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


**SY2018 Monthly Report**

*Lake Thunderbird TMDL Monitoring Plan Implementation:*

*March 2018 Monitoring Report*

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

Sampling for March 2018 occurred on the twelfth and was considered a base flow collection. Water samples were collected at all ten locations and discharge was measured at eight locations. Mesonet data shows no precipitation occurring on the twelfth, 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 March was 0.72 inches. All water level gauges were operational for the month, with the exception of LT-1 and CC-1 as a result of road construction activity.

## RESULTS

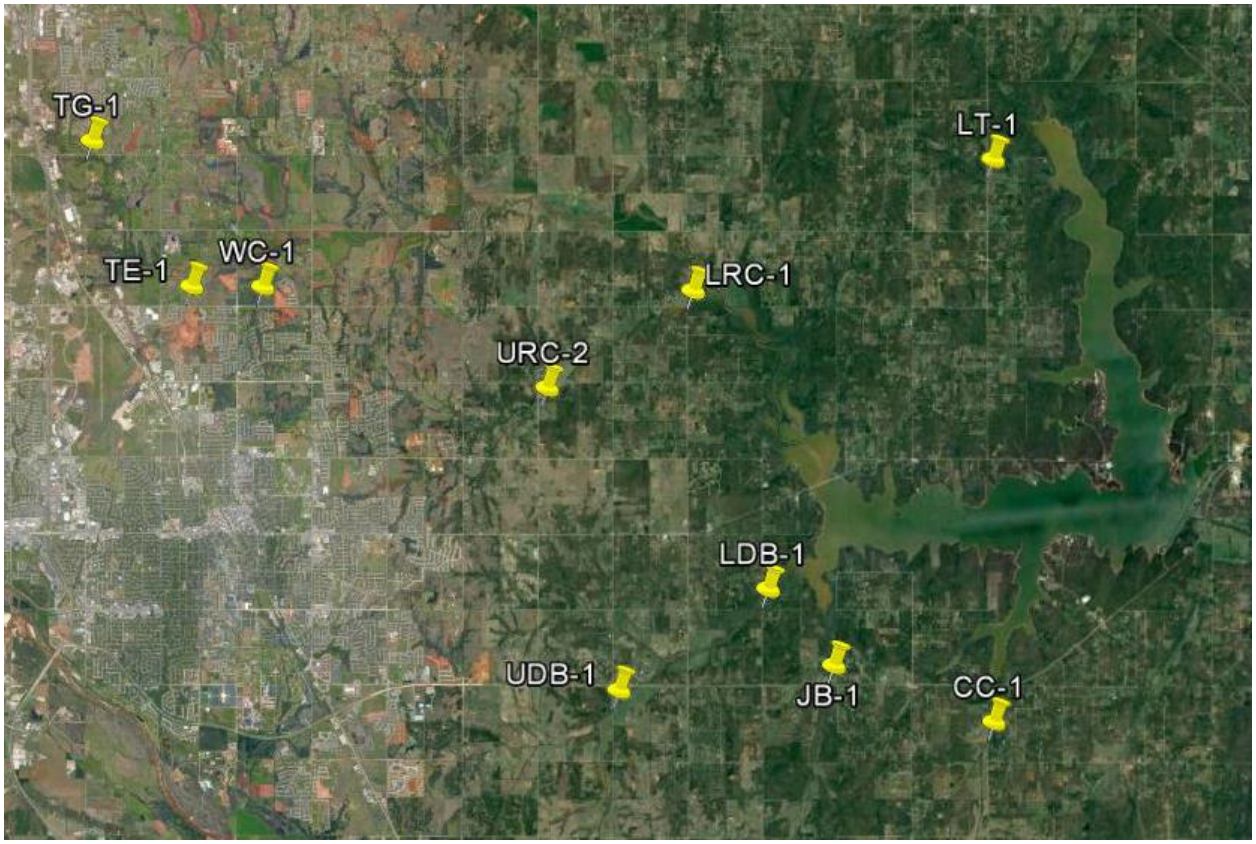


Figure 1 Monitoring Station Map

## 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 | 3/12/2018 | 9:40 | LO | 7.2 | 11.2 | 701.0 | 8.0 | 9.0 | |
| lt-1 | 3/12/2018 | 8:40 | LO | 9.4 | 6.1 | 609.0 | 7.4 | 1.0 | construction at site, no staff gauge or visual flow |
| jb-1 | 3/12/2018 | 10:15 | LO | 7.0 | 10.6 | 877.0 | 7.6 | 3.0 | |
| udb-1 | 3/12/2018 | 11:15 | LO | 7.8 | 11.0 | 987.0 | 8.1 | 4.0 | |
| ldb-1 | 3/12/2018 | 9:10 | LO | 10.7 | 16.1 | 966.0 | 8.2 | 11.0 | flowing backwards |
| tg-1 | 3/12/2018 | 8:30 | SD | 8.1 | 9.7 | 1096.0 | 8.0 | 17.0 | |
| te-1 | 3/12/2018 | 9:35 | SD | 6.5 | 9.4 | 956.0 | 7.7 | 39.0 | |
| wc-1 | 3/12/2018 | 10:30 | SD | 8.4 | 7.8 | 1076.0 | 7.6 | 7.0 | RP1 not over water |
| lrc-1 | 3/12/2018 | 12:25 | SD | 10.7 | 8.1 | 712.0 | 7.8 | 11.0 | |
| urc-2 | 3/12/2018 | 11:30 | SD | 10.9 | 6.5 | 728.0 | 7.6 | 11.0 | RP1, RP2 not over water |

Table 1 Field Data Form

| Site Name | TKN (mg/L) | Nitrate/Nitrite (mg/L) | TP (mg/L) | TSS (mg/L) |
|---|---|---|---|---|
| TG-1 | 0.77 | <0.05 | 0.061 | 18.0 |
| CC-1 | 0.64 | <0.05 | 0.048 | 13.0 |
| JB-1 | 0.37 | <0.05 | 0.030 | <5.0 |
| UDB-1 | 0.24 | <0.05 | 0.020 | 8.0 |
| LDB-1 | 0.44 | <0.05 | 0.036 | 9.0 |
| LRC-1 | 0.59 | <0.05 | 0.049 | 9.0 |
| URC-2 | 0.77 | <0.05 | 0.070 | 11.0 |
| WC-1 | 0.40 | <0.05 | 0.054 | 7.0 |
| TE-1 | 0.68 | <0.05 | 0.053 | 33.0 |
| LT-1 | 0.60 | <0.05 | 0.040 | <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 | 0.66 mg/L | <0.05 mg/L | 0.045 mg/L | 5.0 mg/L |
| Duplicate RPD | 3.08% | 0% | 6.45% | $88.89\%_{*1}$ |

Table 3 QA/QC Data Where Subscript 1 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) | 9.13 | 0.42 | 15.895 | 17.6 | 17.085 | 17.45 | 11.59 | 9.13 | 11.59 | N/A |
| DISCHARGE ($ft^3/s$) | 0.797 | 0.677 | 0.285 | 1.054 | 39.41 | 0.555 | 0.107 | 0.116 | 0.177 | 0 |

Table 4 Station Discharge Summary

# Discharge Measurement Summary

Date Generated: Thu Apr 12 2018

| File Information | |
|---|---|
| File Name | CC0312.WAD |
| Start Date and Time | 2018/03/12 07:10:23 |

| Site Details | |
|---|---|
| Site Name | CC |
| Operator(s) | JW |

| 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^2 |
| Discharge | cfs |

**Discharge Uncertainty**

| Category | ISO | Stats |
|---|---|---|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.8% | 4.0% |
| Velocity | 3.0% | 7.9% |
| Width | 0.3% | 0.3% |
| Method | 4.0% | - |
| # Stations | 3.9% | - |
| **Overall** | **6.5%** | **8.9%** |

**Summary**

| | | | |
|---|---|---|---|
| Averaging Int. | 40 | # Stations | 13 |
| Start Edge | REW | Total Width | 6.500 |
| Mean SNR | 32.2 dB | Total Area | 3.700 |
| Mean Temp | 41.15 °F | Mean Depth | 0.569 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.1830 |
| | | **Total Discharge** | **0.6771** |

**Supplemental Data**

| # | Time | Location | Gauge Height | Rated Flow | Comments |
|---|---|---|---|---|---|
| 1 | Mon Mar 12 07:09:07 CDT 2018 | 0.000 | 0.420 | | |

**Measurement Results**

| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 07:10 | 0.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 07:10 | 0.50 | 0.6 | 0.500 | 0.6 | 0.200 | 0.3940 | 1.00 | 0.3940 | 0.250 | 0.0985 | 14.5 |
| 2 | 07:11 | 1.00 | 0.6 | 0.700 | 0.6 | 0.280 | 0.5472 | 1.00 | 0.5472 | 0.350 | 0.1916 | 28.3 |
| 3 | 07:12 | 1.50 | 0.6 | 0.700 | 0.6 | 0.280 | 0.5538 | 1.00 | 0.5538 | 0.350 | 0.1939 | 28.6 |
| 4 | 07:13 | 2.00 | 0.6 | 0.800 | 0.6 | 0.320 | 0.4032 | 1.00 | 0.4032 | 0.400 | 0.1613 | 23.8 |
| 5 | 07:14 | 2.50 | 0.6 | 0.800 | 0.6 | 0.320 | 0.2352 | 1.00 | 0.2352 | 0.400 | 0.0941 | 13.9 |
| *6* | *07:15* | *3.00* | *0.6* | *0.700* | *0.6* | *0.280* | *0.2037* | *1.00* | *0.2037* | *0.350* | *0.0713* | *10.5* |
| *7* | *07:16* | *3.50* | *0.6* | *0.600* | *0.6* | *0.240* | *0.0774* | *1.00* | *0.0774* | *0.300* | *0.0232* | *3.4* |
| *8* | *07:17* | *4.00* | *0.6* | *0.700* | *0.6* | *0.280* | *-0.0348* | *1.00* | *-0.0348* | *0.350* | *-0.0122* | *-1.8* |
| *9* | *07:18* | *4.50* | *0.6* | *0.700* | *0.6* | *0.280* | *-0.0938* | *1.00* | *-0.0938* | *0.350* | *-0.0328* | *-4.9* |
| *10* | *07:19* | *5.00* | *0.6* | *0.600* | *0.6* | *0.240* | *-0.2218* | *1.00* | *-0.2218* | *0.300* | *-0.0665* | *-9.8* |
| 11 | 07:21 | 5.50 | 0.6 | 0.400 | 0.6 | 0.160 | 0.1506 | -1.00 | -0.1506 | 0.300 | -0.0452 | -6.7 |
| 12 | 07:21 | 6.50 | 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 CC-1

# Discharge Measurement Summary

Date Generated: Thu Apr 12 2018

**File Information**

| | |
|---|---|
| File Name | TE31218.WAD |
| Start Date and Time | 2018/03/12 07:00:34 |

**Site Details**

| | |
|---|---|
| Site Name | TE |
| Operator(s) | ZM |

**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^2 |
| Discharge | cfs |

**Discharge Uncertainty**

| Category | ISO | Stats |
|---|---|---|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.4% | 1.3% |
| Velocity | 0.8% | 5.2% |
| Width | 0.2% | 0.2% |
| Method | 2.3% | - |
| # Stations | 3.0% | - |
| **Overall** | **4.0%** | **5.4%** |

**Summary**

| | | | |
|---|---|---|---|
| Averaging Int. | 40 | # Stations | 17 |
| Start Edge | LEW | Total Width | 8.000 |
| Mean SNR | 29.7 dB | Total Area | 5.475 |
| Mean Temp | 43.61 °F | Mean Depth | 0.684 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.0324 |
| | | **Total Discharge** | **0.1774** |

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

| # | Time | Location | Gauge Height | Rated Flow | Comments |
|---|---|---|---|---|---|
| 1 | Mon Mar 12 06:58:30 CDT 2018 | 0.000 | 11.590 | | |
| 2 | Mon Mar 12 06:58:49 CDT 2018 | 0.000 | 11.590 | | |

**Measurement Results**

| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 07:00 | 0.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| *1* | *07:00* | *0.60* | *0.6* | *0.300* | *0.6* | *0.120* | *-0.0003* | *1.00* | *-0.0003* | *0.150* | *0.0000* | *0.0* |
| 2 | 07:01 | 1.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0240 | 1.00 | 0.0240 | 0.225 | 0.0054 | 3.0 |
| 3 | 07:06 | 1.50 | 0.6 | 0.600 | 0.6 | 0.240 | 0.0210 | 1.00 | 0.0210 | 0.300 | 0.0063 | 3.6 |
| *4* | *07:07* | *2.00* | *0.6* | *0.700* | *0.6* | *0.280* | *0.0240* | *1.00* | *0.0240* | *0.350* | *0.0084* | *4.7* |
| 5 | 07:09 | 2.50 | 0.6 | 0.900 | 0.6 | 0.360 | 0.0308 | 1.00 | 0.0308 | 0.450 | 0.0139 | 7.8 |
| 6 | 07:10 | 3.00 | 0.6 | 0.900 | 0.6 | 0.360 | 0.0374 | 1.00 | 0.0374 | 0.450 | 0.0168 | 9.5 |
| 7 | 07:11 | 3.50 | 0.6 | 0.900 | 0.6 | 0.360 | 0.0476 | 1.00 | 0.0476 | 0.450 | 0.0214 | 12.1 |
| 8 | 07:12 | 4.00 | 0.6 | 1.000 | 0.6 | 0.400 | 0.0400 | 1.00 | 0.0400 | 0.500 | 0.0200 | 11.3 |
| 9 | 07:13 | 4.50 | 0.6 | 1.000 | 0.6 | 0.400 | 0.0404 | 1.00 | 0.0404 | 0.500 | 0.0202 | 11.4 |
| 10 | 07:14 | 5.00 | 0.6 | 1.000 | 0.6 | 0.400 | 0.0325 | 1.00 | 0.0325 | 0.500 | 0.0162 | 9.2 |
| *11* | *07:15* | *5.50* | *0.6* | *0.900* | *0.6* | *0.360* | *0.0390* | *1.00* | *0.0390* | *0.450* | *0.0176* | *9.9* |
| *12* | *07:17* | *6.00* | *0.6* | *0.800* | *0.6* | *0.320* | *0.0361* | *1.00* | *0.0361* | *0.400* | *0.0144* | *8.1* |
| 13 | 07:19 | 6.50 | 0.6 | 0.700 | 0.6 | 0.280 | 0.0404 | 1.00 | 0.0404 | 0.350 | 0.0141 | 8.0 |
| 14 | 07:21 | 7.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0236 | 1.00 | 0.0236 | 0.250 | 0.0059 | 3.3 |
| *15* | *07:23* | *7.50* | *0.6* | *0.300* | *0.6* | *0.120* | *-0.0213* | *1.00* | *-0.0213* | *0.150* | *-0.0032* | *-1.8* |
| 16 | 07:23 | 8.00 | 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 3 Discharge Summary TE-1

# Discharge Measurement Summary

Date Generated: Thu Apr 12 2018

**File Information**

| | |
|---|---|
| File Name | LRC31218.WAD |
| Start Date and Time | 2018/03/12 09:49:44 |

**Site Details**

| | |
|---|---|
| Site Name | LRC |
| Operator(s) | ZM |

**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^2 |
| Discharge | cfs |

**Discharge Uncertainty**

| Category | ISO | Stats |
|---|---|---|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.3% | 3.5% |
| Velocity | 0.7% | 8.1% |
| Width | 0.1% | 0.1% |
| Method | 1.7% | - |
| # Stations | 1.9% | - |
| **Overall** | **2.9%** | **8.9%** |

**Summary**

| | | | |
|---|---|---|---|
| Averaging Int. | 40 | # Stations | 27 |
| Start Edge | LEW | Total Width | 14.000 |
| Mean SNR | 24.3 dB | Total Area | 7.150 |
| Mean Temp | 50.09 °F | Mean Depth | 0.511 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.0777 |
| | | **Total Discharge** | **0.5554** |

**Supplemental Data**

| # | Time | Location | Gauge Height | Rated Flow | Comments |
|---|---|---|---|---|---|
| 1 | Mon Mar 12 09:44:57 CDT 2018 | 1.000 | 17.450 | | |

**Measurement Results**

| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 09:49 | 0.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| *1* | *09:49* | *1.00* | *0.6* | *0.300* | *0.6* | *0.120* | *-0.0039* | *1.00* | *-0.0039* | *0.300* | *-0.0012* | *-0.2* |
| *2* | *09:51* | *2.00* | *0.6* | *0.000* | *0.6* | *0.000* | *0.0761* | *1.00* | *0.0000* | *0.000* | *0.0000* | *0.0* |
| *3* | *09:52* | *2.50* | *0.6* | *0.500* | *0.6* | *0.200* | *0.1270* | *1.00* | *0.1270* | *0.250* | *0.0317* | *5.7* |
| *4* | *09:53* | *3.00* | *0.6* | *0.400* | *0.6* | *0.160* | *0.0354* | *1.00* | *0.0354* | *0.200* | *0.0071* | *1.3* |
| *5* | *09:56* | *3.50* | *0.6* | *0.500* | *0.6* | *0.200* | *0.0013* | *1.00* | *0.0013* | *0.250* | *0.0003* | *0.1* |
| 6 | 09:58 | 4.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.1421 | 1.00 | 0.1421 | 0.250 | 0.0355 | 6.4 |
| 7 | 09:58 | 4.50 | 0.6 | 0.500 | 0.6 | 0.200 | 0.1161 | 1.00 | 0.1161 | 0.250 | 0.0290 | 5.2 |
| 8 | 10:00 | 5.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.1168 | 1.00 | 0.1168 | 0.250 | 0.0292 | 5.3 |
| 9 | 10:01 | 5.50 | 0.6 | 0.600 | 0.6 | 0.240 | 0.0472 | 1.00 | 0.0472 | 0.300 | 0.0142 | 2.6 |
| 10 | 10:03 | 6.00 | 0.6 | 0.800 | 0.6 | 0.320 | 0.1224 | 1.00 | 0.1224 | 0.400 | 0.0489 | 8.8 |
| 11 | 10:04 | 6.50 | 0.6 | 0.800 | 0.6 | 0.320 | 0.1132 | 1.00 | 0.1132 | 0.400 | 0.0453 | 8.1 |
| 12 | 10:05 | 7.00 | 0.6 | 0.800 | 0.6 | 0.320 | 0.0741 | 1.00 | 0.0741 | 0.400 | 0.0297 | 5.3 |
| 13 | 10:06 | 7.50 | 0.6 | 0.800 | 0.6 | 0.320 | 0.0771 | 1.00 | 0.0771 | 0.400 | 0.0308 | 5.6 |
| 14 | 10:07 | 8.00 | 0.6 | 0.700 | 0.6 | 0.280 | 0.0732 | 1.00 | 0.0732 | 0.350 | 0.0256 | 4.6 |
| 15 | 10:08 | 8.50 | 0.6 | 0.700 | 0.6 | 0.280 | 0.0797 | 1.00 | 0.0797 | 0.350 | 0.0279 | 5.0 |
| 16 | 10:09 | 9.00 | 0.6 | 0.700 | 0.6 | 0.280 | 0.0755 | 1.00 | 0.0755 | 0.350 | 0.0264 | 4.8 |
| 17 | 10:10 | 9.50 | 0.6 | 0.700 | 0.6 | 0.280 | 0.0843 | 1.00 | 0.0843 | 0.350 | 0.0295 | 5.3 |
| 18 | 10:11 | 10.00 | 0.6 | 0.700 | 0.6 | 0.280 | 0.0863 | 1.00 | 0.0863 | 0.350 | 0.0302 | 5.4 |
| 19 | 10:12 | 10.50 | 0.6 | 0.600 | 0.6 | 0.240 | 0.0745 | 1.00 | 0.0745 | 0.300 | 0.0223 | 4.0 |
| 20 | 10:13 | 11.00 | 0.6 | 0.600 | 0.6 | 0.240 | 0.0663 | 1.00 | 0.0663 | 0.300 | 0.0199 | 3.6 |
| 21 | 10:14 | 11.50 | 0.6 | 0.600 | 0.6 | 0.240 | 0.0735 | 1.00 | 0.0735 | 0.300 | 0.0220 | 4.0 |
| 22 | 10:17 | 12.00 | 0.6 | 0.600 | 0.6 | 0.240 | 0.0906 | 1.00 | 0.0906 | 0.300 | 0.0272 | 4.9 |
| 23 | 10:19 | 12.50 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0581 | 1.00 | 0.0581 | 0.250 | 0.0145 | 2.6 |
| 24 | 10:20 | 13.00 | 0.6 | 0.400 | 0.6 | 0.160 | 0.0282 | 1.00 | 0.0282 | 0.200 | 0.0056 | 1.0 |
| *25* | *10:23* | *13.50* | *0.6* | *0.200* | *0.6* | *0.080* | *0.0358* | *1.00* | *0.0358* | *0.100* | *0.0036* | *0.6* |
| 26 | 10:23 | 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 4 Discharge Summary LRC-1

# Discharge Measurement Summary

Date Generated: Thu Apr 12 2018

| File Information | |
|---|---|
| File Name | UDB0312.WAD |
| Start Date and Time | 2018/03/12 08:52:28 |

| Site Details | |
|---|---|
| Site Name | UDB |
| Operator(s) | JW |

| 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^2 |
| Discharge | cfs |

**Discharge Uncertainty**

| Category | ISO | Stats |
|---|---|---|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.2% | 1.8% |
| Velocity | 1.2% | 7.1% |
| Width | 0.1% | 0.1% |
| Method | 1.9% | - |
| # Stations | 2.0% | - |
| **Overall** | **3.1%** | **7.4%** |

**Summary**

| | | | |
|---|---|---|---|
| Averaging Int. | 40 | # Stations | 26 |
| Start Edge | LEW | Total Width | 16.000 |
| Mean SNR | 12.5 dB | Total Area | 13.025 |
| Mean Temp | 42.37 °F | Mean Depth | 0.814 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.0809 |
| | | **Total Discharge** | **1.0538** |

**Supplemental Data**

| # | Time | Location | Gauge Height | Rated Flow | Comments |
|---|---|---|---|---|---|
| 1 | Mon Mar 12 08:49:28 CDT 2018 | 0.000 | 17.600 | | |

**Measurement Results**

| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 08:52 | 0.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| *1* | *08:52* | *1.00* | *0.6* | *1.000* | *0.6* | *0.400* | *-0.0295* | *1.00* | *-0.0295* | *1.000* | *-0.0295* | *-2.8* |
| 2 | 08:53 | 2.00 | 0.6 | 1.100 | 0.6 | 0.440 | 0.0105 | 1.00 | 0.0105 | 0.825 | 0.0087 | 0.8 |
| 3 | 08:55 | 2.50 | 0.6 | 1.000 | 0.6 | 0.400 | 0.0404 | 1.00 | 0.0404 | 0.500 | 0.0202 | 1.9 |
| *4* | *08:56* | *3.00* | *0.6* | *0.800* | *0.6* | *0.320* | *0.0230* | *1.00* | *0.0230* | *0.400* | *0.0092* | *0.9* |
| *5* | *08:57* | *3.50* | *0.6* | *0.800* | *0.6* | *0.320* | *0.0751* | *1.00* | *0.0751* | *0.400* | *0.0300* | *2.9* |
| 6 | 08:58 | 4.00 | 0.6 | 1.000 | 0.6 | 0.400 | 0.0522 | 1.00 | 0.0522 | 0.500 | 0.0261 | 2.5 |
| 7 | 08:59 | 4.50 | 0.6 | 1.200 | 0.6 | 0.480 | 0.0748 | 1.00 | 0.0748 | 0.600 | 0.0449 | 4.3 |
| 8 | 09:00 | 5.00 | 0.6 | 1.100 | 0.6 | 0.440 | 0.0633 | 1.00 | 0.0633 | 0.550 | 0.0348 | 3.3 |
| 9 | 09:01 | 5.50 | 0.6 | 0.900 | 0.6 | 0.360 | 0.1362 | 1.00 | 0.1362 | 0.450 | 0.0613 | 5.8 |
| 10 | 09:02 | 6.00 | 0.6 | 0.800 | 0.6 | 0.320 | 0.1673 | 1.00 | 0.1673 | 0.400 | 0.0669 | 6.3 |
| 11 | 09:03 | 6.50 | 0.6 | 1.100 | 0.6 | 0.440 | 0.1732 | 1.00 | 0.1732 | 0.550 | 0.0953 | 9.0 |
| 12 | 09:04 | 7.00 | 0.6 | 1.300 | 0.6 | 0.520 | 0.1742 | 1.00 | 0.1742 | 0.650 | 0.1132 | 10.7 |
| 13 | 09:05 | 7.50 | 0.6 | 1.200 | 0.6 | 0.480 | 0.1020 | 1.00 | 0.1020 | 0.600 | 0.0612 | 5.8 |
| 14 | 09:06 | 8.00 | 0.6 | 1.000 | 0.6 | 0.400 | 0.1030 | 1.00 | 0.1030 | 0.500 | 0.0515 | 4.9 |
| 15 | 09:07 | 8.50 | 0.6 | 1.000 | 0.6 | 0.400 | 0.1017 | 1.00 | 0.1017 | 0.500 | 0.0509 | 4.8 |
| 16 | 09:09 | 9.00 | 0.6 | 1.000 | 0.6 | 0.400 | 0.0768 | 1.00 | 0.0768 | 0.500 | 0.0384 | 3.6 |
| 17 | 09:10 | 9.50 | 0.6 | 1.100 | 0.6 | 0.440 | 0.1266 | 1.00 | 0.1266 | 0.550 | 0.0697 | 6.6 |
| 18 | 09:11 | 10.00 | 0.6 | 1.000 | 0.6 | 0.400 | 0.0935 | 1.00 | 0.0935 | 0.500 | 0.0468 | 4.4 |
| 19 | 09:12 | 10.50 | 0.6 | 0.900 | 0.6 | 0.360 | 0.1401 | 1.00 | 0.1401 | 0.450 | 0.0630 | 6.0 |
| 20 | 09:13 | 11.00 | 0.6 | 0.800 | 0.6 | 0.320 | 0.0512 | 1.00 | 0.0512 | 0.400 | 0.0205 | 1.9 |
| 21 | 09:14 | 11.50 | 0.6 | 0.800 | 0.6 | 0.320 | 0.0833 | 1.00 | 0.0833 | 0.400 | 0.0333 | 3.2 |
| 22 | 09:15 | 12.00 | 0.6 | 0.800 | 0.6 | 0.320 | 0.1273 | 1.00 | 0.1273 | 0.600 | 0.0764 | 7.2 |
| *23* | *09:16* | *13.00* | *0.6* | *0.600* | *0.6* | *0.240* | *0.0919* | *1.00* | *0.0919* | *0.600* | *0.0551* | *5.2* |
| *24* | *09:17* | *14.00* | *0.6* | *0.400* | *0.6* | *0.160* | *0.0102* | *1.00* | *0.0102* | *0.600* | *0.0061* | *0.6* |
| 25 | 09:17 | 16.00 | 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 UDB-1

# Discharge Measurement Summary

Date Generated: Thu Apr 12 2018

**File Information**

| | |
|---|---|
| File Name | URC31218.WAD |
| Start Date and Time | 2018/03/12 08:47:39 |

**Site Details**

| | |
|---|---|
| Site Name | URC |
| Operator(s) | ZM |

**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^2 |
| Discharge | cfs |

**Discharge Uncertainty**

| Category | ISO | Stats |
|---|---|---|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.7% | 6.4% |
| Velocity | 16.3% | 85.0% |
| Width | 0.6% | 0.6% |
| Method | 9.2% | - |
| # Stations | 5.8% | - |
| **Overall** | **19.6%** | **85.2%** |

**Summary**

| | | | |
|---|---|---|---|
| Averaging Int. | 40 | # Stations | 9 |
| Start Edge | LEW | Total Width | 4.500 |
| Mean SNR | 40.2 dB | Total Area | 4.050 |
| Mean Temp | 51.16 °F | Mean Depth | 0.900 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.0263 |
| | | **Total Discharge** | **0.1065** |

**Measurement Results**

| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 08:47 | 0.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| 1 | 08:47 | 1.00 | 0.6 | 1.200 | 0.6 | 0.480 | 0.0384 | 1.00 | 0.0384 | 0.900 | 0.0346 | 32.4 |
| *2* | *08:49* | *1.50* | *0.6* | *1.200* | *0.6* | *0.480* | *0.0551* | *1.00* | *0.0551* | *0.600* | *0.0331* | *31.1* |
| *3* | *08:51* | *2.00* | *0.6* | *1.200* | *0.6* | *0.480* | *0.1726* | *1.00* | *0.1726* | *0.600* | *0.1036* | *97.2* |
| *4* | *08:55* | *2.50* | *0.6* | *1.200* | *0.6* | *0.480* | *0.0361* | *1.00* | *0.0361* | *0.600* | *0.0217* | *20.3* |
| 5 | 08:59 | 3.00 | 0.6 | 1.100 | 0.6 | 0.440 | -0.0148 | 1.00 | -0.0148 | 0.550 | -0.0081 | -7.6 |
| *6* | *09:01* | *3.50* | *0.6* | *1.000* | *0.6* | *0.400* | *-0.1066* | *1.00* | *-0.1066* | *0.500* | *-0.0533* | *-50.1* |
| *7* | *09:03* | *4.00* | *0.6* | *0.600* | *0.6* | *0.240* | *-0.0830* | *1.00* | *-0.0830* | *0.300* | *-0.0249* | *-23.4* |
| 8 | 09:03 | 4.50 | 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 6 Discharge Summary URC-2

# Discharge Measurement Summary

Date Generated: Thu Apr 12 2018

**File Information**

| | |
|---|---|
| File Name | TG31218.WAD |
| Start Date and Time | 2018/03/12 05:58:19 |

**Site Details**

| | |
|---|---|
| Site Name | TG |
| Operator(s) | ZM |

**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^2 |
| Discharge | cfs |

**Discharge Uncertainty**

| Category | ISO | Stats |
|---|---|---|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.4% | 2.4% |
| Velocity | 0.6% | 2.6% |
| Width | 0.1% | 0.1% |
| Method | 2.1% | - |
| # Stations | 2.2% | - |
| **Overall** | **3.3%** | **3.7%** |

**Summary**

| | | | |
|---|---|---|---|
| Averaging Int. | 40 | # Stations | 23 |
| Start Edge | LEW | Total Width | 11.000 |
| Mean SNR | 26.1 dB | Total Area | 5.000 |
| Mean Temp | 46.03 °F | Mean Depth | 0.455 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.1593 |
| | | **Total Discharge** | **0.7967** |

**Supplemental Data**

| # | Time | Location | Gauge Height | Rated Flow | Comments |
|---|---|---|---|---|---|
| 1 | Mon Mar 12 05:54:35 CDT 2018 | 0.000 | 9.130 | | |

**Measurement Results**

| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 05:58 | 0.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| *1* | *05:58* | *0.50* | *0.6* | *0.100* | *0.6* | *0.040* | *-0.0007* | *1.00* | *-0.0007* | *0.050* | *0.0000* | *0.0* |
| *2* | *05:59* | *1.00* | *0.6* | *0.200* | *0.6* | *0.080* | *0.0427* | *1.00* | *0.0427* | *0.100* | *0.0043* | *0.5* |
| 3 | 06:04 | 1.50 | 0.6 | 0.200 | 0.6 | 0.080 | 0.0213 | 1.00 | 0.0213 | 0.100 | 0.0021 | 0.3 |
| 4 | 06:13 | 2.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0135 | 1.00 | 0.0135 | 0.250 | 0.0034 | 0.4 |
| 5 | 06:14 | 2.50 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0633 | 1.00 | 0.0633 | 0.250 | 0.0158 | 2.0 |
| 6 | 06:15 | 3.00 | 0.6 | 0.600 | 0.6 | 0.240 | 0.1063 | 1.00 | 0.1063 | 0.300 | 0.0319 | 4.0 |
| 7 | 06:17 | 3.50 | 0.6 | 0.700 | 0.6 | 0.280 | 0.1316 | 1.00 | 0.1316 | 0.350 | 0.0461 | 5.8 |
| 8 | 06:18 | 4.00 | 0.6 | 0.800 | 0.6 | 0.320 | 0.1421 | 1.00 | 0.1421 | 0.400 | 0.0568 | 7.1 |
| 9 | 06:19 | 4.50 | 0.6 | 0.800 | 0.6 | 0.320 | 0.1821 | 1.00 | 0.1821 | 0.400 | 0.0728 | 9.1 |
| 10 | 06:20 | 5.00 | 0.6 | 0.700 | 0.6 | 0.280 | 0.2477 | 1.00 | 0.2477 | 0.350 | 0.0867 | 10.9 |
| 11 | 06:21 | 5.50 | 0.6 | 0.700 | 0.6 | 0.280 | 0.2608 | 1.00 | 0.2608 | 0.350 | 0.0913 | 11.5 |
| 12 | 06:22 | 6.00 | 0.6 | 0.600 | 0.6 | 0.240 | 0.2316 | 1.00 | 0.2316 | 0.300 | 0.0695 | 8.7 |
| 13 | 06:23 | 6.50 | 0.6 | 0.600 | 0.6 | 0.240 | 0.2457 | 1.00 | 0.2457 | 0.300 | 0.0737 | 9.3 |
| 14 | 06:24 | 7.00 | 0.6 | 0.600 | 0.6 | 0.240 | 0.2310 | 1.00 | 0.2310 | 0.300 | 0.0693 | 8.7 |
| 15 | 06:26 | 7.50 | 0.6 | 0.500 | 0.6 | 0.200 | 0.1932 | 1.00 | 0.1932 | 0.250 | 0.0483 | 6.1 |
| 16 | 06:27 | 8.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.1824 | 1.00 | 0.1824 | 0.250 | 0.0456 | 5.7 |
| 17 | 06:28 | 8.50 | 0.6 | 0.400 | 0.6 | 0.160 | 0.1421 | 1.00 | 0.1421 | 0.200 | 0.0284 | 3.6 |
| 18 | 06:29 | 9.00 | 0.6 | 0.300 | 0.6 | 0.120 | 0.0965 | 1.00 | 0.0965 | 0.150 | 0.0145 | 1.8 |
| 19 | 06:30 | 9.50 | 0.6 | 0.300 | 0.6 | 0.120 | 0.1388 | 1.00 | 0.1388 | 0.150 | 0.0208 | 2.6 |
| 20 | 06:31 | 10.00 | 0.6 | 0.200 | 0.6 | 0.080 | 0.0935 | 1.00 | 0.0935 | 0.100 | 0.0094 | 1.2 |
| 21 | 06:33 | 10.50 | 0.6 | 0.200 | 0.6 | 0.080 | 0.0610 | 1.00 | 0.0610 | 0.100 | 0.0061 | 0.8 |
| 22 | 06:33 | 11.00 | 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 TG-1

# Discharge Measurement Summary

Date Generated: Thu Apr 12 2018

| File Information | |
|---|---|
| File Name | JB0312.WAD |
| Start Date and Time | 2018/03/12 07:56:34 |

| Site Details | |
|---|---|
| Site Name | JB |
| Operator(s) | JW |

| 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^2 |
| Discharge | cfs |

**Discharge Uncertainty**

| Category | ISO | Stats |
|---|---|---|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.7% | 4.6% |
| Velocity | 2.5% | 19.0% |
| Width | 0.2% | 0.2% |
| Method | 3.3% | - |
| # Stations | 4.6% | - |
| **Overall** | **6.4%** | **19.6%** |

**Summary**

| | | | |
|---|---|---|---|
| Averaging Int. | 40 | # Stations | 11 |
| Start Edge | LEW | Total Width | 6.000 |
| Mean SNR | 25.7 dB | Total Area | 2.050 |
| Mean Temp | 40.64 °F | Mean Depth | 0.342 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.1392 |
| | | **Total Discharge** | **0.2854** |

**Supplemental Data**

| # | Time | Location | Gauge Height | Rated Flow | Comments |
|---|---|---|---|---|---|
| 1 | Mon Mar 12 07:53:52 CDT 2018 | 0.000 | 15.895 | | |

**Measurement Results**

| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 07:56 | 0.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| *1* | *07:56* | *1.00* | *0.6* | *0.300* | *0.6* | *0.120* | *-0.0213* | *1.00* | *-0.0213* | *0.225* | *-0.0048* | *-1.7* |
| *2* | *07:58* | *1.50* | *0.6* | *0.500* | *0.6* | *0.200* | *-0.0092* | *1.00* | *-0.0092* | *0.250* | *-0.0023* | *-0.8* |
| 3 | 07:59 | 2.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0581 | 1.00 | 0.0581 | 0.250 | 0.0145 | 5.1 |
| 4 | 08:00 | 2.50 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0925 | 1.00 | 0.0925 | 0.250 | 0.0231 | 8.1 |
| 5 | 08:01 | 3.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.2444 | 1.00 | 0.2444 | 0.250 | 0.0611 | 21.4 |
| 6 | 08:02 | 3.50 | 0.6 | 0.400 | 0.6 | 0.160 | 0.4222 | 1.00 | 0.4222 | 0.200 | 0.0844 | 29.6 |
| *7* | *08:03* | *4.00* | *0.6* | *0.400* | *0.6* | *0.160* | *0.1804* | *1.00* | *0.1804* | *0.200* | *0.0361* | *12.6* |
| *8* | *08:04* | *4.50* | *0.6* | *0.400* | *0.6* | *0.160* | *0.1073* | *1.00* | *0.1073* | *0.200* | *0.0215* | *7.5* |
| 9 | 08:06 | 5.00 | 0.6 | 0.300 | 0.6 | 0.120 | 0.2300 | 1.00 | 0.2300 | 0.225 | 0.0517 | 18.1 |
| 10 | 08:06 | 6.00 | 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 8 Discharge Summary JB-1

# Discharge Measurement Summary

Date Generated: Thu Apr 12 2018

**File Information**

| | |
|---|---|
| File Name | WC31218.WAD |
| Start Date and Time | 2018/03/12 07:46:56 |

**Site Details**

| | |
|---|---|
| Site Name | WC |
| Operator(s) | ZM |

**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^2 |
| Discharge | cfs |

**Discharge Uncertainty**

| Category | ISO | Stats |
|---|---|---|
| Accuracy | 1.0% | 1.0% |
| Depth | 0.4% | 2.0% |
| Velocity | 1.4% | 6.3% |
| Width | 0.1% | 0.1% |
| Method | 1.8% | - |
| # Stations | 2.2% | - |
| **Overall** | **3.4%** | **6.7%** |

**Summary**

| | | | |
|---|---|---|---|
| Averaging Int. | 40 | # Stations | 23 |
| Start Edge | LEW | Total Width | 11.000 |
| Mean SNR | 40.5 dB | Total Area | 4.800 |
| Mean Temp | 47.32 °F | Mean Depth | 0.436 |
| Disch. Equation | Mid-Section | Mean Velocity | 0.0241 |
| | | **Total Discharge** | **0.1156** |

**Supplemental Data**

| # | Time | Location | Gauge Height | Rated Flow | Comments |
|---|---|---|---|---|---|
| 1 | Mon Mar 12 07:50:58 CDT 2018 | 2.000 | 9.130 | | |

**Measurement Results**

| St | Clock | Loc | Method | Depth | %Dep | MeasD | Vel | CorrFact | MeanV | Area | Flow | %Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 07:46 | 0.00 | None | 0.000 | 0.0 | 0.0 | 0.0000 | 1.00 | 0.0000 | 0.000 | 0.0000 | 0.0 |
| *1* | *07:46* | *0.50* | *0.6* | *0.300* | *0.6* | *0.120* | *0.0000* | *1.00* | *0.0000* | *0.150* | *0.0000* | *0.0* |
| 2 | 07:48 | 1.00 | 0.6 | 0.400 | 0.6 | 0.160 | 0.0364 | 1.00 | 0.0364 | 0.200 | 0.0073 | 6.3 |
| 3 | 07:49 | 1.50 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0328 | 1.00 | 0.0328 | 0.250 | 0.0082 | 7.1 |
| 4 | 07:51 | 2.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0531 | 1.00 | 0.0531 | 0.250 | 0.0133 | 11.5 |
| 5 | 07:52 | 2.50 | 0.6 | 0.400 | 0.6 | 0.160 | 0.0446 | 1.00 | 0.0446 | 0.200 | 0.0089 | 7.7 |
| 6 | 07:53 | 3.00 | 0.6 | 0.400 | 0.6 | 0.160 | 0.0243 | 1.00 | 0.0243 | 0.200 | 0.0049 | 4.2 |
| 7 | 07:54 | 3.50 | 0.6 | 0.300 | 0.6 | 0.120 | 0.0194 | 1.00 | 0.0194 | 0.150 | 0.0029 | 2.5 |
| *8* | *07:55* | *4.00* | *0.6* | *0.400* | *0.6* | *0.160* | *0.0312* | *1.00* | *0.0312* | *0.200* | *0.0062* | *5.4* |
| *9* | *07:56* | *4.50* | *0.6* | *0.400* | *0.6* | *0.160* | *0.0282* | *1.00* | *0.0282* | *0.200* | *0.0056* | *4.9* |
| 10 | 07:57 | 5.00 | 0.6 | 0.400 | 0.6 | 0.160 | 0.0253 | 1.00 | 0.0253 | 0.200 | 0.0051 | 4.4 |
| 11 | 07:58 | 5.50 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0315 | 1.00 | 0.0315 | 0.250 | 0.0079 | 6.8 |
| 12 | 08:00 | 6.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0266 | 1.00 | 0.0266 | 0.250 | 0.0066 | 5.7 |
| 13 | 08:01 | 6.50 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0292 | 1.00 | 0.0292 | 0.250 | 0.0073 | 6.3 |
| 14 | 08:02 | 7.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0154 | 1.00 | 0.0154 | 0.250 | 0.0039 | 3.3 |
| 15 | 08:03 | 7.50 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0157 | 1.00 | 0.0157 | 0.250 | 0.0039 | 3.4 |
| 16 | 08:04 | 8.00 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0075 | 1.00 | 0.0075 | 0.250 | 0.0019 | 1.6 |
| 17 | 08:06 | 8.50 | 0.6 | 0.600 | 0.6 | 0.240 | 0.0095 | 1.00 | 0.0095 | 0.300 | 0.0029 | 2.5 |
| 18 | 08:07 | 9.00 | 0.6 | 0.600 | 0.6 | 0.240 | 0.0171 | 1.00 | 0.0171 | 0.300 | 0.0051 | 4.4 |
| 19 | 08:08 | 9.50 | 0.6 | 0.500 | 0.6 | 0.200 | 0.0092 | 1.00 | 0.0092 | 0.250 | 0.0023 | 2.0 |
| *20* | *08:12* | *10.00* | *0.6* | *0.500* | *0.6* | *0.200* | *0.0207* | *1.00* | *0.0207* | *0.250* | *0.0052* | *4.5* |
| *21* | *08:14* | *10.50* | *0.6* | *0.400* | *0.6* | *0.160* | *0.0315* | *1.00* | *0.0315* | *0.200* | *0.0063* | *5.4* |
| 22 | 08:14 | 11.00 | 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 9 Discharge Summary WC-1

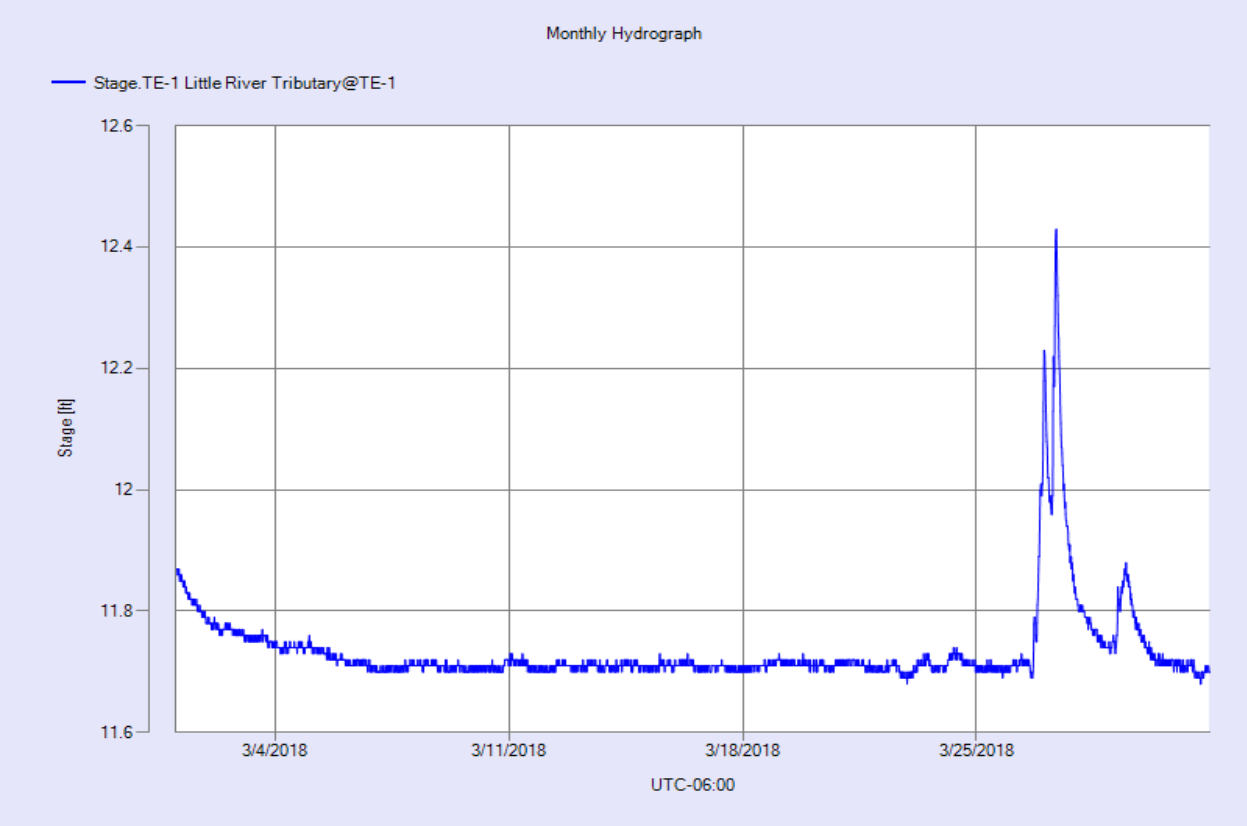


Figure 10 Monthly Hydrograph TE-1

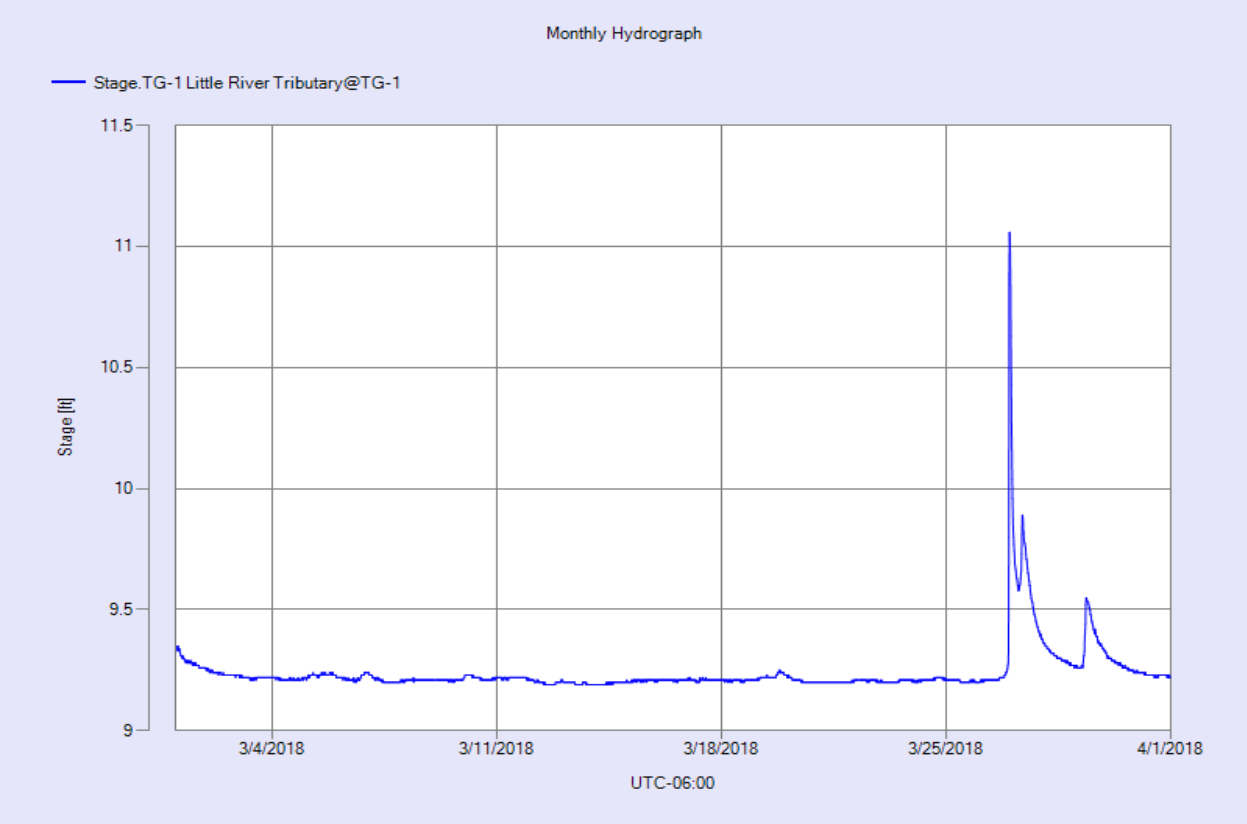


Figure 11 Monthly Hydrograph TG-1

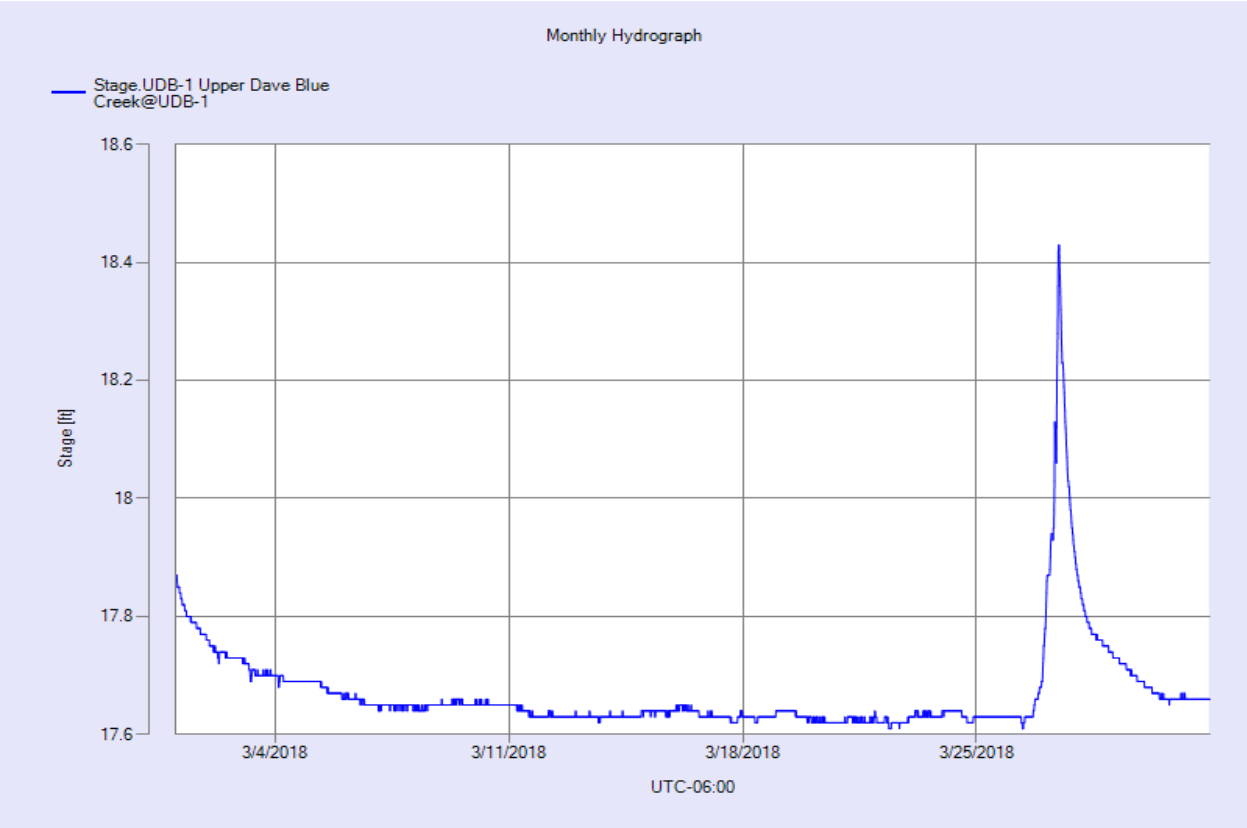


Figure 12 Monthly Hydrograph UDB-1

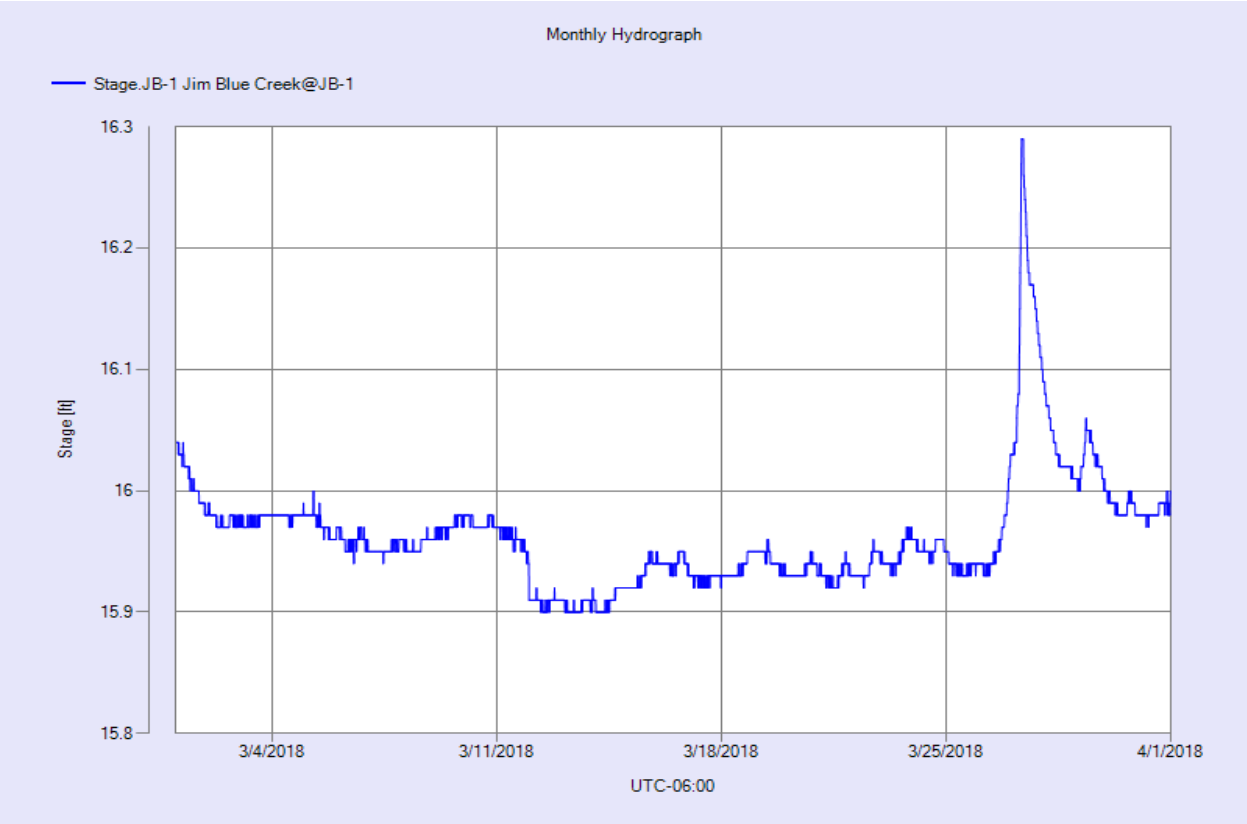


Figure 13 Monthly Hydrograph JB-1

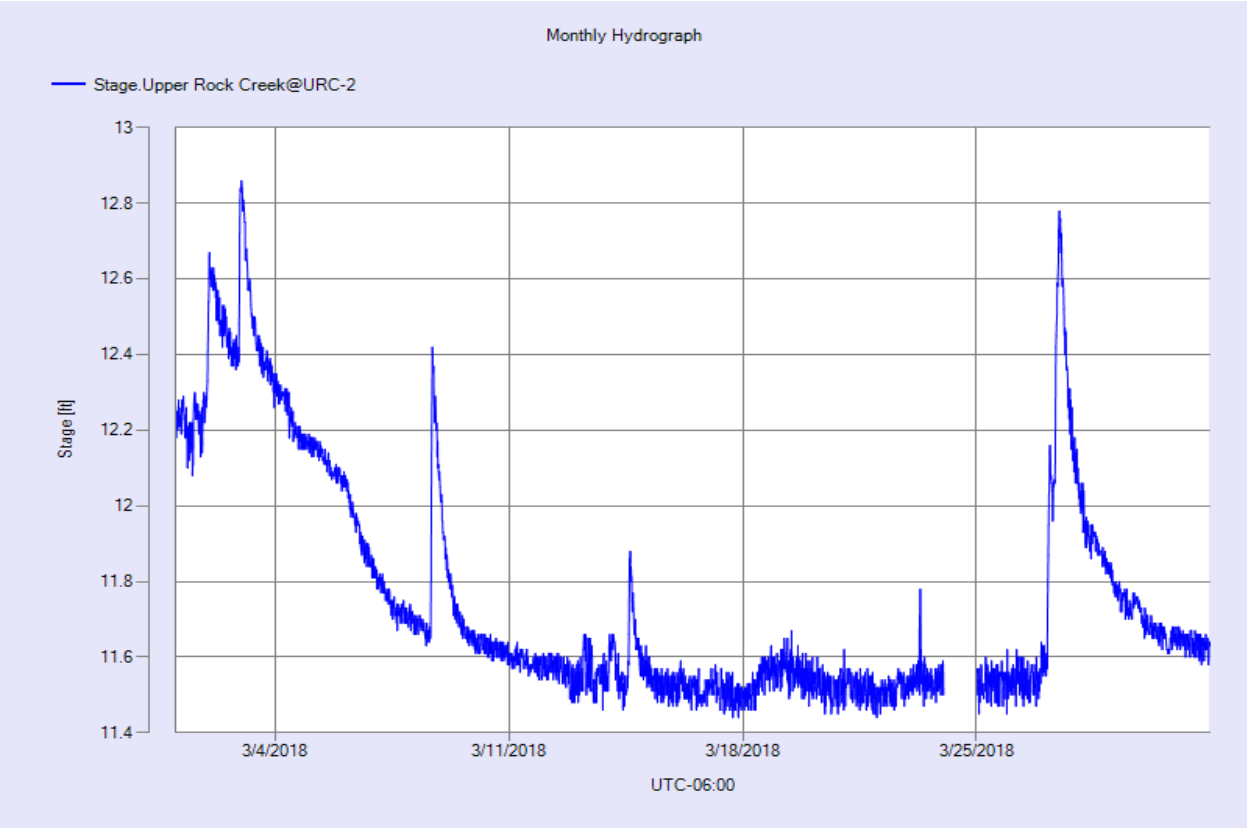


Figure 14 Monthly Hydrograph URC-2

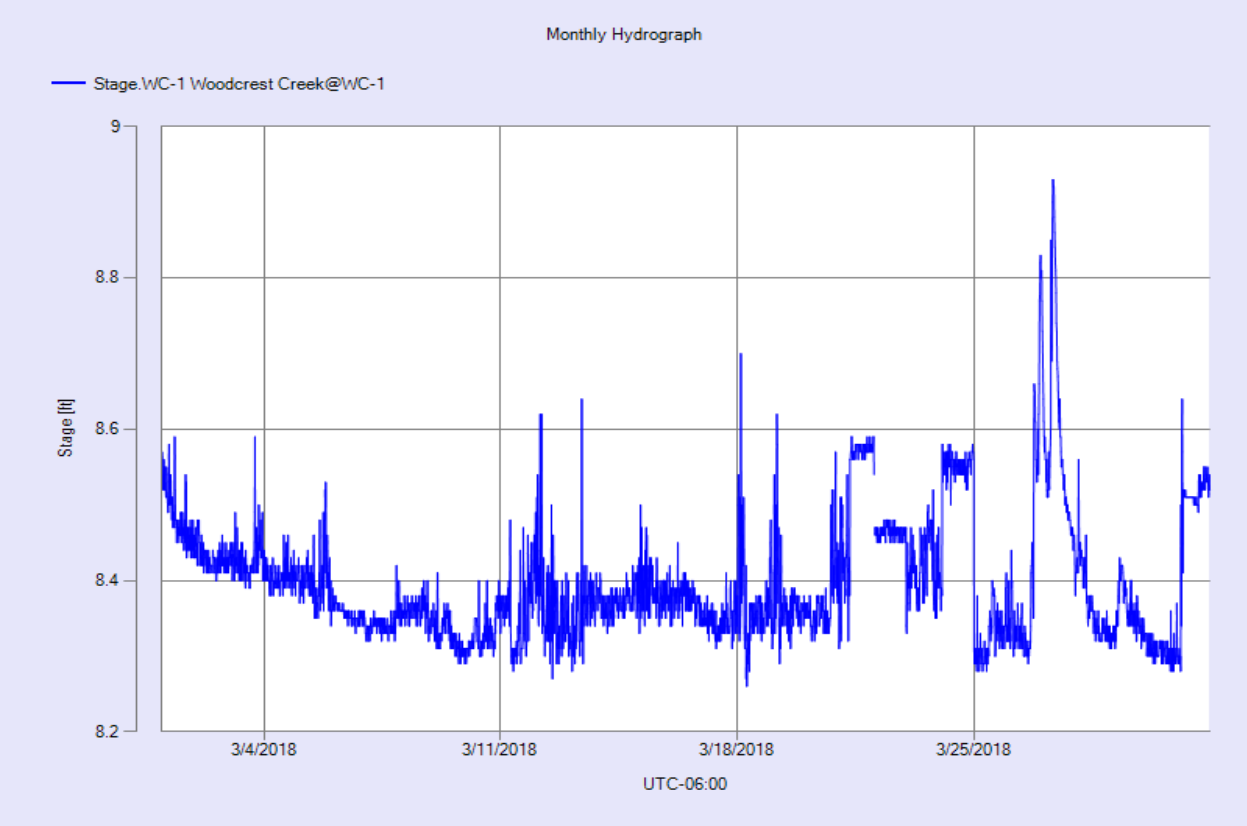


Figure 15 Monthly Hydrograph WC-1

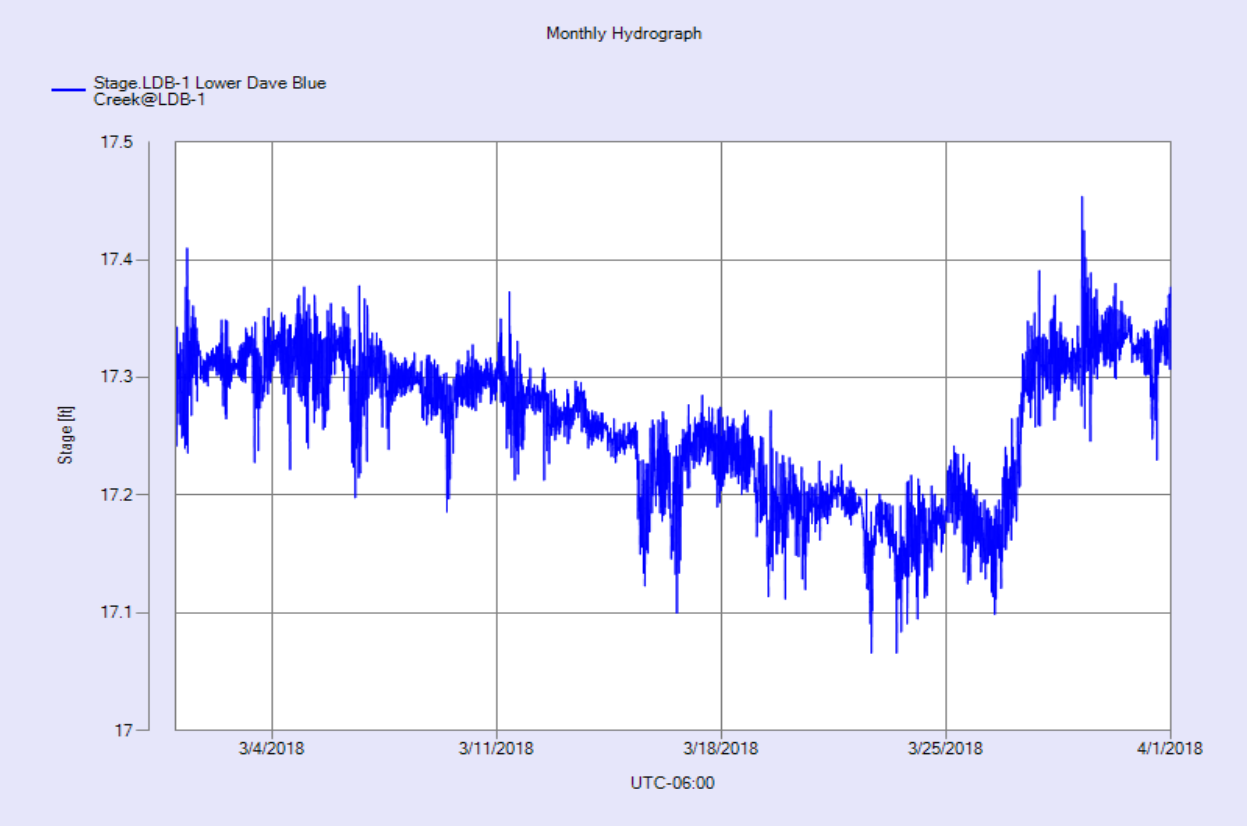


Figure 16 Monthly Hydrograph LDB-1

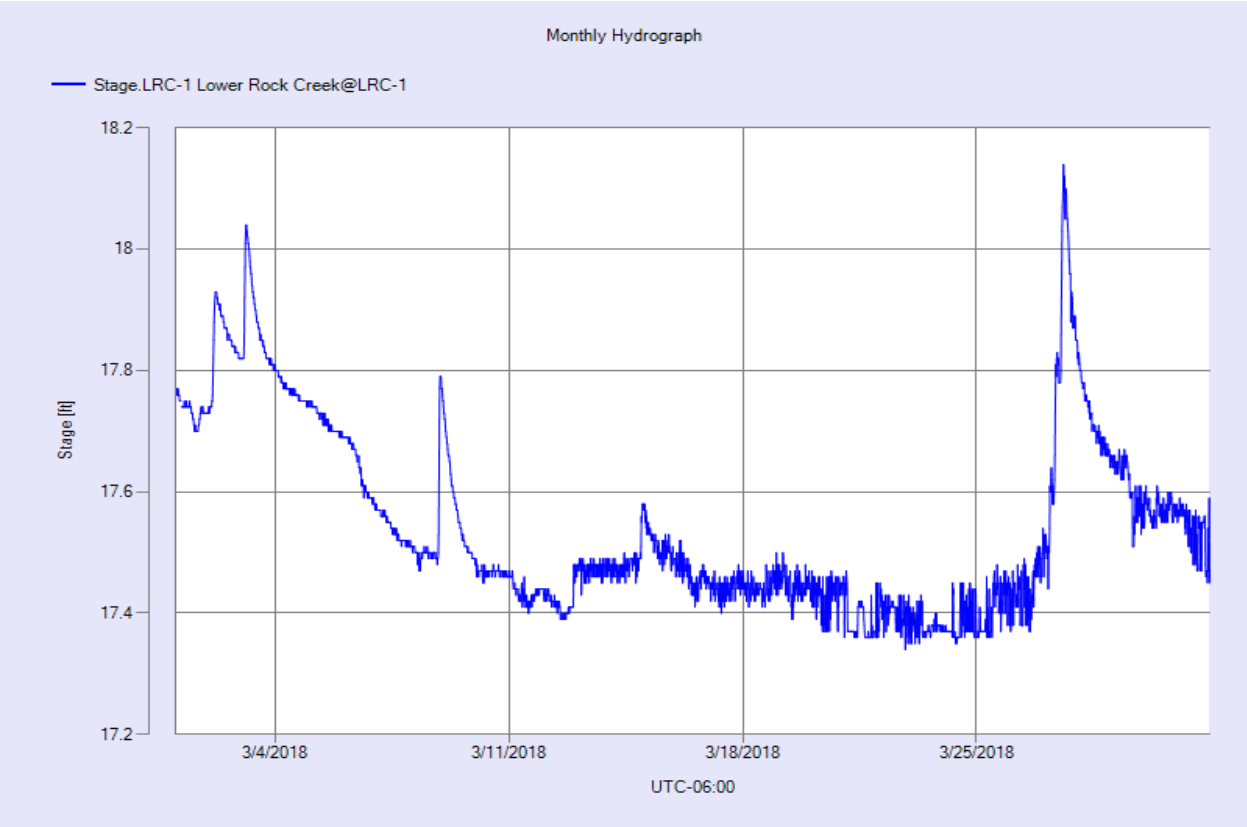


Figure 17 Monthly Hydrograph LRC-1

MESONET CLIMATOLOGICAL DATA SUMMARY — March 2018 — 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 ) MAX | MIN | AVG | DEWPT | DEG DAYS HDD | CDD | HUMIDITY (%) MAX | MIN | AVG | RAIN (in) | PRESSURE (in) STN | MSL | WIND DIR | SPEED AVG | (mph) MAX | SOLAR ($MJ/m^2$) | 4" SOIL TEMPERATURES SOD | BARE | MAX | MIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 60 | 37 | 48.7 | 33.4 | 16 | 0 | 87 | 28 | 59 | 0.00 | 28.88 | 30.14 | N | 12.4 | 31.3 | 19.64 | 51.6 | 52.0 | 56 | 47 |
| 2 | 67 | 30 | 50.4 | 33.2 | 17 | 0 | 87 | 27 | 55 | 0.00 | 29.00 | 30.26 | SSE | 8.0 | 24.5 | 20.40 | 49.0 | 47.5 | 55 | 40 |
| 3 | 70 | 48 | 57.9 | 45.2 | 6 | 0 | 76 | 49 | 63 | 0.00 | 28.88 | 30.13 | SSE | 13.0 | 26.3 | 17.83 | 51.0 | 51.0 | 57 | 46 |
| 4 | 63 | 56 | 59.3 | 52.1 | 5 | 0 | 92 | 56 | 78 | 0.00 | 28.69 | 29.93 | SSE | 13.5 | 30.3 | 5.02 | 52.9 | 53.8 | 56 | 52 |
| 5 | 64 | 37 | 54.6 | 28.7 | 15 | 0 | 96 | 11 | 45 | 0.00 | 28.70 | 29.95 | NNW | 14.9 | 43.1 | 19.96 | 53.2 | 52.6 | 55 | 46 |
| 6 | 61 | 32 | 46.5 | 15.8 | 18 | 0 | 62 | 12 | 33 | 0.00 | 28.88 | 30.14 | NW | 16.2 | 41.1 | 21.01 | 49.0 | 44.9 | 50 | 40 |
| 7 | 53 | 30 | 39.8 | 20.7 | 24 | 0 | 72 | 26 | 48 | 0.00 | 29.02 | 30.28 | NNW | 8.0 | 23.1 | 20.65 | 47.8 | 43.8 | 51 | 39 |
| 8 | 68 | 28 | 48.4 | 26.9 | 17 | 0 | 86 | 21 | 48 | 0.00 | 28.86 | 30.11 | SSE | 6.6 | 22.5 | 19.78 | 47.8 | 45.9 | 55 | 38 |
| 9 | 74 | 47 | 59.1 | 41.7 | 5 | 0 | 76 | 37 | 53 | 0.00 | 28.56 | 29.80 | S | 9.6 | 25.7 | 19.08 | 50.6 | 52.7 | 61 | 45 |
| 10 | 70 | 45 | 58.1 | 53.7 | 8 | 0 | 99 | 63 | 86 | 0.00 | 28.54 | 29.78 | NNE | 4.6 | 14.3 | 8.96 | 52.5 | 54.8 | 60 | 50 |
| 11 | 57 | 38 | 48.3 | 32.7 | 18 | 0 | 88 | 38 | 56 | 0.00 | 28.92 | 30.17 | N | 16.8 | 36.5 | 20.33 | 52.2 | 53.7 | 58 | 50 |
| 12 | 54 | 29 | 41.0 | 24.1 | 23 | 0 | 89 | 23 | 56 | 0.00 | 29.08 | 30.34 | N | 7.7 | 20.4 | 22.13 | 49.9 | 49.9 | 57 | 43 |
| 13 | 59 | 27 | 43.1 | 23.2 | 22 | 0 | 84 | 21 | 50 | 0.00 | 29.07 | 30.33 | N | 5.3 | 19.4 | 19.67 | 48.9 | 48.9 | 57 | 42 |
| 14 | 67 | 28 | 49.4 | 23.8 | 17 | 0 | 84 | 19 | 43 | 0.00 | 28.94 | 30.20 | S | 6.8 | 21.6 | 21.67 | 48.9 | 50.2 | 59 | 41 |
| 15 | 76 | 47 | 61.6 | 39.8 | 3 | 0 | 69 | 34 | 45 | 0.00 | 28.57 | 29.81 | S | 14.5 | 36.5 | 20.06 | 51.4 | 55.3 | 63 | 48 |
| 16 | 78 | 56 | 65.7 | 36.5 | 0 | 2 | 88 | 12 | 43 | 0.00 | 28.49 | 29.73 | WSW | 13.7 | 35.2 | 22.64 | 54.7 | 60.1 | 67 | 55 |
| 17 | 63 | 41 | 52.5 | 35.7 | 13 | 0 | 74 | 35 | 54 | 0.00 | 28.70 | 29.95 | N | 8.8 | 22.8 | 14.15 | 53.5 | 56.9 | 61 | 52 |
| 18 | 68 | 44 | 56.2 | 46.8 | 9 | 0 | 94 | 55 | 71 | 0.00 | 28.54 | 29.78 | ENE | 6.7 | 24.6 | 9.38 | 53.1 | 55.5 | 60 | 51 |
| 19 | 64 | 43 | 49.5 | 35.2 | 12 | 0 | 91 | 28 | 60 | 0.00 | 28.49 | 29.73 | NW | 19.6 | 45.5 | 10.70 | 52.8 | 54.6 | 58 | 52 |
| 20 | 59 | 37 | 46.6 | 32.2 | 17 | 0 | 83 | 33 | 60 | 0.00 | 28.78 | 30.03 | NNW | 11.4 | 29.0 | 22.64 | 51.6 | 53.4 | 60 | 48 |
| 21 | 68 | 32 | 51.5 | 30.7 | 15 | 0 | 91 | 22 | 51 | 0.00 | 28.91 | 30.16 | ESE | 4.9 | 17.8 | 20.39 | 52.0 | 54.4 | 63 | 46 |
| 22 | 79 | 49 | 63.9 | 39.8 | 1 | 0 | 61 | 28 | 42 | 0.00 | 28.87 | 30.12 | SSE | 12.3 | 31.8 | 22.10 | 54.2 | 58.5 | 66 | 52 |
| 23 | 79 | 58 | 67.5 | 55.6 | 0 | 4 | 82 | 49 | 66 | 0.00 | 28.62 | 29.87 | S | 13.9 | 32.9 | 13.01 | 56.8 | 61.5 | 66 | 58 |
| 24 | 74 | 54 | 64.7 | 49.9 | 1 | 0 | 87 | 39 | 60 | 0.00 | 28.63 | 29.87 | NNW | 10.8 | 26.7 | 22.40 | 59.0 | 63.6 | 69 | 59 |
| 25 | 67 | 45 | 56.5 | 48.9 | 9 | 0 | 92 | 59 | 76 | 0.00 | 28.63 | 29.88 | ENE | 10.9 | 23.1 | 11.17 | 57.3 | 60.1 | 64 | 56 |
| 26 | 77 | 62 | 66.1 | 62.0 | 0 | 5 | 98 | 60 | 87 | 0.34 | 28.59 | 29.83 | SSE | 9.6 | 25.6 | 7.86 | 59.7 | 63.0 | 67 | 61 |
| 27 | 62 | 45 | 49.8 | 48.7 | 12 | 0 | 99 | 93 | 96 | 0.28 | 28.77 | 30.02 | N | 10.3 | 23.0 | 2.57 | 57.8 | 57.1 | 62 | 53 |
| 28 | 63 | 44 | 51.0 | 48.2 | 12 | 0 | 100 | 65 | 91 | 0.01 | 28.65 | 29.89 | SE | 4.8 | 12.9 | 10.04 | 55.8 | 54.6 | 60 | 51 |
| 29 | 59 | 41 | 51.5 | 45.4 | 15 | 0 | 99 | 57 | 81 | 0.08 | 28.73 | 29.98 | N | 9.9 | 34.9 | 17.19 | 56.8 | 55.7 | 59 | 52 |
| 30 | 66 | 36 | 51.2 | 38.0 | 14 | 0 | 97 | 32 | 65 | 0.01 | 29.00 | 30.25 | SSE | 4.9 | 17.3 | 23.95 | 55.9 | 53.8 | 62 | 46 |
| 31 | 73 | 51 | 61.7 | 48.5 | 3 | 0 | 73 | 54 | 62 | 0.00 | 28.77 | 30.02 | S | 11.1 | 31.9 | 15.26 | 57.3 | 56.4 | 62 | 51 |
| | 66 | 42 | 53.9 | 38.6 | <- Monthly Averages -> | | | | | | 28.77 | 30.02 | SSE | 10.4 | 45.5 | 16.83 | 53.1 | 54.1 | 60 | 49 |

Temperature - Highest: 79 Lowest: 27

Degree Days - Total HDD: 345 Total CDD: 10

Rainfall: Monthly Total: 0.72 in. Greatest 24 Hr: 0.34 in.

Humidity - Highest: 100 Lowest: 11

Number of Days With:

Tmax ≥ 90: 0 — Rainfall ≥ 0.01 inch: 5

Tmax ≤ 32: 0 — Rainfall ≥ 0.10 inch: 2

Tmin ≤ 32: 8 — Avg Wind Speed ≥ 10 mph: 16

Tmin ≤ 0: 0 — Max Wind Speed ≥ 30 mph: 12



* Denotes incomplete record

Figure 18 March Mesonet Data