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***Lake Thunderbird TMDL Monitoring Plan Implementation:  
Sample Year (SY) 2018- February Report***

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**SY2018 Monthly Report**

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*Lake Thunderbird TMDL Monitoring Plan Implementation:*

*February 2019 Monitoring Report*

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Oklahoma Water Resources Board  
Water Quality Programs Division  
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## SUMMARY OF FEBRUARY WATER QUALITY SAMPLING

Sampling for February 2019 occurred on the twenty-second and was considered a base flow collection. Water samples were collected at all ten locations, and discharge was measured at six locations. Mesonet data shows 0.18 inches of precipitation occurring on the twenty-second, 0.16 inches of precipitation in the 72 hours prior to sampling, and 0.04 inches of precipitation in the 72 hours after the sampling event. The total rainfall amount in Norman for the month of February was 0.60 inches. All water level gauges were operational for the month, with the exception of CC-1 as a result of road construction activity, and LT-1 due to equipment malfunction.

## RESULTS

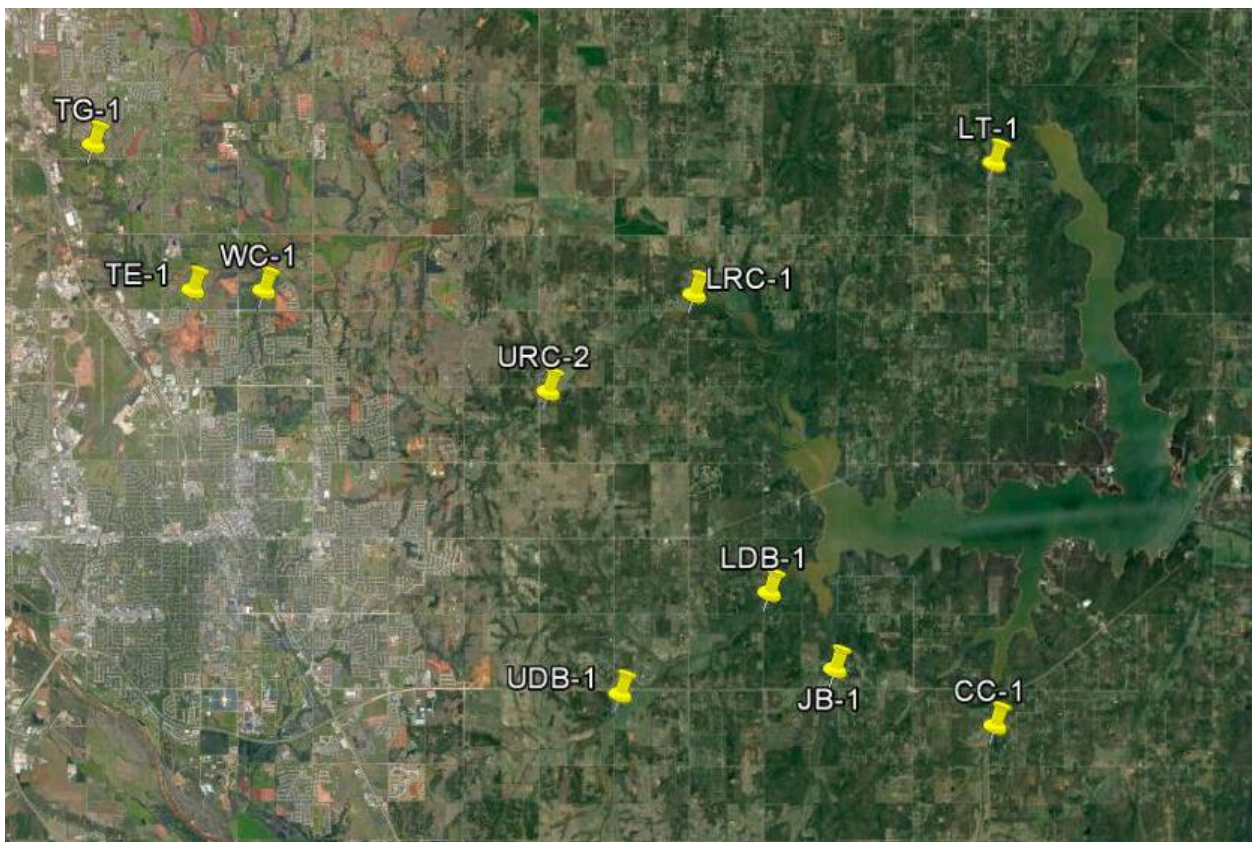


Figure 1 Monitoring Station Map

Monitoring Location ID	Monitoring Location Name	Date	Time	Field Crew	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/l)	pH	Specific Conductance (mS/cm)	Turbidity (NTU)	Notes
CC-1	Clear Creek	02-22-2019	10:52	LO	7.94	11.54	7.96	449	6.0	
JB-1	Jim Blue Creek	02-22-2019	12:40	LO	7.28	10.00	7.76	839	4.0	changed dcp
LDB-1	Lower Dave Blue Creek	02-22-2019	9:52	LO	7.38	13.33	7.96	1002	4.0	changed dcp
LRC-1	Lower Rock Creek	02-22-2019	11:40	SD	7.71	10.71	7.85	947	7.0	
LT-1	Lake Laterals	02-22-2019	8:45	LO	6.88	10.78	7.77	500	5.0	heavy algae
TE-1	Little River Tributary	02-22-2019	9:00	SD	6.71	9.59	7.59	1824	10.0	same stage/dcp as 11/19 collection/flow measurement
TG-1	Little River Tributary	02-22-2019	8:25	SD	7.26	9.05	7.65	1259	5.0	
UDB-1	Upper Dave Blue Creek	02-22-2019	12:18	LO	8.25	11.81	8.00	982	3.0	
URC-2	Upper Rock Creek	02-22-2019	10:35	SD	7.10	9.73	7.64	1034	11.0	rp1 not over water, used rp2. dug hole to get rough estimate of rp1-12.52
WC-1	Woodcrest Creek	02-22-2019	9:25	SD	7.37	10.07	7.65	1144	22.0	beaver dam on us side of bridge. Probably base flow conditions

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	<0.05	0.18	0.023	11.0
JB-1	Jim Blue Creek	<0.05	0.22	0.017	6.0
LDB-1	Lower Dave Blue Creek	0.13	0.26	0.017	10.0
LRC-1	Lower Rock Creek	<0.05	0.22	0.023	5.0
LT-1	Lake Laterals	<0.05	0.32	0.018	10.0
TE-1	Little River Tributary	<0.05	0.48	0.024	10.0
TG-1	Little River Tributary	0.20	0.49	0.031	<5.0
UDB-1	Upper Dave Blue Creek	<0.05	0.18	0.014	5.0
URC-2	Upper Rock Creek	<0.05	0.33	0.028	18.0
WC-1	Woodcrest Creek	<0.05	0.37	0.033	18.0

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	0.19	0.014	5.0
Duplicate RPD	0%	5.41%	0%	0%

Table 3 QA/QC Data With A RPD 1

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	0.95	N/A
JB-1	Jim Blue Creek	0.93	17.02
LDB-1	Lower Dave Blue Creek	2.30	16.57
LRC-1	Lower Rock Creek	2.08	17.60
LT-1	Lake Laterals	0.35	4.44
TE-1	Little River Tributary	0.32	11.57
TG-1	Little River Tributary	3.49	9.28
UDB-1	Upper Dave Blue Creek	0.47	17.56
URC-2	Upper Rock Creek	1.28	11.60
WC-1	Woodcrest Creek	0.13	8.30

Table 4 Station Discharge Summary



# Discharge Measurement Summary

Date Generated: Mon Mar 4 2019

## File Information

File Name WC0222.WAD  
 Start Date and Time 2019/02/22 07:54:59

## Site Details

Site Name WC  
 Operator(s) SCD

## System Information

Sensor Type FlowTracker  
 Serial # P4709  
 CPU Firmware Version 3.9  
 Software Ver 2.30  
 Mounting Correction 0.0%

## Units (English Units)

Distance ft  
 Velocity ft/s  
 Area ft<sup>2</sup>  
 Discharge cfs

## Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.6%	3.4%
Velocity	4.3%	16.6%
Width	0.2%	0.2%
Method	3.1%	-
# Stations	3.1%	-
<b>Overall</b>	<b>6.3%</b>	<b>17.0%</b>

## Summary

Averaging Int. 40 # Stations 16  
 Start Edge LEW Total Width 7.500  
 Mean SNR 38.1 dB Total Area 2.775  
 Mean Temp 44.69 °F Mean Depth 0.370  
 Disch. Equation Mid-Section Mean Velocity 0.0459  
**Total Discharge 0.1274**

## Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Fri Feb 22 08:05:16 CST 2019	5.500	8.300		

## Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	07:54	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	07:54	0.50	0.6	0.300	0.6	0.120	0.0030	1.00	0.0030	0.150	0.0004	0.3
2	07:56	1.00	0.6	0.300	0.6	0.120	-0.0121	1.00	-0.0121	0.150	-0.0018	-1.4
3	07:57	1.50	0.6	0.300	0.6	0.120	-0.0295	1.00	-0.0295	0.150	-0.0044	-3.5
4	07:58	2.00	0.6	0.300	0.6	0.120	0.0663	1.00	0.0663	0.150	0.0099	7.8
5	07:59	2.50	0.6	0.300	0.6	0.120	0.0738	1.00	0.0738	0.150	0.0111	8.7
6	08:00	3.00	0.6	0.500	0.6	0.200	0.0745	1.00	0.0745	0.250	0.0186	14.6
7	08:01	3.50	0.6	0.600	0.6	0.240	0.0128	1.00	0.0128	0.300	0.0038	3.0
8	08:02	4.00	0.6	0.600	0.6	0.240	-0.0226	1.00	-0.0226	0.300	-0.0068	-5.3
9	08:03	4.50	0.6	0.600	0.6	0.240	0.0781	1.00	0.0781	0.300	0.0234	18.4
10	08:04	5.00	0.6	0.500	0.6	0.200	0.1257	1.00	0.1257	0.250	0.0314	24.7
11	08:05	5.50	0.6	0.350	0.6	0.140	0.1112	1.00	0.1112	0.175	0.0195	15.3
12	08:06	6.00	0.6	0.300	0.6	0.120	0.1027	1.00	0.1027	0.150	0.0154	12.1
13	08:07	6.50	0.6	0.300	0.6	0.120	0.0446	1.00	0.0446	0.150	0.0067	5.3
14	08:08	7.00	0.6	0.300	0.6	0.120	0.0007	1.00	0.0007	0.150	0.0001	0.1
15	08:08	7.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

Figure 2 Discharge Summary WC-1

Station Number:  
Station Name: LDB

Meas. No: 0  
Date: 02/22/2019

Party: JTW LEO	Width: 34.4 ft	Processed by:
Boat/Motor:	Area: 115 ft <sup>2</sup>	Mean Velocity: 0.021 ft/s
Gage Height: 16.57 ft	G.H.Change: 0.000 ft	Discharge: 2.30 ft <sup>3</sup> /s

Area Method: Avg. Course	ADCP Depth: 0.270 ft	Index Vel.: 0.00 ft/s	Rating No.: 1
Nav. Method: Bottom Track	Shore Ens.: 10	Adj. Mean Vel: 0.00 ft/s	Qm Rating: U
MagVar Method: None (0.0°)	Bottom Est: Power (0.1667)	Rated Area: 0.000 ft <sup>2</sup>	Diff.: 0.000%
Depth: Composite (BT)	Top Est: Power (0.1667)	Control1: Unspecified	
Discharge Method: None		Control2: Unspecified	
% Correction: 0.00		Control3: Unspecified	

Screening Thresholds:		ADCP:
BT 3-Beam Solution: YES	Max. Vel.: 8.85 ft/s	Type/Freq.: RiverRay / 0 kHz
WT 3-Beam Solution: YES	Max. Depth: 5.09 ft	Serial #: 645654    Firmware: 44.16
BT Error Vel.: 3.28 ft/s	Mean Depth: 3.35 ft	Bin Size: 50 cm    Blank: 50 cm
WT Error Vel.: 32.81 ft/s	% Meas.: 0.00	BT Mode: 0    BT Pings: 1
BT Up Vel.: 32.81 ft/s	Water Temp.: None	WT Mode: 1    WT Pings: 1
WT Up Vel.: 32.81 ft/s	ADCP Temp.: 46.4 °F	WV : 170
Use Weighted Mean Depth: YES		

Performed Diag. Test: NO  
 Performed Moving Bed Test: NO  
 Performed Compass Calibration: YES    Evaluation: YES  
 Meas. Location:

Project Name: ldb022219\_0edit.mmt  
 Software: 2.17

Tr.#	Edge Distance		#Ens.	Discharge						Width	Area	Time		Mean Vel.		% Bad		
	L	R		Top	Middle	Bottom	Left	Right	Total			Start	End	Boat	Water	Ens.	Bins	
004	L	3	3	101	1.38	-3.46	5.12	-0.706	0.530	2.86	31	101	14:11	14:12	0.45	0.03	23	5
005	R	3	3	104	1.13	-1.55	1.98	0.283	-0.565	1.24	35	123	14:12	14:13	0.45	0.01	39	3
008	L	3	3	129	0.106	1.41	1.34	-0.530	0.671	3.00	40	131	14:17	14:19	0.47	0.02	43	5
009	R	3	3	104	0.000	1.55	-0.600	0.636	0.565	2.12	32	105	14:19	14:20	0.47	0.02	29	6
<b>Mean</b>		3	3	109	0.653	-0.512	1.96	-0.079	0.300	2.30	34	115	<b>Total</b>	00:08	0.46	0.02	33	5
<b>SDev</b>		0	0	13	0.702	2.43	2.38	0.642	0.580	0.811	4.4	14.3			0.01	0.01		
<b>SD/M</b>		0.00	0.00	0.12	1.07	4.75	1.21	8.08	1.93	0.35	0.13	0.12			0.02	0.40		

Figure 3 Discharge Summary LDB-1



# Discharge Measurement Summary

Date Generated: Mon Mar 4 2019

## File Information

File Name LT0222.WAD  
Start Date and Time 2019/02/22 07:45:38

## Site Details

Site Name LT  
Operator(s) JTW

## System Information

Sensor Type FlowTracker  
Serial # P4713  
CPU Firmware Version 3.9  
Software Ver 2.30  
Mounting Correction 0.0%

## Units (English Units)

Distance ft  
Velocity ft/s  
Area ft<sup>2</sup>  
Discharge cfs

## Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.3%	2.0%
Velocity	7.2%	31.9%
Width	0.3%	0.3%
Method	4.4%	-
# Stations	2.6%	-
<b>Overall</b>	<b>9.0%</b>	<b>32.0%</b>

## Summary

Averaging Int. 40 # Stations 19  
Start Edge LEW Total Width 18.000  
Mean SNR 43.3 dB Total Area 38.599  
Mean Temp 44.81 °F Mean Depth 2.144  
Disch. Equation Mid-Section Mean Velocity 0.0091  
**Total Discharge 0.3497**

## Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Fri Feb 22 07:43:48 CST 2019	0.000	4.440		

## Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	07:45	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	07:45	1.00	0.6	0.800	0.6	0.320	-0.0072	1.00	-0.0072	0.800	-0.0058	-1.7
2	07:47	2.00	0.6	1.200	0.6	0.480	0.0016	1.00	0.0016	1.200	0.0020	0.6
3	07:48	3.00	0.6	1.600	0.6	0.640	-0.0190	1.00	-0.0190	1.600	-0.0304	-8.7
4	07:49	4.00	0.6	1.900	0.6	0.760	0.0020	1.00	0.0020	1.900	0.0037	1.1
5	07:50	5.00	0.6	2.200	0.6	0.880	0.0095	1.00	0.0095	2.200	0.0209	6.0
6	07:51	6.00	0.6	2.600	0.6	1.040	0.0105	1.00	0.0105	2.600	0.0273	7.8
7	07:52	7.00	0.6	2.900	0.6	1.160	0.0308	1.00	0.0308	2.900	0.0894	25.6
8	07:53	8.00	0.6	2.800	0.6	1.120	0.0272	1.00	0.0272	2.800	0.0762	21.8
9	07:54	9.00	0.6	2.800	0.6	1.120	0.0289	1.00	0.0289	2.800	0.0808	23.1
10	07:55	10.00	0.6	2.900	0.6	1.160	0.0144	1.00	0.0144	2.900	0.0419	12.0
11	07:56	11.00	0.6	2.800	0.6	1.120	0.0246	1.00	0.0246	2.800	0.0689	19.7
12	07:57	12.00	0.6	2.800	0.6	1.120	0.0223	1.00	0.0223	2.800	0.0625	17.9
13	07:59	13.00	0.6	2.800	0.6	1.120	0.0092	1.00	0.0092	2.800	0.0257	7.4
14	08:00	14.00	0.6	2.600	0.6	1.040	0.0049	1.00	0.0049	2.600	0.0128	3.7
15	08:01	15.00	0.6	2.500	0.6	1.000	-0.0010	1.00	-0.0010	2.500	-0.0025	-0.7
16	08:02	16.00	0.6	1.900	0.6	0.760	-0.0476	1.00	-0.0476	1.900	-0.0904	-25.8
17	08:03	17.00	0.6	1.500	0.6	0.600	-0.0223	1.00	-0.0223	1.500	-0.0335	-9.6
18	08:03	18.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

Figure 4 Discharge Summary LT-1

# Discharge Measurement Summary

Date Generated: Mon Mar 4 2019

## File Information

File Name LRC0222.WAD  
Start Date and Time 2019/02/22 10:06:25

## Site Details

Site Name LRC  
Operator(s) SCD

## System Information

Sensor Type FlowTracker  
Serial # P4709  
CPU Firmware Version 3.9  
Software Ver 2.30  
Mounting Correction 0.0%

## Units (English Units)

Distance ft  
Velocity ft/s  
Area ft<sup>2</sup>  
Discharge cfs

## Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	0.7%
Velocity	0.5%	1.2%
Width	0.1%	0.1%
Method	1.6%	-
# Stations	1.9%	-
<b>Overall</b>	<b>2.7%</b>	<b>1.7%</b>

## Summary

Averaging Int. 40 # Stations 27  
Start Edge LEW Total Width 13.000  
Mean SNR 21.0 dB Total Area 10.125  
Mean Temp 45.42 °F Mean Depth 0.779  
Disch. Equation Mid-Section Mean Velocity 0.2052  
**Total Discharge 2.0775**

## Supplemental Data (Gauge Height Change = 0.000ft)

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Fri Feb 22 10:05:42 CST 2019	1.000	17.600		
2	Fri Feb 22 10:30:22 CST 2019	13.000	17.600		

## Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:06	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
<i>1</i>	<i>10:06</i>	<i>0.50</i>	<i>0.6</i>	<i>0.400</i>	<i>0.6</i>	<i>0.160</i>	<i>0.0974</i>	<i>1.00</i>	<i>0.0974</i>	<i>0.200</i>	<i>0.0195</i>	<i>0.9</i>
<i>2</i>	<i>10:07</i>	<i>1.00</i>	<i>0.6</i>	<i>0.600</i>	<i>0.6</i>	<i>0.240</i>	<i>0.1053</i>	<i>1.00</i>	<i>0.1053</i>	<i>0.300</i>	<i>0.0316</i>	<i>1.5</i>
3	10:08	1.50	0.6	0.700	0.6	0.280	0.1529	1.00	0.1529	0.350	0.0535	2.6
4	10:09	2.00	0.6	0.800	0.6	0.320	0.1932	1.00	0.1932	0.400	0.0773	3.7
5	10:10	2.50	0.6	1.000	0.6	0.400	0.2067	1.00	0.2067	0.500	0.1033	5.0
6	10:11	3.00	0.6	1.000	0.6	0.400	0.2297	1.00	0.2297	0.500	0.1148	5.5
7	10:12	3.50	0.6	1.000	0.6	0.400	0.2638	1.00	0.2638	0.500	0.1319	6.3
8	10:13	4.00	0.6	1.000	0.6	0.400	0.2539	1.00	0.2539	0.500	0.1270	6.1
9	10:14	4.50	0.6	1.000	0.6	0.400	0.2349	1.00	0.2349	0.500	0.1175	5.7
10	10:14	5.00	0.6	1.000	0.6	0.400	0.2477	1.00	0.2477	0.500	0.1239	6.0
11	10:15	5.50	0.6	1.000	0.6	0.400	0.2349	1.00	0.2349	0.500	0.1175	5.7
12	10:16	6.00	0.6	1.000	0.6	0.400	0.2329	1.00	0.2329	0.500	0.1165	5.6
13	10:17	6.50	0.6	1.100	0.6	0.440	0.2215	1.00	0.2215	0.550	0.1218	5.9
14	10:18	7.00	0.6	1.050	0.6	0.420	0.2103	1.00	0.2103	0.525	0.1104	5.3
15	10:19	7.50	0.6	1.000	0.6	0.400	0.2123	1.00	0.2123	0.500	0.1061	5.1
16	10:20	8.00	0.6	1.000	0.6	0.400	0.1965	1.00	0.1965	0.500	0.0983	4.7
17	10:21	8.50	0.6	0.900	0.6	0.360	0.2257	1.00	0.2257	0.450	0.1016	4.9
18	10:22	9.00	0.6	0.800	0.6	0.320	0.1890	1.00	0.1890	0.400	0.0756	3.6
19	10:23	9.50	0.6	0.750	0.6	0.300	0.1952	1.00	0.1952	0.375	0.0732	3.5
20	10:24	10.00	0.6	0.700	0.6	0.280	0.1870	1.00	0.1870	0.350	0.0655	3.2
21	10:25	10.50	0.6	0.650	0.6	0.260	0.1647	1.00	0.1647	0.325	0.0535	2.6
22	10:26	11.00	0.6	0.600	0.6	0.240	0.1690	1.00	0.1690	0.300	0.0507	2.4
23	10:27	11.50	0.6	0.500	0.6	0.200	0.1788	1.00	0.1788	0.250	0.0447	2.2
24	10:28	12.00	0.6	0.400	0.6	0.160	0.1309	1.00	0.1309	0.200	0.0262	1.3
<i>25</i>	<i>10:29</i>	<i>12.50</i>	<i>0.6</i>	<i>0.300</i>	<i>0.6</i>	<i>0.120</i>	<i>0.1060</i>	<i>1.00</i>	<i>0.1060</i>	<i>0.150</i>	<i>0.0159</i>	<i>0.8</i>
26	10:29	13.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

Figure 5 Discharge Summary LRC-1



# Discharge Measurement Summary

Date Generated: Mon Mar 4 2019

## File Information

File Name JB0222.WAD  
Start Date and Time 2019/02/22 10:45:26

## Site Details

Site Name JB  
Operator(s) JTW

## System Information

Sensor Type FlowTracker  
Serial # P4713  
CPU Firmware Version 3.9  
Software Ver 2.30  
Mounting Correction 0.0%

## Units (English Units)

Distance ft  
Velocity ft/s  
Area ft<sup>2</sup>  
Discharge cfs

## Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	2.0%
Velocity	2.0%	5.6%
Width	0.2%	0.2%
Method	2.4%	-
# Stations	4.2%	-
<b>Overall</b>	<b>5.4%</b>	<b>6.0%</b>

## Summary

Averaging Int.	40	# Stations	12
Start Edge	LEW	Total Width	15.000
Mean SNR	30.2 dB	Total Area	18.401
Mean Temp	44.76 °F	Mean Depth	1.227
Disch. Equation	Mid-Section	Mean Velocity	0.0504
		<b>Total Discharge</b>	<b>0.9275</b>

## Supplemental Data

#	Time	Location	Gauge Height	Rated Flow	Comments
1	Fri Feb 22 10:43:19 CST 2019	0.000	17.020		

## Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:45	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	10:45	4.00	0.6	1.600	0.6	0.640	0.0374	1.00	0.0374	4.000	0.1496	16.1
2	10:46	5.00	0.6	1.700	0.6	0.680	0.0577	1.00	0.0577	1.700	0.0982	10.6
3	10:47	6.00	0.6	1.700	0.6	0.680	0.0466	1.00	0.0466	1.700	0.0792	8.5
4	10:49	7.00	0.6	1.600	0.6	0.640	0.0495	1.00	0.0495	1.600	0.0793	8.5
5	10:50	8.00	0.6	1.700	0.6	0.680	0.0482	1.00	0.0482	1.700	0.0820	8.8
6	10:51	9.00	0.6	1.900	0.6	0.760	0.0538	1.00	0.0538	1.900	0.1022	11.0
7	10:52	10.00	0.6	1.600	0.6	0.640	0.0522	1.00	0.0522	1.600	0.0835	9.0
8	10:53	11.00	0.6	1.500	0.6	0.600	0.0755	1.00	0.0755	1.500	0.1132	12.2
9	10:54	12.00	0.6	1.200	0.6	0.480	0.0653	1.00	0.0653	1.200	0.0784	8.4
10	10:55	13.00	0.6	1.000	0.6	0.400	0.0413	1.00	0.0413	1.500	0.0620	6.7
11	10:55	15.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

Figure 6 Discharge Summary JB-1

# Discharge Measurement Summary

Date Generated: Mon Mar 4 2019

## File Information

File Name CC0222.WAD  
 Start Date and Time 2019/02/22 09:46:31

## Site Details

Site Name CC  
 Operator(s) JTW

## System Information

Sensor Type FlowTracker  
 Serial # P4713  
 CPU Firmware Version 3.9  
 Software Ver 2.30  
 Mounting Correction 0.0%

## Units (English Units)

Distance ft  
 Velocity ft/s  
 Area ft<sup>2</sup>  
 Discharge cfs

## Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.6%	5.9%
Velocity	1.8%	19.7%
Width	0.2%	0.2%
Method	3.0%	-
# Stations	4.2%	-
<b>Overall</b>	<b>5.6%</b>	<b>20.6%</b>

## Summary

Averaging Int. 40 # Stations 12  
 Start Edge LEW Total Width 14.000  
 Mean SNR 30.0 dB Total Area 4.000  
 Mean Temp 45.94 °F Mean Depth 0.286  
 Disch. Equation Mid-Section Mean Velocity 0.2376  
**Total Discharge 0.9505**

## Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	09:46	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	09:46	4.00	0.6	0.200	0.6	0.080	0.0030	1.00	0.0030	0.500	0.0015	0.2
2	09:48	5.00	0.6	0.200	0.6	0.080	0.1762	1.00	0.1762	0.200	0.0353	3.7
3	09:49	6.00	0.6	0.300	0.6	0.120	0.1535	1.00	0.1535	0.300	0.0460	4.8
4	09:51	7.00	0.6	0.300	0.6	0.120	0.0213	1.00	0.0213	0.300	0.0064	0.7
5	09:52	8.00	0.6	0.300	0.6	0.120	0.3622	1.00	0.3622	0.300	0.1086	11.4
6	09:53	9.00	0.6	0.300	0.6	0.120	0.3045	1.00	0.3045	0.300	0.0913	9.6
7	09:54	10.00	0.6	0.400	0.6	0.160	0.5249	1.00	0.5249	0.400	0.2099	22.1
8	09:55	11.00	0.6	0.500	0.6	0.200	0.2254	1.00	0.2254	0.500	0.1127	11.9
9	09:57	12.00	0.6	0.700	0.6	0.280	0.3012	1.00	0.3012	0.700	0.2109	22.2
10	09:58	13.00	0.6	0.500	0.6	0.200	0.2559	1.00	0.2559	0.500	0.1280	13.5
11	09:58	14.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

Figure 7 Discharge Summary CC-1

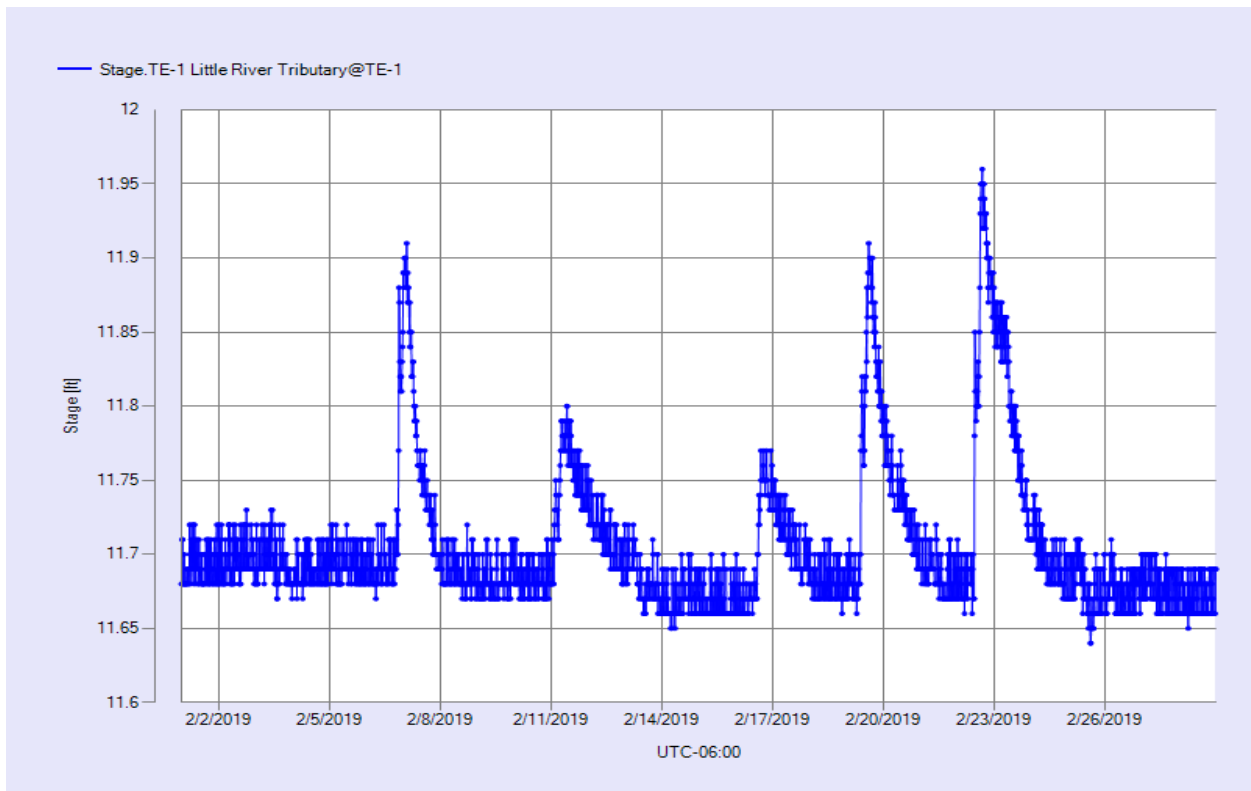


Figure 8 Monthly Hydrograph TE-1

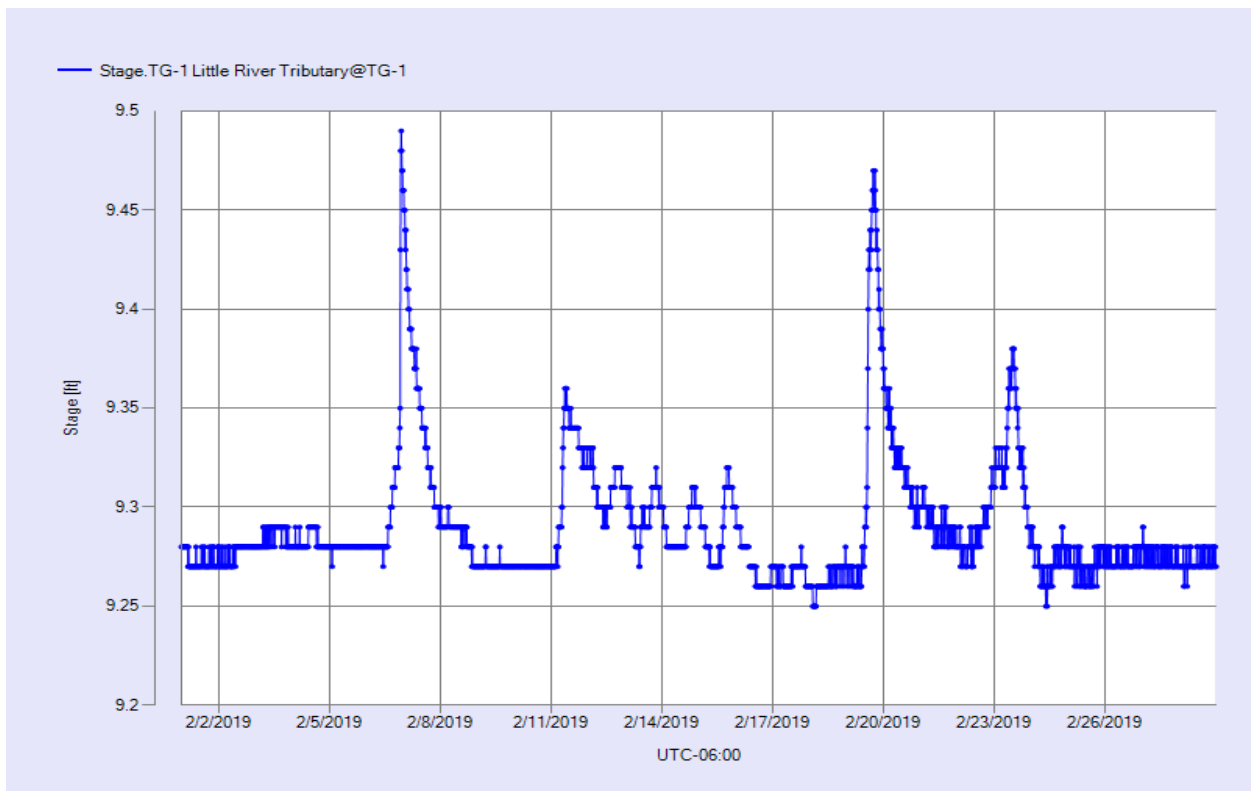


Figure 9 Monthly Hydrograph TG-1

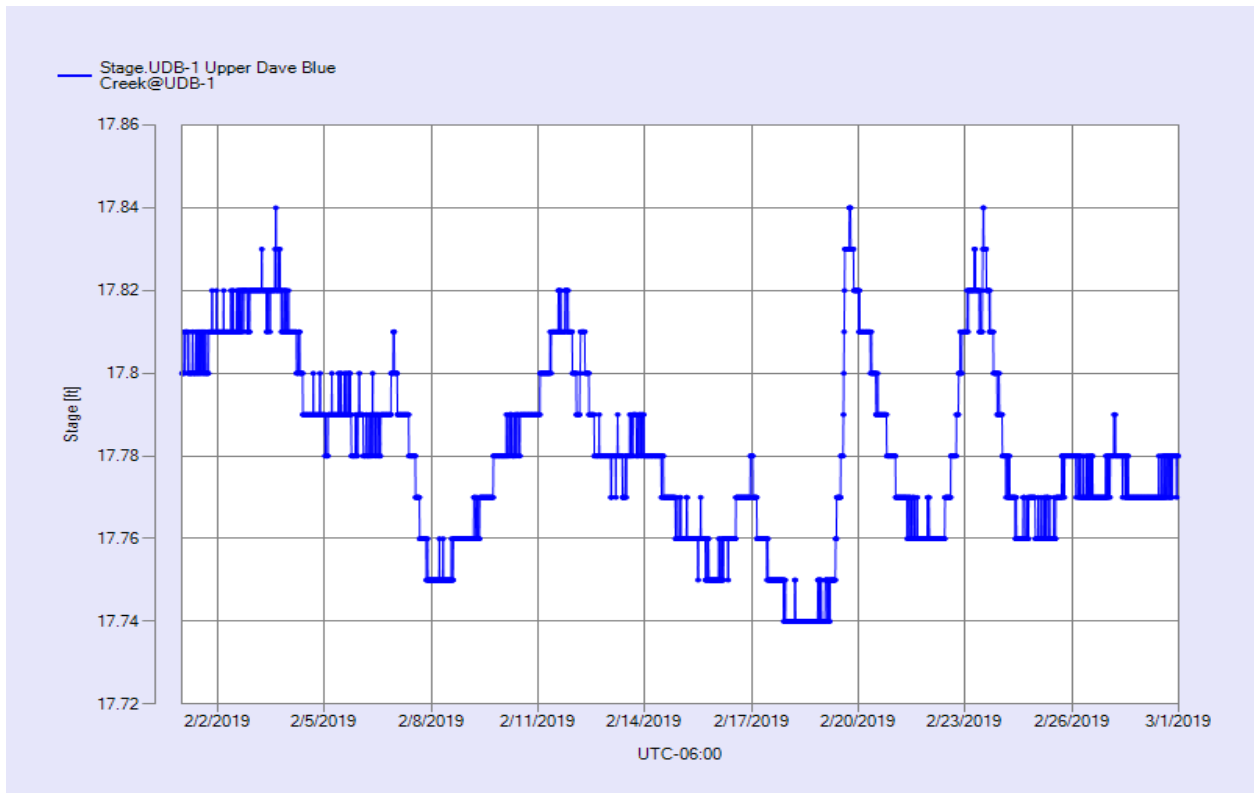


Figure 10 Monthly Hydrograph UDB-1

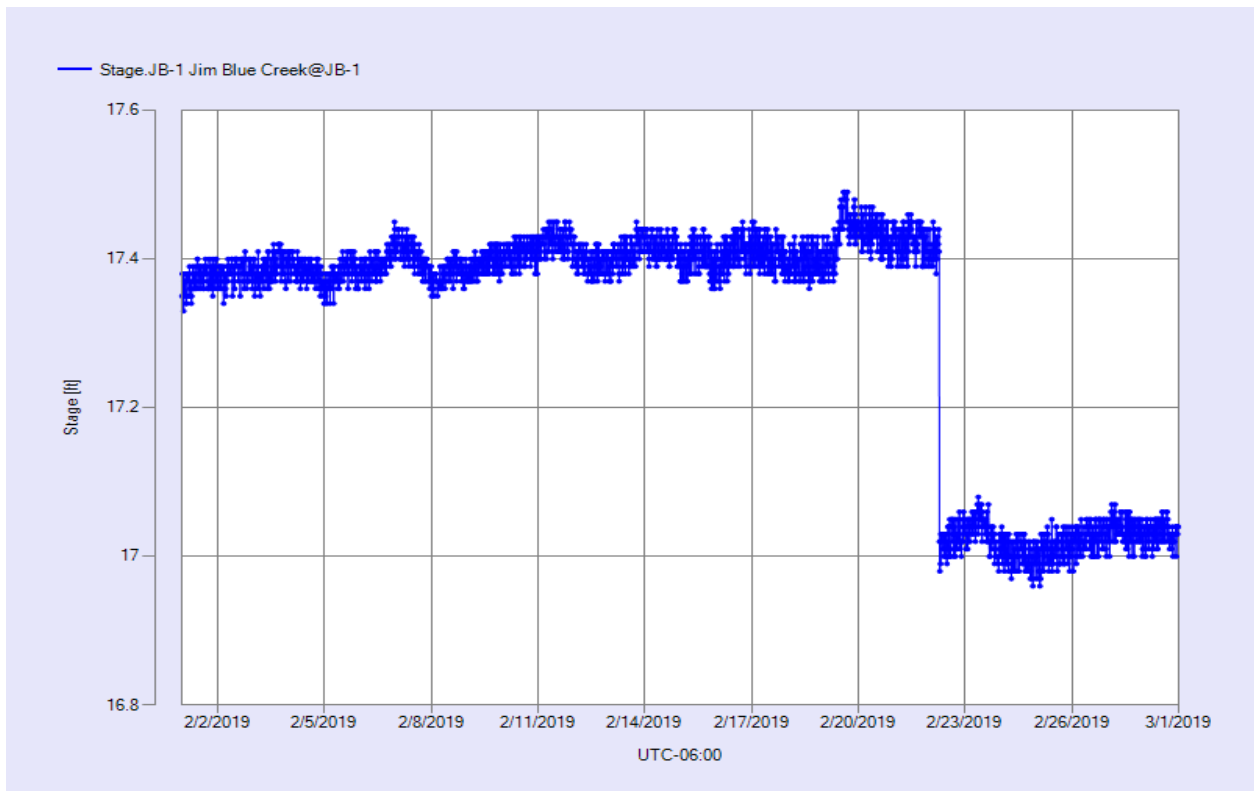


Figure 11 Monthly Hydrograph JB-1



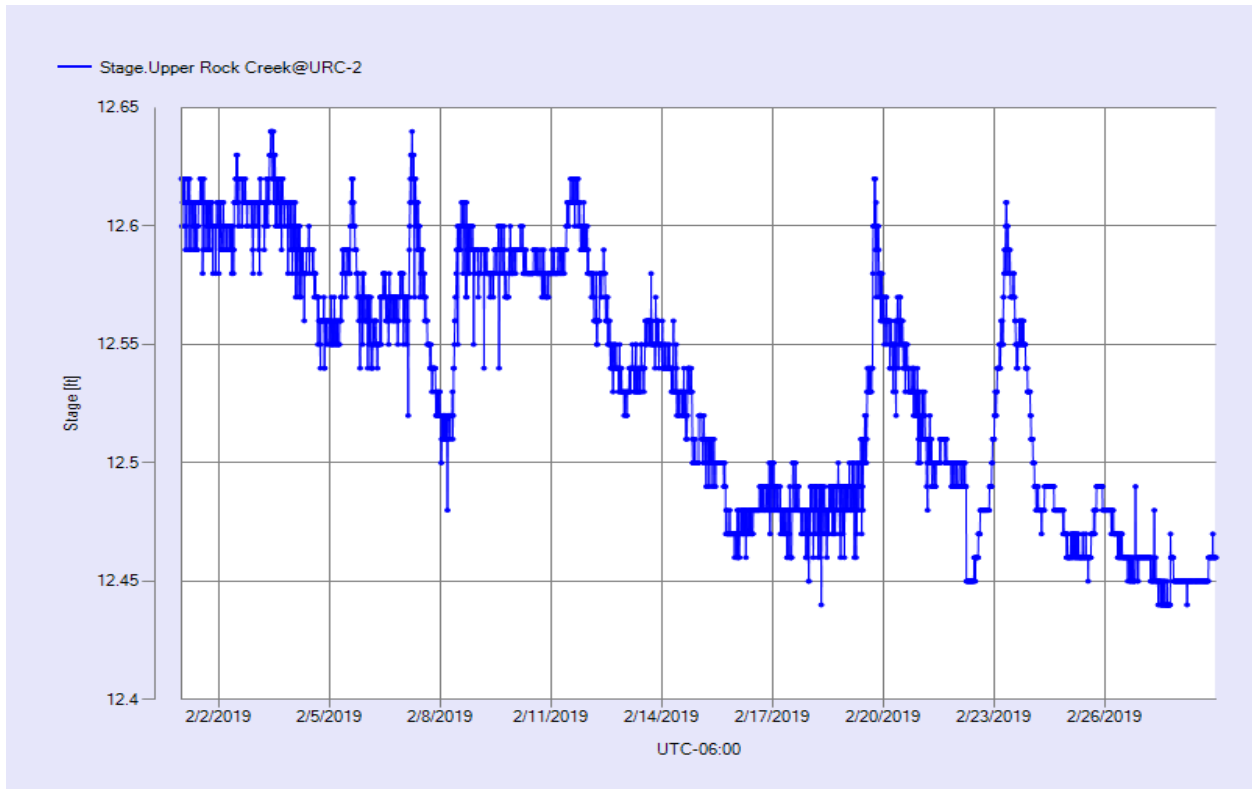


Figure 12 Monthly Hydrograph URC-2

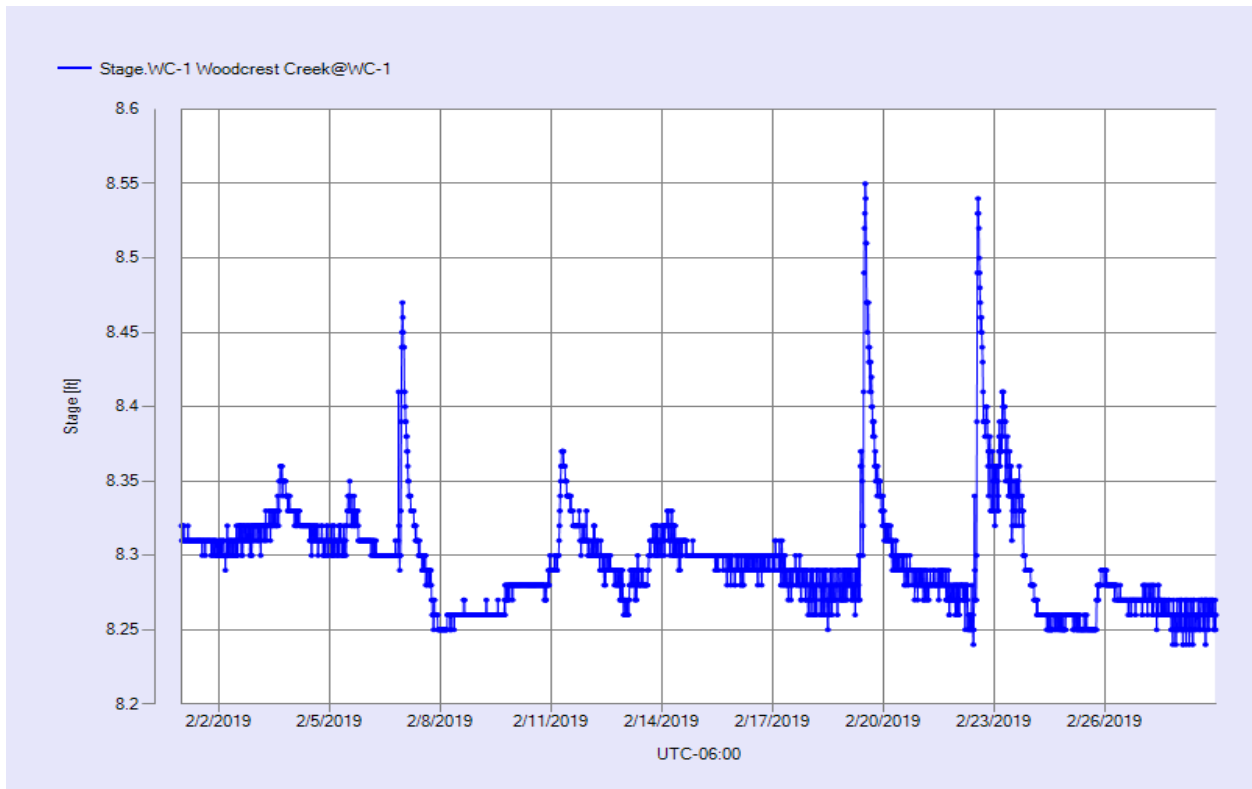


Figure 13 Monthly Hydrograph WC-1

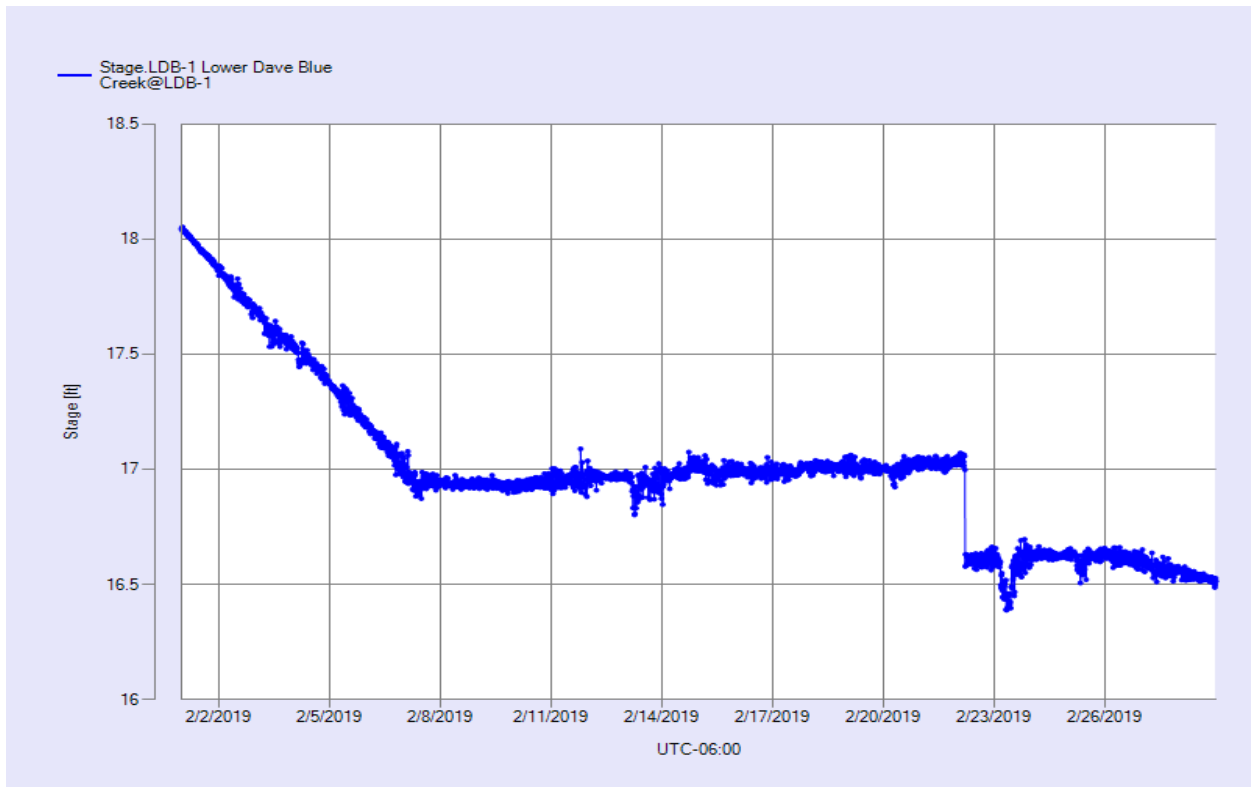


Figure 14 Monthly Hydrograph LDB-1

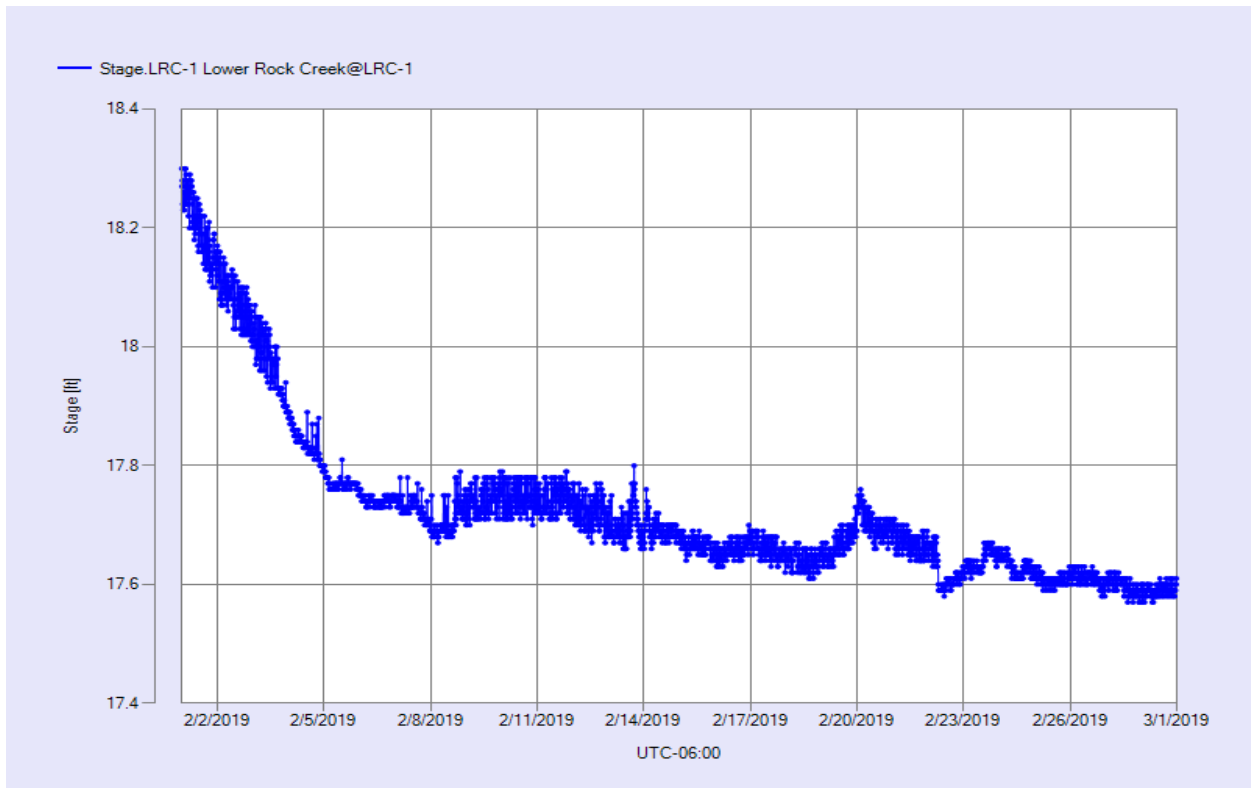


Figure 15 Monthly Hydrograph LRC-1

MESONET CLIMATOLOGICAL DATA SUMMARY				February 2019				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		STN	MSL	DIR	AVG	MAX	SOD		BARE	MAX	MIN	
1	61	45	50.7	48.3	12	0	99	64	92	0.00	28.85	30.11	SE	5.8	15.8	4.63	42.9	43.5	46	41	
2	62	52	56.4	53.5	8	0	96	75	90	0.00	28.77	30.02	S	10.5	24.2	4.47	46.8	48.2	50	46	
3	71	57	62.4	54.7	1	0	93	51	77	0.00	28.50	29.75	S	13.7	31.6	11.24	50.4	52.5	56	50	
4	61	40	50.1	44.1	14	0	93	63	80	0.00	28.58	29.82	NE	9.8	23.1	10.60	50.8	51.9	54	50	
5	45	35	39.9	39.4	25	0	100	90	98	0.03	28.62	29.86	NNE	7.2	16.1	2.94	48.3	47.5	50	46	
6	41	34	37.2	37.2	27	0	100	100	100	0.05	28.56	29.80	NNE	7.2	25.9	3.27	46.3	44.7	46	44	
7	35	19	24.0	17.2	38	0	100	54	76	0.00	28.96	30.22	NNW	17.0	37.2	12.10	42.6	39.7	44	37	
8	35	14	23.7	8.5	41	0	79	31	54	0.02	29.37	30.64	E	6.0	16.7	15.50	38.9	35.5	37	34	
9	40	21	30.5	16.5	34	0	79	31	57	0.01	29.22	30.49	SE	7.0	17.8	6.06	38.9	36.3	38	35	
10	41	32	36.9	35.8	29	0	100	80	96	0.02	28.87	30.13	S	8.3	22.3	2.94	40.2	38.7	40	37	
11	53	40	45.9	44.8	19	0	100	83	96	0.09	28.54	29.78	SE	7.9	30.6	3.28	42.8	42.4	45	40	
12	54	31	41.7	26.6	23	0	91	26	59	0.00	28.92	30.17	NNW	10.7	36.8	17.22	44.1	43.6	47	40	
13	62	34	48.9	27.8	17	0	68	28	45	0.00	28.74	29.99	S	13.1	35.7	11.62	43.0	42.6	46	39	
14	69*	48*	57.9*	30.7*	6*	0*	60*	20*	37*	0.00*	28.46*	29.70*	SSW*	10.7*	27.0*	11.92*	45.7*	47.3*	52*	44*	
15	47	23	32.3	24.9	30	0	90	60	74	0.00	28.63	29.87	N	13.4	25.8	4.39	44.8	44.9	49	41	
16	34	22	27.3	26.0	37	0	99	88	95	0.00	28.58	29.83	NNE*	NA	19.2*	3.21	41.1	39.3	41	38	
17	48	25	35.6	24.7	29	0	95	37	67	0.00	28.73	29.98	NNW	9.9	24.7	18.08	41.7	40.9	45	37	
18	37	20	29.4	15.5	36	0	75	40	57	0.00	29.08	30.35	NNE	11.8	23.0	12.90	40.4	39.2	41	37	
19	33	30	31.2	26.1	33	0	98	60	82	0.09	28.87	30.12	ENE*	NA	20.5*	1.89	39.5	38.2	39	38	
20	53	30	39.5	28.3	24	0	99	27	69	0.07	28.66	29.90	ENE*	NA	23.8*	18.44	40.8	40.2	45	37	
21	55	34	43.5	32.8	20	0	88	39	68	0.00	28.76	30.01	SE	9.7	28.5	12.52	42.4	42.1	46	39	
22	47	39	43.3	41.5	22	0	100	78	93	0.18	28.73	29.98	E	6.2	17.1	4.06	43.8	43.7	45	42	
23	63	37	48.7	37.4	15	0	100	29	70	0.04	28.54	29.78	SW	17.9	47.7	17.49	46.0	46.5	50	45	
24	56	27	42.1	19.4	23	0	74	20	44	0.00	29.05	30.31	NW	7.1	21.6	19.48	44.8	44.5	50	40	
25	63	31	48.3	25.0	18	0	66	27	42	0.00	28.95	30.21	SSE	10.7	32.0	18.66	44.9	45.4	51	40	
26	50	30	37.9	31.5	25	0	94	51	79	0.00	28.89	30.14	SSE	8.9	18.9	4.12	45.0	45.1	47	43	
27	33	21	25.9	24.8	38	0	99	91	95	0.00	28.93	30.19	N *	NA	16.1*	2.10	41.9	39.9	43	37	
28	25	20	22.5	20.4	42	0	95	87	91	0.00	28.90	30.16	NA	NA	NA	3.49	38.2	35.4	37	35	
49* 32* 39.8* 30.8*				<- Monthly Averages ->				28.80* 30.05*		NNE* 10.0* 47.7*		9.24*		43.5* 42.8* 46* 40*							
Temperature - Highest: 71*				Degree Days - Total HDD: 687*				Number of Days With:				Rainfall ≥ 0.01 inch: 10*									
Lowest: 14*				Total CDD: 0*				Tmax ≥ 90: 0*				Rainfall ≥ 0.10 inch: 1*									
Rainfall: Monthly Total: 0.60* in.				Humidity - Highest: 100*				Tmax ≤ 32: 1*				Avg Wind Speed ≥ 10 mph: 10*									
Greatest 24 Hr: 0.18* in.				Lowest: 20*				Tmin ≤ 32: 16*				Max Wind Speed ≥ 30 mph: 7*									

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\* Denotes incomplete record

Figure 16 February Mesonet Data