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



SY2017 Monthly Report

Lake Thunderbird TMDL Monitoring Plan Implementation:

November 2017 Monitoring Report

Oklahoma Water Resources Board
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SUMMARY OF NOVEMBER WATER QUALITY SAMPLING

Sampling for November 2017 occurred on the first and was considered a base flow collection. Water samples were collected at six locations, with the exception of JB-1, TG-1, WC-1, and URC-2, which were collected on the twenty-first of October. 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 first, in the 72 hours prior to sampling, or in the 72 hours after the sampling event. Water samples were collected from JB-1, TG-1, WC-1, and URC-2 via autosamplers on the twenty-first of October, and were considered high flow samples. Mesonet data shows 1.47 inches of precipitation on the twenty-first, and no precipitation in the 72 hours before or after the sampling event. The total rainfall amount in Norman for the month of November was 0.09 inches. All water level gages were operational for the month, with the exception of LT-1, which has been removed due to road construction.

RESULTS

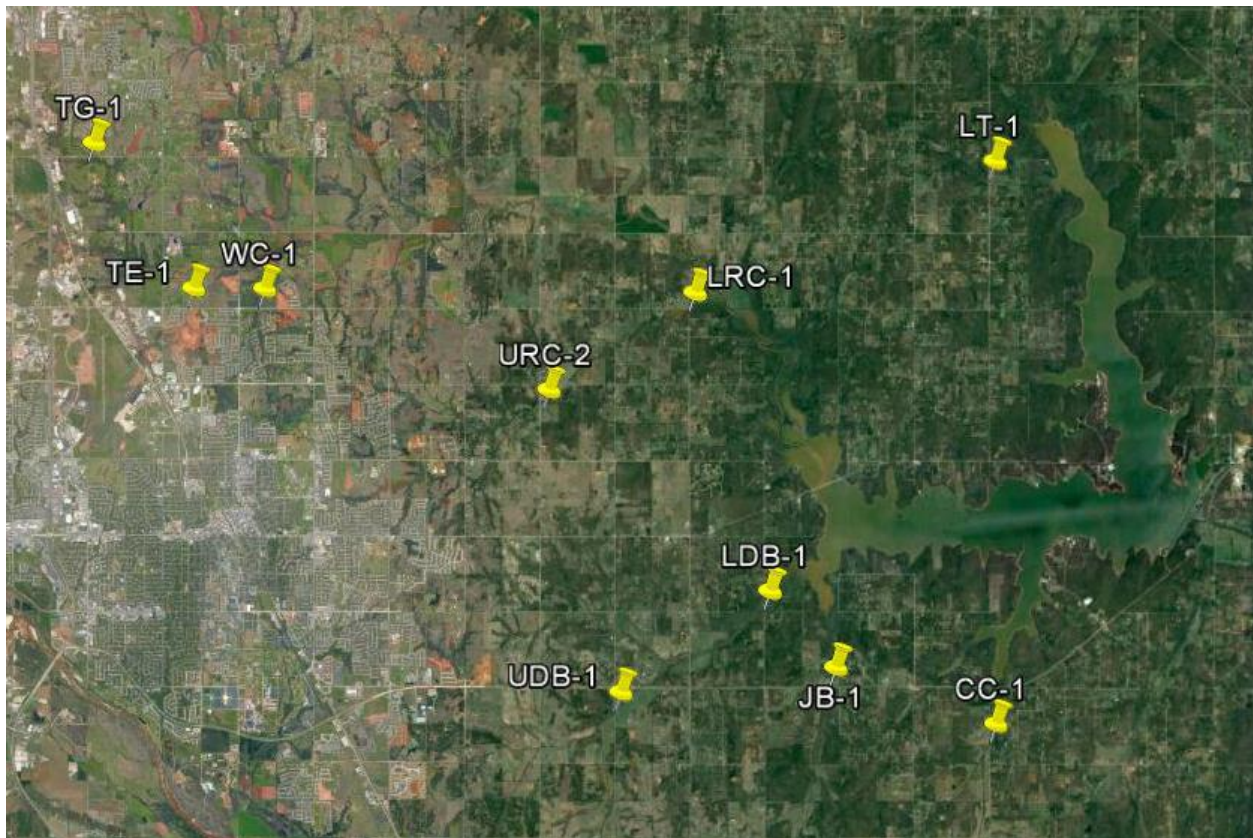


Figure 1 Monitoring Station Map

Field Data Form

Field Measurement Record

Reviewed By: _____ **SD**_____

Station	Date	Time	Field Crew	Temp C°	DO mg/L	SpC µS	pH	Turb (NTU)	Notes
cc-1	11/1/2017	14:55	JW	15.2	9.2	699.0	7.9	9.0	
lt-1	11/1/2017	16:05	JW	15.17	3.5	1099.0	7.4	6.0	isolated pool
jb-1	10/21/2017	23:30	JM	*	*	**	**	**	collected by autosampler
udb-1	11/1/2017	13:50	JW	10.6	9.2	960.0	7.8	2.0	
ldb-1	11/1/2017	14:10	JW	10.7	8.0	632.0	7.8	9.0	
tg-1	10/21/2017	23:15	JM	*	*	335.0	**	**	collected by autosampler
te-1	11/1/2017	12:15	JW	11.6	10.4	818.0	7.7	19.0	
wc-1	10/21/2017	21:45	JM	*	*	**	**	**	collected by autosampler
lrc-1	11/1/2017	13:20	JW	10.4	9.2	696.0	7.8	9.0	
urc-2	10/22/2017	0:00	JM	*	*	**	**	**	collected by autosampler

Table 1 Field Data Form Where the Asterisk Denotes a Sample from the Autosampler and Two Asterisks Denotes Equipment Malfunction

Site Name	TKN (mg/L)	Nitrate/Nitrite (mg/L)	TP (mg/L)	TSS (mg/L)
TG-1	2.11	0.19	0.558	540
CC-1	0.33	<0.05	0.064	8.0
JB-1	1.57	0.19	0.292	160.0
UDB-1	0.84	<0.05	0.039	<5.0
LDB-1	0.56	<0.05	0.062	10.0
LRC-1	0.49	<0.05	0.061	8.0
URC-2	4.62	0.24	1.120	1880
WC-1	2.73	0.28	0.716	510
TE-1	0.49	<0.05	0.050	5.0
LT-1	0.52	<0.05	0.035	5.0

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	0.23 mg/L	<0.05 mg/L	0.051 mg/L	<5.0 mg/L
Duplicate RPD	35.71%* ₂	0%	22.61%* ₁	46.15%* ₃

Table 3 QA/QC Data Where Subscript 1 Denotes a Level 2 RPD, Subscript 2 Denotes a Level 3 RPD, and Subscript 3 Denotes a Level 4 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)	14.92	0.75	16.01	17.62	17.07	17.09	15	11.79	11.7	0.09
DISCHARGE (ft ³ /s)	525	0.85	1.0	0.93	37	0	55	32	0.12	0

Table 4 Station Discharge Summary

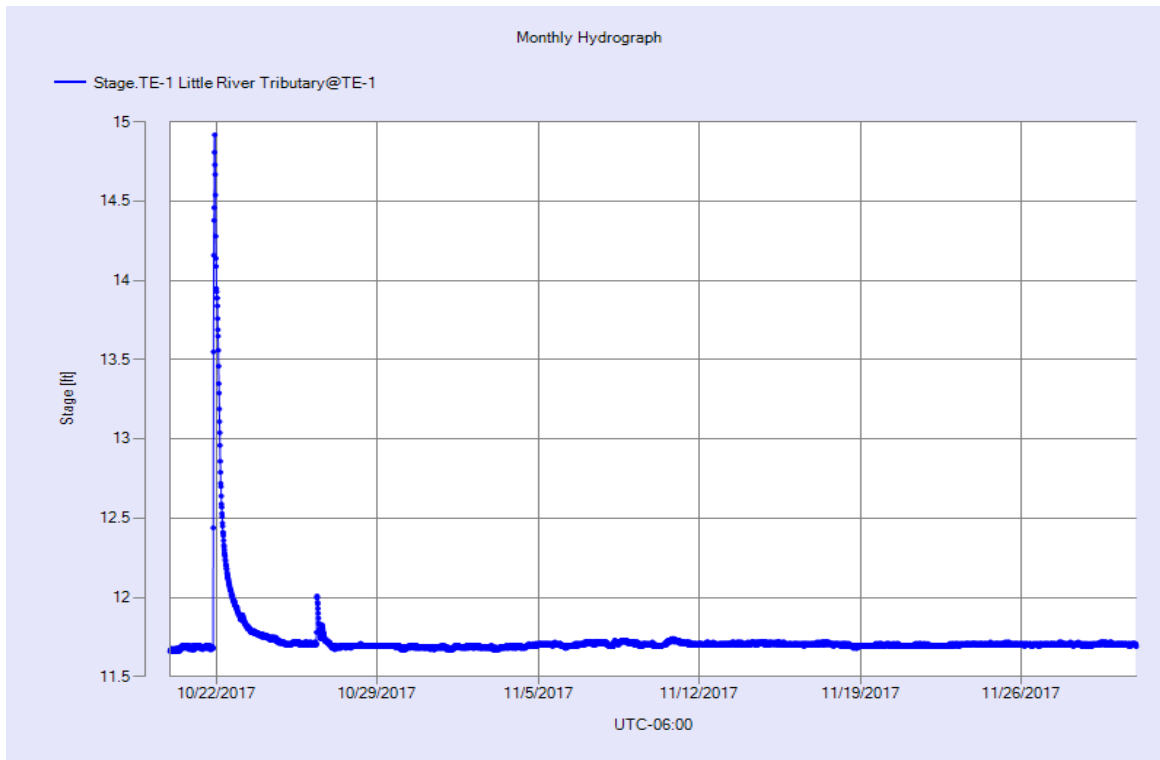


Figure 2 Monthly Hydrograph TE-1

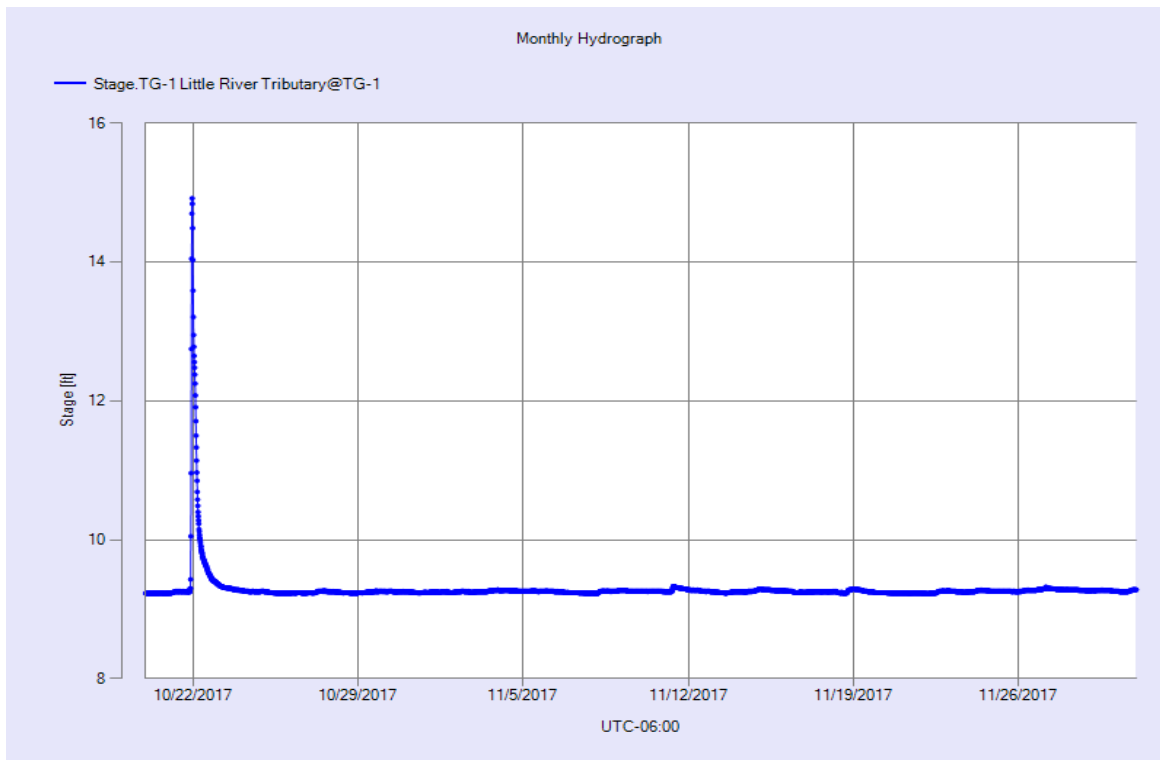


Figure 3 Monthly Hydrograph TG-1

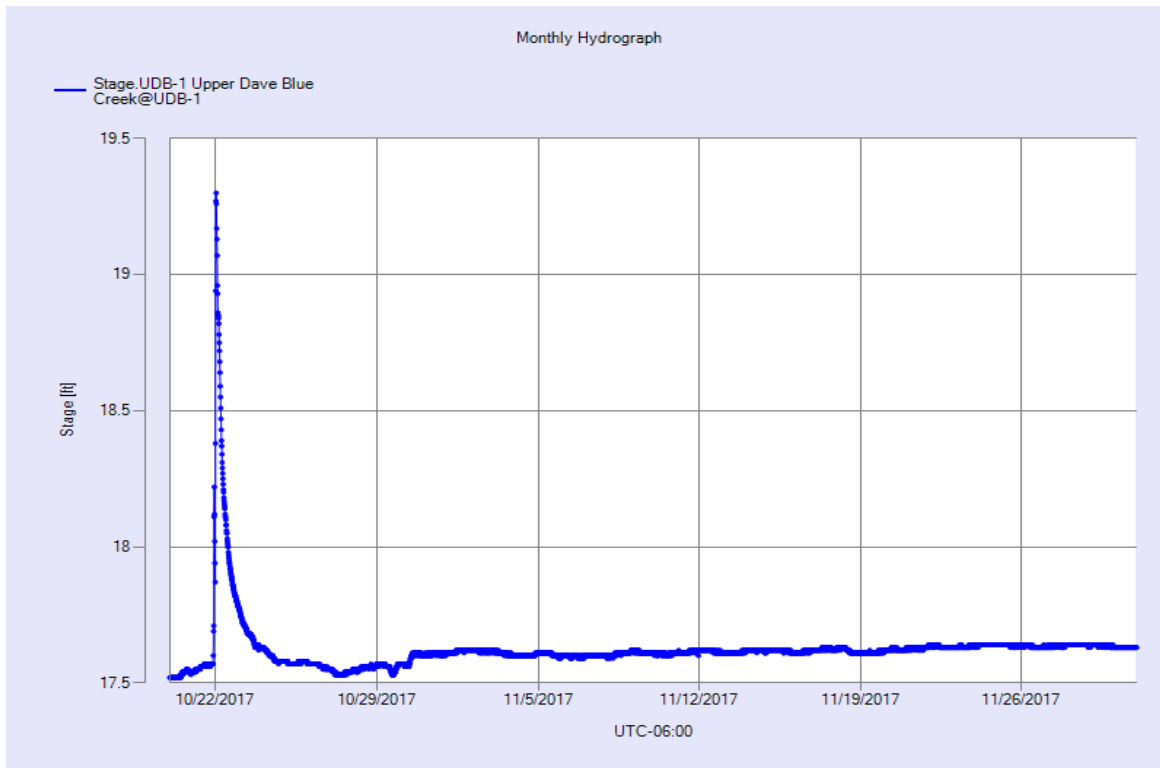


Figure 4 Monthly Hydrograph UDB-1

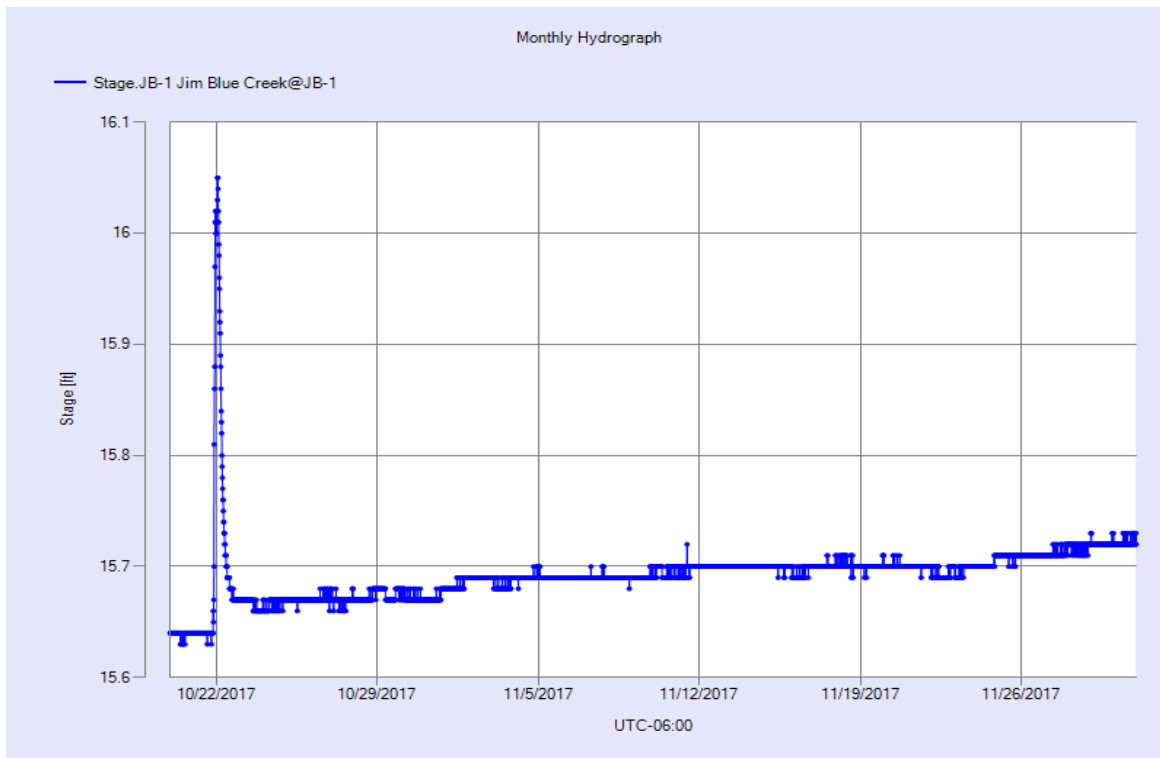


Figure 5 Monthly Hydrograph JB-1

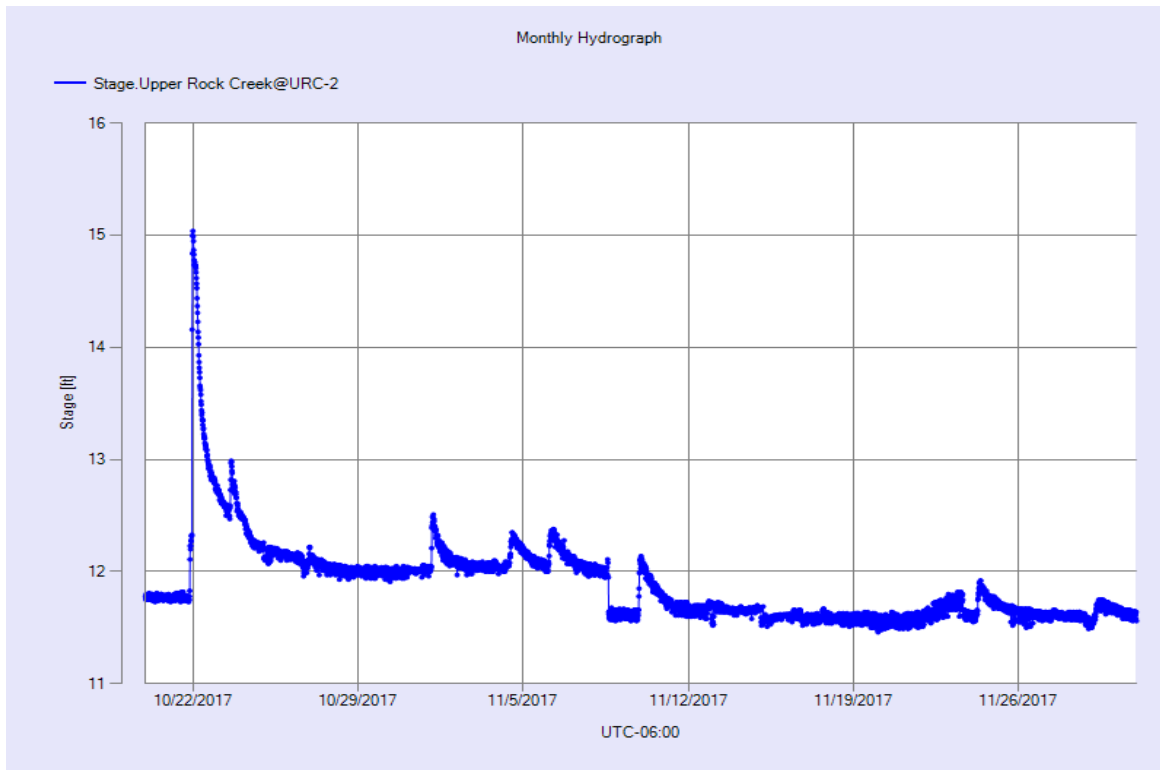


Figure 6 Monthly Hydrograph URC-2

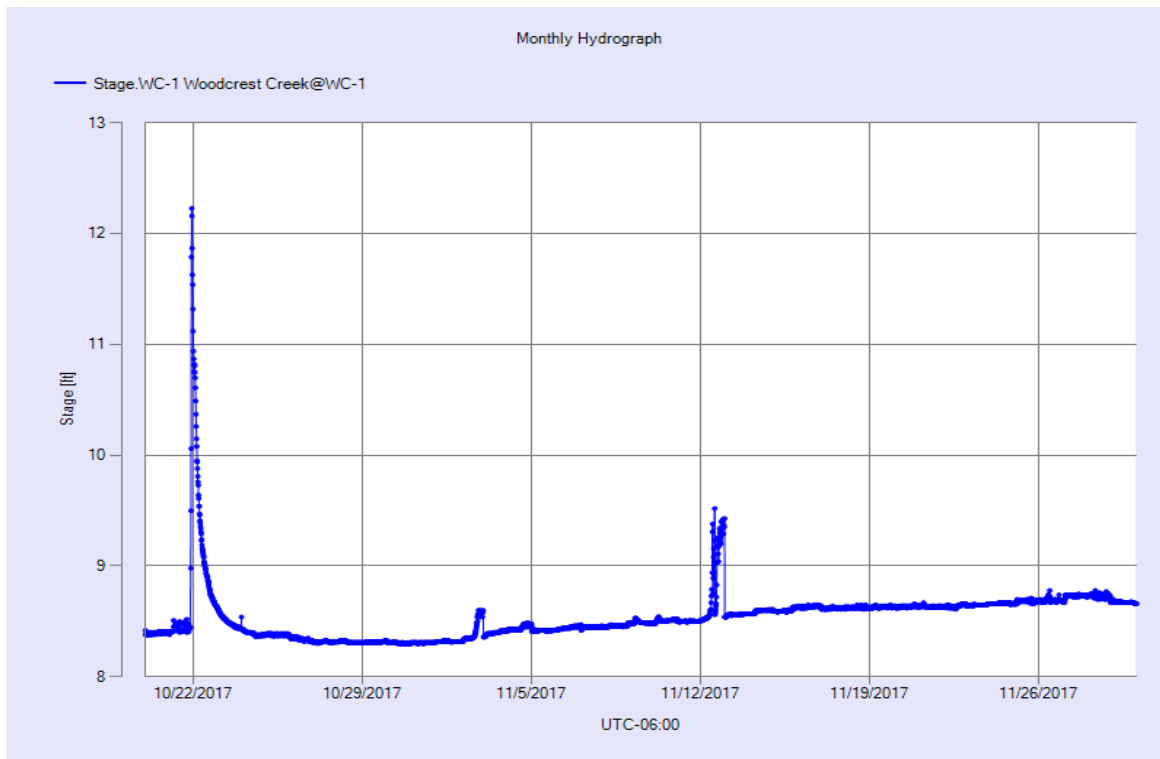


Figure 7 Monthly Hydrograph WC-1

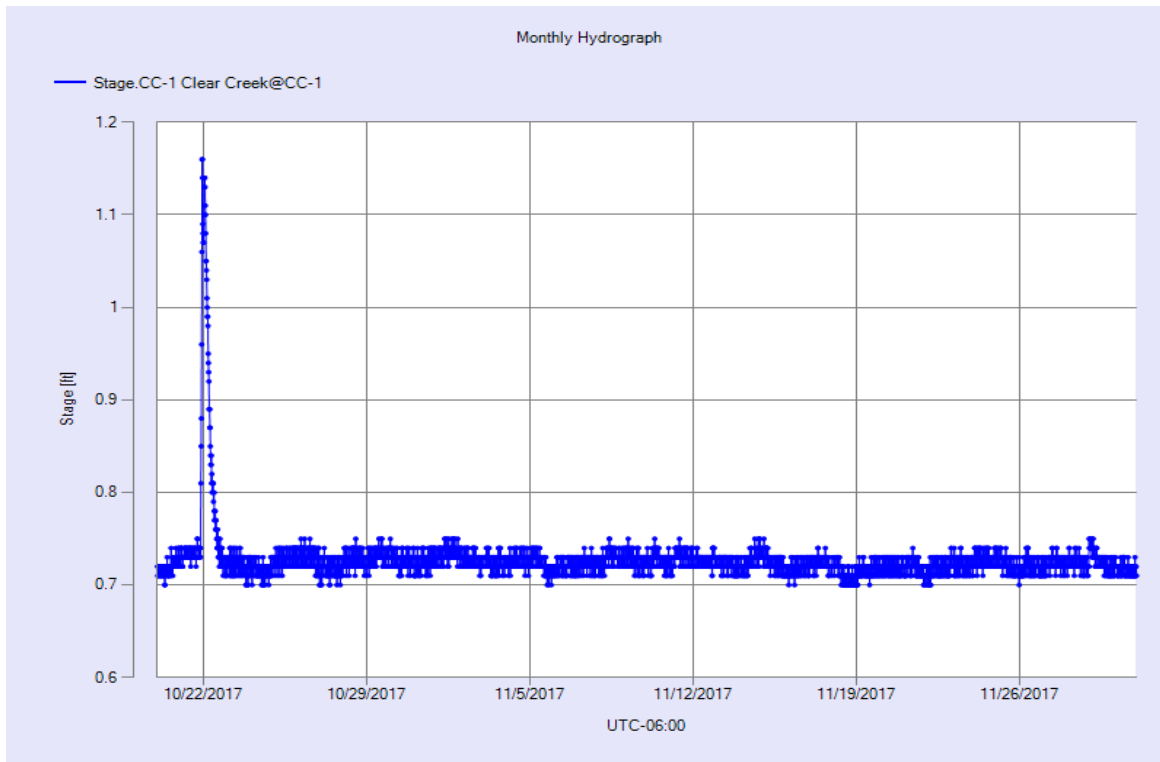


Figure 8 Monthly Hydrograph CC-1

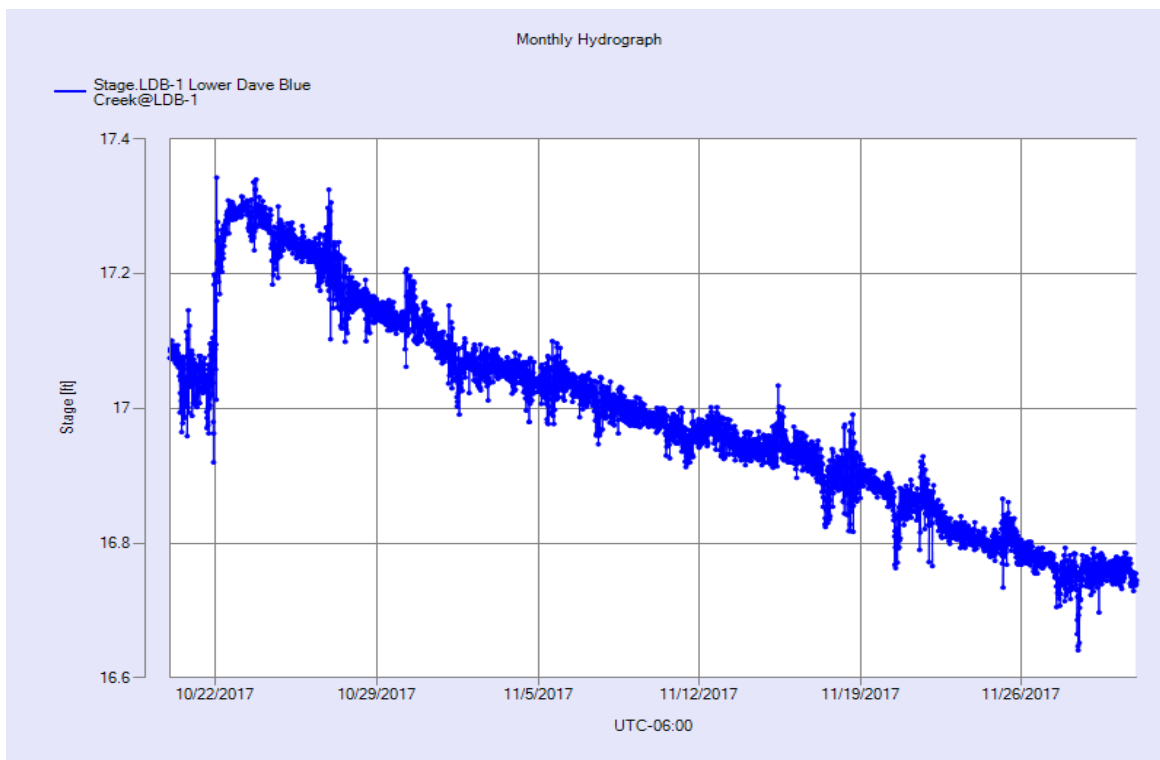


Figure 9 Monthly Hydrograph LDB-1

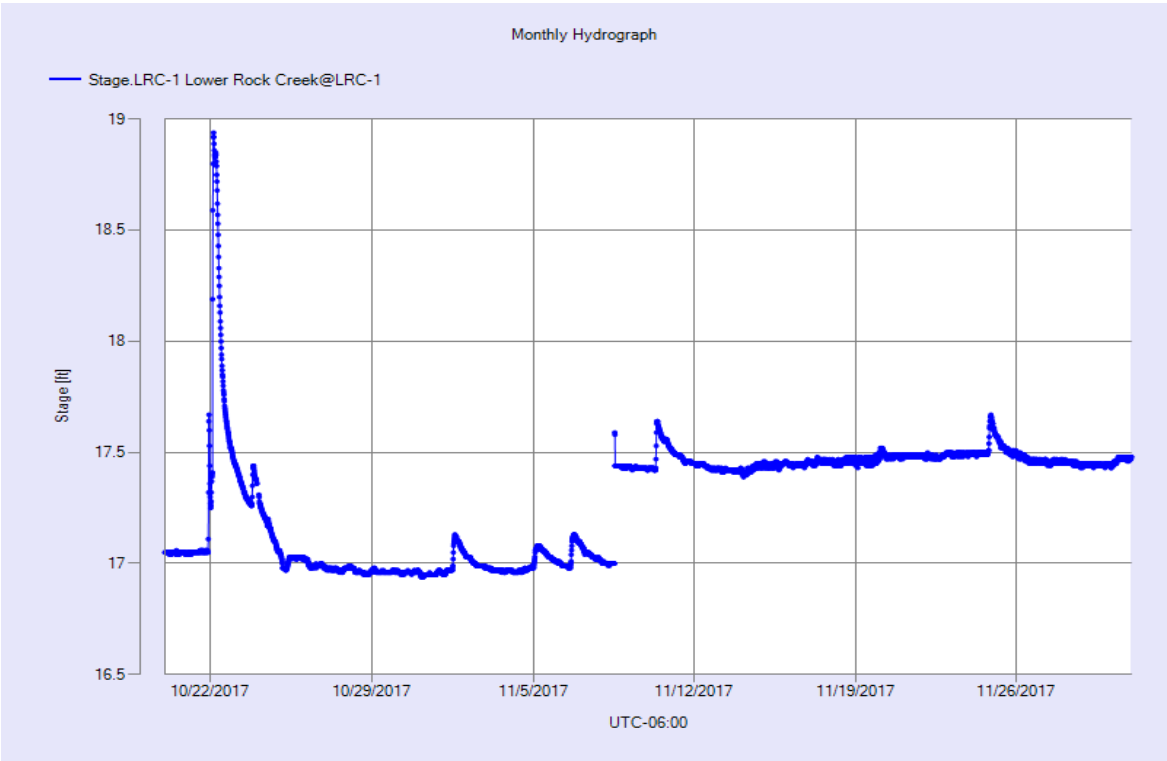


Figure 10 Monthly Hydrograph LRC-1

MESONET CLIMATOLOGICAL DATA SUMMARY					November 2017					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 ²)	4" SOIL TEMPERATURES			
	MAX	MIN	AVG	DEWPT	HDD	CDD	MAX	MIN	AVG		STN	MSL	DIR	AVG	MAX	SOD		BARE	MAX	MIN	
1	76	40	58.2	46.2	7	0	93	36	68	0.00	28.46	29.70	S	11.0	28.0	14.78	56.3	54.6	61	49	
2	80	54	63.8	47.4	0	2	91	23	61	0.00	28.56	29.80	SSW	11.8	26.8	15.04	59.2	60.0	66	55	
3	55	42	51.2	48.6	17	0	100	77	91	0.00	28.82	30.07	NNE	5.5	16.7	4.32	59.4	58.6	60	55	
4	85	42	64.3	54.8	2	0	100	38	76	0.00	28.62	29.87	S	7.2	21.9	14.48	59.3	59.3	67	53	
5	76	48	62.8	53.0	3	0	88	38	73	0.00	28.62	29.87	S	10.9	23.5	14.61	62.2	63.7	68	60	
6	52	45	47.4	42.9	17	0	96	74	84	0.00	28.79	30.05	N	8.2	14.0	3.98	59.5	57.3	60	56	
7	46	42	44.1	37.8	21	0	93	62	79	0.00	28.96	30.21	N	11.8	23.6	3.33	57.3	53.8	56	52	
8	49	34	41.6	35.0	24	0	97	56	78	0.07	29.02	30.28	N	6.9	19.6	4.49	55.3	50.4	52	47	
9	59	29	43.9	35.5	21	0	100	44	76	0.00	29.00	30.26	ESE	1.7	7.6	13.72	53.9	49.7	57	43	
10	62	34	49.2	39.1	17	0	100	41	71	0.01	28.97	30.22	SSE	5.9	20.5	13.09	54.1	51.6	57	46	
11	60	50	56.1	46.8	10	0	84	59	71	0.00	28.81	30.06	SSE	9.8	29.0	3.24	55.5	54.7	56	53	
12	59	46	54.3	48.5	12	0	91	73	81	0.00	29.03	30.29	NNE	8.5	21.2	4.42	56.9	56.2	58	54	
13	64	47	54.3	48.7	9	0	91	64	82	0.00	29.04	30.30	SSE	6.0	19.9	5.13	56.8	55.7	59	53	
14	73	56	62.6	58.1	0	0	100	64	86	0.01	28.76	30.01	SSE	9.3	26.5	4.85	58.6	58.9	62	57	
15	69	43	60.7	48.5	9	0	93	27	68	0.00	28.80	30.05	NNE	9.2	32.3	10.01	60.3	61.0	65	56	
16	61	37	52.7	46.0	16	0	97	57	79	0.00	28.83	30.08	SSE	7.0	20.5	5.25	57.2	55.8	59	52	
17	83	58	70.2	58.7	0	6	100	33	70	0.00	28.48	29.72	SSW	14.3	32.7	12.44	60.3	62.3	68	58	
18	72	38	53.7	39.2	10	0	70	44	58	0.00	28.73	29.98	NNW	16.4	43.0	9.11	59.8	60.3	64	54	
19	60	30	45.6	25.7	20	0	84	24	50	0.00	29.01	30.26	SSW	4.7	16.7	13.81	55.1	53.2	59	48	
20	65	38	50.7	28.4	14	0	68	24	44	0.00	28.75	30.00	S	11.5	33.8	13.68	54.1	52.5	58	48	
21	63*	38*	50.3*	30.8*	14*	0*	79*	31*	48*	0.00*	28.77*	30.02*	NNE*	10.8*	33.0*	NA	54.3*	53.4*	58*	50*	
22	50	28	37.7	17.1	26	0	61	25	44	0.00	29.08	30.34	NNE	6.2	22.7	12.48	52.4	49.5	54	45	
23	70	34	50.9	27.4	13	0	62	24	42	0.00	28.83	30.08	S	4.9	13.7	12.68	52.0	50.4	58	44	
24	78	45	60.4	35.3	3	0	60	23	41	0.00	28.57	29.82	S	8.2	23.7	12.55	53.8	54.7	61	49	
25	66	40	54.4	35.2	12	0	73	26	50	0.00	28.85	30.10	NNE	7.6	22.1	10.33	54.7	55.6	60	52	
26	69	33	51.7	34.4	14	0	87	29	55	0.00	28.98	30.23	S	4.9	19.0	12.23	53.3	52.9	59	47	
27	75	48	60.6	47.3	4	0	77	41	63	0.00	28.73	29.98	S	11.8	29.0	12.25	54.8	55.8	61	51	
28	68	52	59.8	49.4	5	0	85	57	69	0.00	28.70	29.95	S	11.5	32.4	5.49	56.3	57.6	60	55	
29	59	40	50.0	44.2	15	0	100	59	81	0.00	28.89	30.14	NW	9.0	23.5	9.87	56.0	56.7	60	54	
30	60	37	47.3	36.9	17	0	100	33	72	0.00	28.99	30.25	NNE	5.5	17.5	11.83	54.2	53.6	59	50	
	66*	42*	53.7*	41.6*	<- Monthly Averages ->					28.82*	30.07*	S	8.6*	43.0*	9.78*	56.4*	55.7*	60*	52*		
Temperature - Highest: 85*					Degree Days - Total HDD: 351*					Number of Days With:											
Lowest: 28*					Total CDD: 8*					Tmax ≥ 90: 0* Rainfall ≥ 0.01 inch: 3*											
Rainfall: Monthly Total: 0.09* in.					Humidity - Highest: 100*					Tmax ≤ 32: 0* Rainfall ≥ 0.10 inch: 0*											
Greatest 24 Hr: 0.07* in.					Lowest: 23*					Tmin ≤ 32: 3* Avg Wind Speed ≥ 10 mph: 10*											
										Tmin ≤ 0: 0* Max Wind Speed ≥ 30 mph: 6*											

Figure 11 November Mesonet Data