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

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

# Lake Thunderbird TMDL Monitoring Plan Implementation:

## May 2023 Monitoring Report

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Oklahoma Water Resources Board  
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## SUMMARY OF MAY SAMPLING

Sampling for May 2023 occurred during base flow conditions on the sixteenth. Water samples were collected at all ten locations and discharge was measured at one location. Mesonet shows no precipitation on the sixteenth, 1.89 inches of precipitation in the 72 hours prior to sampling, and 0.25 inches of precipitation in the 72 hours after the sampling event. The total rainfall amount in Norman for the month of May was 3.47 inches. All water level gauges were operational for the month, except for JB-1, which will be reinstalled later this year.

## RESULTS

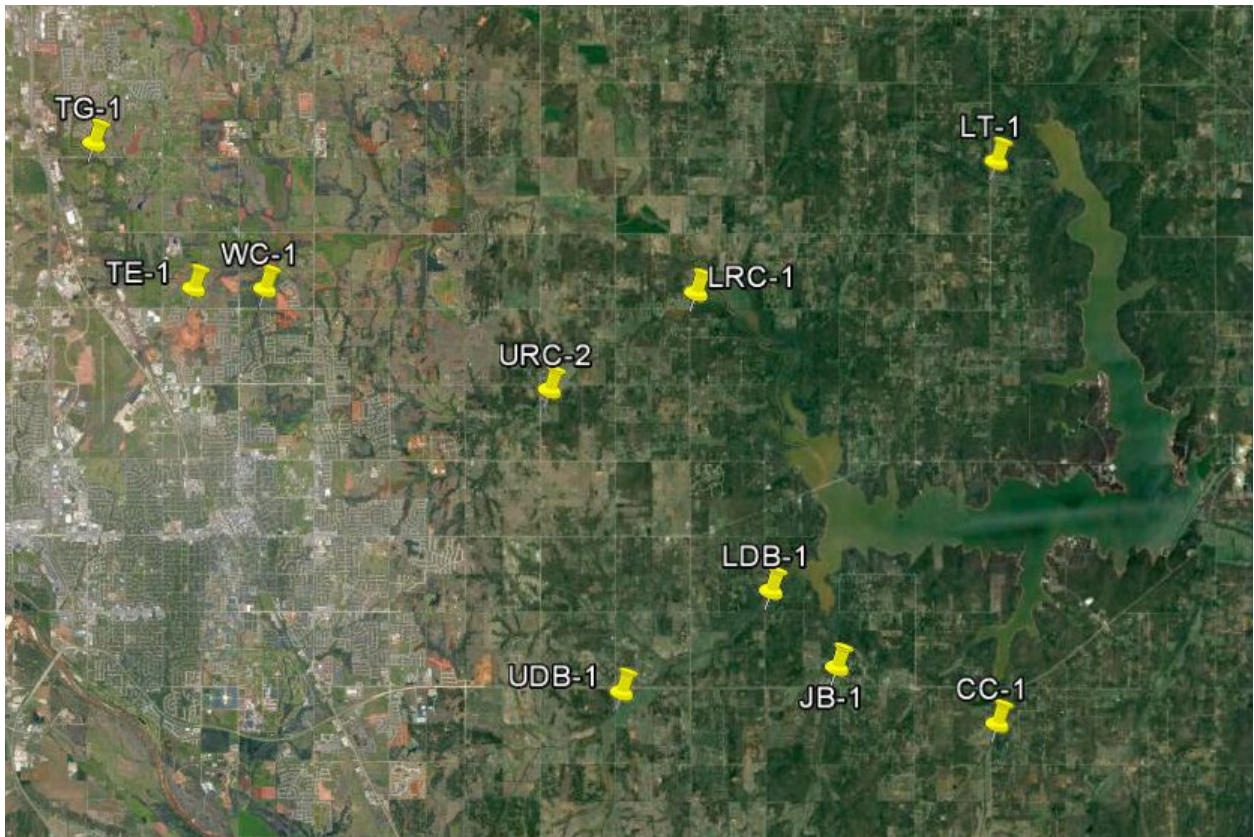


Figure 1 Monitoring Station Map

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	5/16/2023	9:30	NH	18.5	7.10	7.87	575	73	Beaver dam still present upstream of bridge; fairly turbid; slightly elevated flow ; used RP4
JB-1	Jim Blue Creek	5/16/2023	10:13	NH	18.5	6.77	7.77	574	30	Actually flow ing; sampled just dow nstream of bridge; appears to be coming dow n
LDB-1	Lower Dave Blue Creek	5/16/2023	10:32	NH	20.9	6.53	7.94	445	113	Turbid; lots of floating debris, looks to be grass clippings and leaves
LRC-1	Lower Rock Creek	5/16/2023	11:40	NH	21.1	7.72	8.11	440	69	Site very muddy; replaced batteries, unburied orifice; DCP still unavailable
LT-1	Lake Laterals	5/16/2023	11:09	NH	19.7	4.59	7.52	355	15	Water clear; guard rail still damaged
TE-1	Little River Tributary	5/16/2023	14:15	NH	21.9	6.53	7.67	472	48	Beaver dam upstream of bridge; ants in autosampler box
TG-1	Little River	5/16/2023	14:46	NH	20.3	8.16	7.99	579	15	Appears to be back at baseflow after recent rain; periphyton line; ants on autosampler
UDB-1	Upper Dave Blue Creek	5/16/2023	8:40	NH	19.9	8.09	8.10	536	40	Still coming dow n, slightly turbid
URC-2	Upper Rock Creek	5/16/2023	12:41	NH	20.9	7.66	8.15	444	60	Slight periphyton line; very muddy; some signs of cattle under bridge
WC-1	Woodcrest Creek	5/16/2023	13:21	NH	19.4	7.80	7.90	659	16	No periphyton line; appears to still be coming dow n

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	0.09	0.63	0.080	48.0
JB-1	Jim Blue Creek	<0.05	0.65	0.085	28.0
LDB-1	Lower Dave Blue Creek	0.14	1.15	0.141	80.0
LRC-1	Lower Rock Creek	0.10	0.92	0.096	58.0
LT-1	Lake Laterals	<0.05	0.81	0.068	14.0
TE-1	Little River Tributary	0.31	0.90	0.154	26.0
TG-1	Little River	0.64	0.86	0.168	8.0
UDB-1	Upper Dave Blue Creek	0.17	0.99	0.103	28.0
URC-2	Upper Rock Creek	0.11	0.84	0.087	52.0
WC-1	Woodcrest Creek	0.48	0.85	0.171	14.0

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	0.09	0.64	0.080	46.0
Duplicate RPD	0%	1.57%	0%	4.26%

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	0.31	20.43
JB-1	Jim Blue Creek	N/A	N/A
LDB-1	Lower Dave Blue Creek	19.99	17.05
LRC-1	Lower Rock Creek	2.11	4.66
LT-1	Lake Laterals	0.50	4.54
TE-1	Little River Tributary	0.03	11.03
TG-1	Little River	0.71	9.03
UDB-1	Upper Dave Blue Creek	3.01	17.75
URC-2	Upper Rock Creek	0.23	12.11
WC-1	Woodcrest Creek	3.25	7.51

Table 4 Station Discharge Summary

All rated stream discharges are provisional and subject to change.

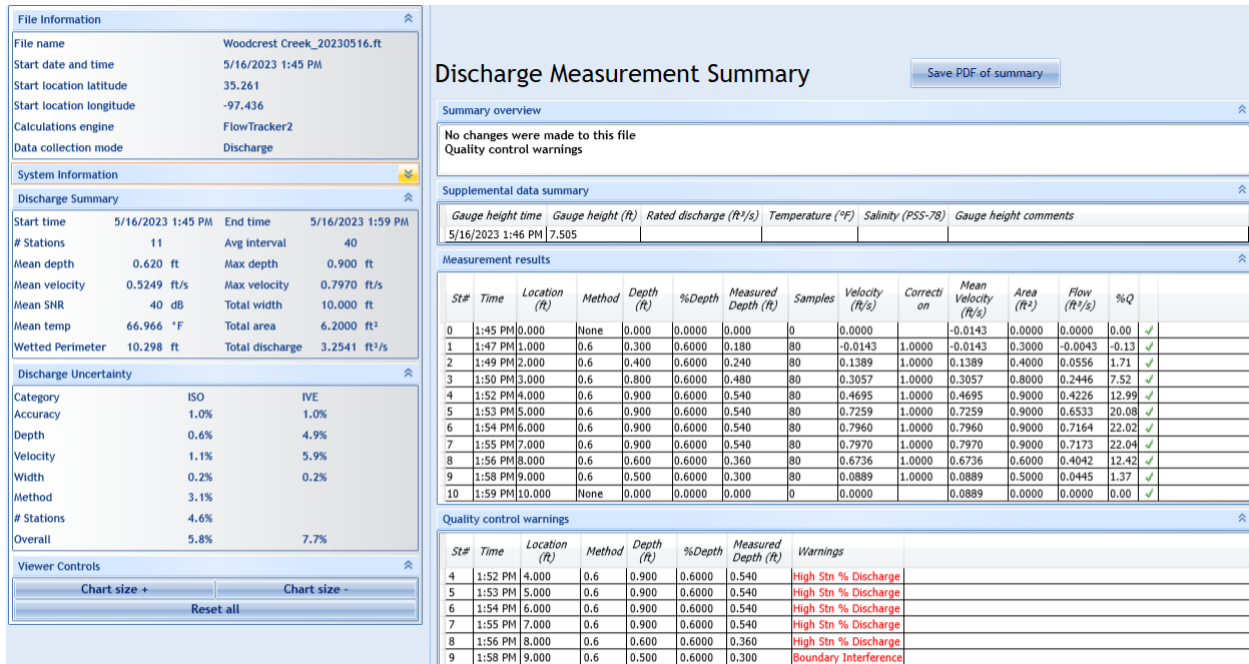


Figure 2 Discharge Measurement Summary WC-1

Period Selected: 2023-05-01 00:00 - 2023-05-31 23:59

UTC Offset: -06:00

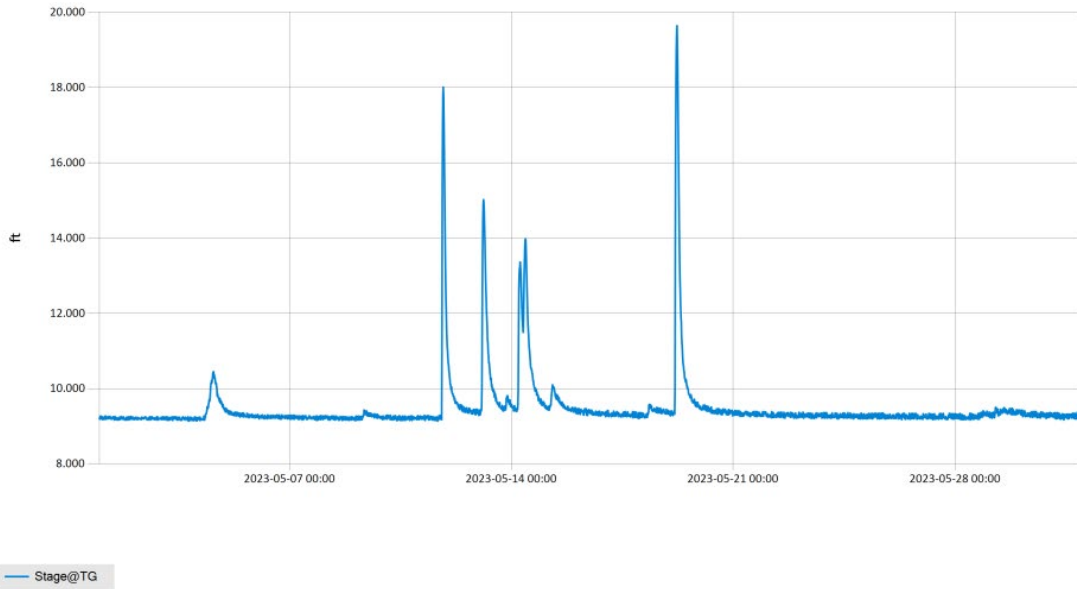


Figure 3 Monthly Hydrograph TG-1

Period Selected: 2023-05-01 00:00 - 2023-05-31 23:59

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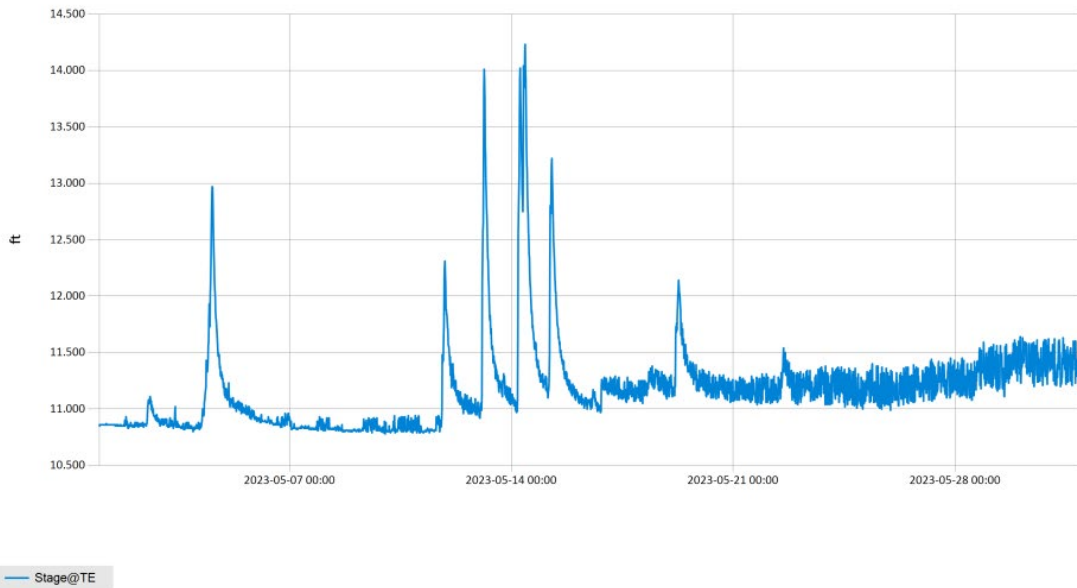
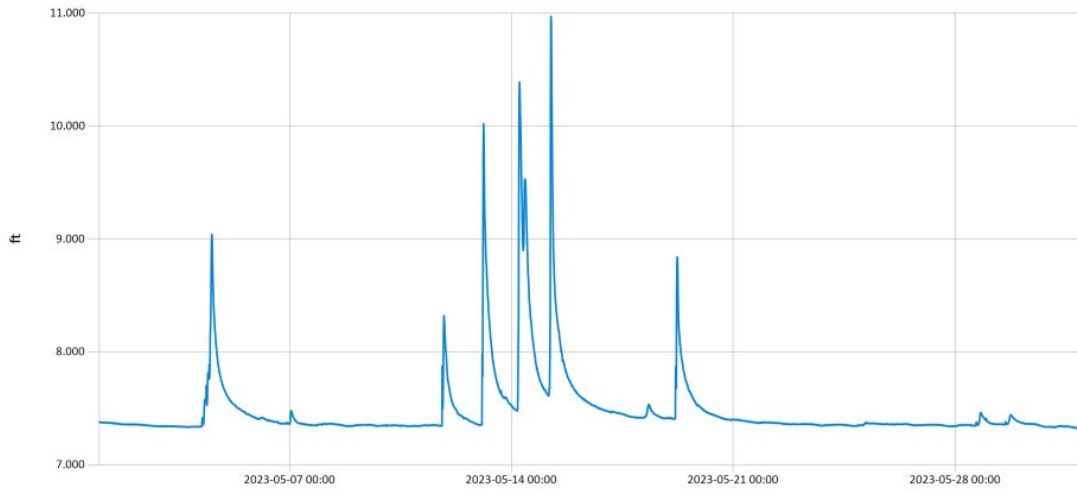


Figure 4 Monthly Hydrograph TE-1



Period Selected: 2023-05-01 00:00 - 2023-05-31 23:59

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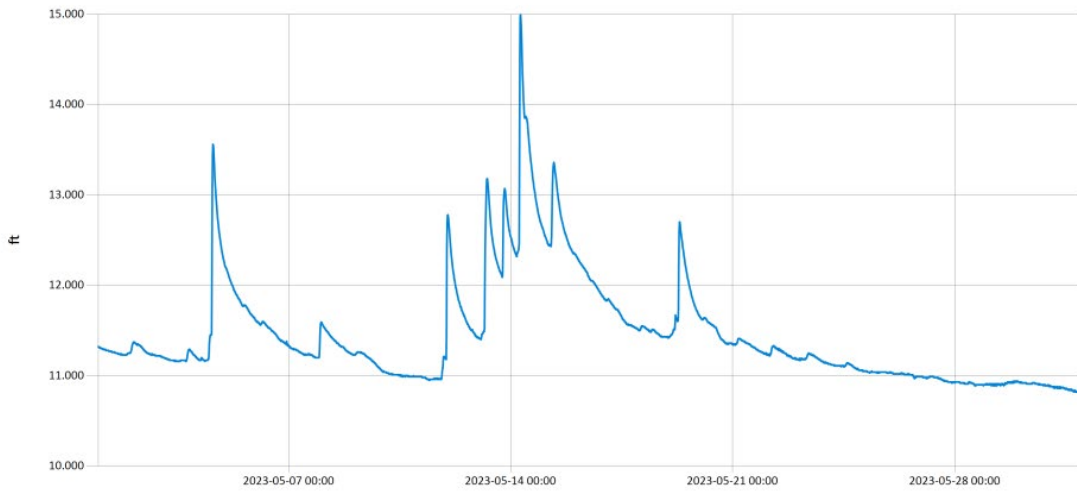


— Stage@WC

Figure 5 Monthly Hydrograph WC-1

Period Selected: 2023-05-01 00:00 - 2023-05-31 23:59

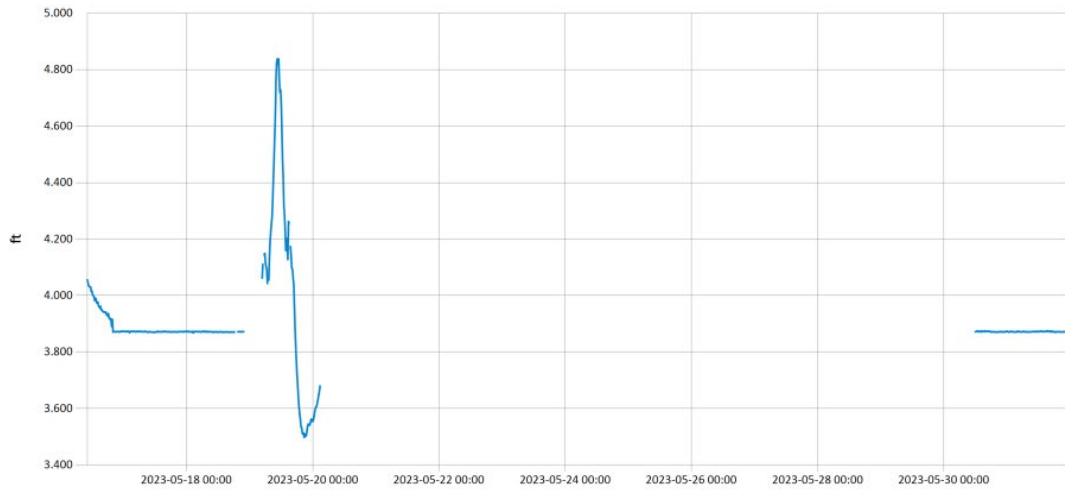
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— Stage@URC

Figure 6 Monthly Hydrograph URC-2

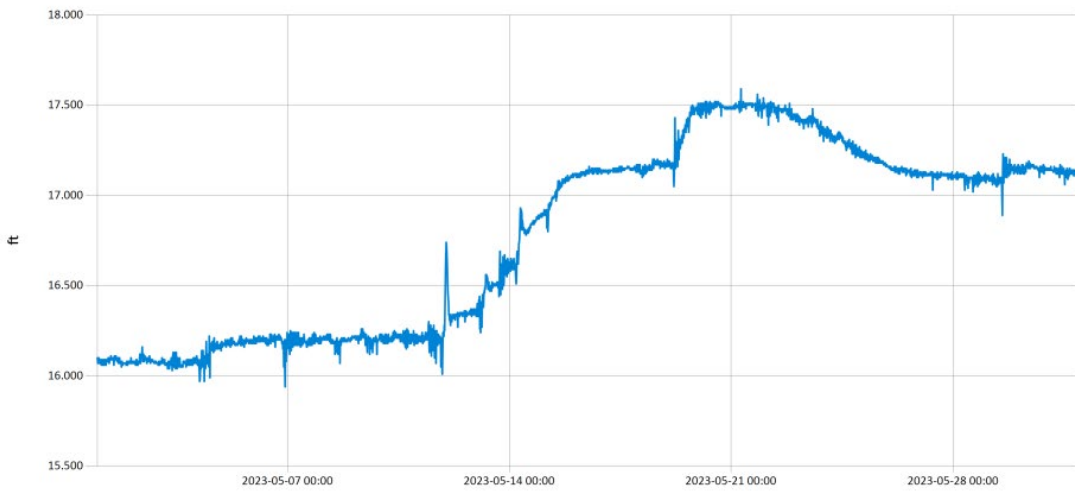
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— Stage@LRC

Figure 7 Monthly Hydrograph LRC-1

Period Selected: 2023-05-01 00:00 - 2023-05-31 23:59 UTC Offset: -06:00



— Stage@LDB

Figure 8 Monthly Hydrograph LDB-1

Period Selected: 2023-05-01 00:00 - 2023-05-31 23:59

UTC Offset: -06:00

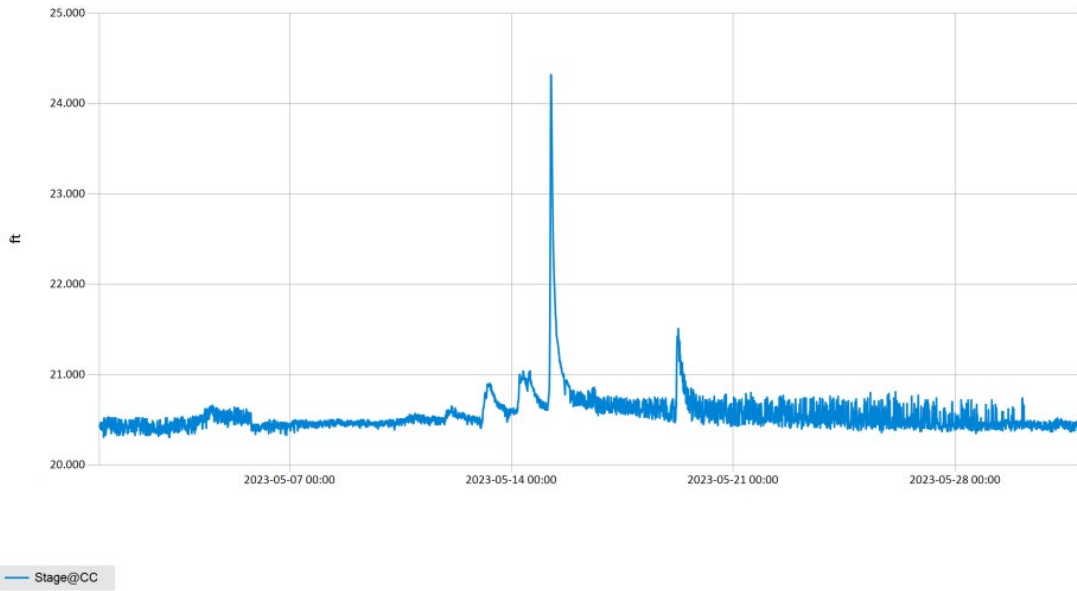


Figure 9 Monthly Hydrograph CC-1

Period Selected: 2023-05-01 00:00 - 2023-05-31 23:59

UTC Offset: -06:00

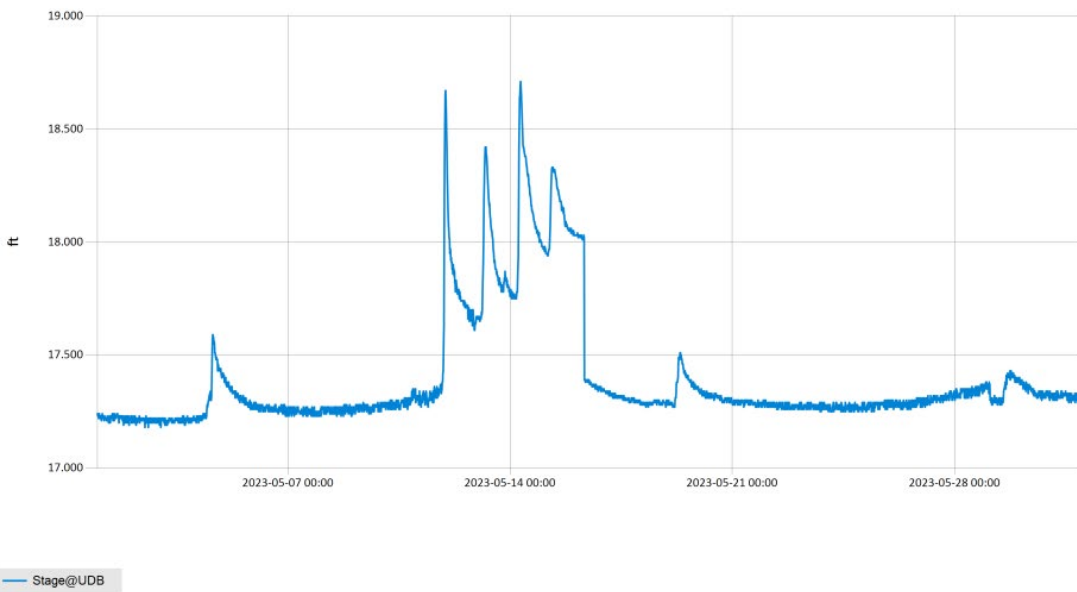


Figure 10 Monthly Hydrograph UDB-1

MESONET CLIMATOLOGICAL DATA SUMMARY				May 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 (in)		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	71*	41*	57.5*	35.4*	9*	0*	79*	24*	47*	0.00*	28.71*	29.96*	NNE*	4.1*	15.7*	26.54*	57.5*	57.9*	66*	50*
2	75	45	61.7	43.6	5	0	89	31	55	0.00	28.73	29.97	NE	3.9	17.2	26.75	59.3	60.3	68	52
3	67	50	58.2	45.4	6	0	82	47	63	0.00	28.74	29.99	SSE	4.1	13.0	10.71	59.1	58.4	62	55
4	62	56	59.2	55.3	6	0	97	65	87	0.71	28.62	29.86	SE	7.6	30.1	5.32	58.9	58.6	61	57
5	90	58	74.9	62.8	0	9	99	31	72	0.00	28.53	29.77	SSE	8.5	22.7	26.58	62.5	66.1	74	59
6	87	68	78.2	64.3	0	13	94	25	64	0.00	28.60	29.84	S	10.9	49.2	25.88	66.9	70.8	76	66
7	82	64	73.4	64.1	0	8	87	54	73	0.00	28.63	29.87	S	10.6	26.9	22.29	67.4	68.9	74	64
8	85	64	75.7	63.0	0	10	89	51	66	0.00	28.62	29.86	S	7.3	19.2	26.57	69.0	70.8	76	65
9	85	70	76.0	68.0	0	12	97	57	77	0.00	28.67	29.92	SSE	8.7	21.6	23.55	70.7	73.4	80	69
10	81	66	71.4	65.0	0	8	94	59	81	0.01	28.67	29.91	ESE	5.9	21.1	14.99	70.7	73.0	79	69
11	79	65	69.5	65.1	0	7	96	73	86	0.45	28.55	29.79	SSE	7.4	34.8	10.96	69.3	70.3	74	68
12	84	70	77.2	71.3	0	12	97	66	83	0.00	28.61	29.85	S	9.1	25.7	16.83	70.4	72.4	77	69
13	83	61	69.9	64.2	0	7	96	59	83	0.87	28.77	30.01	ENE	6.6	32.9	20.39	70.9	72.9	80	67
14	77	67	71.2	67.5	0	7	98	72	89	0.79	28.87	30.12	ESE	5.0	16.2	12.24	71.1	72.6	76	70
15	74	64	69.0	65.1	0	4	97	78	87	0.23	28.91	30.17	NNW	7.3	21.9	16.07	71.2	73.6	78	71
16	71	56	63.6	56.4	1	0	96	62	78	0.00	28.81	30.06	NNW	7.7	19.5	12.87	68.8	69.4	72	67
17	76	53	65.3	58.0	0	0	97	58	79	0.00	28.70	29.95	E	4.2	13.8	24.46	68.3	69.1	76	62
18	75	62	67.3	62.4	0	3	96	70	85	0.09	28.71	29.96	ESE	4.7	12.6	10.94	69.1	68.9	73	66
19	80	56	67.0	61.5	0	3	96	61	83	0.16	28.78	30.03	N	10.0	33.9	19.78	70.0	71.0	78	67
20	72	53	62.9	50.3	2	0	86	45	65	0.00	28.96	30.22	N	7.7	21.3	27.29	68.4	66.8	73	61
21	75	52	63.9	53.5	2	0	96	49	71	0.00	28.87	30.13	SSE	3.0	12.6	23.79	68.7	67.7	75	61
22	76	56	66.3	57.1	0	1	94	52	74	0.00	28.78	30.02	SE	5.3	15.8	19.71	68.4	67.5	73	62
23	76	62	69.1	59.2	0	4	85	53	72	0.00	28.75	30.00	E	6.9	20.6	18.53	69.2	68.3	73	64
24	81	62	71.0	61.1	0	7	91	49	73	0.00	28.76	30.01	E	7.0	18.6	21.78	70.3	70.9	78	65
25	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00*	NA	NA	ESE*	NA	15.8*	NA	NA	NA	NA	NA
26	82	63	72.8	61.2	0	8	94	46	69	0.00	28.83	30.08	ESE	5.2	17.4	17.63	70.6	73.1	79	67
27	81	62	71.8	59.4	0	6	88	50	66	0.00	28.82	30.07	SE	6.0	17.4	19.08	70.8	74.0	81	68
28	80	65	69.6	60.8	0	7	95	49	75	0.09	28.76	30.01	SSE	6.6	28.3	16.24	70.6	73.6	79	69
29	79	65	70.7	63.4	0	7	91	62	78	0.07	28.69	29.94	SSE	6.9	18.4	15.87	70.6	71.7	75	69
30	85	63	74.6	64.5	0	9	96	46	73	0.00	28.68	29.93	SSE	5.6	18.7	25.81	72.0	75.4	84	67
31	86	65	76.5	65.1	0	10	96	49	70	0.00	28.67	29.91	S	7.0	21.9	24.37	73.3	78.3	85	72
79* 60* 69.2* 59.8*				<- Monthly Averages ->				28.73* 29.97*		SSE* 6.7* 49.2*		19.46*		68.1* 69.5* 75* 65*						
Temperature - Highest: 90*					Degree Days - Total HDD: 32*					Number of Days With:										
Lowest: 41*					Total CDD: 163*					Tmax ≥ 90: 1* Rainfall ≥ 0.01 inch: 10*										
Rainfall: Monthly Total: 3.47* in.					Humidity - Highest: 99*					Tmax ≤ 32: 0* Rainfall ≥ 0.10 inch: 6*										
Greatest 24 Hr: 0.87* in.					Lowest: 24*					Tmin ≤ 32: 0* Avg Wind Speed ≥ 10 mph: 3*										
										Tmin ≤ 0: 0* Max Wind Speed ≥ 30 mph: 5*										

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\* Denotes incomplete record

Figure 11 May Mesonet Data