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



SY2017 Monthly Report

Lake Thunderbird TMDL Monitoring Plan Implementation:

March 2017 Monitoring Report

Oklahoma Water Resources Board
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SUMMARY OF MARCH WATER QUALITY SAMPLING

Sampling for March 2017 occurred on the twenty-second and was considered a base flow collection. Discharge measurements were not collected this month due to a lack of rain prior to sampling, where most of the stage measurements were at or below base flow conditions. All water level gages were operational for the month with the exception of LRC-1. LRC-1 is recording data, but not transmitting, as a result of continuing technical issues. Mesonet data for Norman shows a total of 4.18 inches of rainfall for the month of March with no precipitation in the 72 hours preceding and 0.09 inches of precipitation following the sampling event.

RESULTS

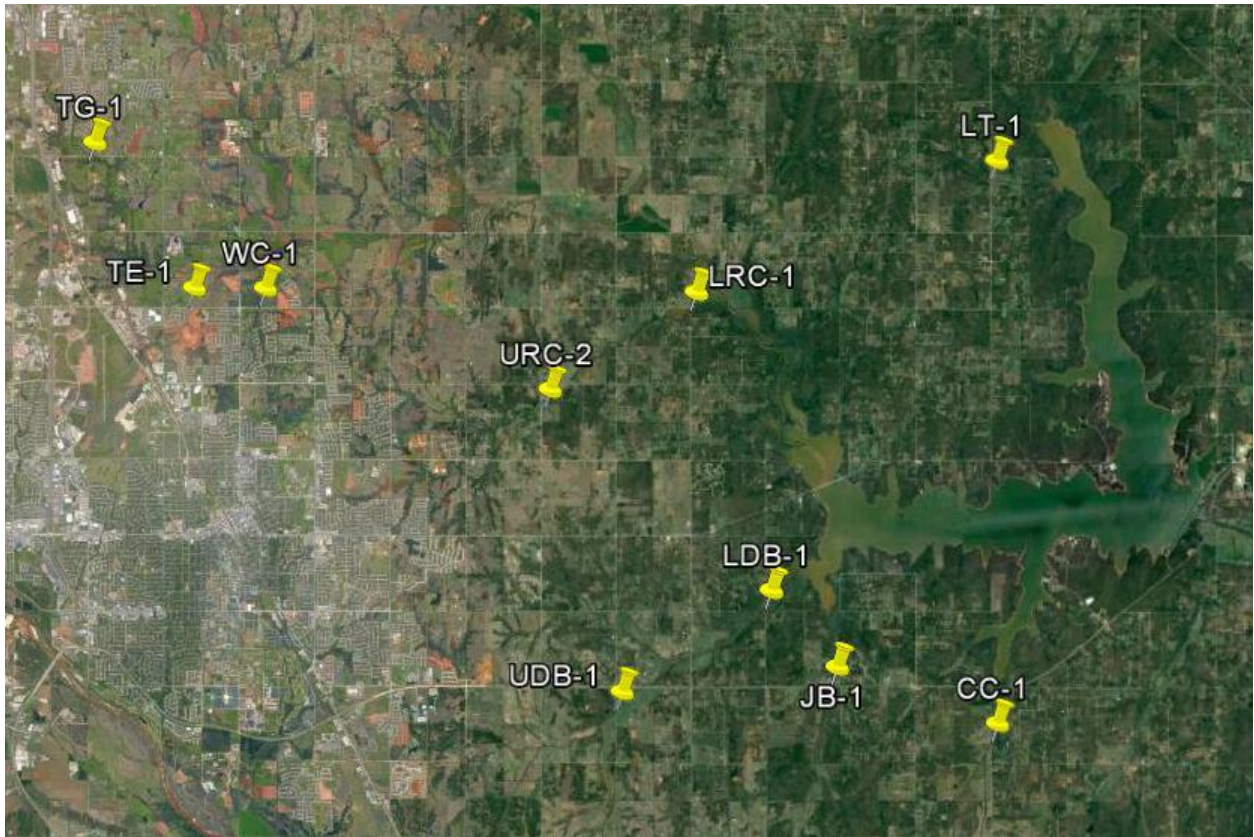


Figure 1 Monitoring Station Map

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 | 42816.0 | 9:40 | sd | 13.9 | 10.2 | 672.0 | 7.9 | 8.0 | |
| tg-1 | 42816.0 | 15:45 | sd | N/A | N/A | N/A | N/A | N/A | Field Blank |
| udb-1 | 42816.0 | 8:50 | sd | 16.0 | 5.7 | 968.0 | 7.7 | 14.0 | |
| jb-1 | 42816.0 | 10:25 | sd | 14.6 | 9.6 | 983.0 | 7.8 | 14.0 | |
| ldb-1 | 42816.0 | 10:55 | sd | 17.6 | 4.9 | 944.0 | 7.9 | 119.0 | |
| lt-1 | 42816.0 | 11:40 | sd | 15.5 | 5.0 | 832.0 | 7.6 | 18.0 | |
| lrc-1 | 42816.0 | 12:30 | sd | 18.0 | 7.0 | 778.0 | 7.8 | 26.0 | |
| urc-2 | 42816.0 | 13:25 | sd | 16.6 | 8.9 | 830.0 | 7.7 | 8.0 | |
| wc-1 | 42816.0 | 14:10 | sd | 17.9 | 8.2 | 1011.0 | 7.8 | 14.0 | |
| te-1 | 42816.0 | 14:45 | sd | 19.3 | 9.6 | 982.0 | 8.0 | 66.0 | water was very green-may be from fertilizer runoff from neighborhood. brush on ds side removed |
| tg-1 | 42816.0 | 15:30 | sd | 20.9 | 13.2 | 1137.0 | 8.1 | 6.0 | |

Table 1 Field Data Form

| Site Name | TKN (mg/L) | Nitrate/Nitrite (mg/L) | TP (mg/L) | TSS (mg/L) |
|-----------|------------|------------------------|-----------|------------|
| TG-1 | <0.050 | <0.050 | 0.030 | 2.64 |
| CC-1 | <0.050 | <0.050 | 0.036 | 3.30 |
| JB-1 | <0.050 | <0.050 | 0.035 | 6.20 |
| UDB-1 | <0.050 | <0.050 | 0.048 | 5.20 |
| LDB-1 | <0.050 | <0.050 | 0.062 | 69.6 |
| LRC-1 | <0.050 | <0.050 | 0.034 | 17.6 |
| URC-2 | <0.050 | <0.050 | 0.030 | 3.26 |
| WC-1 | <0.050 | <0.050 | 0.055 | 7.04 |
| TE-1 | <0.050 | <0.050 | 0.048 | 14.2 |
| LT-1 | <0.050 | <0.050 | 0.028 | 9.42 |

Table 2 Laboratory Analysis Summary

| Site Name | TKN | Nitrate/Nitrite | TP | TSS |
|---------------|-------------|-----------------|----------------------|------------|
| Field Blank | <0.050 mg/L | <0.050 mg/L | <0.005 mg/L | <2.52 mg/L |
| Duplicate | <0.050 mg/L | <0.050 mg/L | 0.032 mg/L | 3.32 mg/L |
| Duplicate RPD | 0% | 0% | 11.76%* ₁ | 0.60% |

Table 3 QA/QC Data Where Subscript 1 Denotes a Level 2 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.

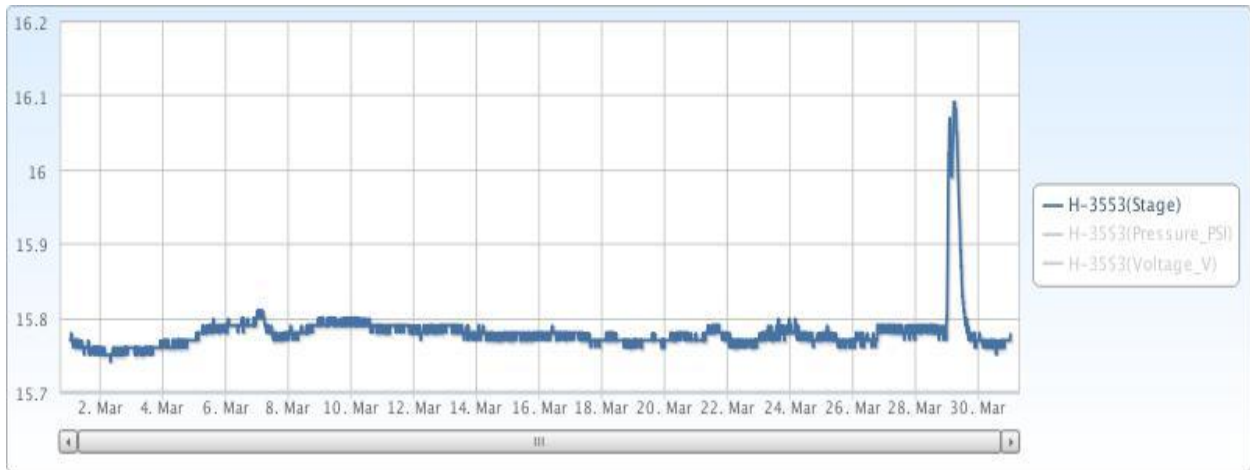


Figure 2 Monthly Hydrograph JB-1

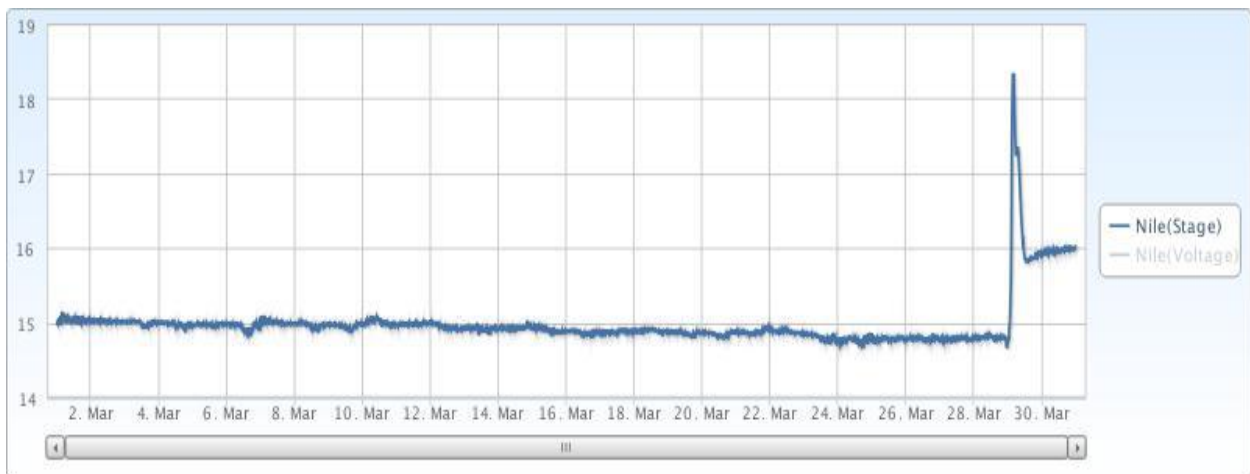


Figure 3 Monthly Hydrograph LDB-1

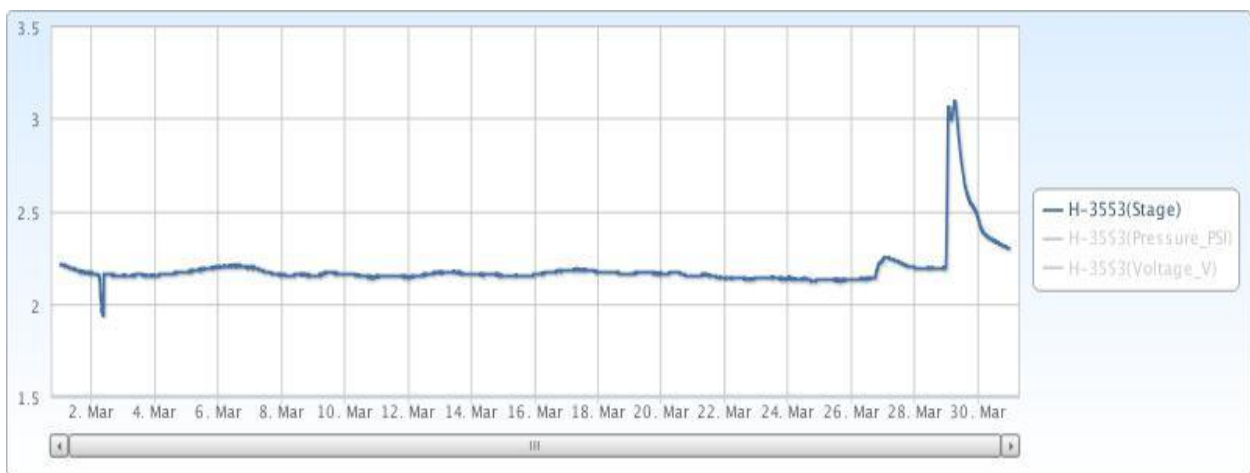


Figure 4 Monthly Hydrograph LT-1

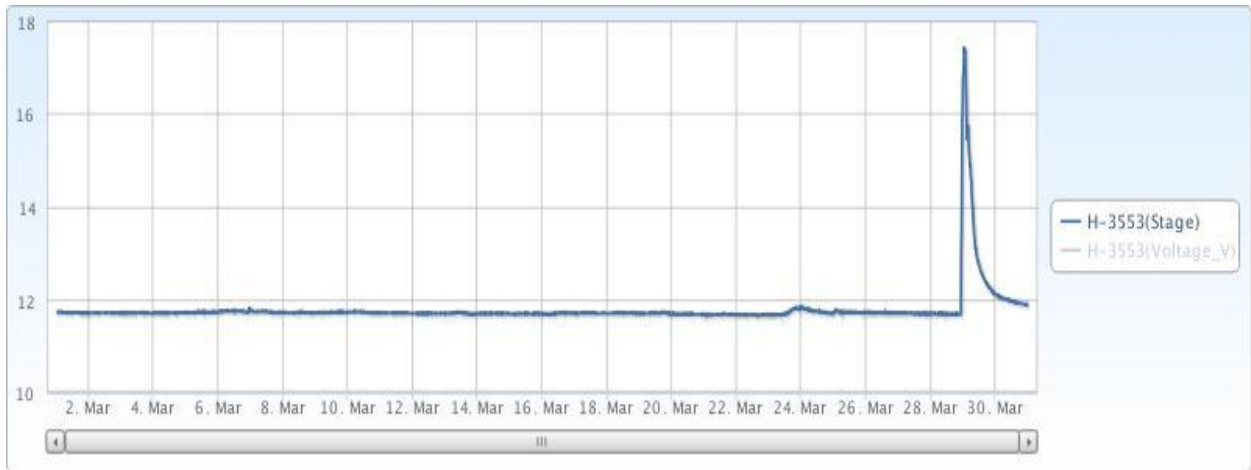


Figure 5 Monthly Hydrograph TE-1

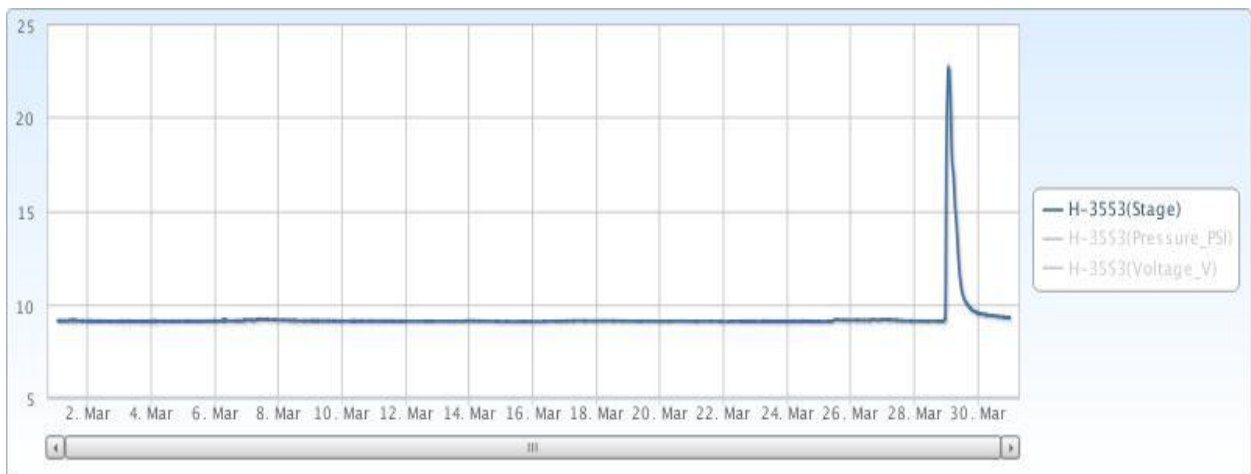


Figure 6 Monthly Hydrograph TG-1

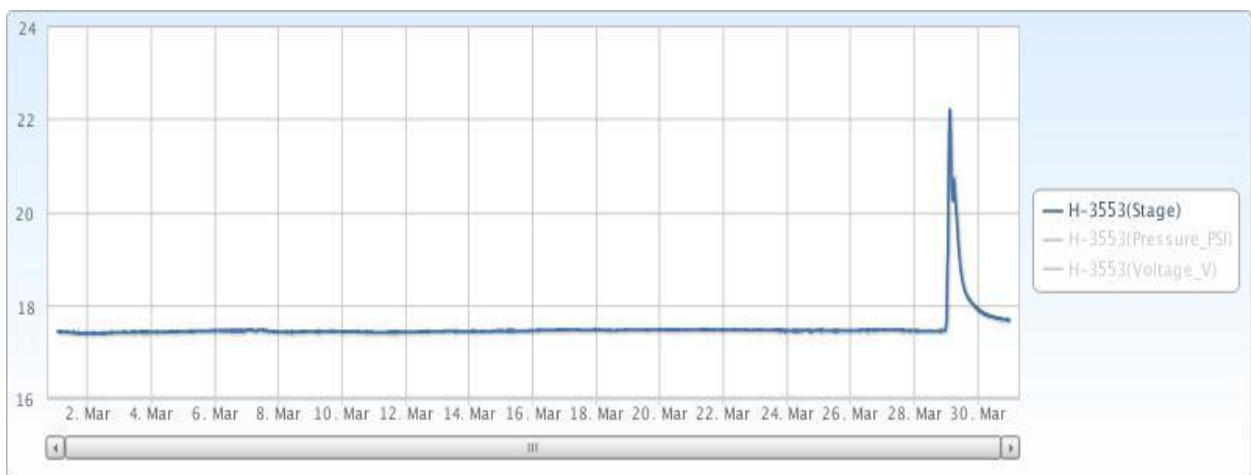


Figure 7 Monthly Hydrograph UDB-1

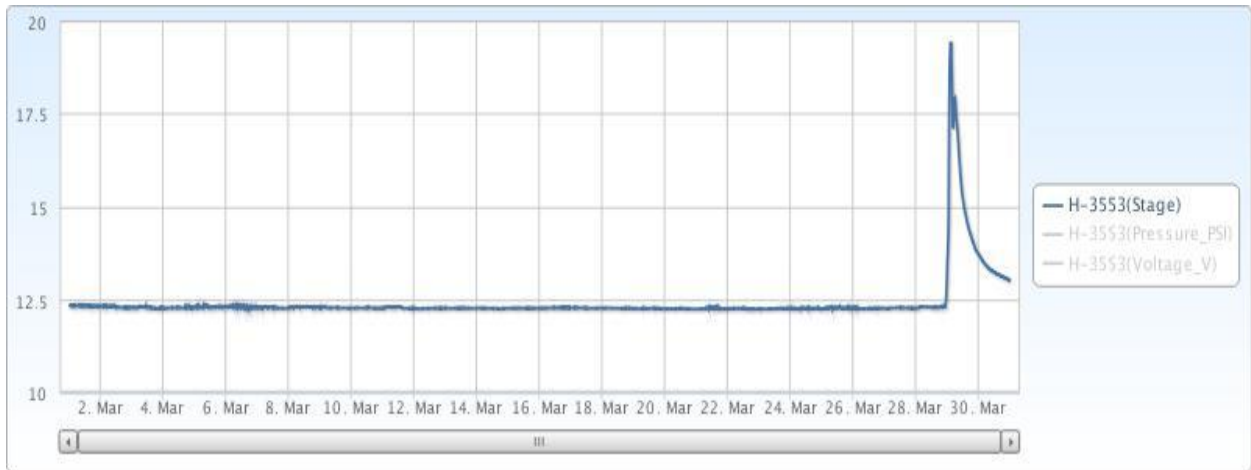


Figure 8 Monthly Hydrograph URC-2

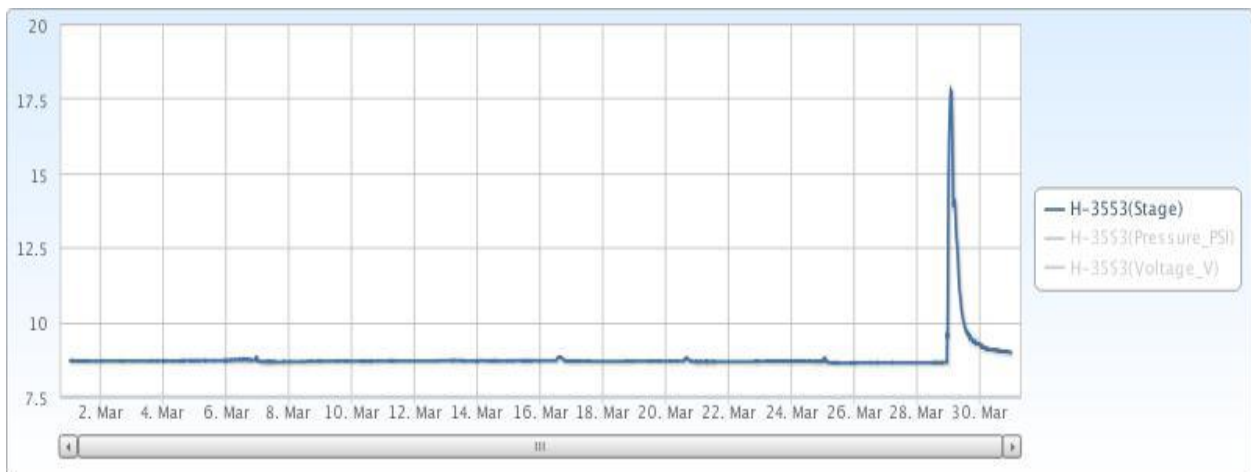


Figure 9 Monthly Hydrograph WC-1

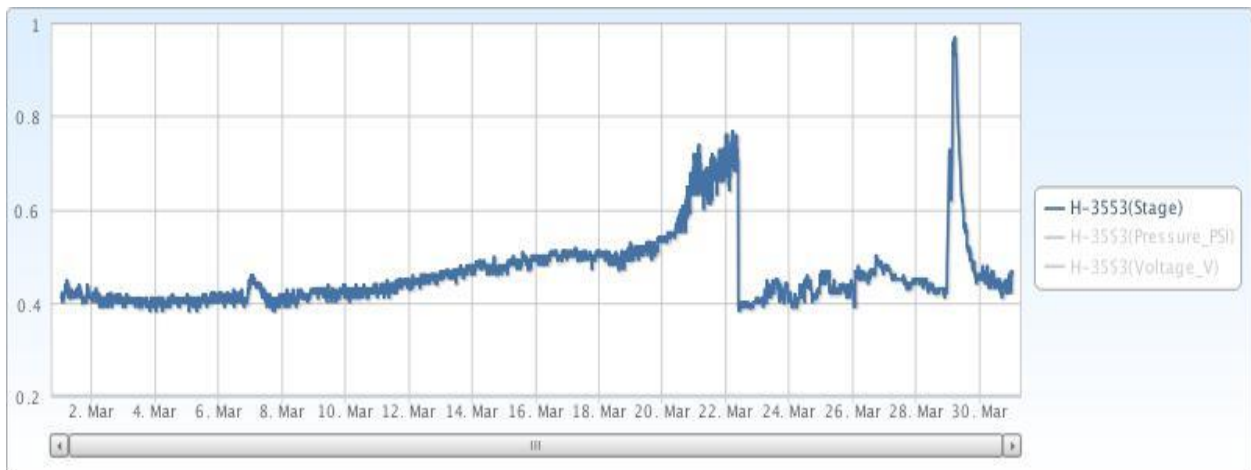


Figure 10 Monthly Hydrograph CC-1

| MESONET CLIMATOLOGICAL DATA SUMMARY | | | | | March 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 | 69 | 35 | 49.1 | 18.5 | 13 | 0 | 61 | 12 | 34 | 0.00 | 28.92 | 30.17 | NNW | 13.9 | 43.1 | 20.82 | 54.1 | 53.9 | 59 | 49 | | |
| 2 | 64 | 26 | 46.1 | 17.9 | 20 | 0 | 84 | 11 | 41 | 0.00 | 29.15 | 30.41 | SSW | 3.2 | 13.2 | 20.50 | 51.1 | 50.6 | 59 | 43 | | |
| 3 | 69 | 29 | 51.8 | 22.9 | 16 | 0 | 86 | 14 | 39 | 0.00 | 29.16 | 30.42 | S | 8.1 | 29.6 | 19.52 | 50.8 | 51.5 | 59 | 45 | | |
| 4 | 64 | 46 | 53.0 | 37.1 | 10 | 0 | 93 | 18 | 58 | 0.00 | 29.00 | 30.26 | S | 12.5 | 37.2 | 6.97 | 51.0 | 52.0 | 54 | 49 | | |
| 5 | 59 | 51 | 55.3 | 54.2 | 10 | 0 | 100 | 89 | 96 | 0.03 | 28.78 | 30.03 | S | 13.1 | 26.8 | 3.71 | 52.5 | 53.7 | 55 | 52 | | |
| 6 | 80 | 56 | 68.8 | 55.6 | 0 | 3 | 99 | 17 | 67 | 0.01 | 28.52 | 29.76 | S | 17.6 | 43.8 | 10.12 | 55.7 | 59.1 | 64 | 55 | | |
| 7 | 64 | 37 | 52.6 | 8.9 | 15 | 0 | 42 | 8 | 19 | 0.00 | 28.95 | 30.21 | N | 8.2 | 27.5 | 21.84 | 54.9 | 57.2 | 63 | 51 | | |
| 8 | 75 | 41 | 58.2 | 26.9 | 7 | 0 | 53 | 15 | 32 | 0.00 | 28.94 | 30.20 | S | 9.6 | 29.6 | 20.41 | 53.0 | 55.1 | 62 | 48 | | |
| 9 | 81* | 55* | 68.2* | 55.3* | 0* | 3* | 90* | 46* | 65* | 0.00* | 28.78* | 30.03* | SSW* | 10.6* | 28.1* | NA | 56.1* | 60.6* | 67* | 55* | | |
| 10 | 67 | 44 | 55.6 | 35.2 | 9 | 0 | 84 | 30 | 48 | 0.00 | 28.97 | 30.23 | NE | 11.7 | 30.1 | 18.71 | 57.0 | 61.0 | 65 | 57 | | |
| 11 | 53 | 37 | 44.4 | 37.4 | 20 | 0 | 99 | 48 | 78 | 0.01 | 28.99 | 30.25 | NE | 12.1 | 26.7 | 3.33 | 54.8 | 55.6 | 60 | 51 | | |
| 12 | 48 | 36 | 41.4 | 35.9 | 23 | 0 | 92 | 68 | 81 | 0.00 | 28.99 | 30.24 | S | 7.4 | 23.5 | 5.95 | 51.9 | 50.8 | 53 | 49 | | |
| 13 | 48 | 33 | 42.4 | 28.7 | 25 | 0 | 96 | 34 | 61 | 0.02 | 28.96 | 30.22 | NNW | 13.1 | 36.9 | 21.07 | 51.8 | 51.7 | 56 | 49 | | |
| 14 | 55 | 29 | 40.6 | 25.1 | 23 | 0 | 86 | 31 | 57 | 0.00 | 29.01 | 30.27 | NE | 6.3 | 22.1 | 20.75 | 51.1 | 51.1 | 59 | 45 | | |
| 15 | 60 | 30 | 44.3 | 30.2 | 20 | 0 | 85 | 35 | 60 | 0.00 | 29.06 | 30.31 | SSE | 8.2 | 18.4 | 21.22 | 51.6 | 52.3 | 59 | 46 | | |
| 16 | 73 | 44 | 58.5 | 50.2 | 6 | 0 | 88 | 54 | 75 | 0.00 | 28.80 | 30.05 | SSE | 12.6 | 33.2 | 15.47 | 53.4 | 55.5 | 62 | 50 | | |
| 17 | 79 | 60 | 68.7 | 59.4 | 0 | 5 | 96 | 47 | 74 | 0.00 | 28.80 | 30.05 | S | 7.4 | 23.3 | 14.15 | 57.6 | 61.8 | 68 | 57 | | |
| 18 | 84 | 58 | 70.0 | 53.8 | 0 | 6 | 87 | 38 | 59 | 0.00 | 28.96 | 30.22 | SSE | 8.6 | 19.4 | 20.63 | 59.5 | 64.6 | 71 | 59 | | |
| 19 | 87 | 61 | 73.5 | 60.2 | 0 | 9 | 96 | 33 | 67 | 0.00 | 28.83 | 30.08 | S | 12.1 | 29.7 | 21.80 | 61.9 | 67.7 | 74 | 62 | | |
| 20 | 90 | 64 | 76.7 | 52.7 | 0 | 12 | 74 | 26 | 47 | 0.00 | 28.69 | 29.94 | SSW | 13.2 | 28.6 | 22.27 | 63.1 | 69.2 | 75 | 64 | | |
| 21 | 85 | 55 | 71.3 | 53.3 | 0 | 5 | 76 | 40 | 54 | 0.00 | 28.73 | 29.98 | S | 10.3 | 27.0 | 18.79 | 63.5 | 69.6 | 75 | 65 | | |
| 22 | 74 | 51 | 61.1 | 50.4 | 2 | 0 | 86 | 52 | 68 | 0.00 | 28.84 | 30.10 | SE | 11.2 | 21.6 | 17.09 | 62.4 | 66.9 | 71 | 62 | | |
| 23 | 83 | 56 | 70.0 | 51.8 | 0 | 5 | 92 | 27 | 58 | 0.00 | 28.64 | 29.89 | SSE | 17.0 | 46.1 | 21.24 | 62.8 | 67.4 | 72 | 63 | | |
| 24 | 78 | 53 | 67.8 | 44.2 | 0 | 1 | 95 | 14 | 49 | 0.06 | 28.50 | 29.74 | S | 15.1 | 36.5 | 18.50 | 63.0 | 68.2 | 73 | 65 | | |
| 25 | 61 | 47 | 52.0 | 44.9 | 11 | 0 | 96 | 55 | 78 | 0.03 | 28.69 | 29.93 | NW | 12.1 | 34.1 | 10.31 | 60.2 | 61.4 | 66 | 59 | | |
| 26 | 77 | 42 | 59.7 | 51.5 | 5 | 0 | 97 | 48 | 77 | 0.01 | 28.55 | 29.79 | SSE | 9.1 | 36.0 | 12.62 | 58.5 | 59.3 | 64 | 54 | | |
| 27 | 69 | 52 | 57.9 | 48.8 | 4 | 0 | 94 | 44 | 74 | 0.00 | 28.65 | 29.89 | NNW | 10.3 | 26.0 | 17.21 | 60.1 | 62.1 | 67 | 59 | | |
| 28 | 69 | 48 | 57.9 | 53.0 | 7 | 0 | 100 | 61 | 85 | 3.29 | 28.60 | 29.84 | ESE | 11.0 | 28.8 | 10.11 | 59.4 | 60.9 | 64 | 57 | | |
| 29 | 61 | 46 | 53.1 | 49.8 | 11 | 0 | 100 | 65 | 89 | 0.72 | 28.48 | 29.72 | WNW | 10.3 | 28.3 | 8.70 | 57.7 | 58.7 | 62 | 57 | | |
| 30 | 63 | 45 | 52.2 | 43.1 | 11 | 0 | 86 | 52 | 72 | 0.00 | 28.53 | 29.77 | WNW | 11.7 | 29.0 | 19.45 | 56.6 | 57.2 | 63 | 53 | | |
| 31 | 72 | 42 | 55.5 | 46.0 | 8 | 0 | 97 | 45 | 73 | 0.00 | 28.59 | 29.83 | ENE | 9.3 | 23.2 | 24.27 | 57.3 | 57.2 | 64 | 51 | | |
| 70* 45* 57.3* 42.0* | | | | | <- Monthly Averages -> | | | | | 28.81* 30.06* | | S * 10.9* 46.1* | | | 16.25* | | 56.6* 58.8* 64* 54* | | | | | |
| Temperature - Highest: 90* | | | | | Degree Days - Total HDD: 278* | | | | | Number of Days With: | | | | | | | | | | | | |
| Lowest: 26* | | | | | Total CDD: 47* | | | | | Tmax ≥ 90: 1* | | | | | Rainfall ≥ 0.10 inch: 9* | | | | | | | |
| | | | | | | | | | | Tmax ≤ 32: 0* | | | | | Rainfall ≥ 0.10 inch: 2* | | | | | | | |
| Rainfall: Monthly Total: 4.18* in. | | | | | Humidity - Highest: 100* | | | | | Tmin ≤ 32: 4* | | | | | Avg Wind Speed ≥ 10 mph: 20* | | | | | | | |
| Greatest 24 Hr: 3.29* in. | | | | | Lowest: 8* | | | | | Tmin ≤ 0: 0* | | | | | Max Wind Speed ≥ 30 mph: 10* | | | | | | | |

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* Denotes incomplete record

Figure 11 March Mesonet Data