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**Lake Thunderbird TMDL Monitoring  
Plan Implementation: Sample Year  
(SY) 2023- November Report**

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**OKLAHOMA**  
**Water Resources Board**

# Lake Thunderbird TMDL Monitoring Plan Implementation: November 2023 Monitoring Report

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## SUMMARY OF NOVEMBER SAMPLING

Sampling for November 2023 occurred during base flow conditions on the thirteenth. Water samples were collected at nine locations and discharge was measured at one location. Mesonet shows no precipitation on the thirteenth, in the 72 hours prior to sampling, or in the 72 hours after sampling occurred. The total rainfall amount in Norman for the month of November was 0.64 inches. Samples were not collected at LT-1 since this station will be relocated. All water level gauges were operational for the month, except for JB-1 which is having communication issues.

## RESULTS

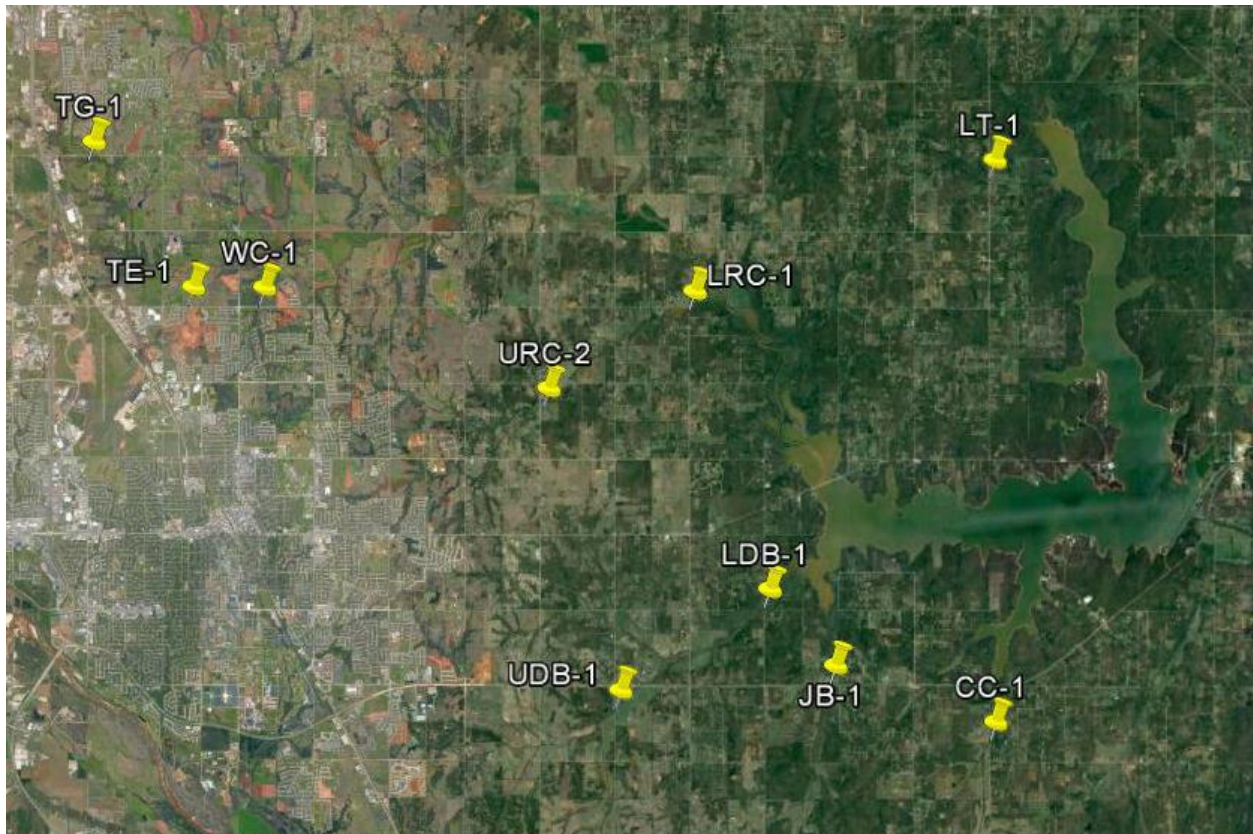


Figure 1 Monitoring Station Map

Monitoring Location ID	Monitoring Location Name	Date	Time	Field Crew	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/L)	pH	Specific Conductance (µS/cm)	Turbidity (NTU)	Notes
CC-1	Clear Creek	11/13/2023	13:35	ANN	13.8	6.95	N/A	676	7	Narrow channel
JB-1	Jim Blue Creek	11/13/2023	13:05	ANN	13.4	3.39	N/A	898	12	Beaver dam upstream of bridge
LDB-1	Lower Dave Blue Creek	11/13/2023	12:34	ANN	12.1	3.26	N/A	325	29	Normal flow; periphyton on edges with oil and grease
LRC-1	Lower Rock Creek	11/13/2023	11:22	ANN	10.8	4.00	N/A	631	13	Very low water level; orifice out of water; moderate amount of floating debris and oil/grease
TE-1	Little River Tributary	11/13/2023	9:42	ANN	11.3	6.68	N/A	672	42	Beaver dam upstream; orifice half out of water
TG-1	Little River	11/13/2023	8:57	ANN	10.2	6.43	N/A	964	2	Lots of leaves
UDB-1	Upper Dave Blue Creek	11/13/2023	14:21	ANN	13.3	3.57	N/A	852	16	Scum, oil, grease covering pool under bridge; debris pile upstream
URC-2	Upper Rock Creek	11/13/2023	11:53	ANN	10.5	2.55	N/A	601	28	Not connected upstream; pool of algae filled, oily, greasy water
WC-1	Woodcrest Creek	11/13/2023	10:38	ANN	11.9	4.69	N/A	790	10	Orifice half out of water

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	<0.05	0.16	0.036	<5.0
JB-1	Jim Blue Creek	<0.05	0.25	0.057	<5.0
LDB-1	Lower Dave Blue Creek	<0.05	0.52	0.079	8.0
LRC-1	Lower Rock Creek	<0.05	1.00	0.148	12.0
TE-1	Little River Tributary	<0.05	0.44	0.050	20.0
TG-1	Little River	<0.05	0.32	0.067	<5.0
UDB-1	Upper Dave Blue Creek	<0.05	0.40	0.082	8.0
URC-2	Upper Rock Creek	<0.05	0.36	0.086	<5.0
WC-1	Woodcrest Creek	<0.05	0.40	0.106	<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	<0.05	0.15	0.034	<5.0
Duplicate RPD	0%	6.45%	5.71%	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	0.30	20.19
JB-1	Jim Blue Creek	0.00	7.20
LDB-1	Lower Dave Blue Creek	1.77	16.12
LRC-1	Lower Rock Creek	0.21	3.92
TE-1	Little River Tributary	0.01	10.76
TG-1	Little River	0.72	9.08
UDB-1	Upper Dave Blue Creek	0.10	17.25
URC-2	Upper Rock Creek	0.01	10.76
WC-1	Woodcrest Creek	0.02	7.36

Table 4 Station Discharge Summary

All rated stream discharges are provisional and subject to change.

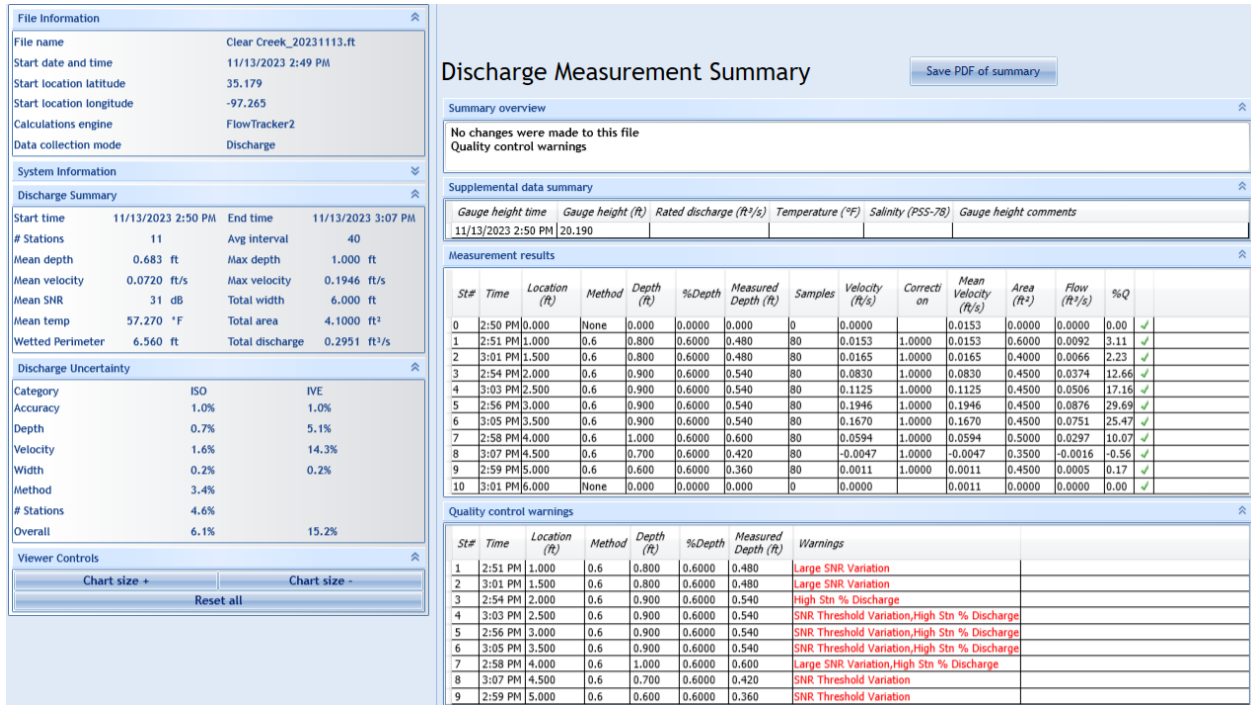
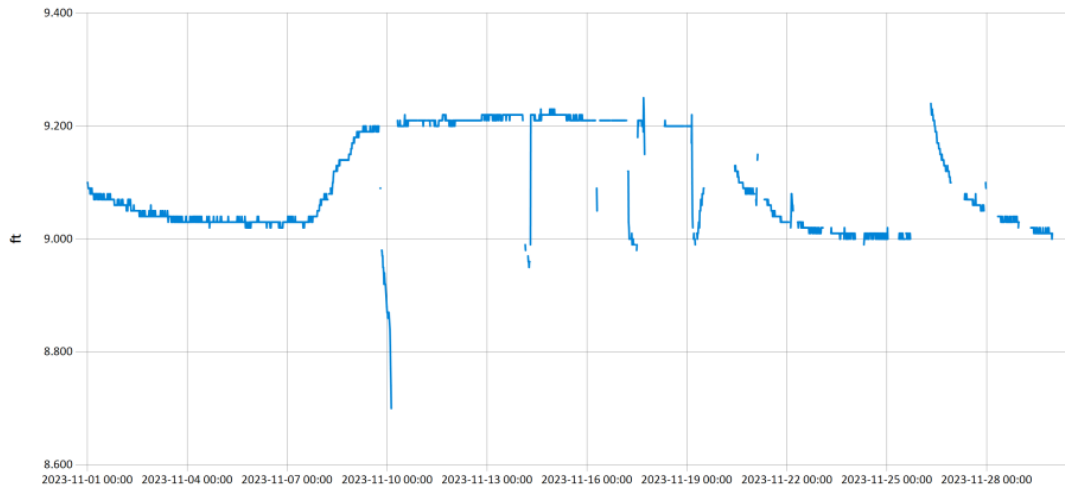


Figure 2 Discharge Measurement Summary CC-1

Period Selected: 2023-11-01 00:00 - 2023-11-30 23:59

UTC Offset: -06:00

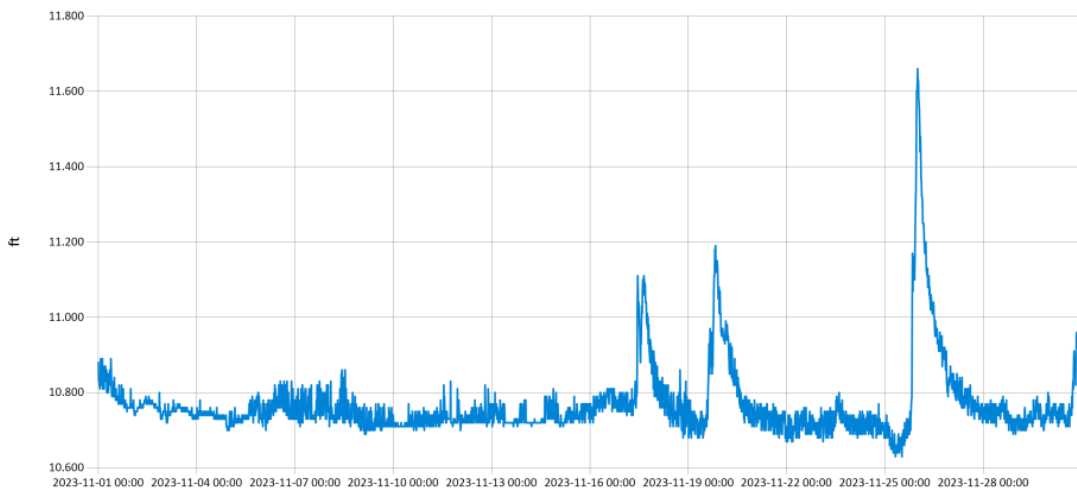


— Stage@TG

Figure 3 Monthly Hydrograph TG-1

Period Selected: 2023-11-01 00:00 - 2023-11-30 23:59

UTC Offset: -06:00



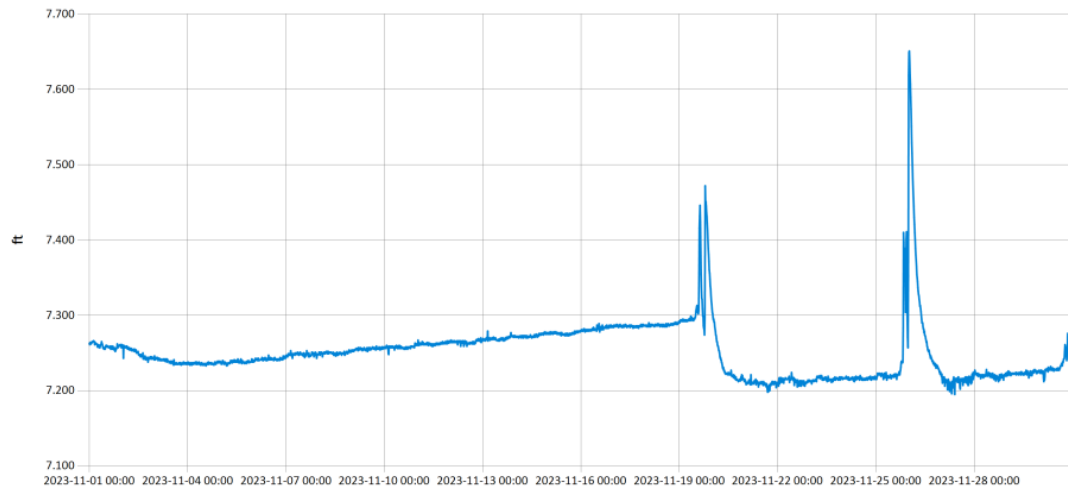
— Stage@TE

Figure 4 Monthly Hydrograph TE-1



Period Selected: 2023-11-01 00:00 - 2023-11-30 23:59

UTC Offset: -06:00

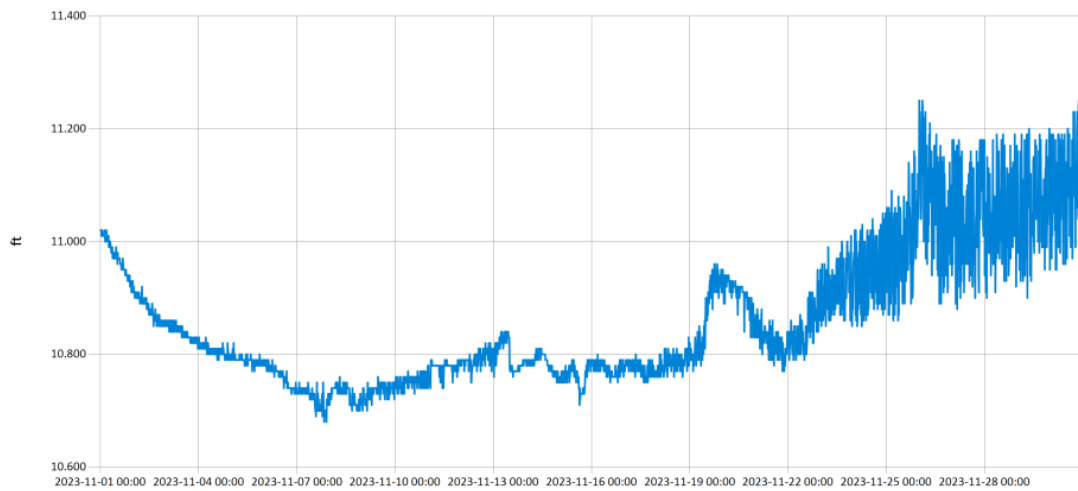


— Stage@WC

Figure 5 Monthly Hydrograph WC-1

Period Selected: 2023-11-01 00:00 - 2023-11-30 23:59

UTC Offset: -06:00

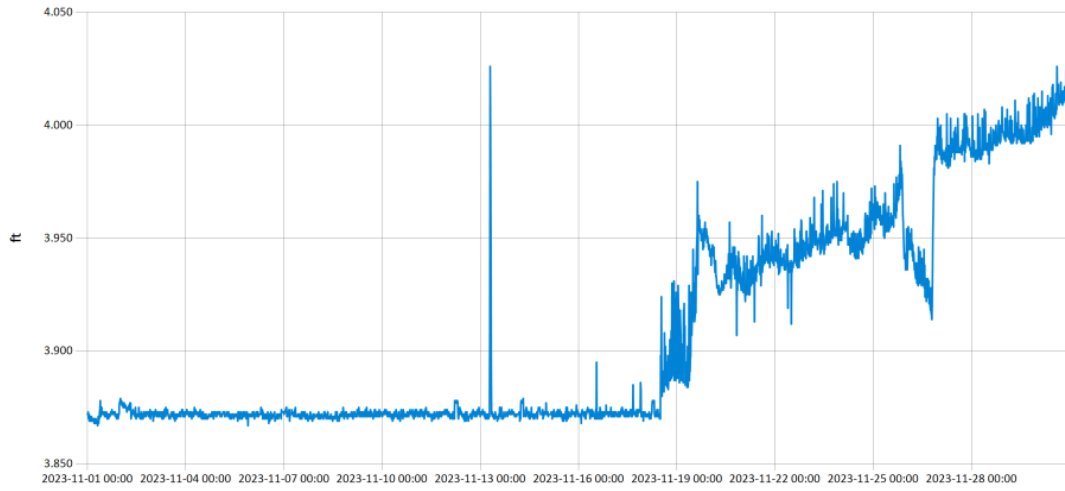


— Stage@URC

Figure 6 Monthly Hydrograph URC-2

Period Selected: 2023-11-01 00:00 - 2023-11-30 23:59

UTC Offs et: -06:00

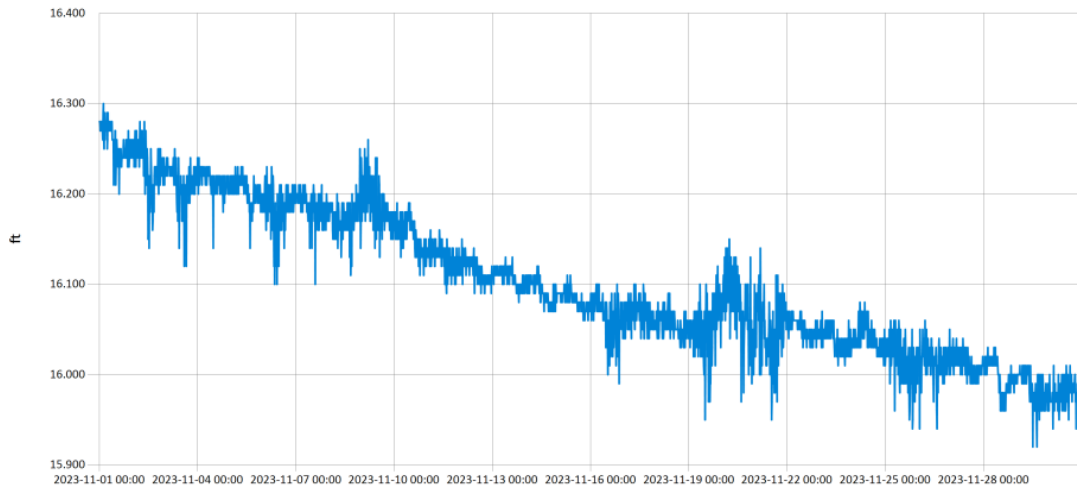


— Stage@LRC

Figure 7 monthly Hydrograph LRC-1

Period Selected: 2023-11-01 00:00 - 2023-11-30 23:59

UTC Offs et: -06:00

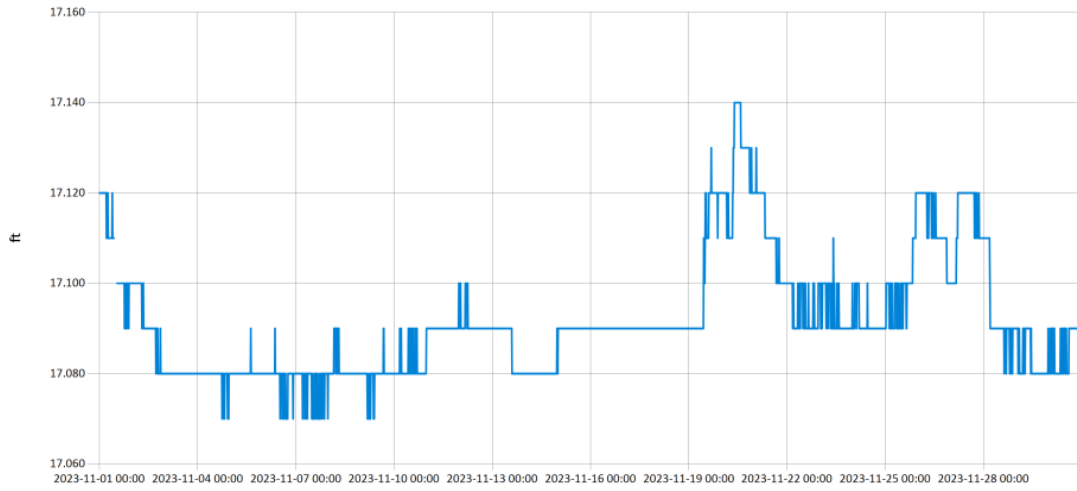


— Stage@LDB

Figure 8 Monthly Hydrograph LDB-1

Period Selected: 2023-11-01 00:00 - 2023-11-30 23:59

UTC Offset: -06:00

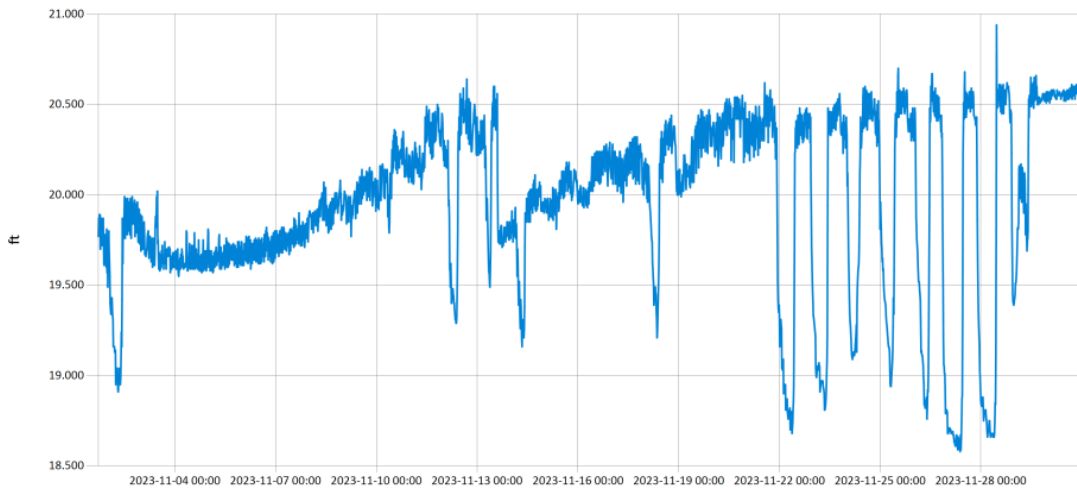


— Stage@UDB

Figure 9 Monthly Hydrograph UDB-1

Period Selected: 2023-11-01 00:00 - 2023-11-30 23:59

UTC Offset: -06:00



— Stage@CC

Figure 10 Monthly Hydrograph CC-1

MESONET CLIMATOLOGICAL DATA SUMMARY				November 2023				Time Zone: Midnight-Midnight CST													
(NRMN) Norman				Nearest City: 2.1 NW Norman				County: Cleveland													
Latitude: 35-14-09				Longitude: 97-27-53				Elevation: 1171 feet													
DAY	TEMPERATURE ( °F )				DEG DAYS		HUMIDITY (%)			RAIN		PRESSURE (in)			WIND SPEED (mph)		SOLAR (MJ/m <sup>2</sup> )	4" SOIL TEMPERATURES			
	MAX	MIN	AVG	DEWPT	HDD	CDD	MAX	MIN	AVG	(in)	STN	MSL	DIR	AVG	MAX	SOD		BARE	MAX	MIN	
1	56	26	40.4	22.0	24	0	80	30	50	0.00	29.12	30.38	S	6.8	18.6	15.41	51.9	44.6	51	40	
2	64	35	49.0	30.9	15	0	75	30	52	0.00	28.97	30.23	S	9.0	27.1	15.24	53.3	46.8	53	41	
3	72	41	56.3	41.9	8	0	85	38	60	0.00	28.87	30.12	S	8.5	22.7	14.80	55.0	50.5	57	44	
4	75	52	62.3	53.4	2	0	91	48	74	0.00	28.87	30.12	SSE	6.0	16.2	14.10	57.7	56.3	63	51	
5	78	50	64.8	55.9	1	0	98	50	75	0.00	28.78	30.03	S	6.5	25.9	14.02	59.7	59.7	65	54	
6	81	60	68.8	57.4	0	5	90	42	69	0.00	28.59	29.83	S	9.7	27.9	14.49	61.4	61.8	67	58	
7	84	60	70.7	57.7	0	7	91	38	66	0.00	28.53	29.77	S	9.1	22.5	14.37	62.3	63.5	70	59	
8	86	58	69.0	52.4	0	7	80	16	60	0.00	28.57	29.81	S	12.1	28.7	14.38	63.3	65.5	72	61	
9	58	49	52.8	35.0	12	0	71	30	52	0.00	28.88	30.14	NNE	12.4	26.5	2.38	60.7	58.8	63	56	
10	64	36	51.4	27.1	15	0	71	21	42	0.00	28.99	30.25	NNE	6.5	19.0	13.92	58.2	56.0	62	50	
11	61	41	51.6	33.9	14	0	79	30	53	0.00	29.01	30.27	SSE	3.7	16.6	8.22	57.7	56.3	60	52	
12	69	36	51.9	40.1	13	0	93	39	67	0.00	29.05	30.31	SSE	3.1	12.6	13.34	56.7	55.9	63	49	
13	71	39	53.5	40.7	10	0	97	26	68	0.00	29.11	30.37	ESE	2.7	15.6	13.40	56.7	56.9	64	51	
14	69	36	53.4	36.1	12	0	95	27	58	0.00	28.98	30.24	SSE	4.0	16.5	13.63	55.9	56.1	63	50	
15	72	42	57.2	44.3	8	0	94	40	65	0.00	28.92	30.18	SSE	4.8	13.9	12.98	56.4	57.1	64	51	
16	64*	48*	54.9*	48.6*	9*	0*	98*	61*	80*	0.00*	28.74*	29.99*	SSE*	9.2*	23.7*	NA	56.8*	57.1*	61*	54*	
17	59	41	53.0	49.8	15	0	97	74	89	0.00	28.76	30.01	N	5.5	18.9	2.99	57.5	57.2	59	54	
18	69	36	53.0	39.2	12	0	97	33	64	0.00	28.83	30.08	SSE	3.7	13.7	13.05	55.6	54.8	62	49	
19	59	52	55.8	52.2	10	0	96	65	88	0.22	28.55	29.79	SSE	9.0	24.3	1.07	56.5	56.0	57	55	
20	62	47	54.6	49.8	11	0	99	66	85	0.00	28.54	29.78	NNW	12.8	33.8	5.20	57.5	57.1	59	53	
21	55	36	47.3	31.0	19	0	76	26	56	0.00	28.98	30.24	NNW	15.4	32.4	8.83	54.8	52.1	55	49	
22	59	28	43.8	24.6	22	0	84	24	50	0.00	28.94	30.19	S	4.2	17.0	12.79	52.4	49.0	56	43	
23	67	33	49.9	30.3	15	0	83	27	49	0.00	28.77	30.02	S	6.3	17.8	12.66	52.3	50.3	57	45	
24	51	34	42.0	31.6	22	0	85	46	68	0.00	28.97	30.22	NNE	8.1	19.1	11.86	51.8	50.0	55	47	
25	49	31	37.5	33.0	25	0	96	72	84	0.31	28.88	30.14	NNW	7.5	24.6	3.17	50.7	46.8	49	45	
26	44	24	32.6	24.7	31	0	90	46	74	0.00	28.97	30.23	NW	10.6	25.2	12.42	48.2	42.9	46	40	
27	53	24	37.2	25.8	27	0	94	31	68	0.00	29.08	30.33	WNW	3.1	14.1	12.16	46.8	42.1	47	38	
28	61	27	43.5	26.5	21	0	92	25	57	0.00	29.03	30.29	SSW	6.1	26.0	12.25	46.8	43.1	48	39	
29	65	37	50.3	33.7	14	0	69	36	54	0.00	28.81	30.06	S	8.1	24.7	11.05	48.3	46.0	52	41	
30	55	45	52.2	48.1	15	0	98	63	87	0.11	28.51	29.75	S	8.5	26.7	1.80	50.8	50.3	52	49	
	64*	40*	52.0*	39.2*	<- Monthly Averages ->				28.85*	30.11*	S	7.4*	33.8*	10.90*	55.1*	53.3*	58*	49*			
Temperature - Highest: 86*					Degree Days - Total HDD: 403*					Number of Days With:											
Lowest: 24*					Total CDD: 20*					Tmax ≥ 90: 0*			Rainfall ≥ 0.01 inch: 3*								
Rainfall: Monthly Total: 0.64* in.					Humidity - Highest: 99*					Tmax ≤ 32: 0*			Rainfall ≥ 0.10 inch: 3*								
Greatest 24 Hr: 0.31* in.					Lowest: 16*					Tmin ≤ 32: 6*			Avg Wind Speed ≥ 10 mph: 5*								
										Tmin ≤ 0: 0*			Max Wind Speed ≥ 30 mph: 2*								

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\* Denotes incomplete record

Figure 11 November Mesonet Data