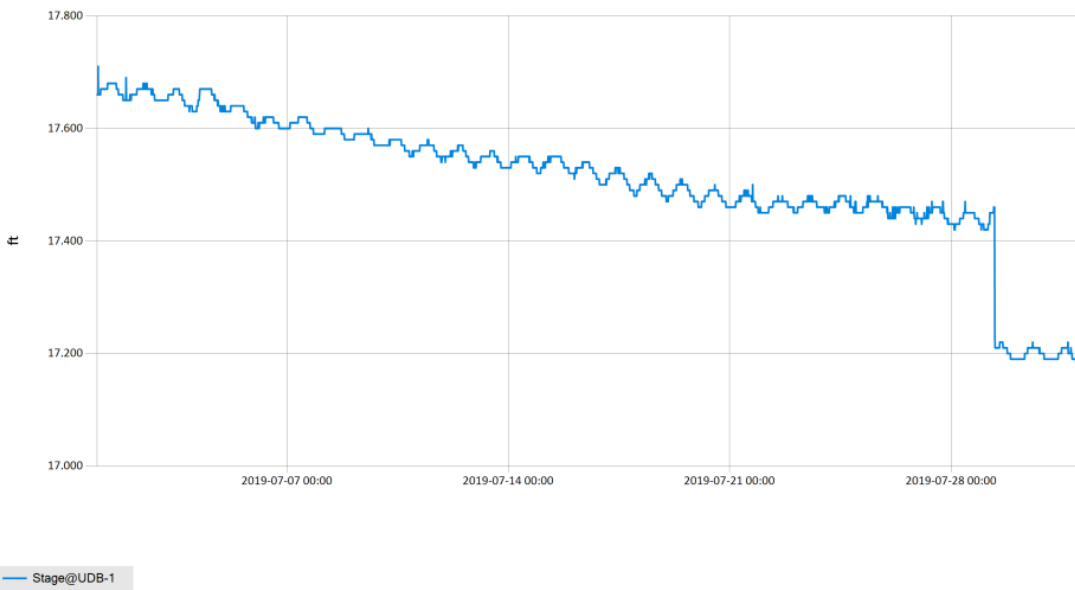


Figure 9 Monthly Hydrograph UDB-1

MESONET CLIMATOLOGICAL DATA SUMMARY
(NRMN) Norman
Latitude: 35-14-09

July 2019
Nearest City: 2.1 NW Norman
Longitude: 97-27-53

Time Zone: Midnight-Midnight CST
County: Cleveland
Elevation: 1171 feet

DAY	TEMPERATURE (°F)				DEG DAYS		HUMIDITY (%)			RAIN (in)	PRESSURE (in)		WIND SPEED (mph)			SOLAR (MJ/m ²)	4" SOIL TEMPERATURES				
	MAX	MIN	AVG	DEWPT	HDD	CDD	MAX	MIN	AVG		STN	MSL	DIR	AVG	MAX		SOD	BARE	MAX	MIN	
1	88	70	79.2	69.0	0	14	93	53	72	0.00	28.76	30.01	SSE	7.2	18.9	27.51	80.9	86.3	93	80	
2	91	73	80.8	70.6	0	17	94	51	73	0.15	28.68	29.93	S	8.6	21.0	26.00	80.7	85.5	91	81	
3	89	72	79.7	71.2	0	16	91	57	76	0.00	28.65	29.89	S	8.6	23.7	23.78	80.4	85.5	92	80	
4	90	73	81.5	72.4	0	17	91	57	75	0.00	28.67	29.91	SSE	9.3	21.6	23.15	80.4	85.7	91	81	
5	90	75	82.2	73.3	0	17	89	58	75	0.00	28.77	30.02	SSE	8.5	21.0	23.93	80.9	86.9	92	82	
6	88	69	79.0	70.7	0	14	94	57	77	0.00	28.83	30.08	NW	5.1	24.6	19.47	80.9	86.7	91	82	
7	91	70	81.3	70.8	0	16	99	51	73	0.00	28.76	30.01	ESE	4.3	24.8	22.42	80.9	87.0	93	81	
8	91	72	80.2	70.7	0	16	94	49	74	0.00	28.69	29.93	S	6.1	24.5	22.83	80.8	87.6	93	83	
9	94	73	83.9	73.2	0	19	91	55	72	0.00	28.66	29.90	SSE	8.2	21.9	26.55	81.1	88.2	95	82	
10	95	76	85.0	74.6	0	21	90	50	72	0.00	28.76	30.01	SSE	7.2	18.5	26.84	83.2	90.4	97	84	
11	89*	69*	80.4*	67.0*	0*	14*	94*	41*	66*	0.00*	28.79*	30.04*	NE *	6.7*	20.4*	NA	82.7*	90.3*	96*	85*	
12	88	65	77.9	63.6	0	11	96	41	64	0.00	28.72	29.96	E	5.0	19.9	29.69	80.8	88.6	95	82	
13	90	66	79.5	65.6	0	13	97	41	66	0.00	28.73	29.98	ENE	5.3	22.5	29.52	80.6	88.6	95	82	
14	88	71	79.7	70.3	0	15	94	54	74	0.00	28.74	29.98	ENE	7.3	21.1	22.70	81.4	88.5	93	84	
15	91	68	79.9	68.8	0	15	97	45	71	0.00	28.68	29.92	N	5.3	19.7	25.38	80.8	87.9	94	82	
16	100	70	86.0	70.7	0	20	95	36	64	0.00	28.67	29.92	S	5.5	17.9	27.00	81.9	89.8	97	83	
17	96	77	86.7	71.2	0	22	79	44	61	0.00	28.70	29.94	S	10.0	24.3	27.11	82.4	91.2	96	86	
18	96	78	86.1	70.2	0	22	81	43	61	0.00	28.66	29.90	S	11.7	28.0	28.37	81.9	90.6	96	86	
19	97	77	86.5	69.2	0	22	80	36	58	0.00	28.65	29.89	S	11.7	27.3	28.67	82.0	90.5	96	85	
20	97	77	86.1	68.9	0	22	82	37	59	0.00	28.64	29.88	S	10.7	27.1	28.53	82.2	90.5	96	85	
21	99	75	86.8	68.2	0	22	85	33	57	0.00	28.67	29.91	SSW	9.2	25.4	27.96	82.6	90.5	96	85	
22	87	70	78.6	65.7	0	14	96	37	67	0.00	28.84	30.09	NNE	11.6	25.9	19.27	82.2	88.3	92	85	
23	85	64	74.8	57.5	0	10	79	36	57	0.00	28.94	30.19	NNE	7.7	22.4	28.57	80.7	85.9	92	80	
24	87	57	74.4	56.7	0	7	97	33	58	0.00	28.90	30.16	E	4.6	17.0	28.83	79.8	85.7	93	78	
25	87	65	76.7	56.5	0	11	80	32	52	0.00	28.88	30.13	SSE	7.5	33.5	28.34	79.5	86.1	92	80	
26	88	64	76.5	57.4	0	11	74	31	53	0.00	28.90	30.15	SSE	6.9	16.6	26.23	79.4	85.7	92	80	
27	91	68	79.8	60.8	0	15	78	34	55	0.00	28.89	30.14	SSE	7.6	20.2	26.81	80.1	86.0	92	80	
28	95	72	83.8	64.8	0	19	79	35	55	0.00	28.77	30.02	SSE	9.4	24.3	25.90	81.1	87.2	93	82	
29	98	75	84.3	70.3	0	21	91	37	65	0.02	28.71	29.96	S	7.3	21.2	24.71	83.2	88.8	95	84	
30	96	72	83.9	70.2	0	19	97	39	67	0.00	28.78	30.03	ESE	5.6	16.8	27.12	84.4	89.6	96	83	
31	98	73	85.9	68.3	0	20	83	36	58	0.00	28.78	30.02	SSE	8.0	21.9	27.15	84.7	90.3	96	85	
	92*	71*	81.5*	67.7*	←- Monthly Averages →-							28.75*	30.00*	SSE*	7.7*	33.5*	26.01*	81.4*	88.1*	94*	82*
Temperature - Highest: 100*					Degree Days - Total HDD: 0*					Number of Days With:											
Lowest: 57*					Total CDD: 509*					Tmax ≥ 90: 20*			Rainfall ≥ 0.01 inch: 2*								
										Tmax ≤ 32: 0*			Rainfall ≥ 0.10 inch: 1*								
Rainfall: Monthly Total: 0.17* in.					Humidity - Highest: 99*					Tmin ≤ 32: 0*			Avg Wind Speed ≥ 10 mph: 5*								
Greatest 24 Hr: 0.15* in.					Lowest: 31*					Tmin ≤ 0: 0*			Max Wind Speed ≥ 30 mph: 1*								

Figure 10 July Mesonet Data