
***Lake Thunderbird TMDL Monitoring Plan Implementation:
Sample Year (SY) 2022- December Report***



SY-2022 Monthly Report

Lake Thunderbird TMDL Monitoring Plan Implementation:

December 2022 Monitoring Report

Oklahoma Water Resources Board
Water Quality Programs Division
Monitoring and Assessment Section
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SUMMARY OF DECEMBER WATER QUALITY SAMPLING

Sampling for December 2022 occurred during base flow conditions on the fifth. Water samples were collected at eight locations and discharge was measured at three locations. Samples were not collected at JB-1 due to pool conditions or LT-1 due to dry conditions. Mesonet shows no precipitation on the fifth, 0.14 inches of precipitation in the 72 hours prior to sampling, and 1.10 inches of precipitation in the 72 hours after the sampling event. The total rainfall amount in Norman for the month of December was 3.14 inches. All water level gauges were operational for the month, except for JB-1 due to road construction. The gauge at LT-1 was removed in 2018 as a result of equipment malfunction. The equipment has not been replaced due to intermittent streamflow and dry conditions. Furthermore, this station is being reviewed for a possible location change.

RESULTS

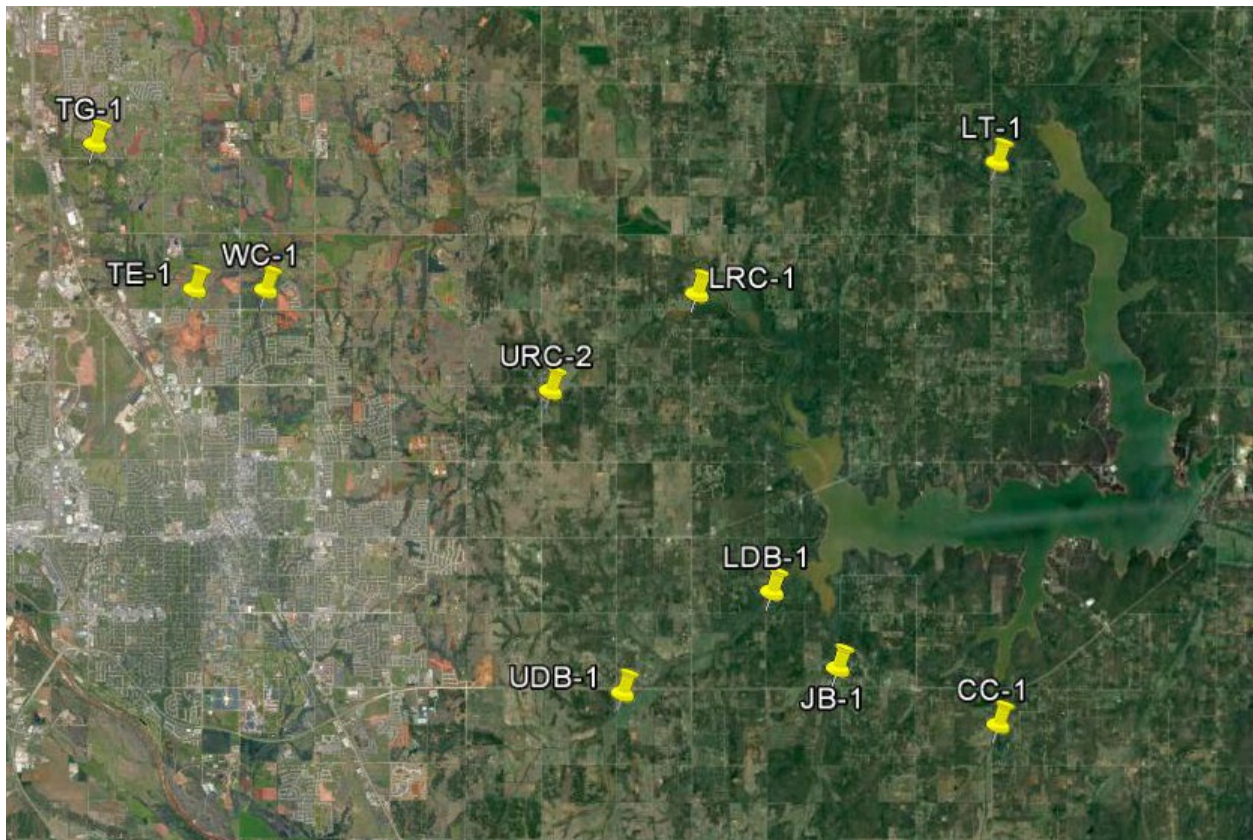


Figure 1 Monitoring Station Map

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	12/5/2022	9:12	SD	8.8	9.18	7.83	695	10	Used RP4, changed DCP at approx 9:10, new stage @ 9:30 = 20.05; beaver dam upstream of where sampling occurred approx 15ft
JB-1	Jim Blue Creek	12/5/2022	9:25	SD	N/A	N/A	N/A	N/A	N/A	Pool conditions on downstream, barely connected by a trickle, did not sample
LDB-1	Lower Dave Blue Creek	12/5/2022	9:39	SD	7.7	9.30	8.01	742	32	Very low water level
LRC-1	Lower Rock Creek	12/5/2022	10:55	SD	8.0	7.33	7.67	705	18	Beaver dam upstream of bridge; dead cow in channel at bridge LEW
LT-1	Lake Laterals	12/5/2022	10:25	SD	N/A	N/A	N/A	N/A	N/A	Completely dry, did not sample
TE-1	Little River Tributary	12/5/2022	12:36	SD	11.4	10.09	7.71	510	58	Changed DCP at approx 12:45, new stage @ 13:00 = 10.76; beaver dam approx 40ft upstream of bridge
TG-1	Little River	12/5/2022	13:15	SD	9.6	11.00	7.83	451	14	Low/normal conditions
UDB-1	Upper Dave Blue Creek	12/5/2022	8:15	SD	7.5	5.38	7.43	611	9	Very low water level, connected but barely flowing; changed DCP (at approx 8:35) new stage at 9:00 = 17.02
URC-2	Upper Rock Creek	12/5/2022	11:47	SD	9.9	2.60	7.36	662	32	Orifice close to being out of water, low water level
WC-1	Woodcrest Creek	12/5/2022	12:17	SD	10.4	4.05	7.32	796	18	Barely connected under bridge

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	0.13	0.027	<5.0
JB-1	Jim Blue Creek	N/A	N/A	N/A	N/A
LDB-1	Lower Dave Blue Creek	<0.05	0.56	0.088	17.0
LRC-1	Lower Rock Creek	<0.05	0.25	0.045	11.0
LT-1	Lake Laterals	N/A	N/A	N/A	N/A
TE-1	Little River Tributary	0.19	0.52	0.068	19.0
TG-1	Little River	0.14	0.35	0.039	<5.0
UDB-1	Upper Dave Blue Creek	<0.05	0.40	0.072	11.0
URC-2	Upper Rock Creek	<0.05	1.95	0.170	20.0
WC-1	Woodcrest Creek	<0.05	0.50	0.104	43.0

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	0.14	0.028	<5.0
Duplicate RPD	0%	7.41%	3.64%	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	0.06	20.23
JB-1	Jim Blue Creek	N/A	N/A
LDB-1	Lower Dave Blue Creek	0.11	13.74
LRC-1	Lower Rock Creek	0.23	4.40
LT-1	Lake Laterals	N/A	N/A
TE-1	Little River Tributary	0.01	10.76
TG-1	Little River	1.36	8.91
UDB-1	Upper Dave Blue Creek	0.01	17.01
URC-2	Upper Rock Creek	0.01	10.70
WC-1	Woodcrest Creek	0.01	7.34

Table 4 Station Discharge Summary

All rated stream discharges are provisional and subject to change.

File Information

File name: Cc_20221205-091041.ft
 Start date and time: 12/5/2022 8:58 AM
 Start location latitude: 35.177
 Start location longitude: -97.271
 Calculations engine: FlowTracker2
 Data collection mode: Discharge

System Information

Discharge Summary

Start time: 12/5/2022 8:59 AM End time: 12/5/2022 9:09 AM
 # Stations: 6 Avg interval: 40
 Mean depth: 0.640 ft Max depth: 1.000 ft
 Mean velocity: 0.0350 ft/s Max velocity: 0.1066 ft/s
 Mean SNR: 47 dB Total width: 2.500 ft
 Mean temp: 47.890 °F Total area: 1.6000 ft²
 Wetted Perimeter: 3.339 ft Total discharge: 0.0561 ft³/s

Discharge Uncertainty

Category	ISO	IVE
Accuracy	1.0%	1.0%
Depth	1.1%	17.0%
Velocity	8.6%	35.3%
Width	0.4%	0.4%
Method	6.0%	
# Stations	9.4%	
Overall	14.2%	39.2%

Viewer Controls

Chart size + Chart size -
 Reset all

Discharge Measurement Summary

Save PDF of summary

Summary overview

No changes were made to this file
 Quality control warnings

Supplemental data summary

Gauge height time Gauge height (ft) Rated discharge (ft³/s) Temperature (°F) Salinity (PSS-78) Gauge height comments
 12/5/2022 9:10 AM 20.230

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correct on	Mean Velocity (ft/s)	Area (ft²)	Flow (ft³/s)	%Q
0	8:59 AM	0.000	None	0.000	0.0000	0.000	0	0.0000		-0.0001	0.0000	0.0000	0.00
1	9:00 AM	0.500	0.6	0.500	0.6000	0.300	80	-0.0001	1.0000	-0.0001	0.2500	0.0000	-0.03
2	9:02 AM	1.000	0.6	0.900	0.6000	0.540	80	-0.0002	1.0000	-0.0002	0.4500	-0.0001	-0.14
3	9:06 AM	1.500	0.6	1.000	0.6000	0.640	80	0.0271	1.0000	0.0271	0.5000	0.0135	24.12
4	9:08 AM	2.000	0.6	0.800	0.6000	0.480	80	0.1066	1.0000	0.1066	0.4000	0.0426	76.05
5	9:09 AM	2.500	None	0.000	0.0000	0.000	0	0.0000		0.1066	0.0000	0.0000	0.00

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	9:00 AM	0.500	0.6	0.500	0.6000	0.300	SNR Threshold Variation
2	9:02 AM	1.000	0.6	0.900	0.6000	0.540	Beam SNRs Not Similar, High % Spikes
3	9:06 AM	1.500	0.6	1.000	0.6000	0.640	Beam SNRs Not Similar, Large SNR Variation, High Stn % Discharge
4	9:08 AM	2.000	0.6	0.800	0.6000	0.480	High Stn % Discharge
5	9:09 AM	2.500	None	0.000	0.0000	0.000	Water Depth > QC

Figure 2 Discharge Measurement Summary CC-1

File Information

File name: Tg_20221205-133428.ft
 Start date and time: 12/5/2022 1:08 PM
 Start location latitude:
 Start location longitude:
 Calculations engine: FlowTracker2
 Data collection mode: Discharge

System Information

Discharge Summary

Start time: 12/5/2022 1:09 PM End time: 12/5/2022 1:30 PM
 # Stations: 20 Avg interval: 40
 Mean depth: 0.336 ft Max depth: 0.500 ft
 Mean velocity: 0.1835 ft/s Max velocity: 0.2619 ft/s
 Mean SNR: 26 dB Total width: 22.000 ft
 Mean temp: 49.703 °F Total area: 7.4000 ft²
 Wetted Perimeter: 22.227 ft Total discharge: 1.3578 ft³/s

Discharge Uncertainty

Category	ISO	IVE
Accuracy	1.0%	1.0%
Depth	0.4%	7.1%
Velocity	0.3%	5.7%
Width	0.1%	0.1%
Method	2.0%	
# Stations	2.5%	
Overall	3.4%	9.2%

Viewer Controls

Chart size + Chart size -
 Reset all

Discharge Measurement Summary

Save PDF of summary

Summary overview

No changes were made to this file
 Quality control warnings

Supplemental data summary

Gauge height time Gauge height (ft) Rated discharge (ft³/s) Temperature (°F) Salinity (PSS-78) Gauge height comments
 12/5/2022 1:34 PM 8.910

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correct on	Mean Velocity (ft/s)	Area (ft²)	Flow (ft³/s)	%Q
0	1:09 PM	0.000	None	0.000	0.0000	0.000	0	0.0000		0.0005	0.0000	0.0000	0.00
1	1:09 PM	1.000	0.6	0.500	0.6000	0.300	80	0.0005	1.0000	0.0005	0.5000	0.0002	0.02
2	1:10 PM	2.000	0.6	0.500	0.6000	0.300	80	0.2109	1.0000	0.2109	0.5000	0.1055	7.77
3	1:11 PM	3.000	0.6	0.500	0.6000	0.300	80	0.2370	1.0000	0.2370	0.5000	0.1185	8.73
4	1:12 PM	4.000	0.6	0.500	0.6000	0.300	80	0.2409	1.0000	0.2409	0.5000	0.1205	8.87
5	1:14 PM	5.000	0.6	0.300	0.6000	0.180	80	0.2209	1.0000	0.2209	0.3000	0.0663	4.88
6	1:15 PM	6.000	0.6	0.300	0.6000	0.180	80	0.2230	1.0000	0.2230	0.3000	0.0669	4.93
7	1:16 PM	7.000	0.6	0.400	0.6000	0.240	80	0.2166	1.0000	0.2166	0.4000	0.0866	6.38
8	1:17 PM	8.000	0.6	0.400	0.6000	0.240	80	0.2205	1.0000	0.2205	0.4000	0.0882	6.50
9	1:18 PM	9.000	0.6	0.400	0.6000	0.240	80	0.2439	1.0000	0.2439	0.4000	0.0976	7.19
10	1:19 PM	10.000	0.6	0.200	0.6000	0.120	80	0.2337	1.0000	0.2337	0.3000	0.0701	5.16
11	1:20 PM	12.000	0.6	0.200	0.6000	0.120	80	0.0010	1.0000	0.0010	0.4000	0.0004	0.03
12	1:21 PM	14.000	0.6	0.200	0.6000	0.120	80	0.0716	1.0000	0.0716	0.3000	0.0215	1.58
13	1:23 PM	15.000	0.6	0.400	0.6000	0.240	80	0.1521	1.0000	0.1521	0.4000	0.0609	4.48
14	1:24 PM	16.000	0.6	0.450	0.6000	0.270	80	0.1618	1.0000	0.1618	0.4500	0.0728	5.36
15	1:25 PM	17.000	0.6	0.350	0.6000	0.210	80	0.1614	1.0000	0.1614	0.5000	0.0807	5.94
16	1:27 PM	18.000	0.6	0.350	0.6000	0.210	80	0.2254	1.0000	0.2254	0.5250	0.1184	8.72
17	1:28 PM	20.000	0.6	0.350	0.6000	0.210	80	0.2619	1.0000	0.2619	0.5250	0.1375	10.13
18	1:29 PM	21.000	0.6	0.200	0.6000	0.120	80	0.2264	1.0000	0.2264	0.2000	0.0453	3.33
19	1:30 PM	22.000	None	0.000	0.0000	0.000	0	0.0000		0.2264	0.0000	0.0000	0.00

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	1:09 PM	1.000	0.6	0.500	0.6000	0.300	Large SNR Variation, High % Spikes
10	1:19 PM	10.000	0.6	0.200	0.6000	0.120	Velocity Angle > QC
11	1:20 PM	12.000	0.6	0.200	0.6000	0.120	Large SNR Variation, SNR Threshold Variation, High % Spikes
12	1:21 PM	14.000	0.6	0.200	0.6000	0.120	Velocity Angle > QC
13	1:23 PM	15.000	0.6	0.400	0.6000	0.240	Velocity Angle > QC
14	1:24 PM	16.000	0.6	0.450	0.6000	0.270	Velocity Angle > QC
16	1:27 PM	18.000	0.6	0.350	0.6000	0.210	Velocity Angle > QC
17	1:28 PM	20.000	0.6	0.350	0.6000	0.210	Velocity Angle > QC, High Stn % Discharge

Figure 3 Discharge Measurement Summary TG-1

File Information

File name: Lrc_20221205-112615.ft
 Start date and time: 12/5/2022 10:49 AM
 Start location latitude: 35.261
 Start location longitude: -97.335
 Calculations engine: FlowTracker2
 Data collection mode: Discharge

System Information

Discharge Summary

Start time: 12/5/2022 10:50 AM End time: 12/5/2022 11:25 AM
 # Stations: 17 Avg interval: 40
 Mean depth: 1.750 ft Max depth: 2.300 ft
 Mean velocity: 0.0082 ft/s Max velocity: 0.0344 ft/s
 Mean SNR: 45 dB Total width: 16,000 ft
 Mean temp: 46.601 °F Total area: 28,0000 ft²
 Wetted Perimeter: 17,870 ft Total discharge: 0.2301 ft³/s

Discharge Uncertainty

Category	ISO	IVE
Accuracy	1.0%	1.0%
Depth	0.2%	2.0%
Velocity	3.2%	28.0%
Width	0.2%	0.2%
Method	1.5%	
# Stations	3.0%	
Overall	4.7%	28.0%

Viewer Controls

Chart size + Chart size -
 Reset all

Discharge Measurement Summary

Save PDF of summary

Summary overview

No changes were made to this file
 Quality control warnings

Supplemental data summary

Gauge height time	Gauge height (ft)	Rated discharge (ft³/s)	Temperature (°F)	Salinity (PSS-78)	Gauge height comments
12/5/2022 10:58 AM	4.400				

Measurement results

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Samples	Velocity (ft/s)	Correct on	Mean Velocity (ft/s)	Area (ft²)	Flow (ft³/s)	%Q
0	10:50 AM	0.000	None	0.000	0.0000	0.000	0	0.0000		0.0079	0.0000	0.0000	0.00
1	10:50 AM	1.000	0.6	0.850	0.6000	0.510	80	0.0079	1.0000	0.0079	0.8500	0.0067	2.93
2	10:52 AM	2.000	0.6	1.200	0.6000	0.720	80	0.0026	1.0000	0.0026	1.2000	0.0031	1.34
3	10:55 AM	3.000	0.6	1.400	0.6000	0.840	80	0.0050	1.0000	0.0050	1.4000	0.0070	3.03
4	10:56 AM	4.000	0.6	1.550	0.6000	0.930	80	-0.0089	1.0000	-0.0089	1.5500	-0.0138	-6.00
5	10:58 AM	5.000	0.2/0.8	1.850	0.2000	0.370	80	0.0056	1.0000	0.0056	1.8500	0.0014	0.63
5	10:58 AM	5.000	0.2/0.8	1.850	0.8000	1.480	80	-0.0041	1.0000	0.0008	1.8500	0.0014	0.63
6	11:01 AM	6.000	0.2/0.8	2.000	0.2000	0.400	80	0.0146	1.0000	0.0017	2.0000	0.0034	1.47
6	11:01 AM	6.000	0.2/0.8	2.000	0.8000	1.600	80	-0.0112	1.0000	0.0017	2.0000	0.0034	1.47
7	11:04 AM	7.000	0.2/0.8	2.100	0.2000	0.420	80	0.0186	1.0000	0.0066	2.1000	0.0139	6.04
7	11:04 AM	7.000	0.2/0.8	2.100	0.8000	1.680	80	-0.0054	1.0000	0.0066	2.1000	0.0139	6.04
8	11:06 AM	8.000	0.2/0.8	2.250	0.2000	0.450	80	0.0167	1.0000	0.0202	2.2500	0.0455	19.77
8	11:06 AM	8.000	0.2/0.8	2.250	0.8000	1.800	80	0.0237	1.0000	0.0202	2.2500	0.0455	19.77
9	11:09 AM	9.000	0.2/0.8	2.300	0.2000	0.460	80	0.0344	1.0000	0.0114	2.3000	0.0262	11.38
9	11:09 AM	9.000	0.2/0.8	2.300	0.8000	1.840	80	-0.0117	1.0000	0.0114	2.3000	0.0262	11.38
10	11:11 AM	10.000	0.2/0.8	2.300	0.2000	0.460	80	0.0156	1.0000	0.0108	2.3000	0.0247	10.74
10	11:11 AM	10.000	0.2/0.8	2.300	0.8000	1.840	80	0.0059	1.0000	0.0108	2.3000	0.0247	10.74
11	11:13 AM	11.000	0.2/0.8	2.200	0.2000	0.440	80	0.0307	1.0000	0.0221	2.2000	0.0486	21.10
11	11:13 AM	11.000	0.2/0.8	2.200	0.8000	1.760	80	0.0134	1.0000	0.0221	2.2000	0.0486	21.10
12	11:16 AM	12.000	0.2/0.8	1.900	0.2000	0.380	80	0.0165	1.0000	0.0141	1.9000	0.0268	11.65
12	11:16 AM	12.000	0.2/0.8	1.900	0.8000	1.520	80	0.0117	1.0000	0.0141	1.9000	0.0268	11.65
13	11:18 AM	13.000	0.2/0.8	1.900	0.2000	0.380	80	0.0337	1.0000	0.0205	1.9000	0.0390	16.96
13	11:18 AM	13.000	0.2/0.8	1.900	0.8000	1.520	80	0.0074	1.0000	0.0205	1.9000	0.0390	16.96
14	11:21 AM	14.000	0.2/0.8	2.100	0.2000	0.420	80	-0.0118	1.0000	-0.0079	2.1000	-0.0167	-7.25
14	11:21 AM	14.000	0.2/0.8	2.100	0.8000	1.680	80	-0.0041	1.0000	-0.0079	2.1000	-0.0167	-7.25
15	11:23 AM	15.000	0.2/0.8	2.100	0.2000	0.420	80	0.0223	1.0000	0.0068	2.1000	0.0143	6.20
15	11:23 AM	15.000	0.2/0.8	2.100	0.8000	1.680	80	-0.0087	1.0000	0.0068	2.1000	0.0143	6.20
16	11:25 AM	16.000	None	0.000	0.0000	0.000	0	0.0000		0.0068	0.0000	0.0000	0.00

Quality control warnings

St#	Time	Location (ft)	Method	Depth (ft)	%Depth	Measured Depth (ft)	Warnings
1	10:50 AM	1.000	0.6	0.850	0.6000	0.510	SNR Threshold Variation
4	10:56 AM	4.000	0.6	1.550	0.6000	0.930	SNR Threshold Variation
5	10:58 AM	5.000	0.2/0.8	1.850	0.2000	0.370	SNR Threshold Variation
5	10:58 AM	5.000	0.2/0.8	1.850	0.8000	1.480	SNR Threshold Variation
6	11:01 AM	6.000	0.2/0.8	2.000	0.2000	0.400	Large SNR Variation,SNR Threshold Variation
6	11:01 AM	6.000	0.2/0.8	2.000	0.8000	1.600	Large SNR Variation,SNR Threshold Variation
7	11:04 AM	7.000	0.2/0.8	2.100	0.2000	0.420	Large SNR Variation,SNR Threshold Variation
7	11:04 AM	7.000	0.2/0.8	2.100	0.8000	1.680	Large SNR Variation,SNR Threshold Variation
8	11:06 AM	8.000	0.2/0.8	2.250	0.2000	0.450	Boundary Interference,Large SNR Variation,SNR Threshold Variation,High Stn % Discharge
8	11:06 AM	8.000	0.2/0.8	2.250	0.8000	1.800	Boundary Interference,Large SNR Variation,SNR Threshold Variation,High Stn % Discharge
9	11:09 AM	9.000	0.2/0.8	2.300	0.2000	0.460	SNR Threshold Variation,High Stn % Discharge
9	11:09 AM	9.000	0.2/0.8	2.300	0.8000	1.840	SNR Threshold Variation,High Stn % Discharge
10	11:11 AM	10.000	0.2/0.8	2.300	0.2000	0.460	Large SNR Variation,SNR Threshold Variation,High Stn % Discharge
10	11:11 AM	10.000	0.2/0.8	2.300	0.8000	1.840	Large SNR Variation,SNR Threshold Variation,High Stn % Discharge
11	11:13 AM	11.000	0.2/0.8	2.200	0.2000	0.440	SNR Threshold Variation,High Stn % Discharge
11	11:13 AM	11.000	0.2/0.8	2.200	0.8000	1.760	SNR Threshold Variation,High Stn % Discharge
12	11:16 AM	12.000	0.2/0.8	1.900	0.2000	0.380	Large SNR Variation,High Stn % Discharge
12	11:16 AM	12.000	0.2/0.8	1.900	0.8000	1.520	Large SNR Variation,High Stn % Discharge
13	11:18 AM	13.000	0.2/0.8	1.900	0.2000	0.380	SNR Threshold Variation,High Stn % Discharge
13	11:18 AM	13.000	0.2/0.8	1.900	0.8000	1.520	SNR Threshold Variation,High Stn % Discharge
15	11:23 AM	15.000	0.2/0.8	2.100	0.2000	0.420	Water Depth > QC,Large SNR Variation
15	11:23 AM	15.000	0.2/0.8	2.100	0.8000	1.680	Water Depth > QC,Large SNR Variation
16	11:25 AM	16.000	None	0.000	0.0000	0.000	Water Depth > QC

Figure 4 Discharge Measurement Summary LRC-1

Period Selected: 2022-12-01 00:00 - 2022-12-31 23:59

UTC Offset: -06:00

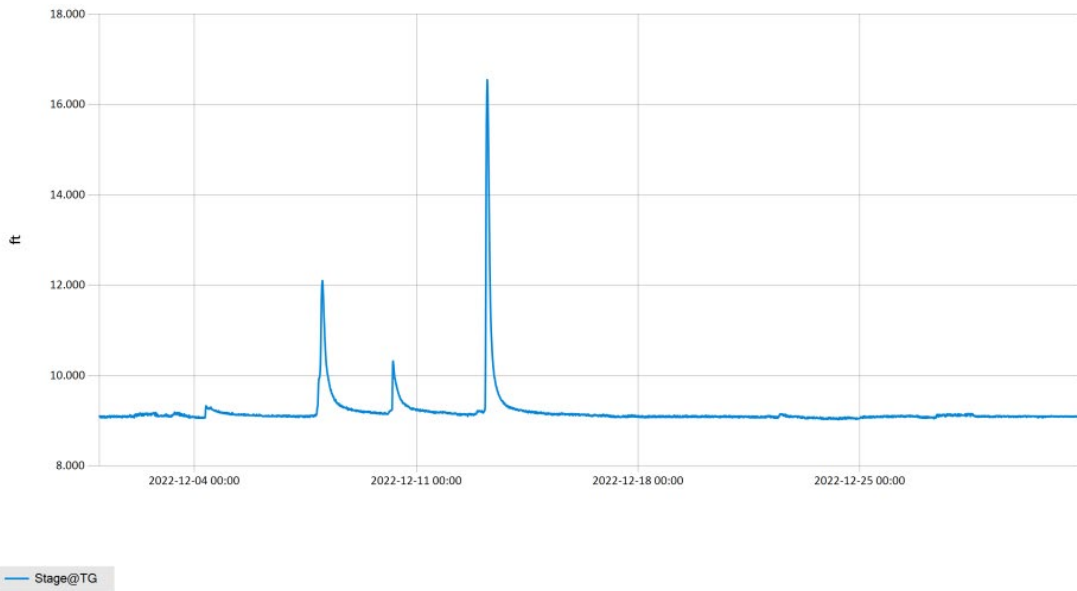


Figure 5 Monthly Hydrograph TG-1

Period Selected: 2022-12-01 00:00 - 2022-12-31 23:59

UTC Offset: -06:00

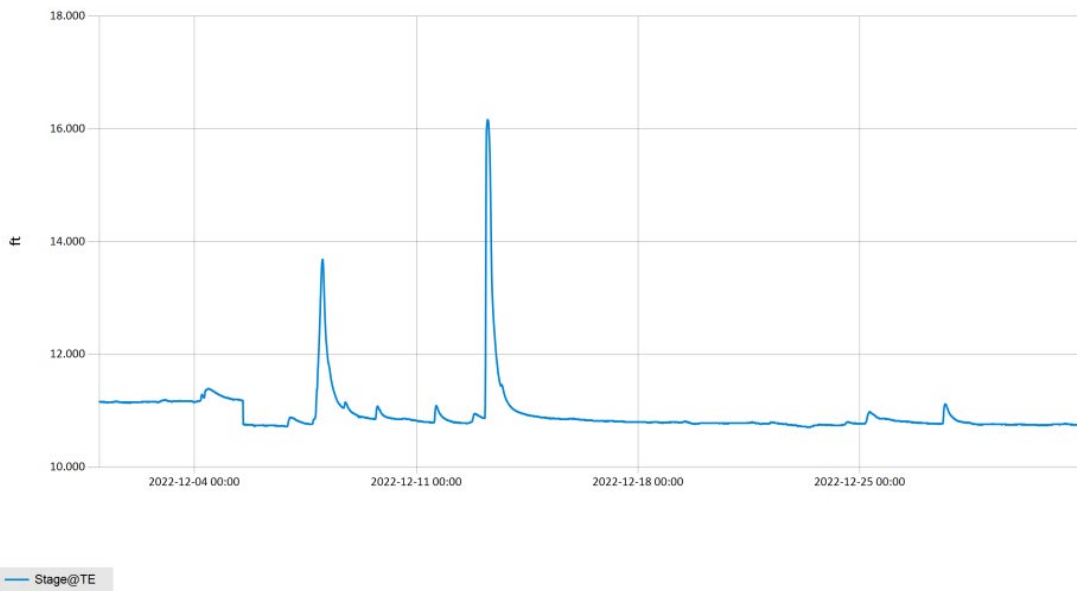


Figure 6 Monthly Hydrograph TE-1

Period Selected: 2022-12-01 00:00 - 2022-12-31 23:59

UTC Offset: -06:00

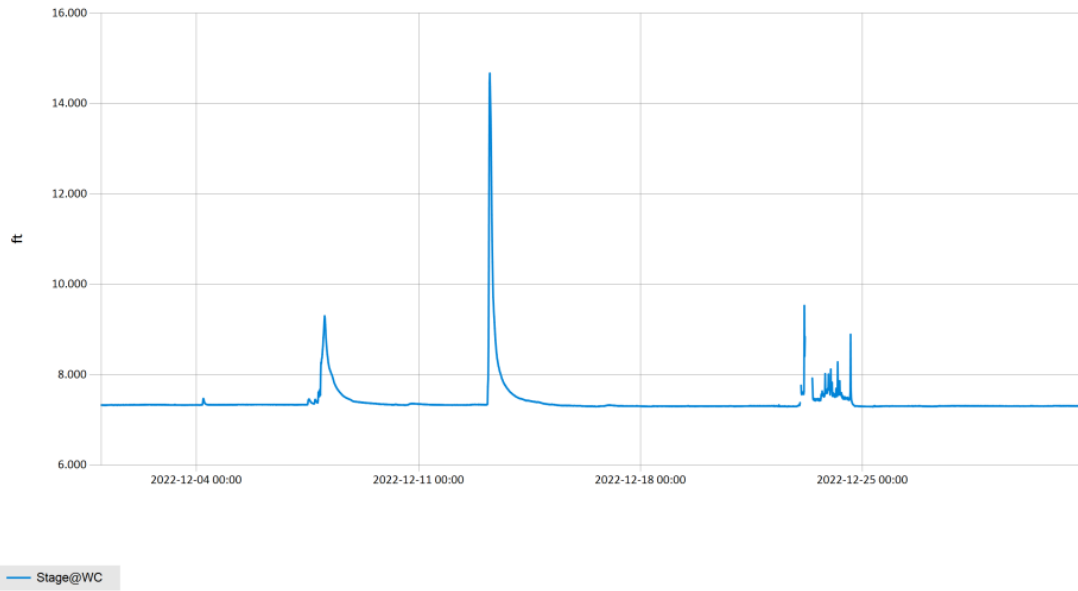


Figure 7 Monthly Hydrograph WC-1

Period Selected: 2022-12-01 00:00 - 2022-12-31 23:59

UTC Offset: -06:00

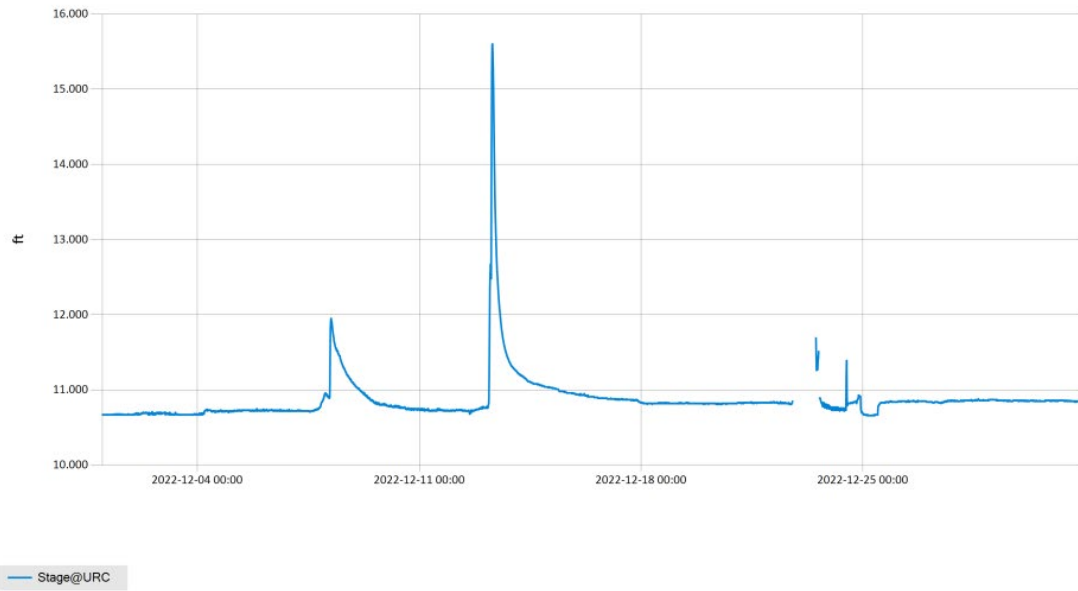
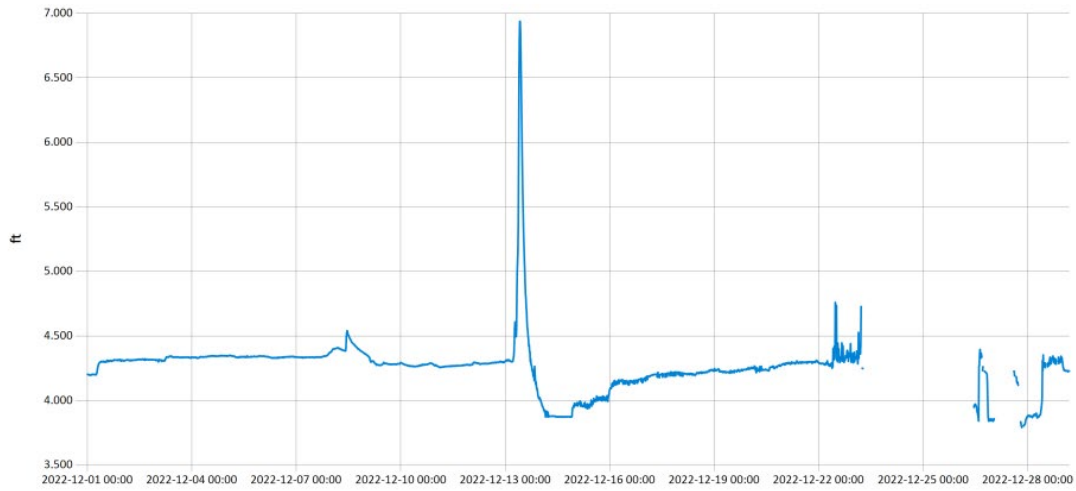


Figure 8 Monthly Hydrograph URC-2

Period Selected: 2022-12-01 00:00 - 2022-12-31 23:59

UTC Offset: -06:00

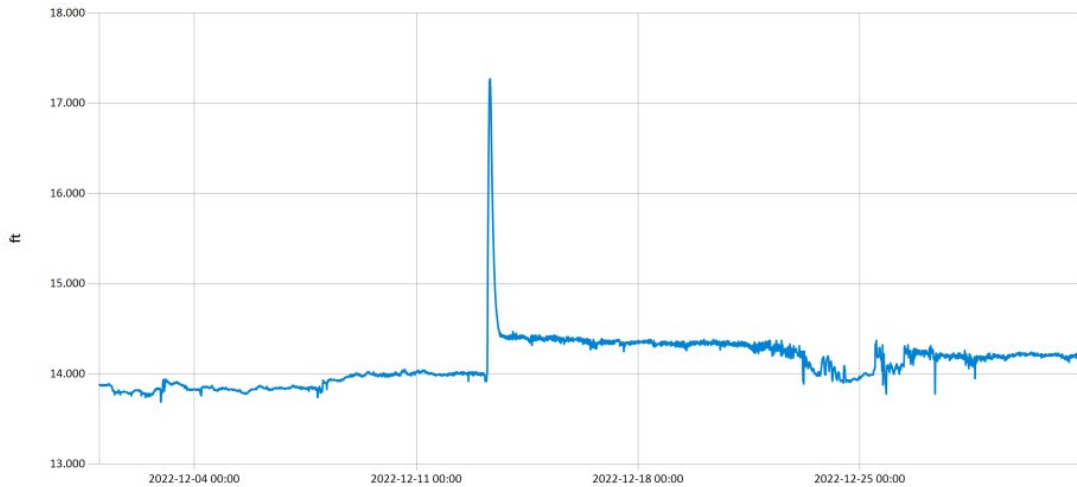


— Stage@LRC

Figure 9 Monthly Hydrograph LRC-1

Period Selected: 2022-12-01 00:00 - 2022-12-31 23:59

UTC Offset: -06:00

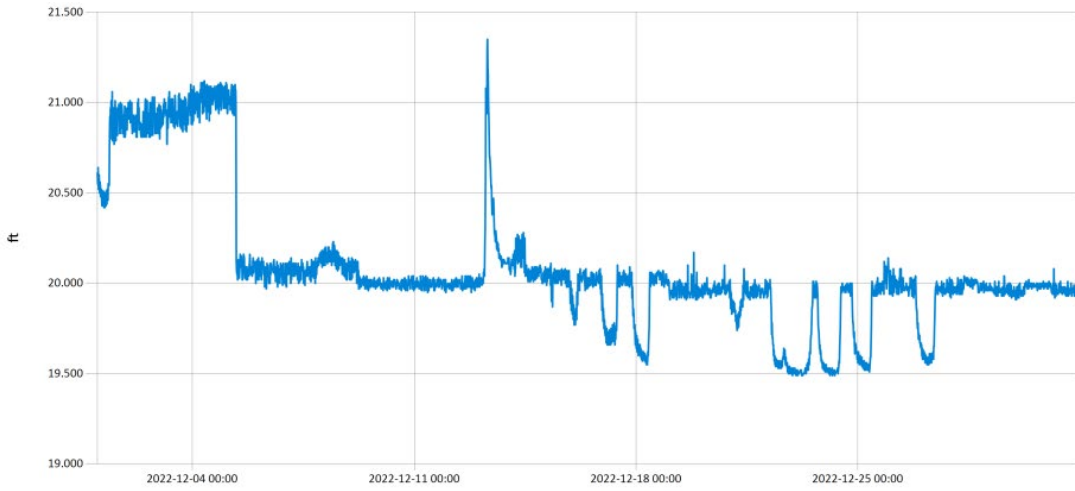


— Stage@LDB

Figure 10 Monthly Hydrograph LDB-1

Period Selected: 2022-12-01 00:00 - 2022-12-31 23:59

UTC Offset: -06:00

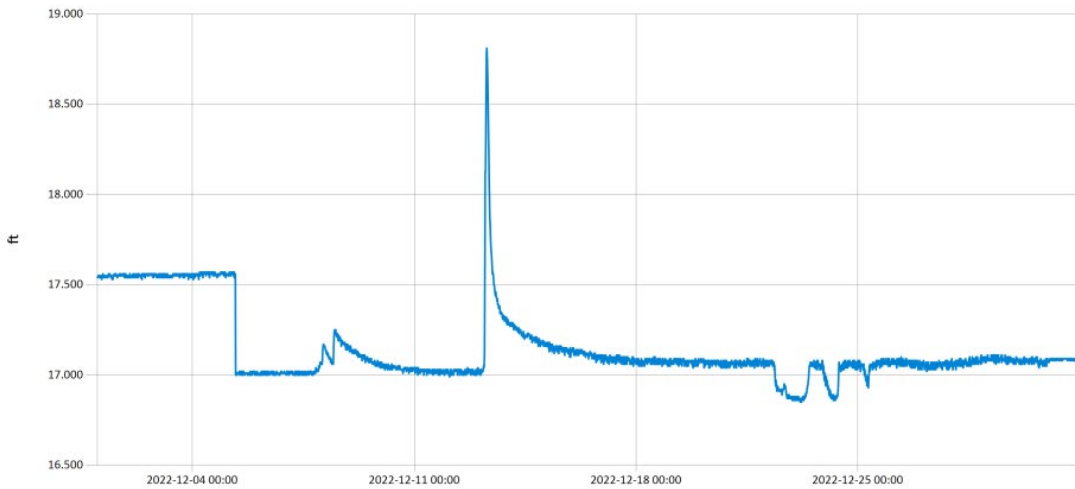


— Stage@CC

Figure 11 Monthly Hydrograph CC-1

Period Selected: 2022-12-01 00:00 - 2022-12-31 23:59

UTC Offset: -06:00



— Stage@UDB

Figure 12 Monthly Hydrograph UDB-1

MESONET CLIMATOLOGICAL DATA SUMMARY				December 2022				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	(in)	STN	MSL	DIR	AVG	MAX		SOD	BARE	MAX	MIN	
1	52	31	42.1	21.1	23	0	84	21	45	0.00	28.99	30.25	S	11.3	28.4	7.88	46.1	43.1	47	39	
2	59	43	51.5	48.1	14	0	97	44	89	0.02	28.73	29.97	S	13.2	41.9	3.51	48.5	48.2	51	46	
3	46	31	38.0	18.5	27	0	67	26	46	0.00	29.20	30.46	N	10.5	34.7	11.16	47.7	46.1	49	43	
4	51	34	41.8	31.3	23	0	88	47	67	0.12	28.92	30.17	SSE	5.6	17.0	7.99	47.1	45.5	49	43	
5	74	44	57.2	48.7	6	0	98	44	76	0.00	28.52	29.76	S	8.2	20.3	9.99	49.5	50.2	56	45	
6	52	41	46.7	44.4	18	0	99	82	92	0.00	28.69	29.93	NNW	6.6	17.0	3.10	50.9	51.0	52	49	
7	50	41	45.6	43.7	20	0	97	86	93	0.94	28.92	30.17	NE	5.0	11.8	2.13	50.2	48.7	50	48	
8	60	46	51.8	50.9	12	0	99	86	97	0.16	28.87	30.13	S	4.0	11.9	3.82	51.2	51.2	55	49	
9	56	42	50.2	42.1	16	0	99	47	76	0.04	28.90	30.15	NNE	6.2	16.7	8.31	51.6	51.3	53	49	
10	52	40	48.0	45.2	19	0	97	80	90	0.03	28.86	30.11	NNE	6.8	19.7	2.48	51.7	50.7	52	49	
11	46	40	43.9	42.0	22	0	98	86	93	0.00	28.88	30.13	NE	5.3	13.7	1.91	50.7	48.3	49	47	
12	55	46	50.5	49.5	15	0	98	92	96	0.04	28.65	29.90	SE	10.7	31.8	1.53	51.2	49.9	52	48	
13	63	41	54.9	40.1	13	0	97	21	62	1.79	28.40	29.64	SW	10.3	34.6	11.02	53.0	53.7	57	50	
14	46	30	38.2	22.8	27	0	72	36	54	0.00	28.57	29.81	WNW	9.9	25.5	11.14	49.3	44.7	49	41	
15	46	29	37.0	21.2	27	0	73	35	53	0.00	28.73	29.98	WNW	10.9	26.2	11.41	46.6	40.3	44	38	
16	45	30	36.6	14.4	27	0	65	21	42	0.00	28.84	30.09	NW	12.7	31.3	10.02	45.1	38.6	41	37	
17	46	24	33.7	17.2	30	0	71	29	53	0.00	28.90	30.16	WNW	7.0	22.2	11.58	43.5	37.7	40	36	
18	53	22	38.7	19.4	28	0	86	25	50	0.00	28.94	30.19	SSE	7.4	22.4	10.72	42.3	38.2	42	36	
19	53	40	45.0	29.8	19	0	78	43	56	0.00	28.88	30.13	SSE	11.1	29.3	11.01	44.7	41.9	46	39	
20	41	24	32.4	28.3	32	0	92	77	85	0.00	29.16	30.42	N	8.2	20.1	4.29	44.7	40.5	42	38	
21	46	23	33.5	28.3	30	0	97	60	82	0.00	28.88	30.13	S	7.1	24.5	6.36	43.0	38.2	41	36	
22	40	3	12.3	3.8	43	0	93	48	69	0.00	29.02	30.28	NNW	21.8	49.1	5.25	40.6	35.4	39	32	
23	19	4	11.3	-4.7	53	0	65	39	48	0.00	29.37	30.64	NW	14.5	30.1	9.02	36.3	29.0	31	27	
24	33	9	21.3	2.5	44	0	74	23	47	0.00	29.24	30.51	WNW	4.0	15.9	11.15	35.3	29.2	31	27	
25	48	14	32.6	9.2	34	0	80	21	41	0.00	29.01	30.26	S	5.1	18.1	9.95	35.5	30.3	32	28	
26	48	18	33.7	17.6	32	0	72	36	52	0.00	28.99	30.25	NNW	11.2	37.0	10.19	37.8	31.7	32	31	
27	51	16	32.8	16.9	32	0	80	31	55	0.00	28.83	30.08	S	10.6	31.9	11.46	37.2	31.6	32	31	
28	70	42	54.1	34.7	9	0	69	29	49	0.00	28.43	29.67	S	16.2	37.1	8.69	40.6	36.7	44	32	
29	67	43	57.0	36.1	10	0	72	19	49	0.00	28.61	29.85	S	9.9	28.5	6.85	44.6	45.7	50	44	
30	58	30	44.5	32.6	21	0	92	37	65	0.00	28.75	29.99	NNE	5.2	13.2	10.60	43.8	43.9	49	40	
31	62	34	49.0	38.1	17	0	84	47	67	0.00	28.54	29.78	S	7.4	23.4	8.56	44.0	44.2	49	41	
	51	31	40.8	28.8	<- Monthly Averages ->							28.85	30.10	S	9.2	49.1	7.84	45.3	42.4	45	40
Temperature - Highest: 74					Degree Days - Total HDD: 744					Number of Days With:											
Lowest: 3					Total CDD: 0					Tmax ≥ 90: 0					Rainfall ≥ 0.01 inch: 8						
Rainfall: Monthly Total: 3.14 in.					Humidity - Highest: 99					Tmax ≤ 32: 1					Rainfall ≥ 0.10 inch: 4						
Greatest 24 Hr: 1.79 in.					Lowest: 19					Tmin ≤ 32: 16					Avg Wind Speed ≥ 10 mph: 13						
										Tmin ≤ 0: 0					Max Wind Speed ≥ 30 mph: 10						

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* Denotes incomplete record

Figure 13 December Mesonet Data