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



OKLAHOMA
Water Resources Board

Lake Thunderbird TMDL Monitoring Plan Implementation:

February 2024 Monitoring Report

Oklahoma Water Resources Board
WATER Division
Streams Monitoring and Assessment Section
3800 N. Classen, Oklahoma City, Oklahoma 73118
405-530-8800

Contact

Sarah Dexter, Project Leader, sarah.dexter@owrb.ok.gov
Lance Phillips, Streams Program Manager, lance.phillips@owrb.ok.gov
Bill Cauthron, Monitoring Coordinator, bill.cauthron@owrb.ok.gov

TABLE OF CONTENTS

TABLE OF CONTENTS	3
LIST OF TABLES.....	3
LIST OF FIGURES	3
SUMMARY OF FEBRUARY SAMPLING	4
RESULTS.....	4

LIST OF TABLES

TABLE 1 FIELD DATA FORM	5
TABLE 2 LABORATORY ANALYSIS SUMMARY	6
TABLE 3 QA/QC DATA	6
TABLE 4 STATION DISCHARGE SUMMARY	7

LIST OF FIGURES

FIGURE 1 MONITORING STATION MAP	4
FIGURE 2 DISCHARGE MEASUREMENT SUMMARY JB-1	8
FIGURE 3 DISCHARGE MEASUREMENT SUMMARY TE-1	8
FIGURE 4 DISCHARGE MEASUREMENT SUMMARY LRC-1	9
FIGURE 5 MONTHLY HYDROGRAPH TG-1	10
FIGURE 6 MONTHLY HYDROGRAPH TE-1	10
FIGURE 7 MONTHLY HYDROGRAPH WC-1.....	11
FIGURE 8 MONTHLY HYDROGRAPH URC-2.....	11
FIGURE 9 MONTHLY HYDROGRAPH LRC-1	12
FIGURE 10 MONTHLY HYDROGRAPH LDB-1	12
FIGURE 11 MONTHLY HYDROGRAPH UDB-1	13
FIGURE 12 FEBRUARY MESONET DATA	14

SUMMARY OF FEBRUARY SAMPLING

Sampling for February 2024 occurred during base flow conditions on the twentieth. Water samples were collected at eight locations and discharge was measured at three locations. Two samples were collected at JB-1, one on the upstream side of the bridge and the other on the downstream side of the bridge. Samples were not collected at URC-2 due to inaccessibility from road construction. Mesonet shows no precipitation on the twentieth, 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 February was 1.84 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, and CC-1 due to battery problems.

RESULTS

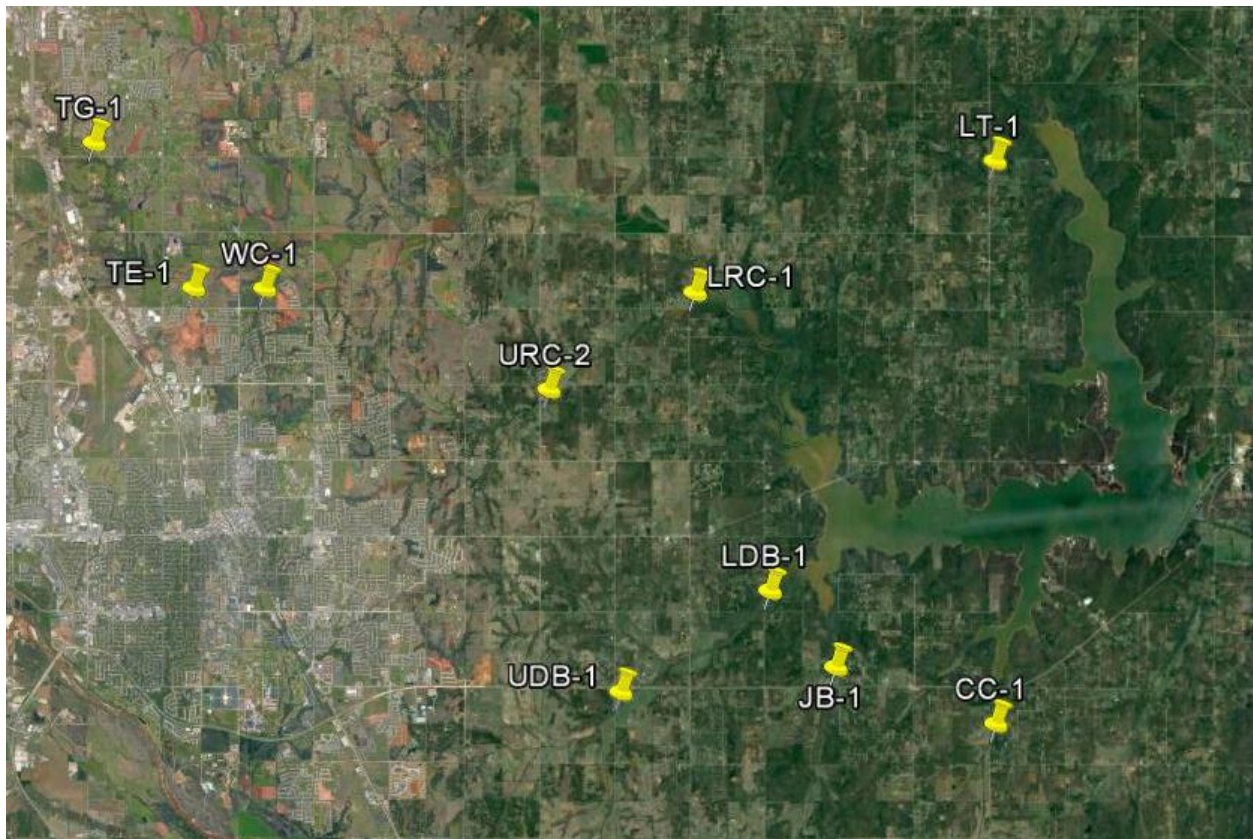


Figure 1 Monitoring Station Map

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	2/20/2024	11:20	LES	9.6	10.50	8.15	658	9	Dead battery. New beaver dam upstream of bridge
JB-1	Jim Blue Creek	2/20/2024	10:25	LES	8.0	9.77	7.81	883	8	Sampled up and downstream of bridge. Murky us, clear ds. Some chalky-looking film present on surface us. Abundant periphyton
LDB-1	Lower Dave Blue Creek	2/20/2024	12:00	LES	7.3	17.00	8.57	707	5	Very green water, some down trees in water upstream of bridge; some normal visual flow ds
LRC-1	Lower Rock Creek	2/20/2024	12:30	LES	8.2	12.42	8.32	628	8	Gage lost power 2/18. Visual evidence of higher flow (muddy banks) but visible periphyton line/abundant algae
TE-1	Little River Tributary	2/20/2024	15:25	LES	14.7	14.71	8.34	689	16	Two beaver dams still present upstream. Green, murky water. Orifice partially out of water
TG-1	Little River	2/20/2024	16:30	LES	11.9	16.05	8.48	942	8	Nominal channel conditions
UDB-1	Upper Dave Blue Creek	2/20/2024	9:45	LES	5.3	11.38	8.18	857	3	Running clear, nominal flow conditions
URC-2	Upper Rock Creek	2/20/2024	13:00	LES	N/A	N/A	N/A	N/A	N/A	Inaccessible due to active bridge construction
WC-1	Woodcrest Creek	2/20/2024	14:50	LES	10.9	13.67	8.15	918	5	Changed DCP

Table 1 Field Data Form

Monitoring Location Name	Nitrate and Nitrite (mg/L)	Kjeldahl Nitrogen (mg/L)	Phosphorus (mg/L)	Total Suspended Solids (mg/L)
Clear Creek	<0.05	0.17	0.028	<5.0
Jim Blue Creek (us)	<0.05	0.32	0.022	<5.0
Jim Blue Creek (ds)	<0.05	0.26	0.013	<5.0
Lower Dave Blue Creek	<0.05	0.35	0.021	<5.0
Lower Rock Creek	<0.05	0.41	0.027	<5.0
Little River Tributary	0.23	0.64	0.053	14.0
Little River	0.28	0.52	0.044	<5.0
Upper Dave Blue Creek	<0.05	0.28	0.016	<5.0
Upper Rock Creek	N/A	N/A	N/A	N/A
Woodcrest Creek	0.08	0.45	0.050	<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	0.028	<5.0
Duplicate RPD	0%	12.50%	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	1.02	20.77
JB-1	Jim Blue Creek	0.15	7.42
LDB-1	Lower Dave Blue Creek	9.00	16.86
LRC-1	Lower Rock Creek	0.90	3.60
TE-1	Little River Tributary	0.28	10.86
TG-1	Little River	0.45	8.91
UDB-1	Upper Dave Blue Creek	0.15	17.37
URC-2	Upper Rock Creek	N/A	N/A
WC-1	Woodcrest Creek	0.16	6.48

Table 4 Station Discharge Summary

All rated stream discharges are provisional and subject to change.

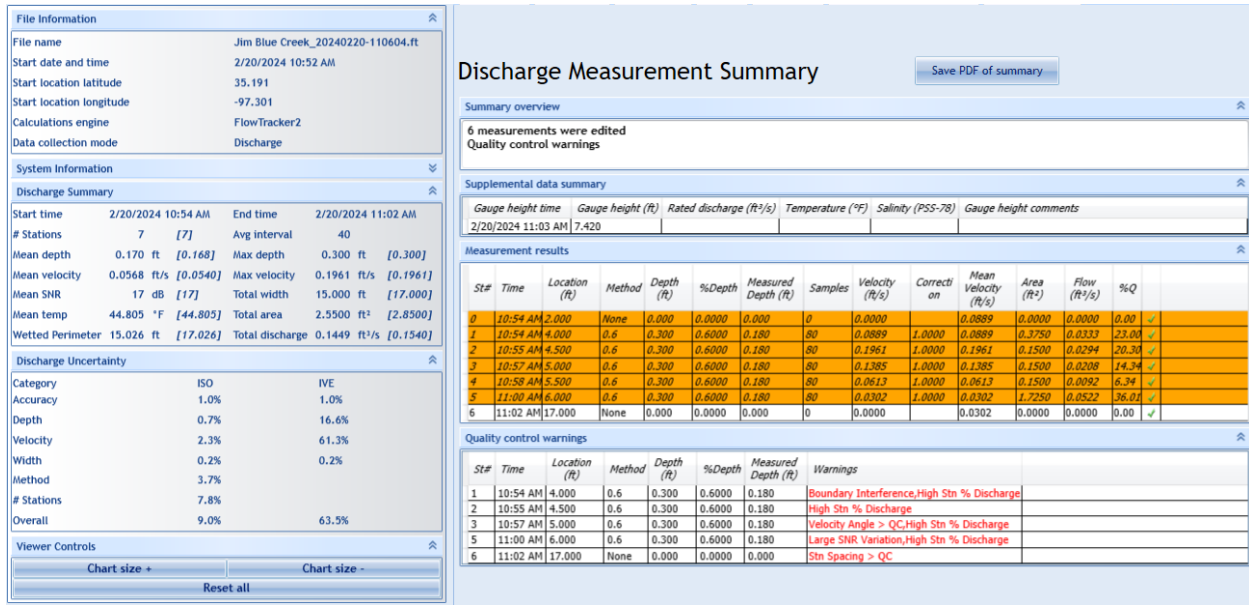


Figure 2 Discharge Measurement Summary JB-1

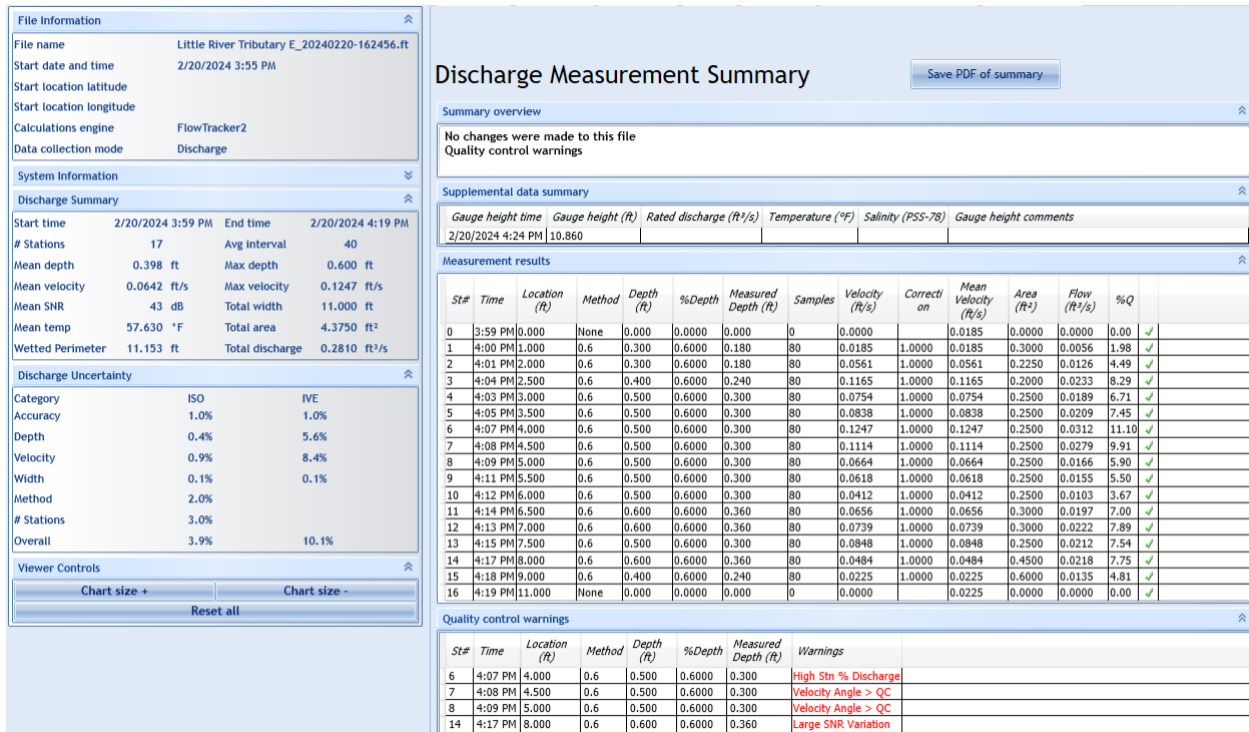


Figure 3 Discharge Measurement Summary TE-1

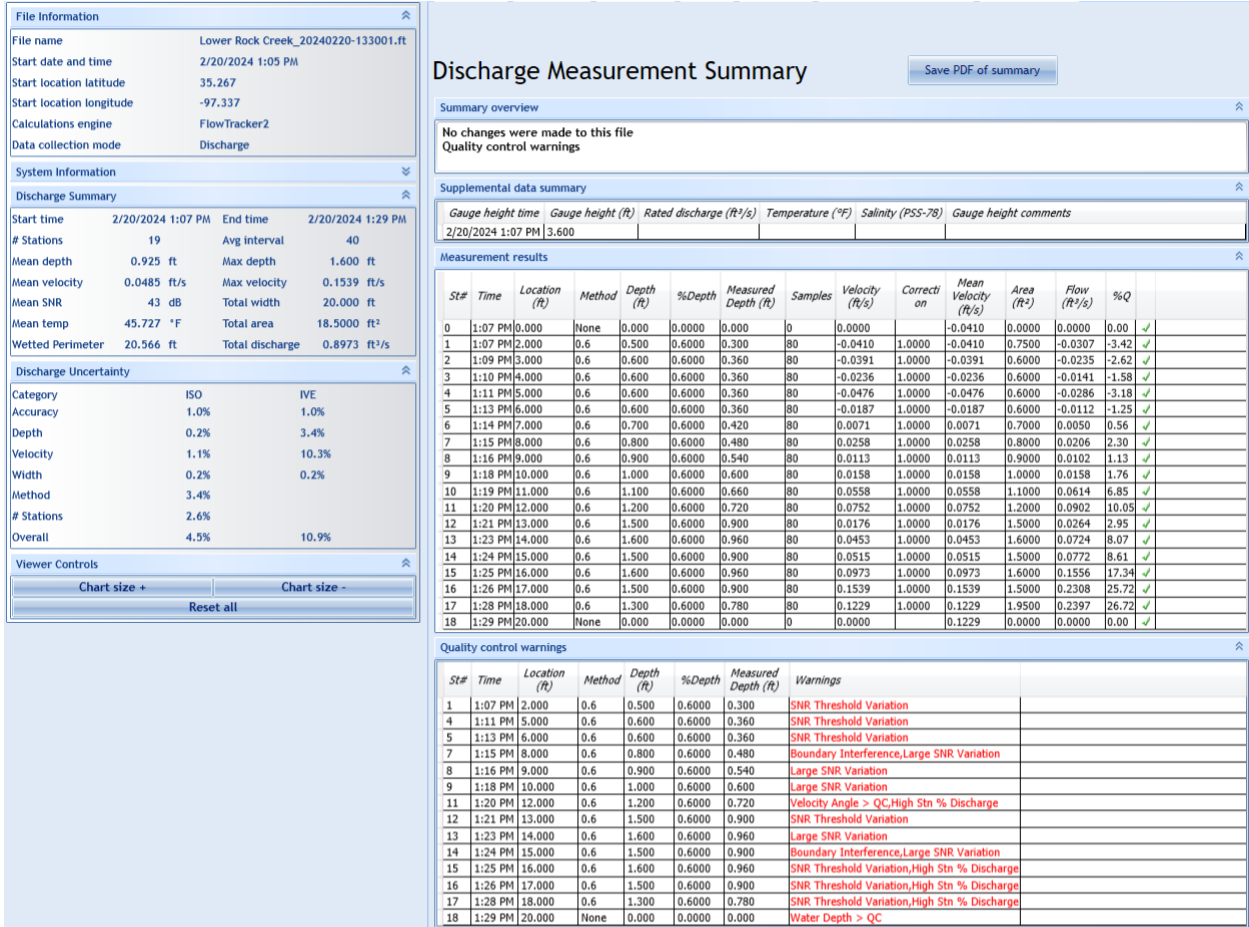
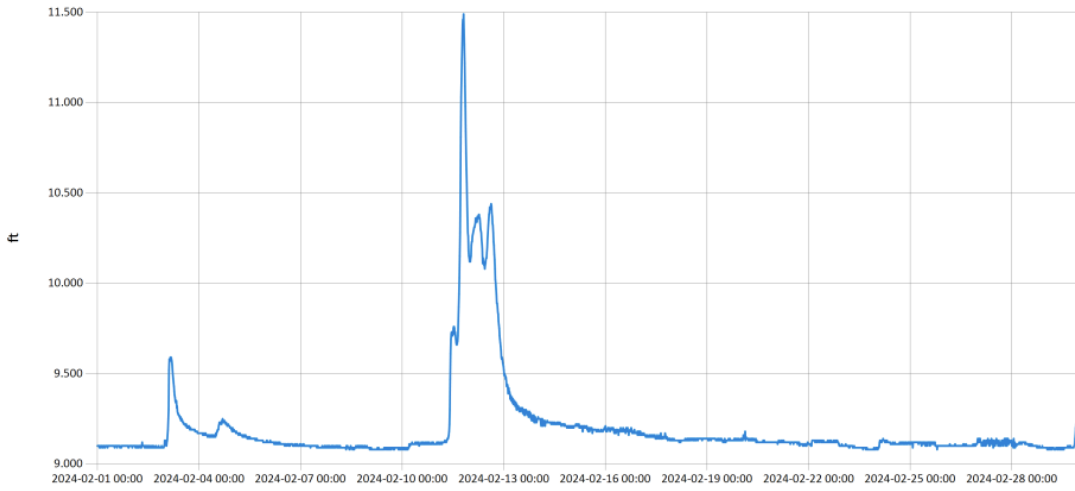


Figure 4 Discharge Measurement Summary LRC-1

Period Selected: 2024-02-01 00:00 - 2024-02-29 23:59

UTC Offset: -06:00

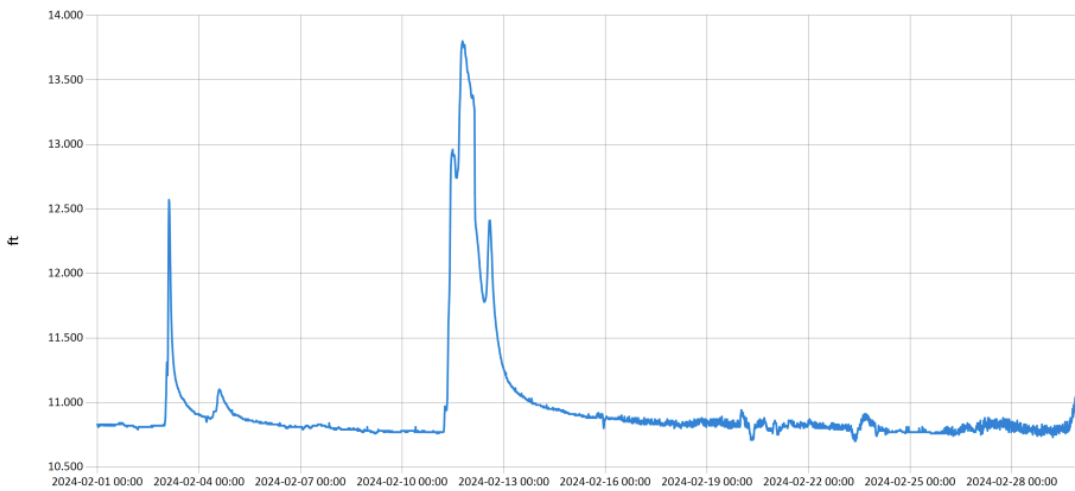


— Stage@TG

Figure 5 Monthly Hydrograph TG-1

Period Selected: 2024-02-01 00:00 - 2024-02-29 23:59

UTC Offset: -06:00

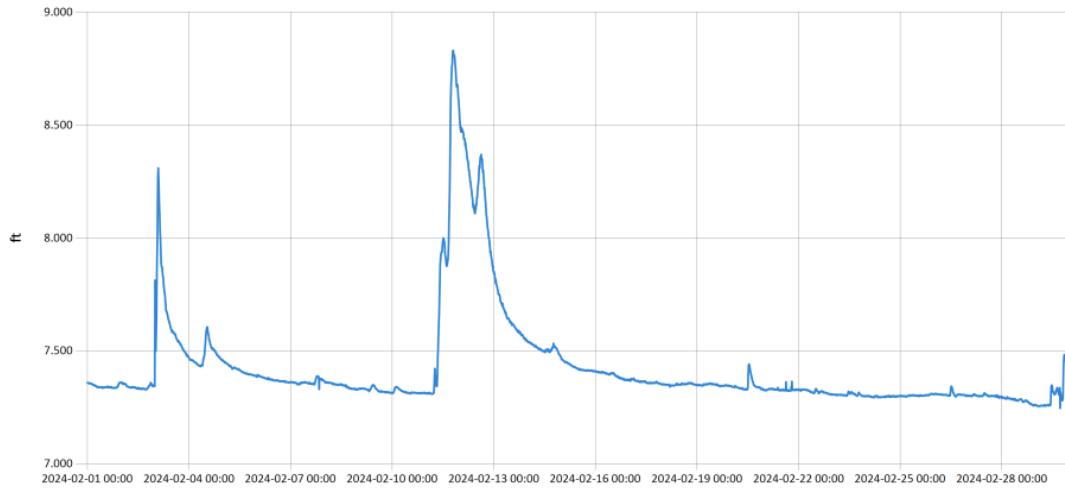


— Stage@TE

Figure 6 Monthly Hydrograph TE-1

Period Selected: 2024-02-01 00:00 - 2024-02-29 23:59

UTC Offset: -06:00

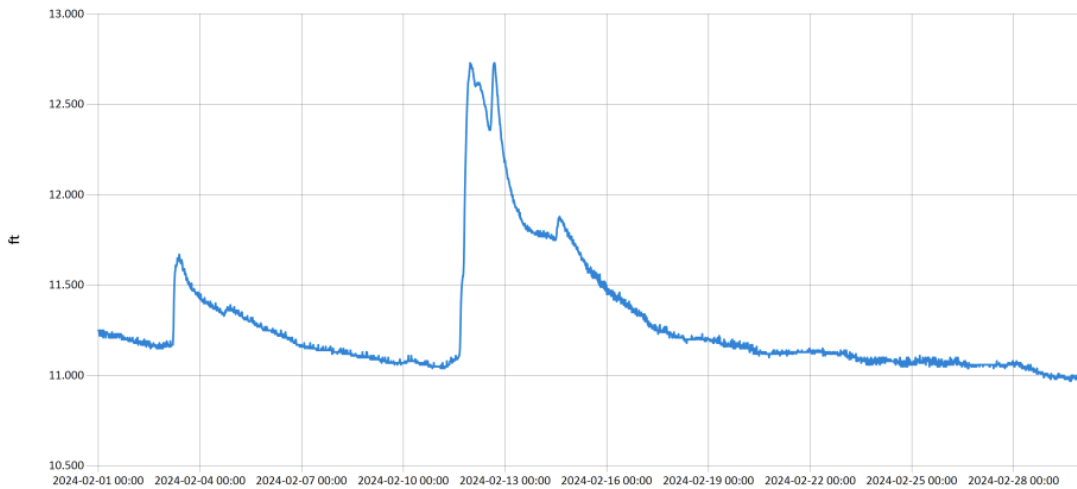


— Stage@WC

Figure 7 Monthly Hydrograph WC-1

Period Selected: 2024-02-01 00:00 - 2024-02-29 23:59

UTC Offset: -06:00

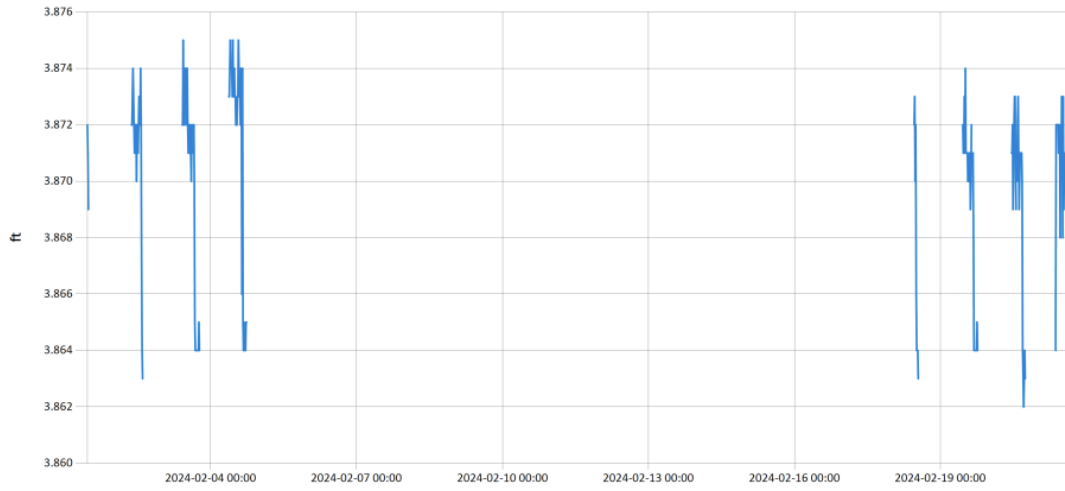


— Stage@URC

Figure 8 Monthly Hydrograph URC-2

Period Selected: 2024-02-01 00:00 - 2024-02-29 23:59

UTC Offset: -06:00

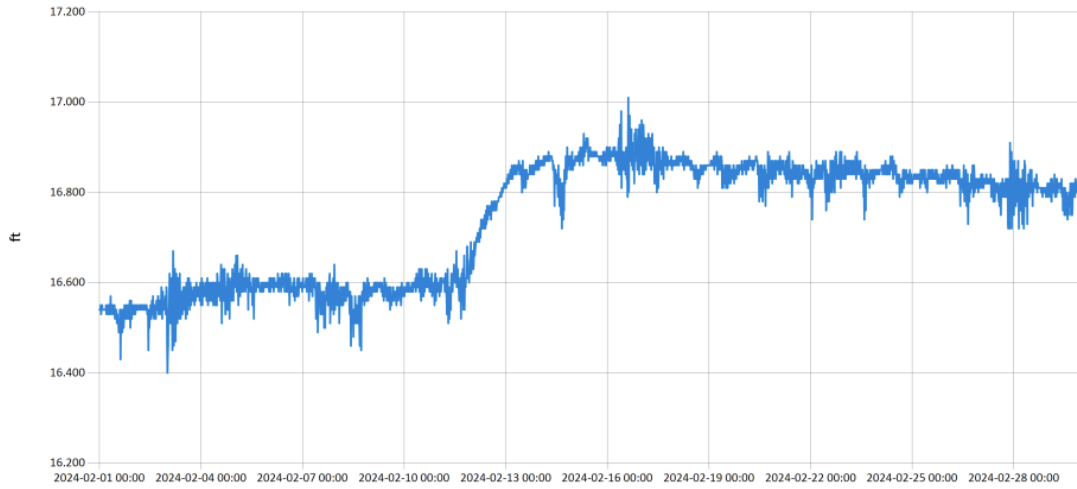


— Stage@LRC

Figure 9 Monthly Hydrograph LRC-1

Period Selected: 2024-02-01 00:00 - 2024-02-29 23:59

UTC Offset: -06:00



— Stage@LDB

Figure 10 Monthly Hydrograph LDB-1

Period Selected: 2024-02-01 00:00 - 2024-02-29 23:59

UTC Offset: -06:00

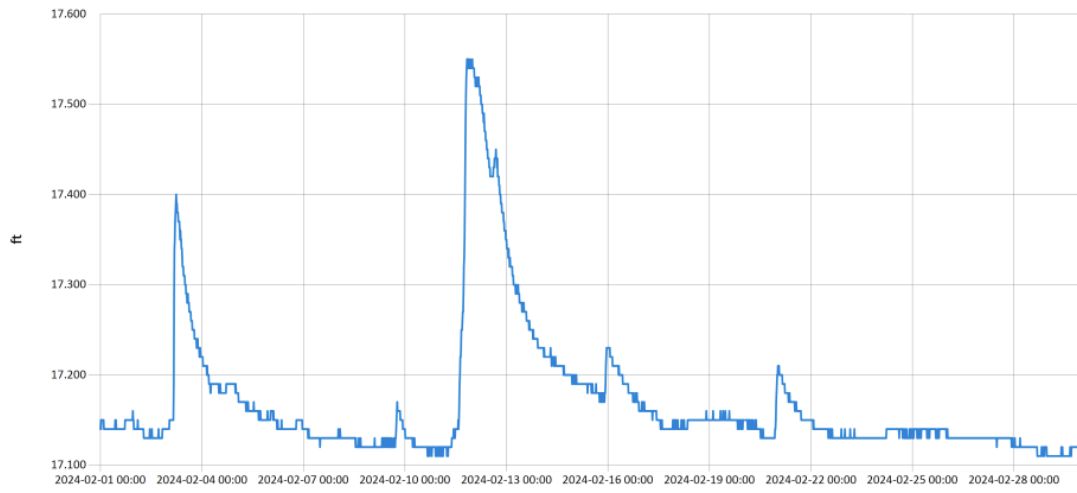


Figure 11 Monthly Hydrograph UDB-1

MESONET CLIMATOLOGICAL DATA SUMMARY					February 2024					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	74	50	59.9	41.7	3	0	71	32	53	0.00	28.69	29.94	S	9.6	27.9	13.13	46.5	48.8	54	45	
2	61	51	57.0	53.5	9	0	96	72	88	0.09	28.52	29.76	SSE	11.0	27.5	4.38	48.5	50.8	53	48	
3	63	50	54.3	49.8	9	0	97	56	86	0.16	28.34	29.57	SSE	10.6	25.1	9.39	49.9	52.8	56	50	
4	53	45	48.6	46.2	16	0	97	76	91	0.11	28.50	29.73	N	12.0	29.0	4.62	49.6	50.8	52	49	
5	55	34	44.5	37.7	21	0	97	51	78	0.00	28.88	30.13	N	10.2	24.6	14.20	48.1	47.8	52	45	
6	63*	30*	47.2*	33.5*	18*	0*	98*	27*	65*	0.00*	28.88*	30.13*	SSE*	4.2*	15.0*	12.47*	46.5*	45.2*	51*	39*	
7	65	46	55.6	37.7	10	0	75	34	52	0.00	28.67	29.91	SSE	11.0	31.6	11.08	48.0	47.9	52	44	
8	69	51	58.3	37.1	5	0	86	23	50	0.00	28.58	29.82	SSW	13.1	29.6	15.56	49.3	49.6	54	47	
9	65	46	53.7	34.9	9	0	65	34	50	0.00	28.62	29.87	SSW	7.3	17.9	8.28	48.9	47.5	52	44	
10	52	41	45.5	34.5	19	0	82	48	66	0.00	28.69	29.93	NNE	8.5	21.8	6.64	48.1	45.9	48	44	
11	41	32	36.5	33.2	28	0	97	69	88	0.91	28.70	29.94	N	14.6	28.1	2.20	45.8	42.3	44	40	
12	49	32	38.5	32.5	24	0	97	52	80	0.43	28.79	30.04	NW	8.9	19.2	15.72	43.6	42.6	48	39	
13	60*	29*	45.3*	30.8*	21*	0*	96*	30*	61*	0.01*	28.84*	30.09*	SSW*	6.4*	18.5*	15.86*	43.8*	45.5*	51*	41*	
14	68	41	54.0	39.1	11	0	83	35	59	0.00	28.77	30.02	S	11.0	37.3	16.07	45.9	48.0	54	43	
15	63	40	49.8	40.0	14	0	97	44	71	0.00	28.81	30.06	NNE	6.1	21.4	15.89	47.6	49.3	55	44	
16	50	31	42.1	32.0	25	0	95	45	69	0.00	28.80	30.05	N	16.1	36.0	14.64	46.9	46.5	49	42	
17	31	22	27.2	12.7	39	0	76	31	55	0.00	29.12	30.38	NNE	11.9	30.2	6.88	42.9	38.4	42	37	
18	54	21	37.3	22.4	28	0	87	31	59	0.00	28.91	30.16	SW	6.0	18.2	17.32	41.3	38.4	43	36	
19	62	35	46.2	30.4	16	0	81	35	56	0.00	28.78	30.03	S	7.1	22.5	16.92	43.4	41.7	49	36	
20	79	33	55.8	35.9	9	0	92	18	55	0.00	28.83	30.08	SSE	6.1	26.1	17.14	45.2	45.0	52	38	
21	81	50	65.2	44.7	0	0	80	22	52	0.00	28.62	29.86	S	9.9	30.9	16.92	48.5	50.2	56	45	
22	71	48	60.3	42.5	6	0	70	40	53	0.00	28.55	29.80	NNW	13.2	30.6	16.88	51.0	52.6	56	49	
23	69	41	53.5	30.8	10	0	74	18	46	0.00	28.82	30.07	NW	9.0	30.3	17.81	50.0	49.6	55	44	
24	73	34	56.4	30.2	12	0	72	20	39	0.00	28.81	30.06	S	6.6	24.6	17.65	49.1	48.4	55	41	
25	76	47	61.1	38.0	3	0	69	24	44	0.00	28.61	29.85	S	6.0	18.0	17.91	51.3	53.1	61	47	
26	88	46	68.6	38.6	0	2	71	17	37	0.00	28.46	29.70	SW	9.3	36.6	14.24	51.6	54.6	62	47	
27	79	37	66.2	39.0	7	0	49	28	38	0.00	28.35	29.58	SSW	14.4	44.3	6.75	53.5	57.9	61	55	
28	45	26	35.5	13.6	29	0	61	25	42	0.00	29.04	30.30	N	12.1	39.5	15.45	48.9	49.6	55	45	
29	48	28	37.2	23.6	27	0	90	24	61	0.13	29.05	30.30	SE	6.8	23.7	7.09	46.3	44.8	48	41	
	62*	38*	50.4*	35.0*	<- Monthly Averages ->					28.73*	29.97*	S	9.6*	44.3*	12.73*	47.6*	47.8*	52*	44*		
Temperature - Highest: 88*					Degree Days - Total HDD: 426*					Number of Days With:											
Lowest: 21*					Total CDD: 3*					Tmax ≥ 90: 0* Rainfall ≥ 0.01 inch: 7*											
Rainfall: Monthly Total: 1.84* in.					Humidity - Highest: 98*					Tmax ≤ 32: 1* Rainfall ≥ 0.10 inch: 5*											
Greatest 24 Hr: 0.91* in.					Lowest: 17*					Tmin ≤ 32: 9* Avg Wind Speed ≥ 10 mph: 13*											
										Tmin ≤ 0: 0* Max Wind Speed ≥ 30 mph: 10*											

© 1993-2024 Oklahoma Climatological Survey and the Oklahoma Mesonet

* Denotes incomplete record

Figure 12 February Mesonet Data