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



OKLAHOMA
Water Resources Board

Lake Thunderbird TMDL Monitoring Plan Implementation:

June 2023 Monitoring Report

Oklahoma Water Resources Board
Water Quality Programs Division
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SUMMARY OF JUNE SAMPLING

Sampling for June 2023 occurred above base flow conditions on the thirteenth. Water samples were collected at nine locations and discharge was measured at four locations. Two water samples were collected at JB-1; one on the upstream side of the road, and one on the downstream side of the road where the channel constricts. Samples were not collected at LT-1 since this station will be relocated later this year. Mesonet shows 0.15 inches of precipitation on the thirteenth, 1.28 inches of precipitation in the 72 hours prior to sampling, and 0.77 inches of precipitation in the 72 hours after the sampling event. The total rainfall amount in Norman for the month of June was 5.13 inches. All water level gauges were operational for the month, except for JB-1, which will be reinstalled later this year.

RESULTS

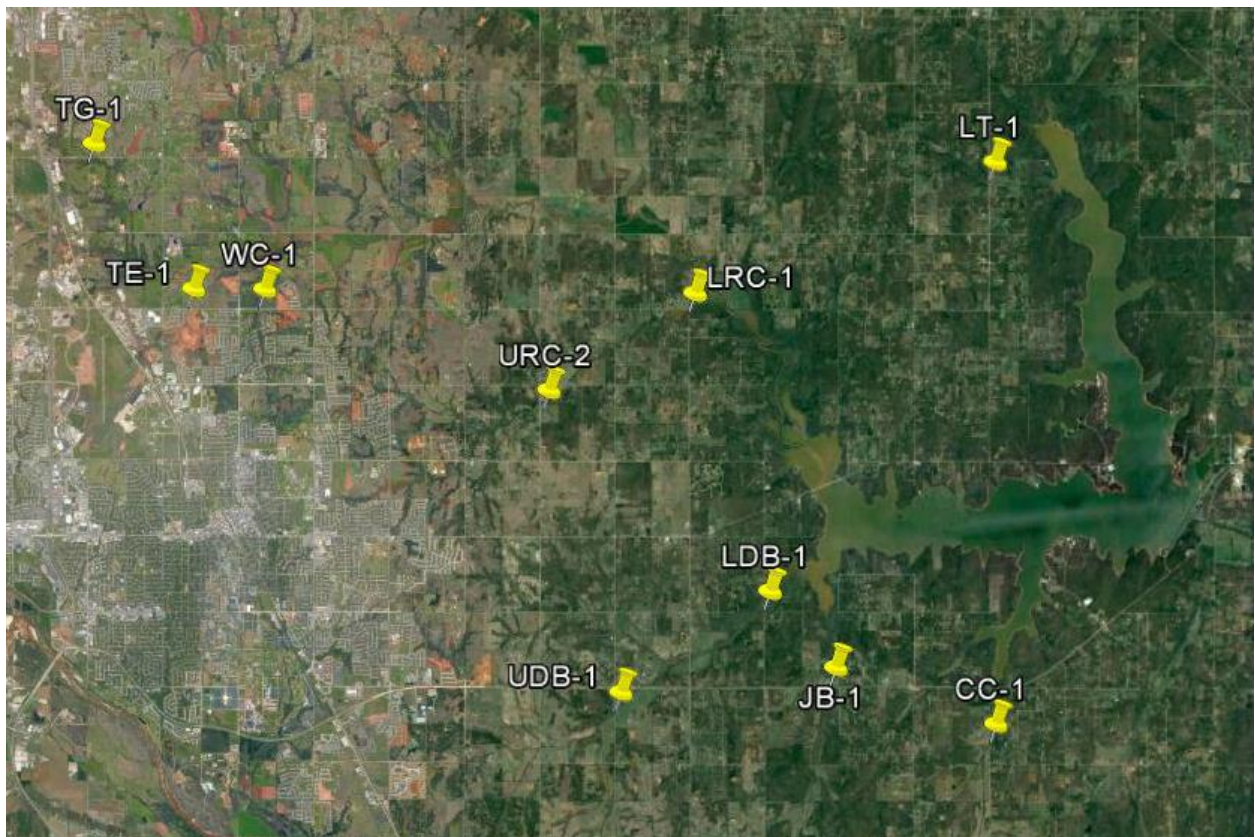


Figure 1 Monitoring Station Map

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	6/12/2023	9:59	AN	19.6	6.11	7.79	524	152	Bank full, used RP4
JB-1	Jim Blue Creek	6/13/2023	8:15	AN	18.0	6.85	7.97	884	24	Water level has come up, flow stronger; some trash on downstream, took flow on upstream
LDB-1	Lower Dave Blue Creek	6/13/2023	9:08	AN	20.5	5.35	7.96	661	120	Large amount of floating debris; bank full
LRC-1	Lower Rock Creek	6/13/2023	10:54	AN	20.4	7.73	8.11	629	35	Looks lower than usual, but appears to be flowing more
TE-1	Little River Tributary	6/13/2023	15:30	AN	25.1	7.87	8.02	365	52	Smelled like human feces under bridge; have flow measurements at this stage
TG-1	Little River	6/13/2023	16:25	AN	23.4	8.58	8.14	405	10	Appears lower than usual; debris cleared out of midstream
UDB-1	Upper Dave Blue Creek	6/13/2023	9:43	AN	19.3	7.69	8.02	456	109	Higher water level than usual; changed dcp from 21.20 to 17.52
URC-2	Upper Rock Creek	6/13/2023	11:50	AN	19.6	7.45	8.04	382	175	Used RP2, good flow
WC-1	Woodcrest Creek	6/13/2023	14:59	AN	21.7	8.14	7.97	393	30	Looks normal

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	0.25	1.14	0.201	82.0
JB-1	Jim Blue Creek (ds)	0.08	0.56	0.072	30.0
JB-1	Jim Blue Creek (us)	0.07	0.54	0.066	28.0
LDB-1	Lower Dave Blue Creek	0.24	0.72	0.117	104
LRC-1	Lower Rock Creek	0.17	0.65	0.063	38.0
TE-1	Little River Tributary	0.32	0.90	0.109	34.0
TG-1	Little River	0.43	0.65	0.096	20.0
UDB-1	Upper Dave Blue Creek	0.28	0.61	0.106	68.0
URC-2	Upper Rock Creek	0.18	1.09	0.140	132
WC-1	Woodcrest Creek	0.30	1.05	0.200	50.0

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	0.25	1.28	0.230	104
Duplicate RPD	0%	11.57%	13.46%*	23.66%*

Table 3 QA/QC Data Where the Asterisk Denotes RPD2

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	0.94	20.36
JB-1	Jim Blue Creek	0.40	N/A
LDB-1	Lower Dave Blue Creek	53.88	17.38
LRC-1	Lower Rock Creek	3.63	3.69
TE-1	Little River Tributary	0.04	11.19
TG-1	Little River	0.67	8.93
UDB-1	Upper Dave Blue Creek	2.21	17.52
URC-2	Upper Rock Creek	0.04	11.74
WC-1	Woodcrest Creek	0.04	7.48

Table 4 Station Discharge Summary

All rated stream discharges are provisional and subject to change.

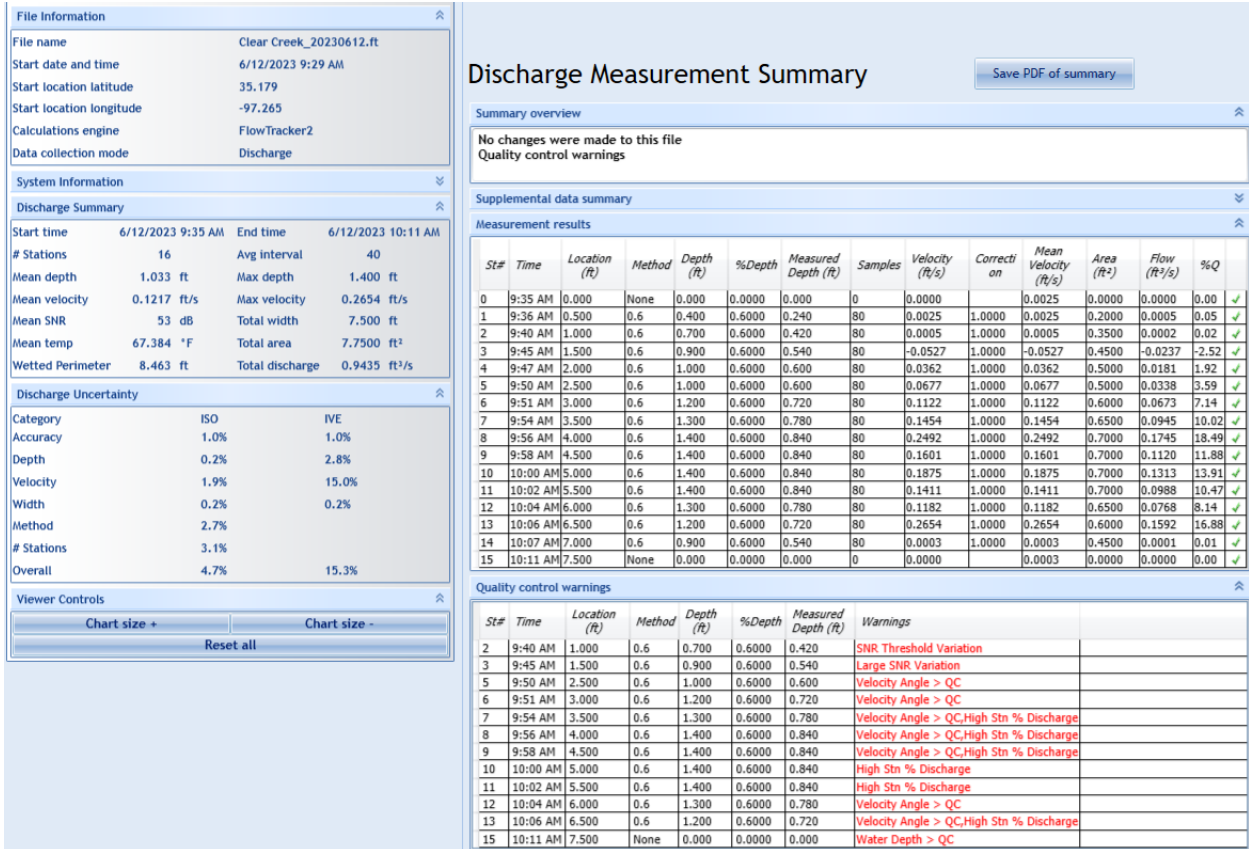


Figure 2 Discharge Measurement Summary CC-1

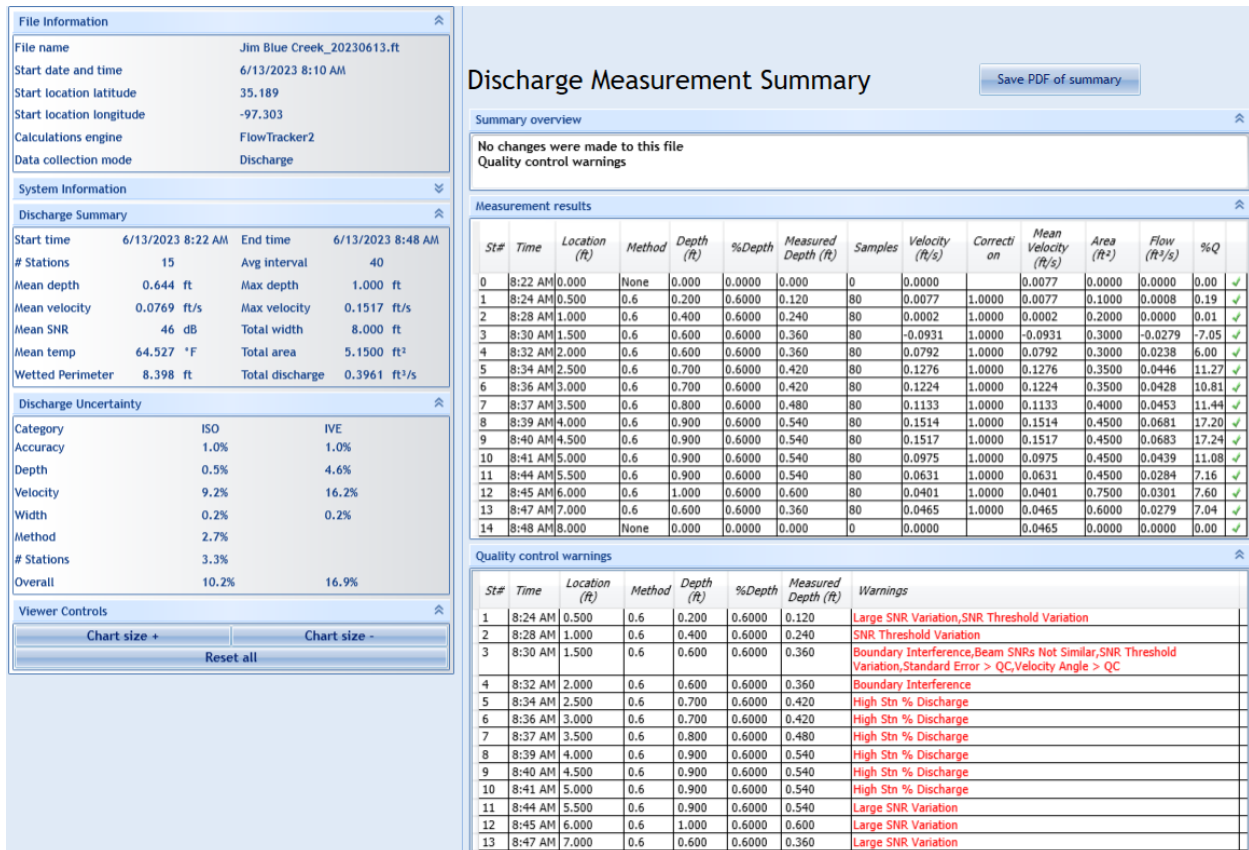


Figure 3 Discharge Measurement Summary JB-1

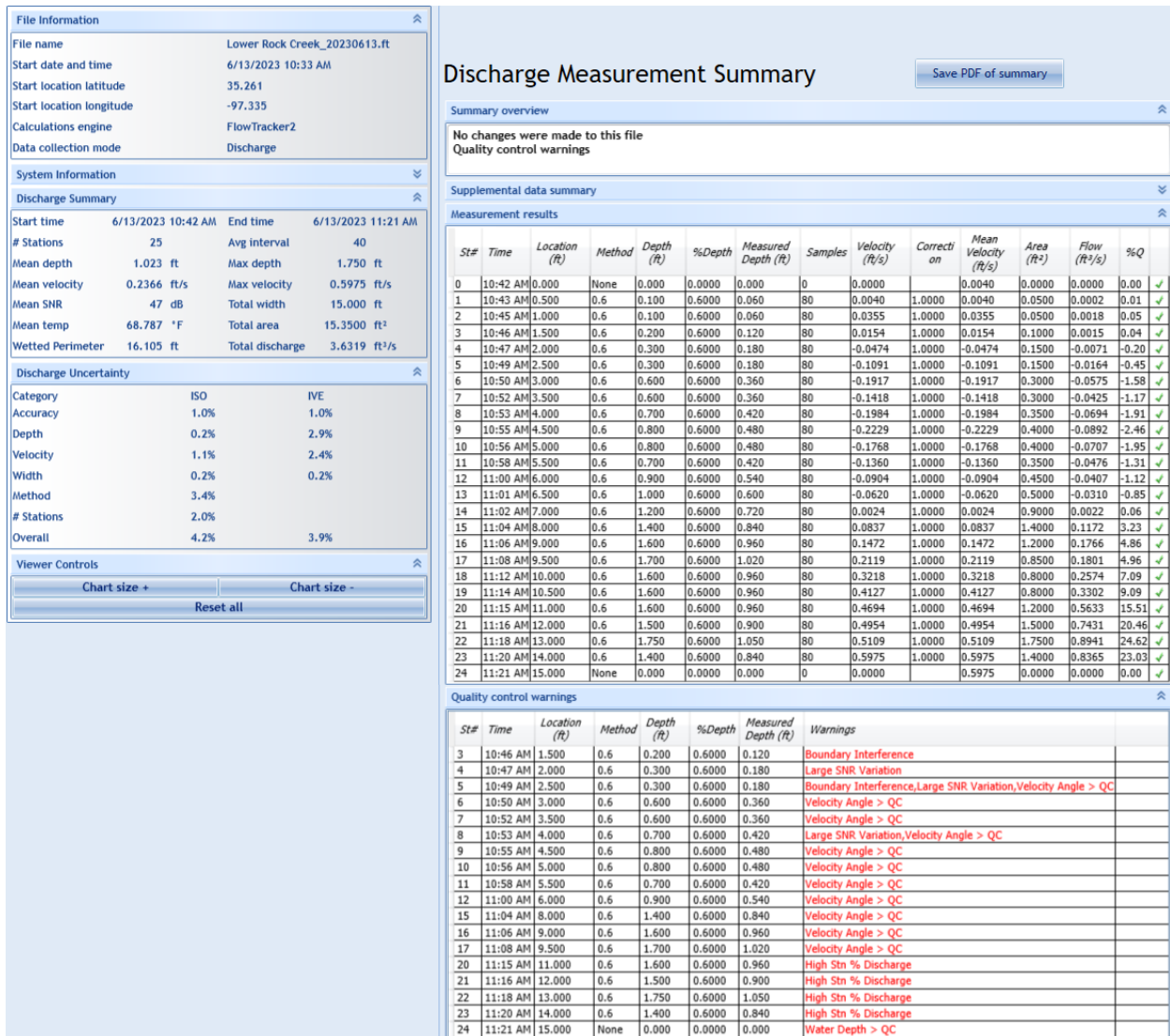


Figure 4 Discharge Measurement Summary LRC-1

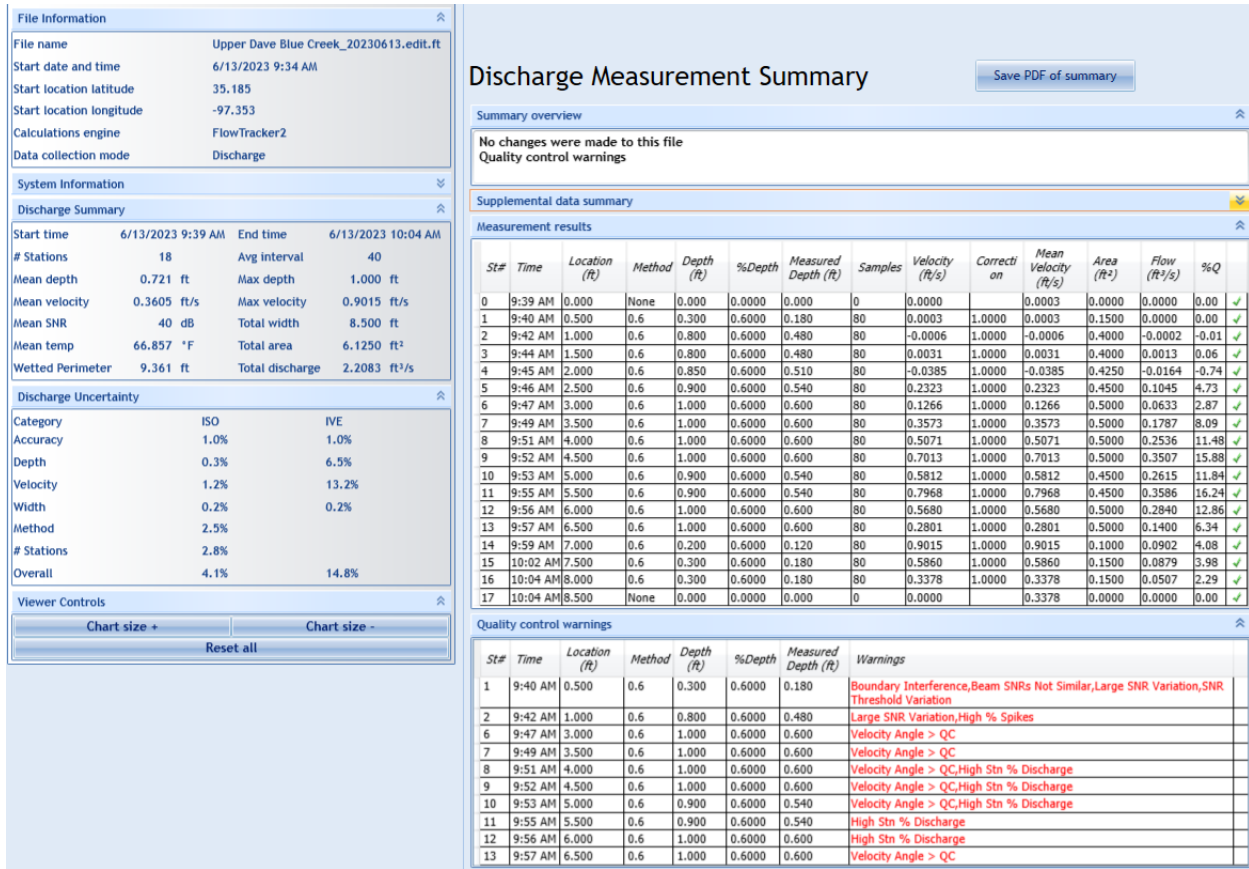
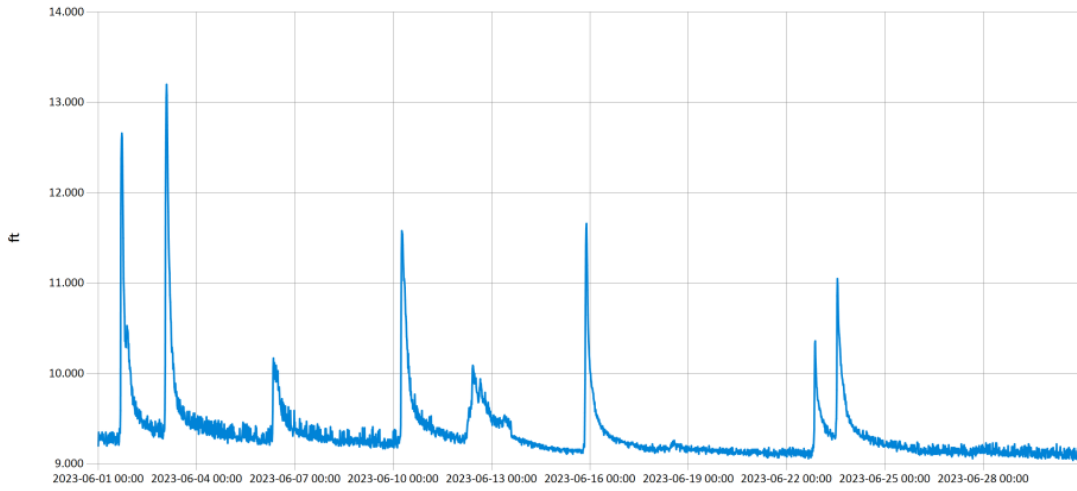


Figure 5 Discharge Measurement Summary UDB-1

Period Selected: 2023-06-01 00:00 - 2023-06-30 23:59

UTC Offset: -06:00

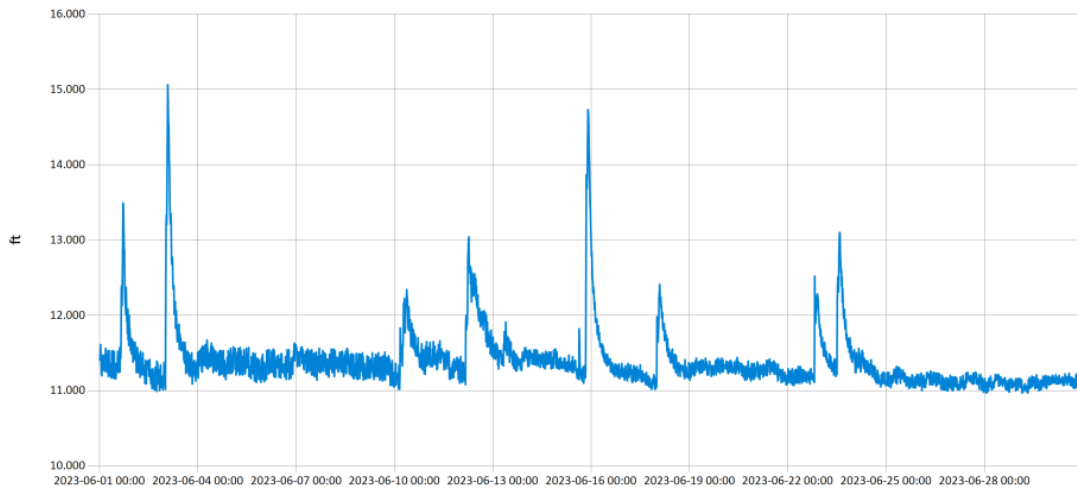


— Stage@TG

Figure 6 Monthly Hydrograph TG-1

Period Selected: 2023-06-01 00:00 - 2023-06-30 23:59

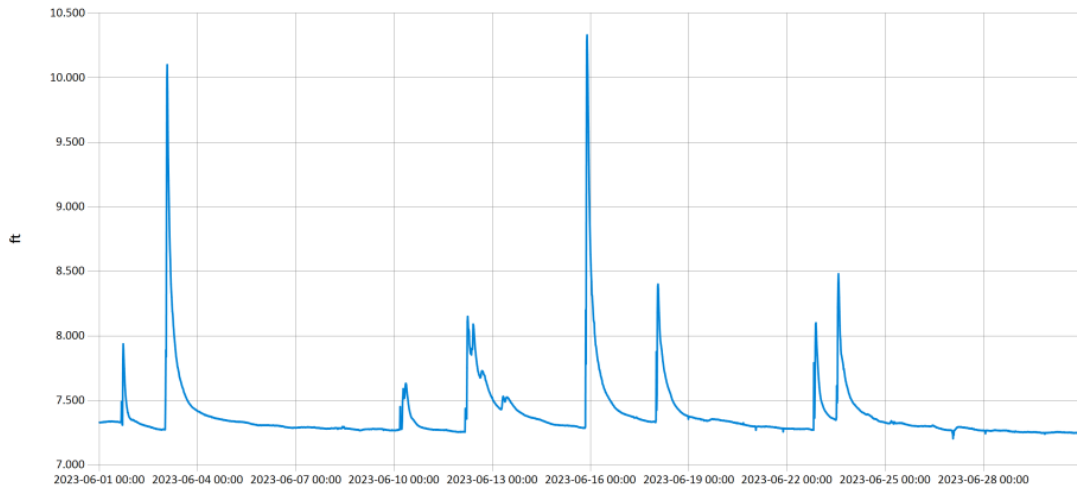
UTC Offset: -06:00



— Stage@TE

Figure 7 Monthly Hydrograph TE-1

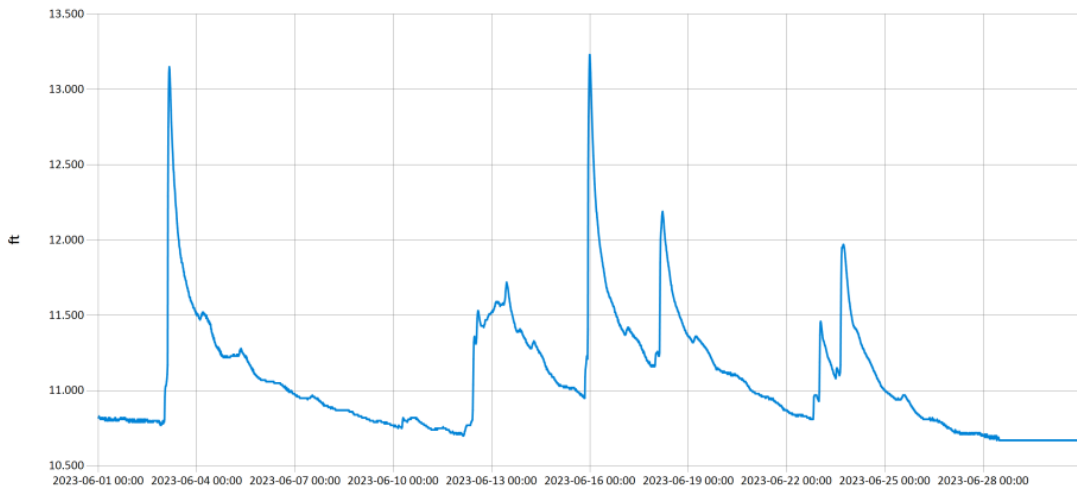
Period Selected: 2023-06-01 00:00 - 2023-06-30 23:59 UTC Offset: -06:00



— Stage@WC

Figure 8 Monthly Hydrograph WC-1

Period Selected: 2023-06-01 00:00 - 2023-06-30 23:59 UTC Offset: -06:00

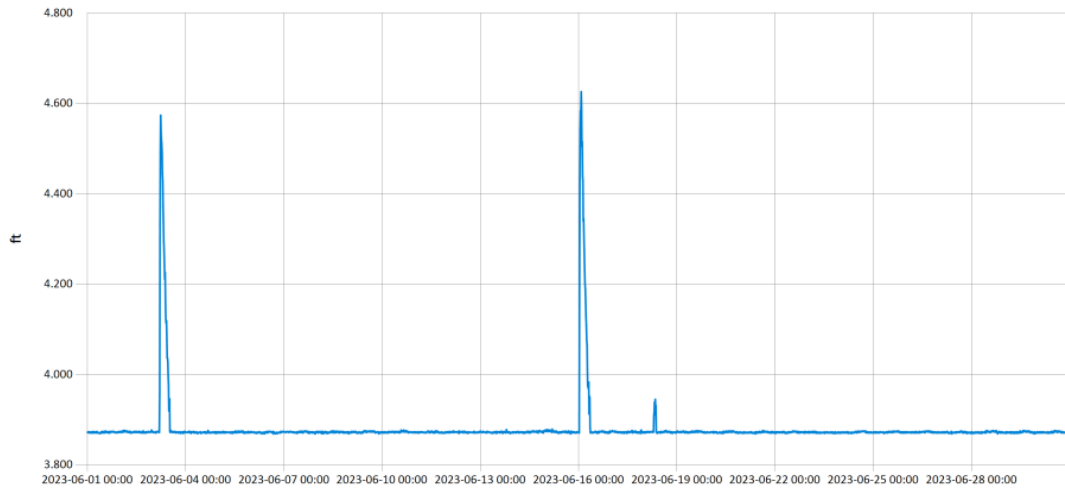


— Stage@URC

Figure 9 Monthly Hydrograph URC-2

Period Selected: 2023-06-01 00:00 - 2023-06-30 23:59

UTC Offset: -06:00

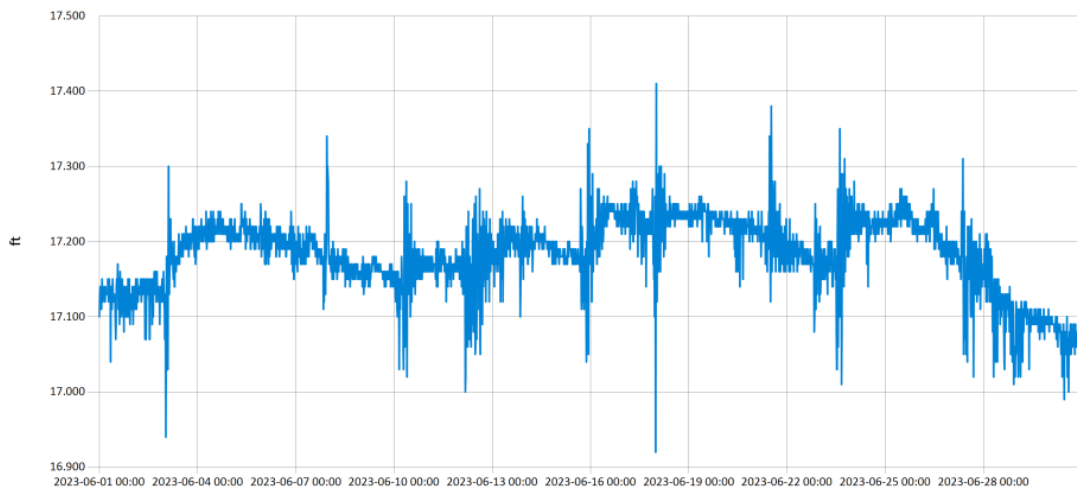


— Stage@LRC

Figure 10 Monthly Hydrograph LRC-1

Period Selected: 2023-06-01 00:00 - 2023-06-30 23:59

UTC Offset: -06:00

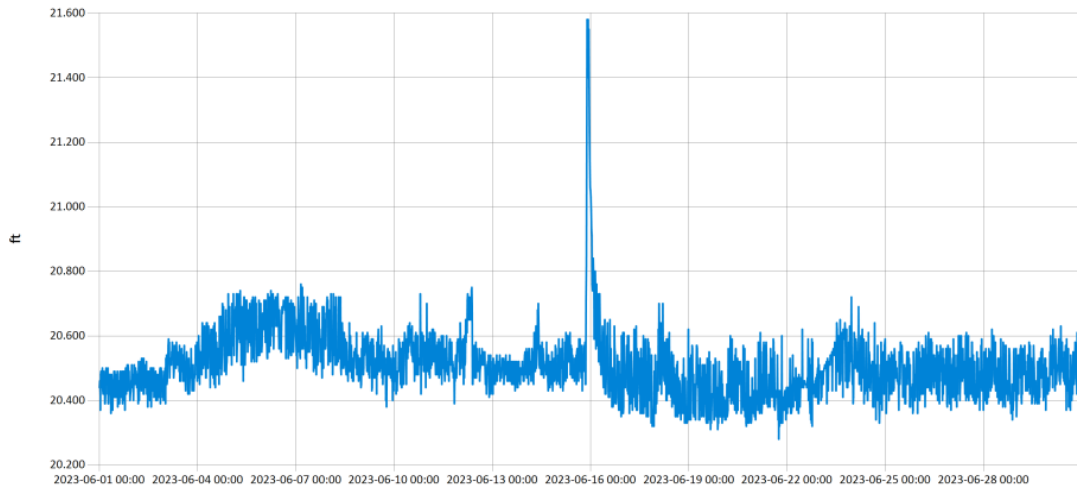


— Stage@LDB

Figure 11 Monthly Hydrograph LDB-1

Period Selected: 2023-06-01 00:00 - 2023-06-30 23:59

UTC Offset: -06:00

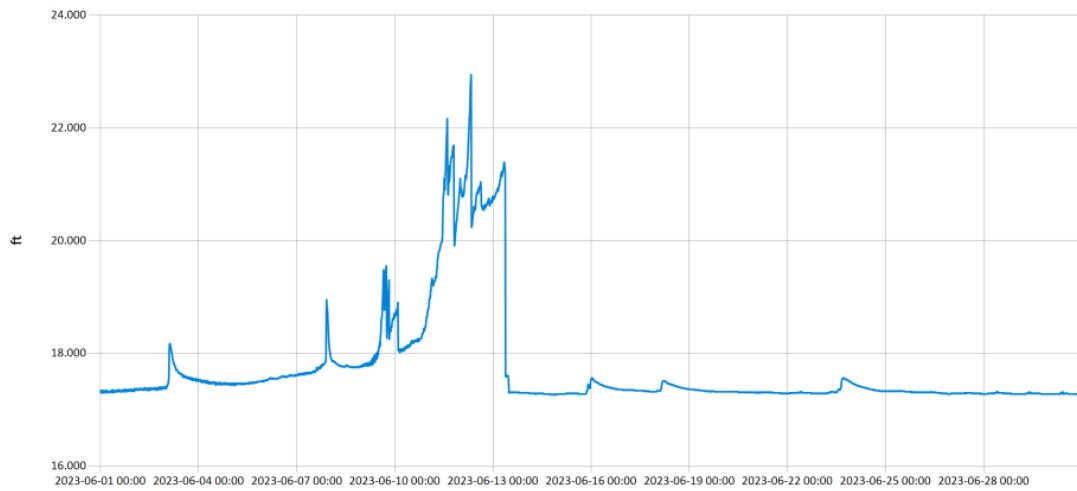


— Stage@CC

Figure 12 Monthly Hydrograph CC-1

Period Selected: 2023-06-01 00:00 - 2023-06-30 23:59

UTC Offset: -06:00



— Stage@UDB

Figure 13 Monthly Hydrograph UDB-1

MESONET CLIMATOLOGICAL DATA SUMMARY				June 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 ²)	4" SOIL TEMPERATURES				
	MAX	MIN	AVG	DEWPT	HDD	CDD	MAX	MIN	AVG	(in)	STN	MSL	DIR	AVG	MAX		SOD	BARE	MAX	MIN	
1	86	68	75.5	65.8	0	12	91	52	72	0.63	28.68	29.93	SSE	7.1	34.8	18.53	73.5	78.0	85	74	
2	86	67	76.4	64.2	0	11	88	50	67	0.00	28.67	29.91	SE	8.2	26.8	22.16	73.7	75.4	80	71	
3	79	63	70.6	64.3	0	6	97	58	82	1.10	28.65	29.90	WSW	5.0	30.0	20.94	73.4	75.0	81	70	
4	79	64	70.2	64.8	0	6	96	68	84	0.00	28.70	29.94	NE	4.3	12.1	10.51	72.9	73.4	76	71	
5	86	64	74.7	62.6	0	10	95	42	69	0.00	28.74	29.98	NW	3.7	17.4	23.47	73.1	74.2	81	68	
6	86	64	74.0	62.3	0	10	91	44	69	0.00	28.72	29.97	ENE	4.1	14.8	20.01	74.1	74.4	82	69	
7	87	62	75.0	62.4	0	10	93	39	67	0.00	28.65	29.89	ESE	3.6	19.8	23.07	74.8	75.1	82	69	
8	88	64	76.4	63.2	0	11	94	40	66	0.00	28.60	29.84	SW	4.5	20.4	25.74	75.2	76.6	84	70	
9	91	65	80.0	65.6	0	13	95	40	64	0.00	28.59	29.83	SSE	4.1	15.3	24.59	75.8	79.2	87	71	
10	86	64	75.8	65.4	0	10	94	47	72	0.29	28.54	29.78	SSE	6.4	36.6	23.62	76.4	78.8	84	73	
11	88	67	77.2	65.0	0	12	96	42	68	0.00	28.60	29.85	NNW	8.1	24.7	28.22	76.8	79.5	87	73	
12	67	61	63.4	60.4	1	0	95	81	90	0.99	28.72	29.96	NE	6.8	28.4	5.29	73.1	72.3	78	70	
13	80	61	70.6	64.2	0	5	94	62	81	0.15	28.62	29.87	SE	4.7	15.3	17.71	72.6	73.3	79	68	
14	86	66	76.0	63.7	0	11	98	40	69	0.00	28.52	29.76	NW	4.4	17.6	27.68	75.0	77.1	83	72	
15	88	64	75.2	64.8	0	11	98	44	73	0.77	28.53	29.77	ESE	7.6	84.0	21.70	75.1	75.8	83	70	
16	86	65	74.7	63.6	0	10	91	46	71	0.00	28.62	29.87	NNE	5.6	19.4	25.91	74.9	76.3	84	70	
17	86	64	77.2	67.1	0	10	97	53	72	0.13	28.63	29.87	SSE	8.7	62.1	25.51	76.0	77.6	82	72	
18	85	62	72.7	61.9	0	8	97	45	71	0.28	28.55	29.79	NW	6.0	37.0	29.06	75.6	77.2	84	70	
19	90	63	79.2	66.6	0	11	97	44	68	0.00	28.58	29.82	ESE	8.2	20.5	28.27	76.2	77.5	83	71	
20	94	74	83.6	74.1	0	19	85	58	74	0.00	28.57	29.82	ESE	10.1	20.8	26.55	78.5	79.9	86	74	
21	85	75	80.1	70.3	0	15	84	57	73	0.00	28.64	29.88	SE	9.9	46.1	23.81	79.4	80.0	84	77	
22	88	68	78.1	67.8	0	13	90	51	72	0.29	28.68	29.93	E	6.4	32.9	23.07	79.0	80.5	88	75	
23	84	67	74.8	68.3	0	10	97	61	81	0.50	28.70	29.95	SE	6.6	52.6	14.51	76.9	77.2	80	74	
24	93	70	82.1	72.2	0	16	95	53	74	0.00	28.62	29.86	SSE	7.3	18.6	26.75	77.8	78.9	85	73	
25	91	73	83.3	73.1	0	17	94	61	72	0.00	28.64	29.89	NE	7.0	20.0	23.24	79.6	80.9	85	76	
26	88	76	81.3	61.6	0	17	64	38	52	0.00	28.69	29.93	ENE	8.0	20.8	25.77	79.4	79.0	84	75	
27	90	74	81.9	70.4	0	17	87	56	69	0.00	28.62	29.86	SE	10.6	31.5	17.79	78.8	79.1	85	75	
28	97*	76*	86.6*	73.1*	0*	22*	96*	45*	67*	0.00*	28.60*	29.84*	SSE*	10.3*	23.9*	NA	79.8*	85.0*	93*	77*	
29	98	76	87.2	69.7	0	22	73	41	57	0.00	28.65	29.90	S	9.0	20.4	27.72	79.9	87.6	96	80	
30	94	77	85.2	67.8	0	20	80	37	58	0.00	28.69	29.94	SSE	7.8	20.2	25.72	79.7	88.2	95	82	
	87*	67*	77.3*	66.2*	<- Monthly Averages ->						28.63*	29.88*	SSE*	6.8*	84.0*	22.65*	76.2*	78.1*	84*	73*	
Temperature - Highest: 98*							Degree Days - Total HDD: 1*					Number of Days With: Tmax ≥ 90: 9* Rainfall ≥ 0.01 inch: 10* Tmax ≤ 32: 0* Rainfall ≥ 0.10 inch: 10* Tmin ≤ 32: 0* Avg Wind Speed ≥ 10 mph: 3* Tmin ≤ 0: 0* Max Wind Speed ≥ 30 mph: 10*									
Lowest: 61*							Total CDD: 370*														
Rainfall: Monthly Total: 5.13* in.					Humidity - Highest: 98*																
Greatest 24 Hr: 1.10* in.					Lowest: 37*																

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* Denotes incomplete record

Figure 14 June Mesonet Data