
***Lake Thunderbird TMDL Monitoring Plan Implementation:
Sample Year (SY) 2017- December Report***



SY2017 Monthly Report

Lake Thunderbird TMDL Monitoring Plan Implementation:

December 2017 Monitoring Report

Oklahoma Water Resources Board
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SUMMARY OF DECEMBER WATER QUALITY SAMPLING

Sampling for December 2017 occurred on the eleventh and was considered a base flow collection. Water samples were collected at all ten locations, with the exception of LT-1, which was inaccessible due to road construction. Discharge was not measured this month as a result of low water levels, where the stage measurements were at or below base flow conditions. Mesonet data shows no precipitation occurring on the eleventh, 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 December was 1.13 inches. All water level gages were operational for the month, with the exception of LT-1.

RESULTS

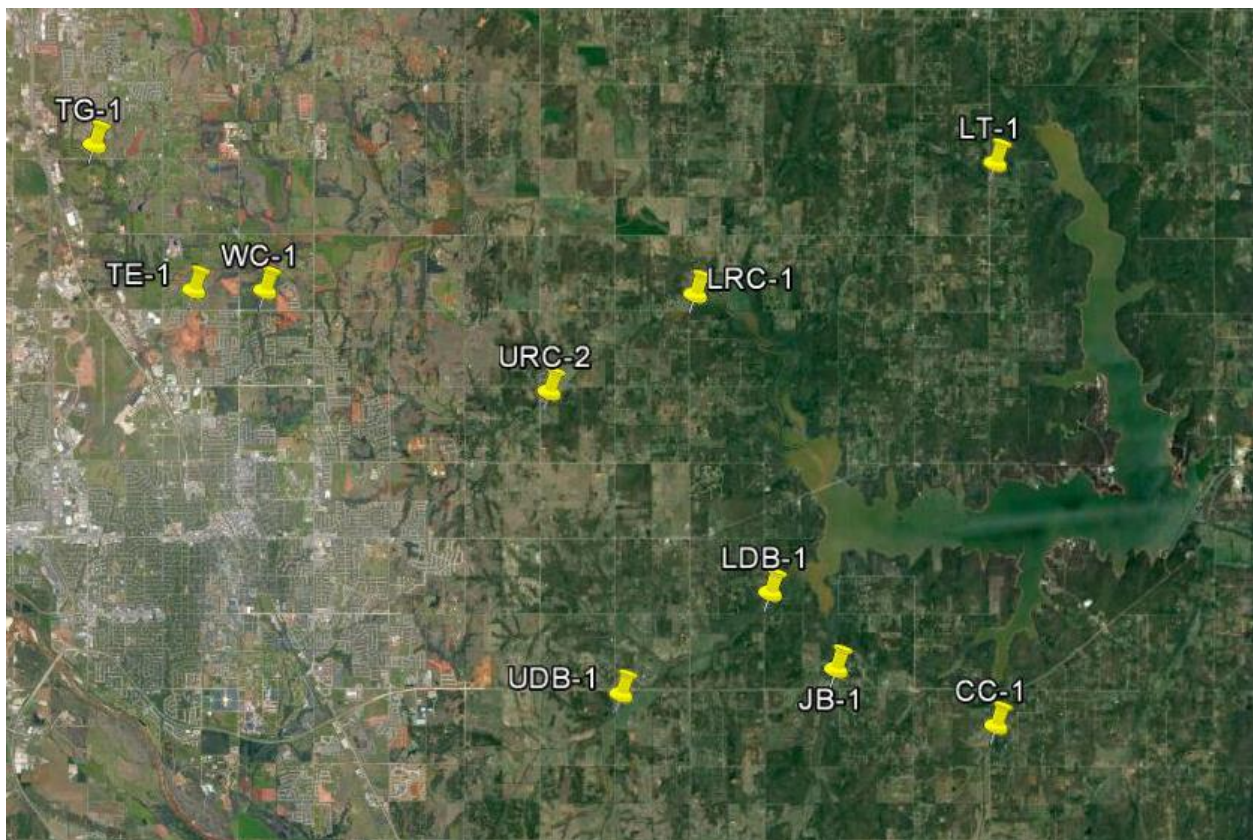


Figure 1 Monitoring Station Map

Field Data Form

Field Measurement Record

Reviewed By: JM

Station	Date	Time	Field Crew	Temp C°	DO mg/L	SpC µS	pH	Turb (NTU)	Notes
cc-1	12/11/2017	9:55	SD	4.6	11.4	697.0	8.1	8.0	
lt-1	12/11/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not sampled. Construction going on. Could not access site-machines were in channel
jb-1	12/11/2017	10:35	SD	4.9	11.9	993.0	7.8	3.0	US pool frozen. Edges of channel partially frozen. Did not look connected to US at bridge
udb-1	12/11/2017	9:20	SD	2.9	10.6	982.0	8.1	2.0	
ldb-1	12/11/2017	11:00	SD	4.2	13.4	1018.0	8.3	3.0	
tg-1	12/11/2017	14:15	SD	6.8	11.6	1292.0	7.9	1.0	several bags of leaf litter trash
te-1	12/11/2017	13:35	SD	8.3	12.3	1119.0	8.2	10.0	trees/brush cut back about 30ft from bridge
wc-1	12/11/2017	12:50	SD	5.2	6.3	1076.0	7.8	11.0	beaver dam on US side of bridge. Lots of scum/small floating debris above dam
lrc-1	12/11/2017	11:55	SD	4.2	8.9	792.0	7.9	6.0	
urc-2	12/11/2017	12:20	SD	6.8	5.4	832.0	7.6	5.0	RP1 not over water, RP2 just barely over water

Table 1 Field Data Form

Site Name	TKN (mg/L)	Nitrate/Nitrite (mg/L)	TP (mg/L)	TSS (mg/L)
TG-1	0.26	0.05	0.027	<5.0
CC-1	0.13	<0.05	0.029	<5.0
JB-1	0.50	0.06	0.060	31.0
UDB-1	<0.10	<0.05	0.018	<5.0
LDB-1	0.22	<0.05	0.016	<5.0
LRC-1	0.18	<0.05	0.036	<5.0
URC-2	0.42	<0.05	0.075	<5.0
WC-1	0.17	<0.05	0.072	<5.0
TE-1	0.34	<0.05	0.025	<5.0
LT-1	N/A	N/A	N/A	N/A

Table 2 Laboratory Analysis Summary

Site Name	TKN	Nitrate/Nitrite	TP	TSS
Field Blank	<0.10 mg/L	<0.05 mg/L	<0.010 mg/L	<5.0 mg/L
Duplicate	0.14 mg/L	0.05 mg/L	0.038 mg/L	<5.0 mg/L
Duplicate RPD	7.41%	0%	26.87%* ₁	0%

Table 3 QA/QC Data Where Subscript 1 Denotes a Level 3 RPD

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.

SITE	TG-1	CC-1	JB-1	UDB-1	LDB-1	LRC-1	URC-2	WC-1	TE-1	LT-1
STAGE (ft)	9.2	0.72	15.74	17.63	16.65	17.5	11.65	8.6	11.71	N/A
DISCHARGE (ft ³ /s)	1.13	0.7	0.0	1	13	0.1	0.02	0.002	0.12	N/A

Table 4 Station Discharge Summary

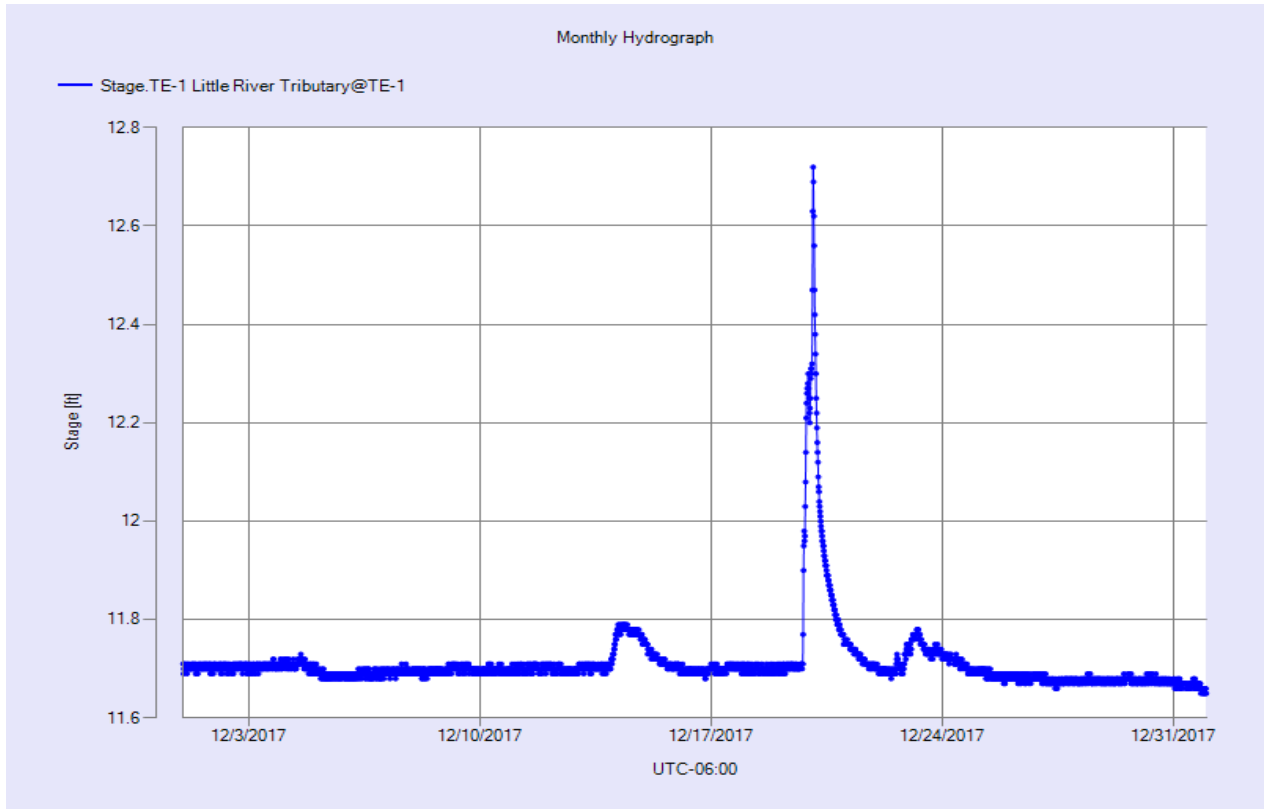


Figure 2 Monthly Hydrograph TE-1

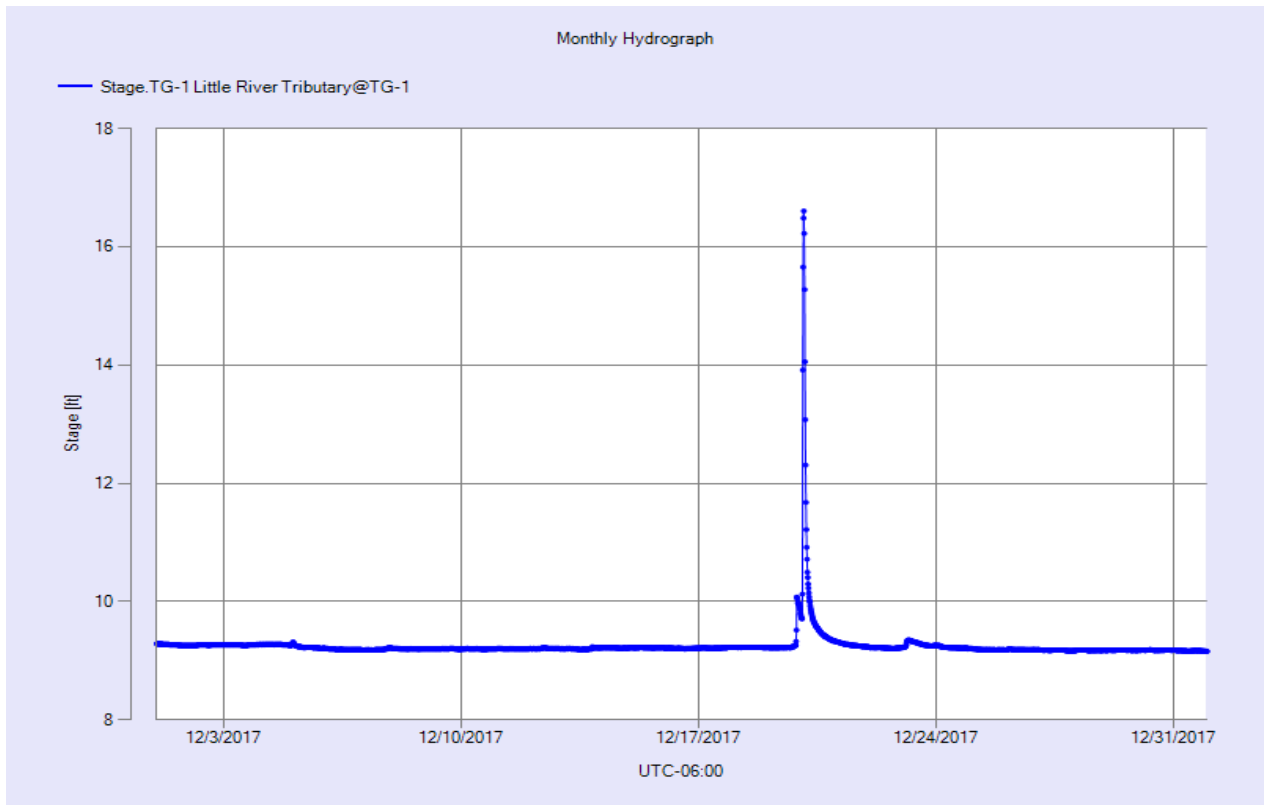


Figure 3 Monthly Hydrograph TG-1

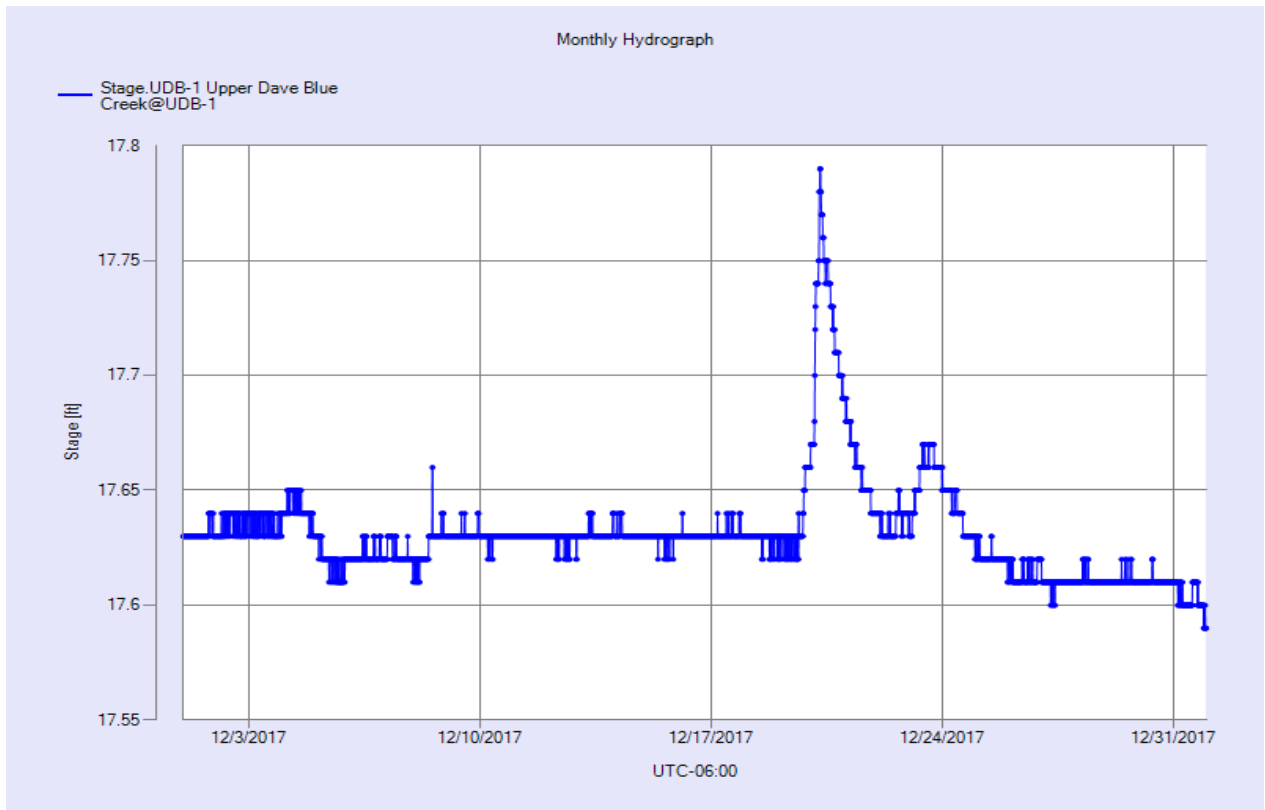


Figure 4 Monthly Hydrograph UDB-1

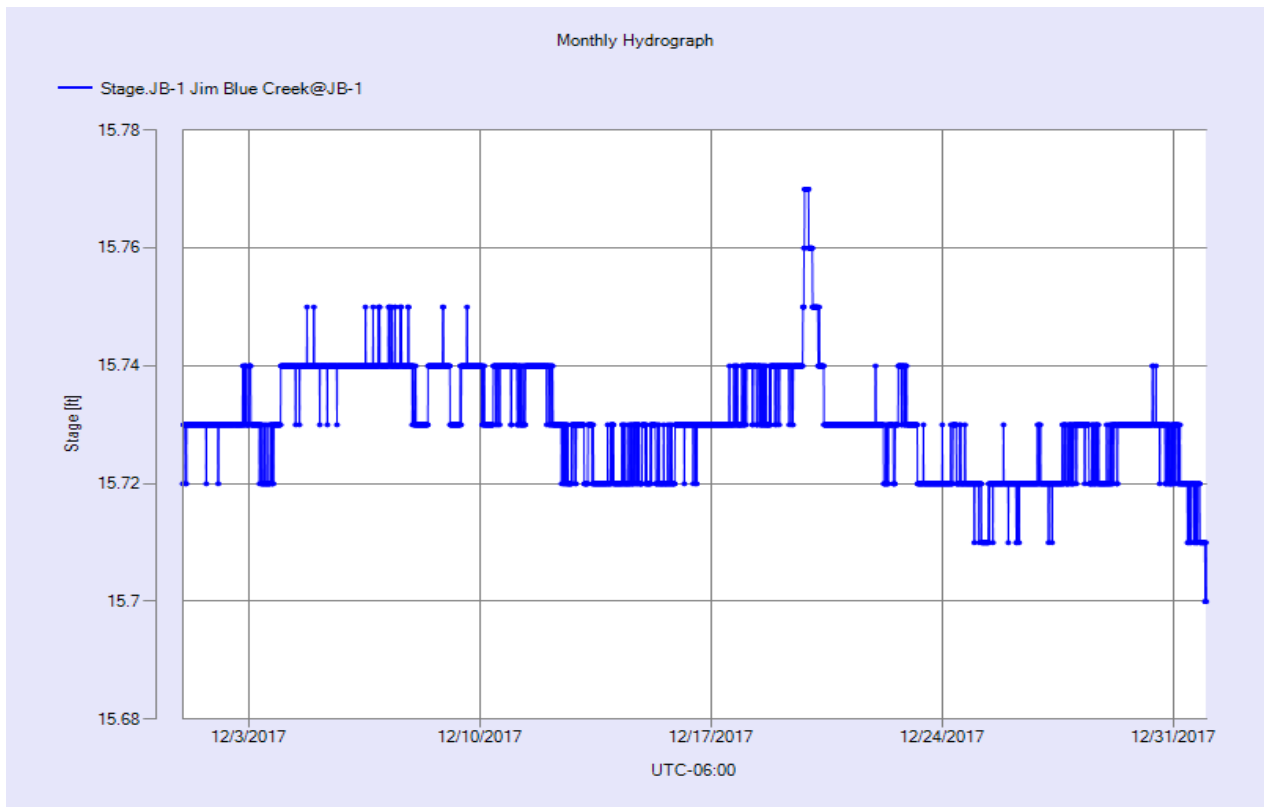


Figure 5 Monthly Hydrograph JB-1

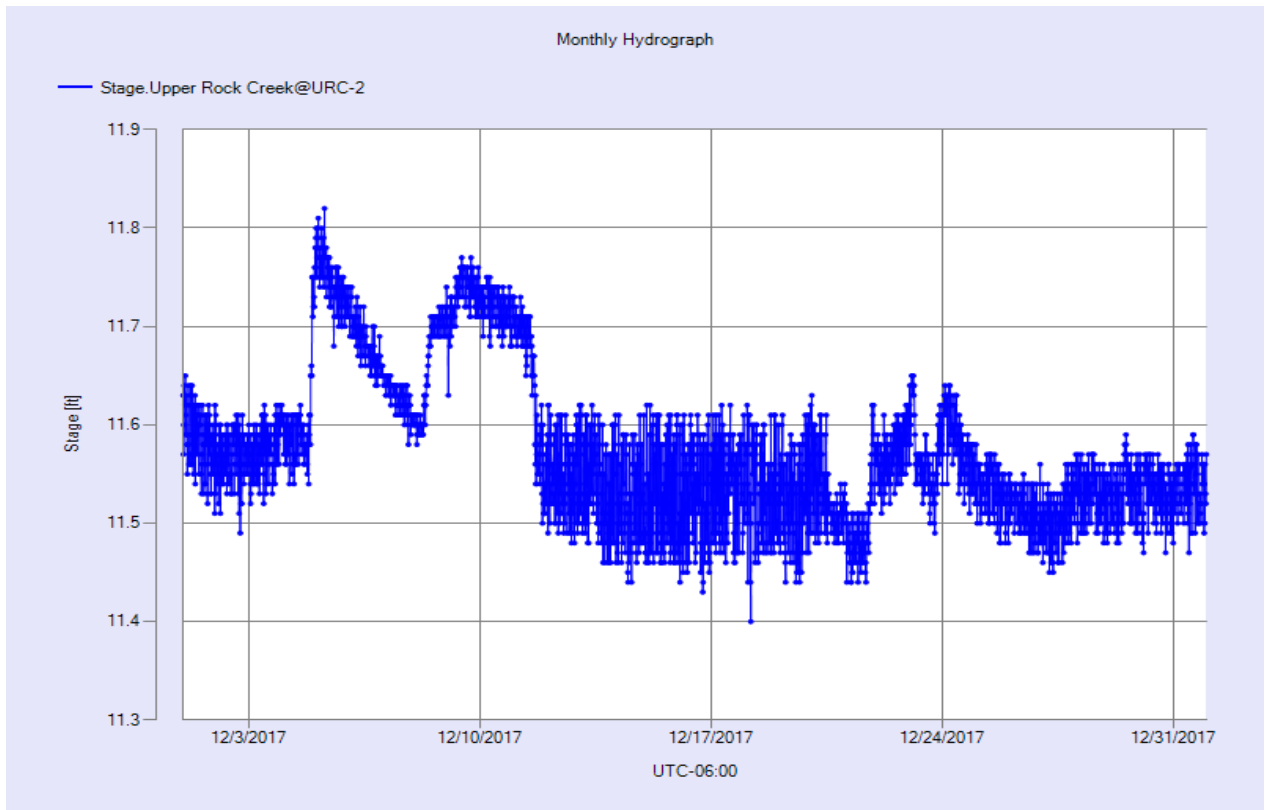


Figure 6 Monthly Hydrograph URC-2

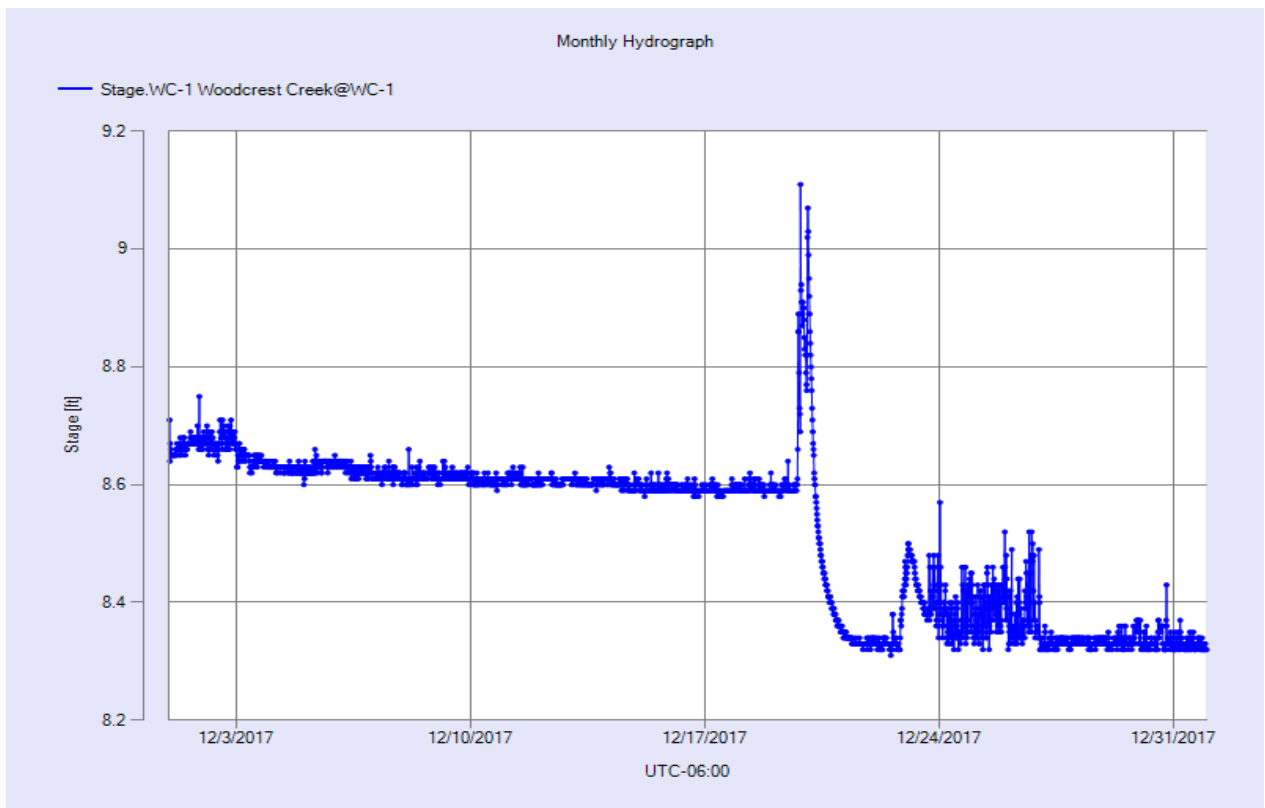


Figure 7 Monthly Hydrograph WC-1

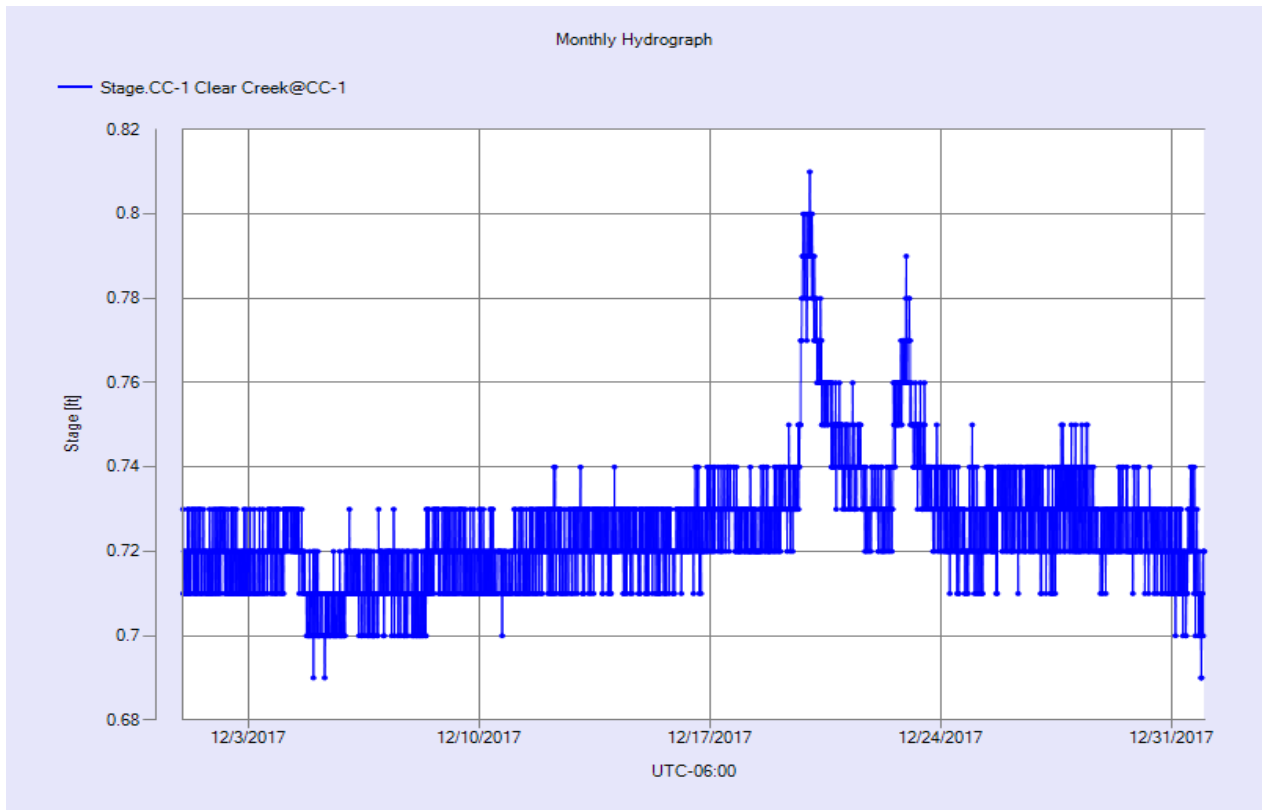


Figure 8 Monthly Hydrograph CC-1

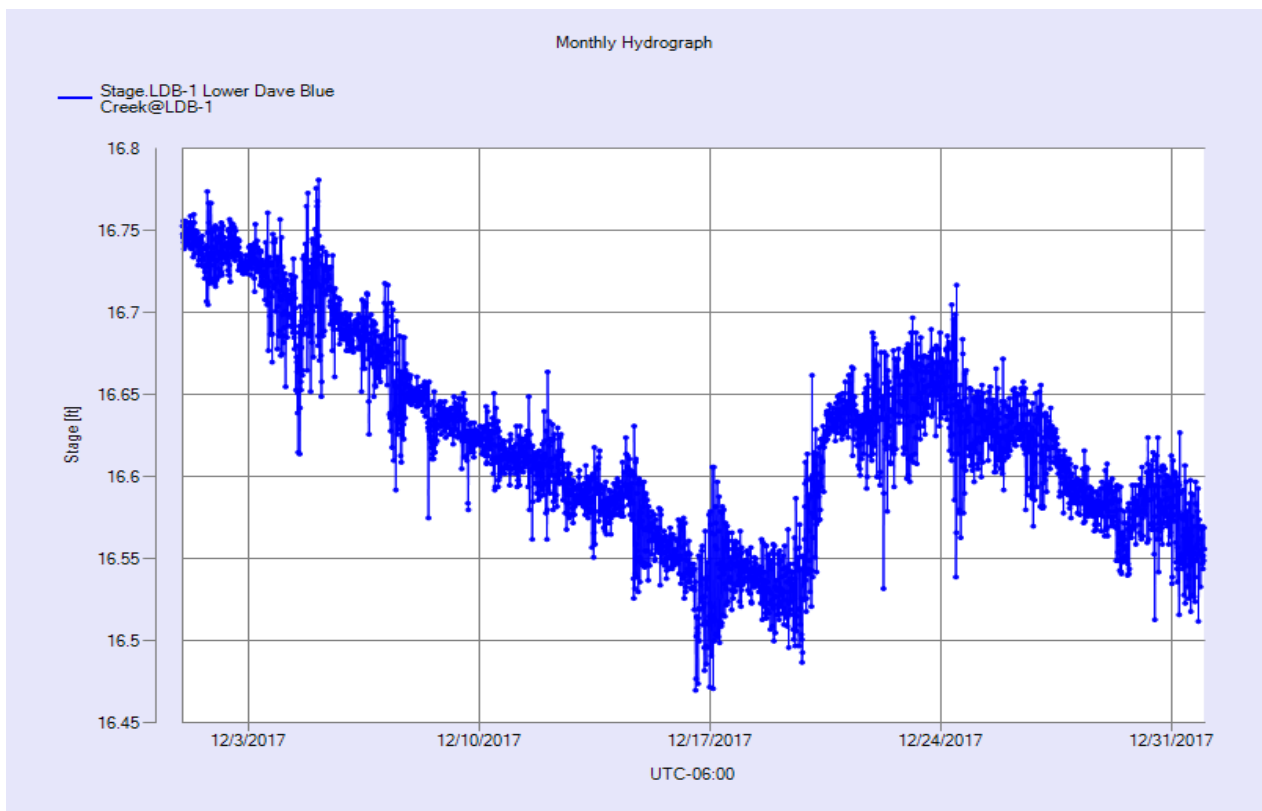


Figure 9 Monthly Hydrograph LDB-1

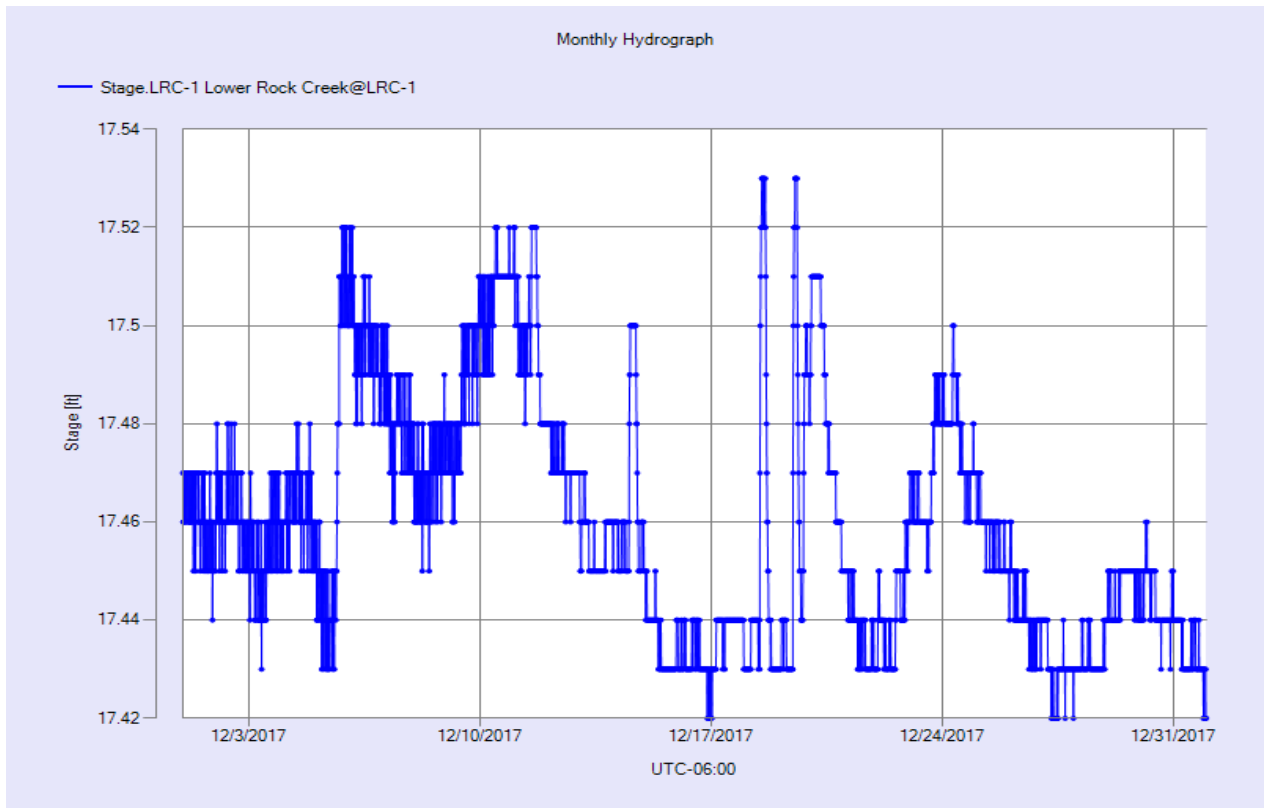


Figure 10 Monthly Hydrograph LRC-1

MESONET CLIMATOLOGICAL DATA SUMMARY																					
(NRMN) Norman Latitude: 35-14-09				December 2017 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	PRESSURE (in)		WIND SPEED (mph)			SOLAR	4" SOIL TEMPERATURES				
	MAX	MIN	AVG	DEWPT	HDD	CDD	MAX	MIN	AVG	(in)	STN	MSL	DIR	AVG	MAX	(MJ/m ²)	SOD	BARE	MAX	MIN	
1	68	41	53.9	38.7	10	0	87	37	58	0.00	28.86	30.11	SSE	6.5	22.5	7.79	53.8	53.7	58	51	
2	71	43	56.7	47.9	8	0	96	48	74	0.00	28.80	30.05	SSE	3.7	15.4	11.23	55.4	56.3	62	51	
3	75	47	60.1	52.9	4	0	98	52	79	0.00	28.71	29.96	S	8.2	28.3	7.11	55.7	56.4	60	53	
4	75	44	64.5	48.1	5	0	89	21	60	0.00	28.61	29.85	S	17.4	37.7	8.34	58.6	60.9	65	58	
5	44	30	37.7	11.9	28	0	59	20	35	0.00	29.07	30.33	N	10.2	31.1	5.92	53.9	52.7	58	48	
6	54	27	39.6	19.4	25	0	69	23	46	0.00	29.08	30.34	N	6.9	24.2	12.18	50.5	47.9	53	43	
7	36	18	28.5	13.5	38	0	73	36	54	0.00	29.16	30.42	N	11.0	27.3	11.95	48.0	44.1	47	40	
8	47	16	30.0	14.4	34	0	76	28	55	0.00	28.89	30.14	SW	4.7	16.8	10.04	45.0	40.1	45	36	
9	55	27	38.7	22.5	24	0	78	28	55	0.00	28.97	30.23	NW	6.4	22.0	11.97	45.5	42.3	48	37	
10	69	29	45.3	19.0	16	0	76	11	41	0.00	29.03	30.29	WNW	5.7	18.9	12.25	45.9	43.9	51	38	
11	72	29	48.1	19.9	14	0	73	12	38	0.00	28.93	30.19	N	6.8	26.7	12.18	46.6	45.7	52	40	
12	50	33	42.1	27.1	23	0	77	41	56	0.00	29.05	30.31	N	8.6	27.6	11.83	47.2	46.6	51	43	
13	66	36	47.9	23.1	14	0	63	20	41	0.00	28.69	29.94	SSW	6.6	18.8	11.57	47.3	46.8	53	42	
14	50	33	42.0	26.8	23	0	78	37	56	0.00	28.85	30.11	N	8.4	26.0	11.54	47.1	46.3	51	43	
15	51	27	39.7	25.2	26	0	89	32	59	0.00	28.95	30.20	NW	7.6	17.8	11.88	46.2	44.6	50	40	
16	61	34	45.8	27.5	18	0	97	26	52	0.02	28.74	29.99	S	11.8	31.2	9.12	46.3	45.4	50	41	
17	46	37	43.1	41.6	23	0	100	86	95	0.00	28.78	30.03	S	5.7	19.0	1.83	47.9	47.0	48	45	
18	53	39	44.7	43.3	19	0	100	72	95	0.01	28.87	30.12	S	6.4	19.7	6.60	48.4	47.5	51	45	
19	56	49	53.3	52.9	13	0	100	91	98	0.94	28.77	30.02	S	6.2	17.2	2.01	50.8	50.9	52	49	
20	57	48	52.0	51.0	13	0	100	82	96	0.02	28.68	29.93	SSE	4.9	18.6	2.99	52.4	52.4	55	50	
21	67	37	50.7	41.2	13	0	98	35	73	0.00	28.57	29.81	S	12.4	29.6	11.20	51.9	50.4	55	47	
22	36	29	31.1	26.8	32	0	97	76	84	0.04	28.83	30.08	N *	NA	29.3*	1.23	48.0	41.8	47	39	
23	42	26	32.3	27.1	31	0	98	54	82	0.10	28.92	30.17	ESE*	NA	16.7*	11.32	45.6	40.0	45	37	
24	38	26	31.5	21.9	33	0	100	39	70	0.00	29.06	30.32	N	12.3	30.5	11.27	44.7	39.2	42	38	
25	39	21	30.5	14.2	35	0	88	23	53	0.00	29.06	30.32	SE	7.0	21.7	4.86	42.4	36.9	38	36	
26	34	23	28.9	17.1	37	0	73	56	61	0.00	29.13	30.39	NNE	10.9	22.9	4.25	41.3	35.6	36	35	
27	28	18	23.0	10.9	42	0	67	49	60	0.00	29.29	30.55	NNE	9.1	23.6	3.79	40.3	34.9	36	35	
28	38	28	32.9	24.1	32	0	82	62	70	0.00	29.13	30.39	S	4.3	14.4	5.52	41.2	36.2	39	35	
29	41	33	37.3	32.3	28	0	94	73	82	0.00	28.97	30.22	S	7.4	26.6	2.23	42.4	38.8	40	38	
30	38	19	24.5	21.3	36	0	95	77	87	0.00	29.03	30.29	N	10.5	26.3	1.62	41.5	37.7	40	36	
31	22	12	17.4	4.8	48	0	88	33	60	0.00	29.28	30.54	NNE	15.1	28.5	9.40	39.0	34.6	35	34	
	51	31	40.5	28.0	<- Monthly Averages ->							28.93	30.18	N *	8.4*	37.7*	7.97	47.4	45.1	49	42
Temperature - Highest: 75 Lowest: 12					Degree Days - Total HDD: 746 Total CDD: 0					Number of Days With: Tmax ≥ 90: 0 Rainfall ≥ 0.01 inch: 6 Tmax ≤ 32: 2 Rainfall ≥ 0.10 inch: 2 Tmin ≤ 32: 17 Avg Wind Speed ≥ 10 mph: 9* Tmin ≤ 0: 0 Max Wind Speed ≥ 30 mph: 4*											
Rainfall: Monthly Total: 1.13 in. Greatest 24 Hr: 0.94 in.					Humidity - Highest: 100 Lowest: 11																

Figure 11 December Mesonet Data