

JBT01 tile drain monitoring station

Assessment of Tile Drainage Systems in the Jewett Brook Watershed:

January 2018 Monitoring Summary

PROJECT NO.

15-309

PREPARED FOR:

**Matthew Vaughan** / Technical Coordinator

**Lake Champlain Basin Program**

54 West Shore Road

Grand Isle, VT 05458

SUBMITTED BY:

Dave Braun / Senior Water Resources Scientist

Stone Environmental, Inc.

535 Stone Cutters Way

Montpelier, VT 05602

[dbraun@stone-env.com](mailto:dbraun@stone-env.com)

802-272-8819

January 2018 Monitoring Summary

The purpose of this report is to document monitoring activities performed last month, in January 2018, at 12 selected tile drain outlets in the Jewett Brook watershed in St. Albans, Vermont.

Table 1 identifies the start dates for monitoring activities at each station. The first set of weekly composite samples was collected and processed on April 11, in accordance with the project Quality Assurance Project Plan, Version 1.0, Amendment 1.

Flow monitoring and sample collection continues at all 12 tile drain monitoring stations. Samples are collected approximately weekly. Through January 2018, 41 sampling rounds had been performed. Every 30 minutes, flow and sampling data are transmitted to Stone’s server. These data are checked periodically to assess whether the monitoring program is working as intended. Figure 2 illustrates the pattern of observed flow data at station JBT01.



Completing monitoring station construction at JBT01.

Collection of flow-paced composite samples was generally successful until the week of November 14, 2017, when all the composite sample carboys were frozen. As of November 14th, automated composite sampling was suspended due to below freezing conditions. We are currently collecting grab samples at all stations approximately once per week. The monitoring manholes were insulated to protect the flowmeters against freezing.

Stone’s subcontractor, the Friends of Northern Lake Champlain, is performing the majority of sample processing. Various maintenance activities are performed on every sample collection date, including checking/changing instrument desiccant and removing vegetation or snow shading solar panels.

Samples collected at the tile drain monitoring stations are analyzed by the Vermont Agriculture and Environmental Laboratory for concentrations of total phosphorus (TP), total dissolved phosphorus (TDP), and total nitrogen (TN). Beginning in August, VTDEC (which supports the TN analysis) requested TN be collected on alternate weeks (a cost saving measure) until field conditions change due to manure application or other agricultural activities. Approved analytical data are presented in Table 2.

A tremendous effort was devoted in the last quarter to manipulating flow data and identifying and making estimates for any gaps in the continuous (15-minute) flow and concentration time series data. This laborious effort is a necessary precursor to calculating seasonal and annual flow totals and TP and TDP concentrations and loads.

Providing sufficient power to all stations is challenging under winter conditions. Despite additional solar panels and repeated battery swaps, it has not been possible to continuously power certain stations with poor solar exposure, JBT01, JBT02, and JBT04. Extremely cold temperatures and snow accumulation on the solar panels has exacerbated the low voltage problem and in January all stations except JBT05, JBT06, and JBT16 had short periods of power failure.

During the January sampling events, it was not possible to collect grab samples at every station because the suction lines conveying water to the autosamplers developed ice plugs. Where possible, grab samples were collected at the outlet when the autosampler intake line was frozen.

Table : Start dates for monitoring activities at each station

| Station | Start flow monitoring | Start autosampling |
| --- | --- | --- |
| JBT01 | 3/23/17 | 4/5/17 |
| JBT02 | 3/23/17 | 4/5/17 |
| JBT04 | 4/3/17 | 4/5/17 |
| JBT05 | 4/20/17 | 4/20/17 |
| JBT06 | 4/5/17 | 4/5/17 |
| JBT07 | 3/30/17 | 4/5/17 |
| JBT11 | 4/5/17 | 4/5/17 |
| JBT13 | 4/3/17 | 4/11/17 |
| JBT14 | 4/5/17 | 4/5/17 |
| JBT16 | 3/30/17 | 4/5/17 |
| JBT18 | 4/22/17 | 4/22/17 |
| JBT19 | 4/22/17 | 4/22/17 |

Table : TP, TDP, and TN concentrations in samples collected through January 16, 2018

| LAB ID | Site | Sampling Date | Carboy | TP (µg/L) | TDP (µg/L) | TN (mg/L) | Comment |
| --- | --- | --- | --- | --- | --- | --- | --- |
| JBT01-04112017-1 | JBT01 | 4/11/2017 | 1 | 491 | 258 | 4.81 | TDP vial cloudy |
| JBT01-04182017-1 | JBT01 | 4/18/2017 | 1 | 55.1 | 21.1 | 4.77 |  |
| JBT01-04252017-1 | JBT01 | 4/25/2017 | 1 | 77.3 | 17.6 | 5.24 |  |
| JBT01-05022017-1 | JBT01 | 5/2/2017 | 1 | 333 | 81.2 | 5.63 |  |
| JBT01-05092017-1 | JBT01 | 5/9/2017 | 1 | 208 | 44.5 | 5.29 |  |
| JBT01-05092017-2+3 | JBT01 | 5/9/2017 | 2+3 | 236 | 40.8 | 5.17 |  |
| JBT01-05162017-1 | JBT01 | 5/16/2017 | 1 | 26.7 | 15.4 | 4.96 |  |
| JBT01-05232017-1 | JBT01 | 5/23/2017 | 1 | 127 | 26.7 | 5.27 |  |
| JBT01-05302017-1 | JBT01 | 5/30/2017 | 1 | 19.3 | 13.0 | 5.13 |  |
| JBT01-06072017-1 | JBT01 | 6/7/2017 | 1 | 23.5 | 7.6 | 5.32 | VAEL remark: TDP biased low |
| JBT01-06132017-1 | JBT01 | 6/13/2017 | 1 | 23.9 | 13.9 | 5.29 |  |
| JBT01-06222017-1 | JBT01 | 6/22/2017 | 1 | 28.6 | 16.1 | 6.48 |  |
| JBT01-06272017-1 | JBT01 | 6/27/2017 | 1 | 108 | 64.4 | 22.19 |  |
| JBT01-06272017-2 | JBT01 | 6/27/2017 | 2 | 111 | 72.2 | 15.57 |  |
| JBT01-06272017-3 | JBT01 | 6/27/2017 | 3 | 63.8 | 44.1 | 8.47 |  |
| JBT01-07052017-1 | JBT01 | 7/5/2017 | 1 | 256 | 77.9 | 8.05 |  |
| JBT01-07052017-2+3 | JBT01 | 7/5/2017 | 2+3 | 94.6 | 46.7 | 6.27 |  |
| JBT01-07112017-1+2 | JBT01 | 7/11/2017 | 1+2 | 223 | 106 | 6.63 |  |
| JBT01-07182017-1+2 | JBT01 | 7/18/2017 | 1+2 | 98.0 | 47.5 | 5.31 |  |
| JBT01-07262017-1 | JBT01 | 7/26/2017 | 1 | 31.6 | 21.7 | 4.40 | Reversed TP and TDP result |
| JBT01-08012017-1 | JBT01 | 8/1/2017 | 1 | 23.8 | 20.9 | 3.69 |  |
| JBT01-08082017-1 | JBT01 | 8/8/2017 | 1 | 33.3 | 20.1 | NS |  |
| JBT01-08222017-1 | JBT01 | 8/22/2017 | 1 | 55.5 | 26.6 | 3.10 |  |
| JBT01-090517-1 | JBT01 | 9/5/2017 | 1 | 37.0 | 13.6 | 3.81 |  |
| JBT01-091217-1 | JBT01 | 9/12/2017 | 1 | 114 | 34.0 | NS |  |
| JBT01-091917-1 | JBT01 | 9/19/2017 | 1 | 116 | 73.0 | 2.40 |  |
| JBT01-092617-1 | JBT01 | 9/26/2017 | 1 | 119 | 18.3 | NS |  |
| JBT01-100317-1 | JBT01 | 10/3/2017 | 1 | 49.3 | 14.8 | 3.53 |  |
| JBT01-101017-1 | JBT01 | 10/10/2017 | 1 | 1250 | 45.3 | NS | TDP filtered at VAEL on 10/12/17 |
| JBT01-101017-2 | JBT01 | 10/10/2017 | 2 | 1204 | 35.0 | NS | TDP filtered at VAEL on 10/12/17 |
| JBT01-101017-3+4 | JBT01 | 10/10/20177 | 3+4 | 914 | 37.9 | NS | TDP filtered at VAEL on 10/12/17 |
| JBT01-102417-1 | JBT01 | 10/24/2017 | 1 | 44.2 | 13.4 | NS |  |
| JBT01-110117-3 | JBT01 | 11/1/2017 | 3 | 360 | NS | NS | TDP sample invalid (diluted w/ distilled water) |
| JBT01-110717-3 | JBT01 | 11/7/2017 | 3 | 329 | 60.6 | NS |  |
| JBT01-111417-1 | JBT01 | 11/14/20177 | 1 | 40.2 | 33.9 | NS | Carboy partially frozen--only liquid sampled |
| JBT01-112017-1 | JBT01 | 11/20/2017 | 1 | 33.8 | 17.6 | NS | Carboy frozen--processed in office |
| JBT01-120417-GR | JBT01 | 12/4/2017 | GR | 30.7 | 18.2 | 4.02 | TN sample acidified 24 hrs later, kept cold |
| JBT01-121517-GR | JBT01 | 12/15/2017 | GR | 30.9 | 11.6 | 3.49 |  |
| JBT01-121917-GR | JBT01 | 12/19/2017 | GR | 22.7 | 15.6 | 3.48 |  |
| JBT01-122717-GR | JBT01 | 12/27/2017 | GR | 19.2 | 15.9 | NS |  |
| JBT01-010918-GR | JBT01 | 1/9/2018 | GR | 25.9 | 16 | NS |  |
| JBT01-011218-GR | JBT01 | 1/12/2018 | GR | 377 | NS | 5.63 |  |
| JBT01-011618-GR | JBT01 | 1/16/2018 | GR | 27.8 | 21.4 | 4.91 |  |

| LAB ID | Site | Sampling Date | Carboy | TP (µg/L) | TDP (µg/L) | TN (mg/L) | Comment |
| --- | --- | --- | --- | --- | --- | --- | --- |
| JBT02-04112017-1 | JBT02 | 4/11/2017 | 1 | 976 | 678 | 7.19 | TDP vial cloudy |
| JBT02-04182017-1 | JBT02 | 4/18/2017 | 1 | 242 | 93.6 | 8.52 |  |
| JBT02-04252017-1 | JBT02 | 4/25/2017 | 1 | 491 | 142 | 8.68 |  |
| JBT02-05022017-1 | JBT02 | 5/2/2017 | 1 | 805 | 492 | 8.58 |  |
| JBT02-05092017-1 | JBT02 | 5/9/2017 | 1 | 585 | 120 | 8.52 |  |
| JBT02-05092017-2 | JBT02 | 5/9/2017 | 2 | 868 | 122 | 7.88 |  |
| JBT02-05092017-3 | JBT02 | 5/9/2017 | 3 | 868 | 156 | 8.00 |  |
| JBT02-05162017-1 | JBT02 | 5/16/2017 | 1 | 109 | 37.6 | 8.26 |  |
| JBT02-05302017-1 | JBT02 | 5/30/2017 | 1 | 78.5 | 30.3 | 8.83 |  |
| JBT02-06072017-1 | JBT02 | 6/7/2017 | 1 | 67.3 | 28.2 | 11.78 |  |
| JBT02-06132017-1 | JBT02 | 6/13/2017 | 1 | 48.0 | 28.5 | 11.69 |  |
| JBT02-06222017-1 | JBT02 | 6/22/2017 | 1 | 90.9 | 42.3 | 12.86 |  |
| JBT02-06262017-1 | JBT02 | 6/26/2017 | 1 | 137 | 61.9 | 25.34 |  |
| JBT02-06262017-2 | JBT02 | 6/26/2017 | 2 | 189 | 82.2 | 29.34 |  |
| JBT02-06262017-3 | JBT02 | 6/26/2017 | 3 | 160 | 94.0 | 27.34 |  |
| JBT02-06262017-4 | JBT02 | 6/26/2017 | 4 | 315 | 106 | 22.93 |  |
| JBT02-07052017-1+2 | JBT02 | 7/5/2017 | 1+2 | 102 | 60.5 | 9.85 |  |
| JBT02-07112017-1 | JBT02 | 7/11/2017 | 1 | 303 | 118 | 8.68 |  |
| JBT02-07112017-2 | JBT02 | 7/11/2017 | 2 | 434 | 196 | 7.19 |  |
| JBT02-07182017-1 | JBT02 | 7/18/2017 | 1 | 187 | 118 | 7.27 |  |
| JBT02-07262017-1 | JBT02 | 7/26/2017 | 1 | 73.1 | 70.4 | 8.03 |  |
| JBT02-08012017-1 | JBT02 | 8/1/2017 | 1 | 63.9 | 40.0 | 8.41 |  |
| JBT02-08082017-1 | JBT02 | 8/8/2017 | 1 | 50.5 | 37.0 | NS |  |
| JBT02-08152017-1 | JBT02 | 8/15/2017 | 1 | 52.0 | 41.3 | 7.29 |  |
| JBT02-08222017-1 | JBT02 | 8/22/2017 | 1 | 308 | 141 | 5.81 |  |
| JBT02-08302017-1 | JBT02 | 8/30/2017 | 1 | 142 | 63.2 | NS |  |
| JBT02-090517-1 | JBT02 | 9/5/2017 | 1 | 137 | 53.4 | 5.09 |  |
| JBT02-091217-1 | JBT02 | 9/12/2017 | 1 | 674 | 106 | NS |  |
| JBT02-091917-1 | JBT02 | 9/19/2017 | 1 | 138 | 85.6 | 6.36 |  |
| JBT02-092617-1 | JBT02 | 9/26/2017 | 1 | 102 | 65.2 | NS |  |
| JBT02-100317-1 | JBT02 | 10/3/2017 | 1 | 81.3 | 43.3 | 4.93 |  |
| JBT02-101017-1 | JBT02 | 10/10/2017 | 1 | 1464 | 69.7 | NS | TDP filtered at VAEL on 10/12/17 |
| JBT02-101017-2 | JBT02 | 10/10/2017 | 2 | 1322 | 77.5 | NS | TDP filtered at VAEL on 10/12/17 |
| JBT02-101017-3+4 | JBT02 | 10/10/2017 | 3+4 | 1202 | 91.7 | NS | TDP filtered at VAEL on 10/12/17 |
| JBT02-101717-1 | JBT02 | 10/17/2017 | 1 | 252 | 86.7 | 9.22 |  |
| JBT02-102417-1 | JBT02 | 10/24/2017 | 1 | 86.2 | 48.0 | NS |  |
| JBT02-110117-3 | JBT02 | 11/1/2017 | 3 | 672 | 419 | NS |  |
| JBT02-110717-3 | JBT02 | 11/7/2017 | 3 | 599 | 82.2 | NS |  |
| JBT02-111417-1 | JBT02 | 11/14/2017 | 1 | 226 | 103 | NS | Carboy partially frozen--only liquid sampled |
| JBT02-112017-1 | JBT02 | 11/20/2017 | 1 | 292 | 113 | NS | Carboy frozen--processed in office |
| JBT02-112917-GR | JBT02 | 11/29/2017 | GR | 277.8 | 125 | NS |  |
| JBT02-120417-GR | JBT02 | 12/4/2017 | GR | 64.5 | 31.1 | 8.72 | TN sample acidified 24 hrs later, kept cold |
| JBT02-121517-GR | JBT02 | 12/15/2017 | GR | 60.3 | 16.5 | 9.44 |  |
| JBT02-121917-GR | JBT02 | 12/19/2017 | GR | 33.9 | 20.9 | 7.62 |  |
| JBT02-122717-GR | JBT02 | 12/27/2017 | GR | 46.4 | 27.7 | NS |  |
| JBT02-010918-GR | JBT02 | 1/9/2018 | GR | 32.5 | 18.8 | NS |  |
| JBT02-011218-GR | JBT02 | 1/12/2018 | GR | 449 | NS | 4.71 |  |
|  |  |  |  |  |  |  |  |
| LAB ID | Site | Sampling Date | Carboy | TP (µg/L) | TDP (µg/L) | TN (mg/L) | Comment |
| JBT04-04112017-1 | JBT04 | 4/11/2017 | 1 | 798 | 120 | 4.89 | TDP vial cloudy |
| JBT04-04182017-1 | JBT04 | 4/18/2017 | 1 | 115 | 38.6 | 4.33 |  |
| JBT04-04252017-1 | JBT04 | 4/25/2017 | 1 | 133 | 45.4 | 4.86 |  |
| JBT04-05022017-1 | JBT04 | 5/2/2017 | 1 | 500 | 79.2 | 5.43 |  |
| JBT04-05092017-1 | JBT04 | 5/9/2017 | 1 | 303 | 52.9 | 4.19 |  |
| JBT04-05092017-2+3 | JBT04 | 5/9/2017 | 2+3 | 404 | 58.8 | 4.23 |  |
| JBT04-05162017-1 | JBT04 | 5/16/2017 | 1 | 68.8 | 22.2 | 3.80 |  |
| JBT04-05232017-1 | JBT04 | 5/23/2017 | 1 | 109 | 23.6 | 4.35 |  |
| JBT04-05302017-1 | JBT04 | 5/30/2017 | 1 | 90.2 | 18.1 | 4.37 |  |
| JBT04-06072017-1 | JBT04 | 6/7/2017 | 1 | 114 | 10.7 | 5.65 | VAEL remark: TDP biased low |
| JBT04-06132017-1 | JBT04 | 6/13/2017 | 1 | 42.9 | 19.6 | 5.19 |  |
| JBT04-06222017-1 | JBT04 | 6/22/2017 | 1 | 108 | 49.5 | 5.39 |  |
| JBT04-06272017-1 | JBT04 | 6/27/2017 | 1 | 184 | 52.4 | 29.19 |  |
| JBT04-06272017-2 | JBT04 | 6/27/2017 | 2 | 135 | 49.6 | 27.59 |  |
| JBT04-06272017-3 | JBT04 | 6/27/2017 | 3 | 115 | 65.3 | 16.71 |  |
| JBT04-06272017-4 | JBT04 | 6/27/2017 | 4 | 73.6 | 50.1 | 11.85 |  |
| JBT04-07052017-1 | JBT04 | 7/5/2017 | 1 | 271 | 53.0 | 13.07 |  |
| JBT04-07052017-2+3 | JBT04 | 7/5/2017 | 2+3 | 132 | 52.6 | 7.29 |  |
| JBT04-07112017-1+2 | JBT04 | 7/11/2017 | 1+2 | 262 | 51.5 | 8.25 |  |
| JBT04-07182017-1 | JBT04 | 7/18/2017 | 1 | 126 | 38.4 | 5.79 |  |
| JBT04-07262017-1 | JBT04 | 7/26/2017 | 1 | 50.4 | 39.5 | 4.36 | Reversed TP and TDP result |
| JBT04-08012017-1 | JBT04 | 8/1/2017 | 1 | 30.5 | 24.1 | 3.81 |  |
| JBT04-08082017-1 | JBT04 | 8/8/2017 | 1 | 35.2 | 20.6 | NS |  |
| JBT04-08152017-1 | JBT04 | 8/15/2017 | 1 | 29.8 | 22.6 | 2.92 |  |
| JBT04-08222017-1 | JBT04 | 8/22/2017 | 1 | 465 | 228 | 5.89 |  |
| JBT04-08302017-1 | JBT04 | 8/30/2017 | 1 | 71.0 | 23.5 | NS |  |
| JBT04-090517-1 | JBT04 | 9/5/2017 | 1 | 152 | 21.5 | 3.19 |  |
| JBT04-091217-1+2 | JBT04 | 9/12/2017 | 1+2 | 698 | 32.4 | NS | 0.5 L left in carboy 2 |
| JBT04-091917-1 | JBT04 | 9/19/2017 | 1 | 64.8 | 22.5 | 1.29 |  |
| JBT04-092617-1 | JBT04 | 9/26/2017 | 1 | 67.6 | 32.0 | NS |  |
| JBT04-100317-1 | JBT04 | 10/3/2017 | 1 | 78.3 | 31.0 | 1.05 |  |
| JBT04-101017-1 | JBT04 | 10/10/2017 | 1 | 500 | 33.5 | NS | TDP filtered at VAEL on 10/12/17 |
| JBT04-101017-2 | JBT04 | 10/10/2017 | 2 | 256 | 34.7 | NS | TDP filtered at VAEL on 10/12/17 |
| JBT04-101017-3+4 | JBT04 | 10/10/2017 | 3+4 | 244 | 39.3 | NS | TDP filtered at VAEL on 10/12/17 |
| JBT04-101717-1 | JBT04 | 10/17/2017 | 1 | 102 | 23.9 | 1.38 |  |
| JBT04-102417-1 | JBT04 | 10/24/2017 | 1 | 110 | 17.5 | NS |  |
| JBT04-110117-3 | JBT04 | 11/1/2017 | 3 | 372 | 135 | NS |  |
| JBT04-110717-3 | JBT04 | 11/7/2017 | 3 | 384 | 36.6 | NS |  |
| JBT04-111417-1 | JBT04 | 11/14/2017 | 1 | 183 | 51.0 | NS | Carboy partially frozen--only liquid sampled |
| JBT04-112017-1 | JBT04 | 11/20/2017 | 1 | 53.2 | 27.6 | NS | Carboy frozen--processed in office |
| JBT04-112917-GR | JBT04 | 11/29/2017 | GR | 54.3 | 21.8 | NS |  |
| JBT04-120417-GR | JBT04 | 12/4/2017 | GR | 54.6 | 17.1 | 2.22 | TN sample acidified 24 hrs later, kept cold |
| JBT04-121517-GR | JBT04 | 12/15/2017 | GR | 43.4 | 21.7 | 2.2 |  |
| JBT04-121917-GR | JBT04 | 12/19/2017 | GR | 24.2 | 17.6 | 2.2 |  |
| JBT04-122717-GR | JBT04 | 12/27/2017 | GR | 18.4 | 15.9 | NS |  |
| JBT04-011218-GR | JBT04 | 1/12/2018 | GR | 367 | NS | 3.61 |  |
| JBT04-011618-GR | JBT04 | 1/16/2018 | GR | 49.9 | 24.2 | 3.99 |  |
|  |  |  |  |  |  |  |  |

| LAB ID | Site | Sampling Date | Carboy | TP (µg/L) | TDP (µg/L) | TN (mg/L) | Comment |
| --- | --- | --- | --- | --- | --- | --- | --- |
| JBT05-04252017-1 | JBT05 | 4/25/2017 | 1 | 68.7 | 53.7 | 24.78 |  |
| JBT05-05022017-1 | JBT05 | 5/2/2017 | 1 | 226 | 108 | 20.60 |  |
| JBT05-05092017-1 | JBT05 | 5/9/2017 | 1 | 132 | 82.9 | 23.56 |  |
| JBT05-05162017-1 | JBT05 | 5/16/2017 | 1 | 33.6 | 26.6 | 21.68 |  |
| JBT05-05232017-1 | JBT05 | 5/23/2017 | 1 | 60.0 | 38.4 | 14.84 |  |
| JBT05-05302017-1 | JBT05 | 5/30/2017 | 1 | 38.4 | 37.0 | 10.52 |  |
| JBT05-06062017-1+2 | JBT05 | 6/6/2017 | 1+2 | 34.1 | 21.4 | 8.10 |  |
| JBT05-06132017-1+3 | JBT05 | 6/13/2017 | 1+3 | 67.6 | 49.6 | 12.68 |  |
| JBT05-06222017-1 | JBT05 | 6/22/2017 | 1 | 61.2 | 40.6 | 14.48 |  |
| JBT05-06272017-1+2 | JBT05 | 6/27/2017 | 1+2 | 345 | 285 | 34.73 |  |
| JBT05-06272017-3+4 | JBT05 | 6/27/2017 | 3+4 | 408 | 357 | 27.73 |  |
| JBT05-06302017-1 | JBT05 | 6/30/2017 | 1 | 79.7 | 57.2 | 24.83 |  |
| JBT05-06302017-2 | JBT05 | 6/30/2017 | 2 | 595 | 452 | 21.23 |  |
| JBT05-06302017-3 | JBT05 | 6/30/2017 | 3 | 210 | 181 | 23.63 |  |
| JBT05-07052017-1 | JBT05 | 7/5/2017 | 1 | 134 | 100 | 24.58 |  |
| JBT05-07112017-1+2 | JBT05 | 7/11/2017 | 1+2 | 565 | 493 | 23.70 |  |
| JBT05-07182017-1 | JBT05 | 7/18/2017 | 1 | 138 | 104 | 29.55 |  |
| JBT05-07262017-1 | JBT05 | 7/26/2017 | 1 | 85.8 | 51.5 | 23.80 | Reversed TP and TDP result |
| JBT05-08012017-1 | JBT05 | 8/1/2017 | 1 | 42.8 | 37.6 | 21.61 |  |
| JBT05-08082017-1+2 | JBT05 | 8/8/2017 | 1+2 | 51.1 | 46.6 | NS | Reversed TP and TDP result |
| JBT05-08152017-1 | JBT05 | 8/15/2017 | 1 | 32.2 | 26.1 | 10.63 |  |
| JBT05-08222017-1 | JBT05 | 8/22/2017 | 1 | 125 | 44.4 | 15.31 |  |
| JBT05-08302017-1 | JBT05 | 8/30/2017 | 1 | 91.1 | 28.6 | NS |  |
| JBT05-090517-1 | JBT05 | 9/5/2017 | 1 | 204 | 51.3 | 10.41 |  |
| JBT05-091217-1 | JBT05 | 9/12/2017 | 1 | 133 | 67.6 | NS |  |
| JBT05-091917-1 | JBT05 | 9/19/2017 | 1 | 65.2 | 30.6 | 11.76 |  |
| JBT05-092617-1 | JBT05 | 9/26/2017 | 1 | 39.0 | 22.3 | NS |  |
| JBT05-100317-1 | JBT05 | 10/3/2017 | 1 | 43.7 | 22.4 | 7.82 |  |
| JBT05-101017-1 | JBT05 | 10/10/2017 | 1 | 966 | 383 | 18.54 |  |
| JBT05-101717-1 | JBT05 | 10/17/2017 | 1 | 167 | 122 | 12.63 |  |
| JBT05-102417-1 | JBT05 | 10/24/2017 | 1 | 84.0 | 33.7 | NS |  |
| JBT05-110117-3 | JBT05 | 11/1/2017 | 3 | 420 | 321 | NS |  |
| JBT05-110717-3 | JBT05 | 11/7/2017 | 3 | 368 | 300 | NS |  |
| JBT05-111417-3 | JBT05 | 11/14/2017 | 3 | 131 | 98.2 | NS | Carboy partially frozen--only liquid sampled |
| JBT05-112017-1 | JBT05 | 11/20/2017 | 1 | 75.0 | 51.1 | NS | Carboy frozen--processed in office |
| JBT05-112917-GR | JBT05 | 11/29/2017 | GR | 54.35 | 32.45 | NS |  |
| JBT05-120417-GR | JBT05 | 12/4/2017 | GR | 37.55 | 30.95 | 17.83 | TN sample acidified 24 hrs later, kept cold |
| JBT05-121517-GR | JBT05 | 12/15/2017 | GR | 43.1 | 35.1 | 16.95 |  |
| JBT05-121917-GR | JBT05 | 12/19/2017 | GR | 33.9 | 27.4 | 16.5 |  |
| JBT05-122717-GR | JBT05 | 12/27/2017 | GR | 45.55 | 36.25 | NS |  |
| JBT05-010918-GR | JBT05 | 1/9/2018 | GR | 40.3 | 26.4 | NS |  |
| JBT05-011618-GR | JBT05 | 1/16/2018 | GR | 56.2 | 39.7 | 22.34 |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| LAB ID | Site | Sampling Date | Carboy | TP (µg/L) | TDP (µg/L) | TN (mg/L) | Comment |
| JBT06-04112017-1 | JBT06 | 4/11/2017 | 1 | 195 | 131 | 33.47 |  |
| JBT06-04182017-1 | JBT06 | 4/18/2017 | 1 | 192 | 76.3 | 20.71 |  |
| JBT06-04252017-1+2 | JBT06 | 4/25/2017 | 1+2 | 117 | 70.1 | 24.03 |  |
| JBT06-05022017-1 | JBT06 | 5/2/2017 | 1 | 321 | 164 | 25.20 |  |
| JBT06-05092017-1 | JBT06 | 5/9/2017 | 1 | 150 | 100 | 28.20 |  |
| JBT06-05092017-2 | JBT06 | 5/9/2017 | 2 | 135 | 98.1 | 13.54 |  |
| JBT06-05162017-1 | JBT06 | 5/16/2017 | 1 | 180 | 96.2 | 26.04 |  |
| JBT06-05232017-1 | JBT06 | 5/23/2017 | 1 | 327 | 65.2 | 21.04 |  |
| JBT06-05302017-1 | JBT06 | 5/30/2017 | 1 | 67.7 | 37.8 | 22.52 |  |
| JBT06-06072017-1 | JBT06 | 6/7/2017 | 1 | 138 | 88.9 | 25.87 |  |
| JBT06-06132017-1 | JBT06 | 6/13/2017 | 1 | 47.4 | 36.4 | 25.95 |  |
| JBT06-06222017-1 | JBT06 | 6/22/2017 | 1 | 45.9 | 27.3 | 23.12 |  |
| JBT06-06272017-1 | JBT06 | 6/27/2017 | 1 | 412 | 192 | 42.67 |  |
| JBT06-06272017-2 | JBT06 | 6/27/2017 | 2 | 210 | 157 | 48.27 |  |
| JBT06-06272017-3 | JBT06 | 6/27/2017 | 3 | 416 | 222 | 46.63 |  |
| JBT06-06272017-4 | JBT06 | 6/27/2017 | 4 | 234 | 183 | 49.83 |  |
| JBT06-06302017-1+2+3+4 | JBT06 | 6/30/2017 | 1+2+3+4 | 266 | 174 | 33.83 |  |
| JBT06-07052017-1 | JBT06 | 7/5/2017 | 1 | 134 | 109 | 34.82 |  |
| JBT06-07112017-1+2 | JBT06 | 7/11/2017 | 1+2 | 228 | 137 | 26.50 |  |
| JBT06-07182017-1 | JBT06 | 7/18/2017 | 1 | 128 | 106 | 32.55 |  |
| JBT06-07262017-1 | JBT06 | 7/26/2017 | 1 | 90.2 | 39.1 | 27.40 | Reversed TP and TDP result |
| JBT06-101017-1 | JBT06 | 10/10/2017 | 1 | 393 | 171 | NS |  |
| JBT06-110117-3 | JBT06 | 11/1/2017 | 3 | 1884 | 1576 | NS |  |
| JBT06-110717-3 | JBT06 | 11/7/2017 | 3 | 510 | 412 | NS |  |
| JBT06-111417-1 | JBT06 | 11/14/2017 | 1 | 123 | 88.1 | NS | Carboy partially frozen--only liquid sampled |
| JBT06-112017-1 | JBT06 | 11/20/2017 | 1 | 234 | 186 | NS | Carboy frozen--processed in office |
| JBT06-112917-GR | JBT06 | 11/29/2017 | GR | 88.9 | 66 | NS |  |
| JBT06-120417-GR | JBT06 | 12/4/2017 | GR | 53.3 | 36 | 18.13 | TN sample acidified 24 hrs later, kept cold |
| JBT06-121517-GR | JBT06 | 12/15/2017 | GR | 32.5 | 31.9 | 16.94 |  |
| JBT06-121917-GR | JBT06 | 12/19/2017 | GR | 38.6 | 23.4 | 17.56 |  |
| JBT06-011218-GR | JBT06 | 1/12/2018 | GR | 335 | NS | 13.77 |  |
| JBT06-011618-GR | JBT06 | 1/16/2018 | GR | 52.6 | 51.5 | 24.54 |  |

| LAB ID | Site | Sampling Date | Carboy | TP (µg/L) | TDP (µg/L) | TN (mg/L) | Comment |
| --- | --- | --- | --- | --- | --- | --- | --- |
| JBT07-04112017-1+2 | JBT07 | 4/11/2017 | 1+2 | 708 | 159 | 7.52 |  |
| JBT07-04182017-1 | JBT07 | 4/18/2017 | 1 | 45.0 | 14.1 | 4.81 |  |
| JBT07-04252017-1 | JBT07 | 4/25/2017 | 1 | 103 | 27.4 | 5.79 |  |
| JBT07-05022017-1 | JBT07 | 5/2/2017 | 1 | 280 | 58.0 | 6.72 |  |
| JBT07-05092017-1 | JBT07 | 5/9/2017 | 1 | 126 | 41.4 | 6.17 |  |
| JBT07-05092017-2+3 | JBT07 | 5/9/2017 | 2+3 | 230 | 54.2 | 6.59 |  |
| JBT07-05162017-1 | JBT07 | 5/16/2017 | 1 | 19.7 | 12.9 | 5.21 |  |
| JBT07-05232017-1 | JBT07 | 5/23/2017 | 1 | 24.4 | 11.9 | 5.08 |  |
| JBT07-05302017-1 | JBT07 | 5/30/2017 | 1 | 21.1 | 14.2 | 5.29 |  |
| JBT07-06072017-1 | JBT07 | 6/7/2017 | 1 | 17.0 | 7.0 | 5.57 |  |
| JBT07-06132017-1 | JBT07 | 6/13/2017 | 1 | NS | 13.1 | 5.35 | VAEL remark: TDP biased low |
| JBT07-06222017-1 | JBT07 | 6/22/2017 | 1 | 39.3 | 17.1 | 8.16 |  |
| JBT07-06262017-1 | JBT07 | 6/26/2017 | 1 | 242 | 177 | 45.18 |  |
| JBT07-06262017-2 | JBT07 | 6/26/2017 | 2 | 555 | 357 | 45.18 |  |
| JBT07-06262017-3 | JBT07 | 6/26/2017 | 3 | 204 | 182 | 31.59 |  |
| JBT07-06262017-4 | JBT07 | 6/26/2017 | 4 | 389 | 230 | 23.59 |  |
| JBT07-06302017-1 | JBT07 | 6/30/2017 | 1 | 79.7 | 60.8 | 12.67 |  |
| JBT07-06302017-2+3 | JBT07 | 6/30/2017 | 2+3 | 700 | 327 | 18.55 |  |
| JBT07-07052017-1 | JBT07 | 7/5/2017 | 1 | 119 | 88.6 | 11.62 |  |
| JBT07-07112017-1 | JBT07 | 7/11/2017 | 1 | 47.3 | 21.0 | 11.05 |  |
| JBT07-07182017-1 | JBT07 | 7/18/2017 | 1 | 69.9 | 54.9 | 15.37 |  |
| JBT07-07262017-1 | JBT07 | 7/26/2017 | 1 | 82.5 | 37.3 | 9.14 |  |
| JBT07-08012017-1 | JBT07 | 8/1/2017 | 1 | 29.4 | 25.1 | 6.96 |  |
| JBT07-08222017-1 | JBT07 | 8/22/2017 | 1 | 226 | 136 | 3.37 |  |
| JBT07-08302017-1 | JBT07 | 8/30/2017 | 1 | 52.0 | 32.6 | NS |  |
| JBT07-091217-1 | JBT07 | 9/12/2017 | 1 | 169 | 89.5 | NS |  |
| JBT07-091217-2+3 | JBT07 | 9/12/2017 | 2+3 | 106 | 77.3 | NS |  |
| JBT07-091917-1 | JBT07 | 9/19/2017 | 1 | 51.8 | 19.1 | 3.06 |  |
| JBT07-092617-1 | JBT07 | 9/26/2017 | 1 | 101 | 32.3 | NS |  |
| JBT07-101017-1 | JBT07 | 10/10/2017 | 1 | 304 | 125 | NS |  |
| JBT07-101717-1 | JBT07 | 10/17/2017 | 1 | 39.6 | 21.4 | 2.04 |  |
| JBT07-102417-1 | JBT07 | 10/24/2017 | 1 | 44.0 | 20.6 | NS |  |
| JBT07-110117-3 | JBT07 | 11/1/2017 | 3 | 471 | 197 | NS |  |
| JBT07-110717-3 | JBT07 | 11/7/2017 | 3 | 450 | 125 | NS |  |
| JBT07-111417-1 | JBT07 | 11/14/2017 | 1 | 116 | 44.3 | NS | Carboy partially frozen--only liquid sampled |
| JBT07-112017-1 | JBT07 | 11/20/2017 | 1 | 104 | 38.2 | NS | Carboy frozen--processed in office |
| JBT07-112917-GR | JBT07 | 11/29/2017 | GR | 31.7 | 24.8 | NS |  |
| JBT07-120417-GR | JBT07 | 12/4/2017 | GR | 28.2 | 22 | 3.2 | TN sample acidified 24 hrs later, kept cold |
| JBT07-121917-GR | JBT07 | 12/19/2017 | GR | 25.7 | 19.4 | 2.96 |  |
| JBT07-011218-GR | JBT07 | 1/12/2018 | GR | 433 | 361.5 | 13.47 | Reversed TP and TDP result |

| LAB ID | Site | Sampling Date | Carboy | TP (µg/L) | TDP (µg/L) | TN (mg/L) | Comment |
| --- | --- | --- | --- | --- | --- | --- | --- |
| JBT11-04112017-1 | JBT11 | 4/11/2017 | 1 | 57.80 | 39.50 | 3.35 | Reversed TP and TDP result |
| JBT11-04182017-1 | JBT11 | 4/18/2017 | 1 | 16.20 | 11.50 | 2.59 | Reversed TP and TDP result |
| JBT11-04252017-1 | JBT11 | 4/25/2017 | 1 | 14.7 | 9.7 | 2.45 |  |
| JBT11-05022017-1 | JBT11 | 5/2/2017 | 1 | 46.5 | 16.1 | 2.04 |  |
| JBT11-05092017-1 | JBT11 | 5/9/2017 | 1 | 28.8 | 12.0 | 1.63 |  |
| JBT11-05092017-2 | JBT11 | 5/9/2017 | 2 | 39.0 | 12.9 | 1.53 |  |
| JBT11-05162017-1 | JBT11 | 5/16/2017 | 1 | 31.2 | 23.1 | 1.24 |  |
| JBT11-05232017-1 | JBT11 | 5/23/2017 | 1 | 234 | 28.8 | 1.24 |  |
| JBT11-05302017-1 | JBT11 | 5/30/2017 | 1 | 18.1 | 9.6 | 0.81 |  |
| JBT11-06072017-1 | JBT11 | 6/7/2017 | 1 | 18.6 | 6.5 | 0.91 | VAEL remark: TDP biased low |
| JBT11-06132017-1 | JBT11 | 6/13/2017 | 1 | 49.7 | 17.2 | 1.29 |  |
| JBT11-06222017-1 | JBT11 | 6/22/2017 | 1 | 68.8 | 26.4 | 0.77 |  |
| JBT11-06272017-1 | JBT11 | 6/27/2017 | 1 | 61.5 | 29.2 | 1.48 |  |
| JBT11-06272017-2 | JBT11 | 6/27/2017 | 2 | 89.8 | 48.0 | 1.59 |  |
| JBT11-06272017-3 | JBT11 | 6/27/2017 | 3 | 77.1 | 51.4 | 1.54 |  |
| JBT11-06272017-4 | JBT11 | 6/27/2017 | 4 | 81.4 | 44.0 | 1.51 |  |
| JBT11-06302017-1 | JBT11 | 6/30/2017 | 1 | 30.3 | 17.9 | 1.11 |  |
| JBT11-06302017-2 | JBT11 | 6/30/2017 | 2 | 24.8 | 17.9 | 1.01 |  |
| JBT11-06302017-3 | JBT11 | 6/30/2017 | 3 | 24.0 | 16.8 | 1.05 |  |
| JBT11-06302017-4 | JBT11 | 6/30/2017 | 4 | 23.3 | 16.0 | 1.06 |  |
| JBT11-07052017-1 | JBT11 | 7/5/2017 | 1 | 21.2 | 16.8 | 1.16 |  |
| JBT11-07112017-1 | JBT11 | 7/11/2017 | 1 | 28.1 | 19.5 | 1.30 |  |
| JBT11-07182017-1+2 | JBT11 | 7/18/2017 | 1+2 | 64.4 | 33.5 | 1.22 | Reversed TP and TDP result |
| JBT11-07262017-1 | JBT11 | 7/26/2017 | 1 | 26.0 | 15.4 | 0.96 | Reversed TP and TDP result |
| JBT11-08012017-1 | JBT11 | 8/1/2017 | 1 | 59.1 | 35.2 | 1.23 |  |
| JBT11-090517-1 | JBT11 | 9/5/2017 | 1 | 92.6 | 45.2 | 1.13 |  |
| JBT11-091217-1+2 | JBT11 | 9/12/2017 | 1+2 | 420 | 411 | NS |  |
| JBT11-091917-1 | JBT11 | 9/19/2017 | 1 | 77.9 | 38.1 | 1.20 |  |
| JBT11-092617-1 | JBT11 | 9/26/2017 | 1 | 127 | 34.9 | NS |  |
| JBT11-100317-1 | JBT11 | 10/3/2017 | 1 | 26.0 | 14.1 | 0.19 |  |
| JBT11-101117-1 | JBT11 | 10/11/2017 | 1 | 256 | 203 | NS |  |
| JBT11-101717-1 | JBT11 | 10/17/2017 | 1 | 92.5 | 77.8 | 0.81 |  |
| JBT11-102417-1 | JBT11 | 10/24/2017 | 1 | 66.7 | 25.0 | NS |  |
| JBT11-110117-1 | JBT11 | 11/1/2017 | 1 | 79.3 | 44.0 | NS |  |
| JBT11-110717-3 | JBT11 | 11/7/2017 | 3 | 84.3 | 58.3 | NS |  |
| JBT11-112017-3 | JBT11 | 11/20/2017 | 3 | 15.9 | 8.4 | NS | Carboy frozen-processed in office; VAEL remark: TDP biased high |
| JBT11-112917-GR | JBT11 | 11/29/2017 | GR | 20.1 | 12.5 | NS |  |
| JBT11-120417-GR | JBT11 | 12/4/2017 | GR | 16.2 | 12.2 | 1.31 | TN sample acidified 24 hrs later, kept cold |
| JBT11-121517-GR | JBT11 | 12/15/2017 | GR | 14.3 | 11.9 | 1.55 |  |
| JBT11-121917-GR | JBT11 | 12/19/2017 | GR | 14 | 12 | 1.49 |  |

| LAB ID | Site | Sampling Date | Carboy | TP (µg/L) | TDP (µg/L) | TN (mg/L) | Comment |
| --- | --- | --- | --- | --- | --- | --- | --- |
| JBT13-04182017-1 | JBT13 | 4/18/2017 | 1 | 63.8 | 23.2 | 6.12 |  |
| JBT13-04252017-1 | JBT13 | 4/25/2017 | 1 | 113 | 26.1 | 6.44 |  |
| JBT13-05022017-1 | JBT13 | 5/2/2017 | 1 | 560 | 41.1 | 5.25 |  |
| JBT13-05092017-1+2 | JBT13 | 5/9/2017 | 1+2 | 120 | 35.7 | 6.10 |  |
| JBT13-05162017-1 | JBT13 | 5/16/2017 | 1 | 35295 | NS | 217.21 | TDP vial lost in transit; samples dark brown |
| JBT13-05232017-1 | JBT13 | 5/23/2017 | 1 | 3720 | 2525 | 17.20 |  |
| JBT13-05302017-1 | JBT13 | 5/30/2017 | 1 | 2975 | 2070 | 14.08 | Sample is cloudy; lots of sediment |
| JBT13-06072017-1 | JBT13 | 6/7/2017 | 1 | 3585 | 2240 | 19.08 | Sample is cloudy; lots of sediment |
| JBT13-06132017-1 | JBT13 | 6/13/2017 | 1 | 815 | 490 | 7.97 |  |
| JBT13-06222017-1 | JBT13 | 6/22/2017 | 1 | 912 | 585 | 8.94 |  |
| JBT13-06272017-1 | JBT13 | 6/27/2017 | 1 | 525 | 218 | 21.83 |  |
| JBT13-06272017-2 | JBT13 | 6/27/2017 | 2 | 385 | 137 | 12.71 |  |
| JBT13-07052017-1 | JBT13 | 7/5/2017 | 1 | 312 | 143 | 28.87 |  |
| JBT13-07052017-2 | JBT13 | 7/5/2017 | 2 | 87.1 | 70.5 | 14.03 |  |
| JBT13-07112017-1 | JBT13 | 7/11/2017 | 1 | 350 | 191 | 12.15 |  |
| JBT13-07182017-1 | JBT13 | 7/18/2017 | 1 | 95.3 | 94.8 | 16.97 |  |
| JBT13-07262017-1 | JBT13 | 7/26/2017 | 1 | 127 | 118 | 10.20 |  |
| JBT13-08082017-1 | JBT13 | 8/8/2017 | 1 | 248 | 148 | NS |  |
| JBT13-08152017-1 | JBT13 | 8/15/2017 | 1 | 336 | 196 | 5.29 |  |
| JBT13-08222017-1 | JBT13 | 8/22/2017 | 1 | 275 | 139 | 7.74 |  |
| JBT13-08302017-1 | JBT13 | 8/30/2017 | 1 | 272 | 94.1 | NS |  |
| JBT13-090517-1 | JBT13 | 9/5/2017 | 1 | 139 | 70.8 | 2.87 |  |
| JBT13-091217-1+2 | JBT13 | 9/12/2017 | 1+2 | 202 | 149 | NS |  |
| JBT13-091917-1 | JBT13 | 9/19/2017 | 1 | 105 | 57.7 | 5.94 |  |
| JBT13-092617-1 | JBT13 | 9/26/2017 | 1 | 86.8 | 46.4 | NS |  |
| JBT13-100317-1 | JBT13 | 10/3/2017 | 1 | 99.1 | 61.5 | 1.86 |  |
| JBT13-101117-1 | JBT13 | 10/11/2017 | 1 | 612 | 172 | NS | TDP filtered at VAEL on 10/12/17 |
| JBT13-101717-1 | JBT13 | 10/17/2017 | 1 | 178 | 115 | NS |  |
| JBT13-102417-1 | JBT13 | 10/24/2017 | 1 | 63.2 | 36.5 | NS |  |
| JBT13-110117-1+2 | JBT13 | 11/1/2017 | 1+2 | 172 | 77.6 | NS |  |
| JBT13-110717-3 | JBT13 | 11/7/2017 | 3 | 141 | 85.6 | NS |  |
| JBT13-111417-1 | JBT13 | 11/14/2017 | 1 | 66.4 | 49.8 | NS | Carboy partially frozen--only liquid sampled |
| JBT13-112017-1 | JBT13 | 11/20/2017 | 1 | 64.1 | 42.8 | NS | Carboy frozen--processed in office |
| JBT13-112917-GR | JBT13 | 11/29/2017 | GR | 35.8 | 24.5 | NS |  |
| JBT13-120417-GR | JBT13 | 12/4/2017 | GR | 36.8 | 26 | 5.72 | TN sample acidified 24 hrs later, kept cold |
| JBT13-121517-GR | JBT13 | 12/15/2017 | GR | 182 | 24 | 6.65 |  |
| JBT13-121917-GR | JBT13 | 12/19/2017 | GR | 38.9 | 24.5 | 6.12 |  |
| JBT13-010918-GR | JBT13 | 1/9/2018 | GR | 36.8 | 27.1 | NS |  |
| JBT13-011618-GR | JBT13 | 1/16/2018 | GR | 79.8 | 24 | 6.47 |  |

| LAB ID | Site | Sampling Date | Carboy | TP (µg/L) | TDP (µg/L) | TN (mg/L) | Comment |
| --- | --- | --- | --- | --- | --- | --- | --- |
| JBT14-04112017-1 | JBT14 | 4/11/2017 | 1 | 248 | 66.5 | 7.43 |  |
| JBT14-04182017-1 | JBT14 | 4/18/2017 | 1 | 70.5 | 33.2 | 8.25 |  |
| JBT14-04252017-1 | JBT14 | 4/25/2017 | 1 | 145 | 51.5 | 7.62 |  |
| JBT14-04252017-2 | JBT14 | 4/25/2017 | 2 | 46.3 | 35.2 | 8.22 |  |
| JBT14-05022017-1 | JBT14 | 5/2/2017 | 1 | 342 | 59.3 | 7.20 |  |
| JBT14-05092017-1+2 | JBT14 | 5/9/2017 | 1+2 | 177 | 51.1 | 7.12 |  |
| JBT14-05162017-1 | JBT14 | 5/16/2017 | 1 | 4335 | 1640 | 51.21 | Samples dark brown; TDP filtered at VAEL |
| JBT14-05232017-1 | JBT14 | 5/23/2017 | 1 | 690 | 183 | 9.66 |  |
| JBT14-05302017-1 | JBT14 | 5/30/2017 | 1 | 78.2 | 75.7 | 7.72 |  |
| JBT14-06072017-1 | JBT14 | 6/7/2017 | 1 | 138 | 143 | 19.95 |  |
| JBT14-06132017-1+2 | JBT14 | 6/13/2017 | 1+2 | 73.6 | 60.1 | 9.89 |  |
| JBT14-06222017-1 | JBT14 | 6/22/2017 | 1 | 189 | 132 | 11.88 |  |
| JBT14-06272017-1 | JBT14 | 6/27/2017 | 1 | 482 | 208 | 31.95 |  |
| JBT14-06272017-2 | JBT14 | 6/27/2017 | 2 | 618 | 345 | 22.75 |  |
| JBT14-06272017-3 | JBT14 | 6/27/2017 | 3 | 246 | 216 | 19.91 |  |
| JBT14-06302017-1 | JBT14 | 6/30/2017 | 1 | 436 | 210 | 56.87 |  |
| JBT14-06302017-2 | JBT14 | 6/30/2017 | 2 | 220 | 162 | 34.23 |  |
| JBT14-07052017-1 | JBT14 | 7/5/2017 | 1 | 95.9 | 86.4 | 16.81 |  |
| JBT14-07052017-2 | JBT14 | 7/5/2017 | 2 | 90.4 | 74.1 | 14.07 |  |
| JBT14-07112017-1 | JBT14 | 7/11/2017 | 1 | 103 | 87.4 | 13.35 |  |
| JBT14-07182017-1+2 | JBT14 | 7/18/2017 | 1+2 | 102 | 88.3 | 14.87 | Reversed TP and TDP result |
| JBT14-07262017-1 | JBT14 | 7/26/2017 | 1 | 79.3 | 69.4 | 12.90 | Reversed TP and TDP result |
| JBT14-08012017-1 | JBT14 | 8/1/2017 | 1 | 73.6 | 59.7 | 11.80 | Reversed TP and TDP result |
| JBT14-08302017-1 | JBT14 | 8/30/2017 | 1 | 350 | 239 | NS |  |
| JBT14-090517-1 | JBT14 | 9/5/2017 | 1 | 309 | 251 | 4.97 |  |
| JBT14-091217-1+2 | JBT14 | 9/12/2017 | 1+2 | 162 | 107 | NS |  |
| JBT14-091917-1 | JBT14 | 9/19/2017 | 1 | 52.9 | 26.1 | 7.84 |  |
| JBT14-092617-1 | JBT14 | 9/26/2017 | 1 | 37.5 | 29.0 | NS |  |
| JBT14-100317-1 | JBT14 | 10/3/2017 | 1 | 82.0 | 67.7 | 4.95 |  |
| JBT14-101117-1 | JBT14 | 10/11/2017 | 1 | 776 | 150 | NS |  |
| JBT14-101117-3 | JBT14 | 10/11/2017 | 3 | 341 | 184 | NS |  |
| JBT14-101117-4 | JBT14 | 10/11/2017 | 4 | 134 | 91.0 | NS |  |
| JBT14-101717-1 | JBT14 | 10/17/2017 | 1 | 67.3 | 49.5 | NS |  |
| JBT14-102417-1 | JBT14 | 10/24/2017 | 1 | 54.4 | 39.0 | NS |  |
| JBT14-110117-3 | JBT14 | 11/1/2017 | 3 | 152 | 71.7 | NS |  |
| JBT14-110717-3+4 | JBT14 | 11/7/2017 | 3+4 | 161 | 98.4 | NS |  |
| JBT14-111417-1 | JBT14 | 11/14/2017 | 1 | 107 | 42.7 | NS | Carboy partially frozen--only liquid sampled |
| JBT14-112017-1 | JBT14 | 11/20/2017 | 1 | 55.1 | 43.1 | NS | Carboy frozen--processed in office |
| JBT14-112917-GR | JBT14 | 11/29/2017 | GR | 38 | 28.3 | NS |  |
| JBT14-120417-GR | JBT14 | 12/4/2017 | GR | 73.7 | 27.7 | 8.28 | TN sample acidified 24 hrs later, kept cold |
| JBT14-121517-GR | JBT14 | 12/15/2017 | GR | 56.7 | 17.2 | 8.1 |  |
| JBT14-121917-GR | JBT14 | 12/19/2017 | GR | 25 | 23.6 | 8.22 |  |

| LAB ID | Site | Sampling Date | Carboy | TP (µg/L) | TDP (µg/L) | TN (mg/L) | Comment |
| --- | --- | --- | --- | --- | --- | --- | --- |
| JBT16-04112017-1+2 | JBT16 | 4/11/2017 | 1+2 | 105 | 72.7 | 5.77 |  |
| JBT16-04182017-1 | JBT16 | 4/18/2017 | 1 | 28.2 | 22.4 | 5.12 |  |
| JBT16-04252017-1 | JBT16 | 4/25/2017 | 1 | 28.5 | 21.5 | 4.48 |  |
| JBT16-05022017-1 | JBT16 | 5/2/2017 | 1 | 256 | 25.5 | 3.89 |  |
| JBT16-05092017-1+2 | JBT16 | 5/9/2017 | 1+2 | 31.3 | 13.7 | 2.79 |  |
| JBT16-05162017-1 | JBT16 | 5/16/2017 | 1 | 19.4 | 13.3 | 2.89 |  |
| JBT16-05232017-1 | JBT16 | 5/23/2017 | 1 | 26.2 | 17.0 | 2.96 |  |
| JBT16-05302017-1 | JBT16 | 5/30/2017 | 1 | 26.7 | 17.7 | 2.62 |  |
| JBT16-06072017-1 | JBT16 | 6/7/2017 | 1 | 25.9 | 9.6 | 3.68 | VAEL remark: TDP biased low |
| JBT16-06132017-1 | JBT16 | 6/13/2017 | 1 | 29.4 | 17.4 | 3.44 |  |
| JBT16-06222017-1 | JBT16 | 6/22/2017 | 1 | 85.9 | 32.9 | 5.81 |  |
| JBT16-06262017-1+2 | JBT16 | 6/26/2017 | 1+2 | 89.2 | 44.1 | 21.99 |  |
| JBT16-07052017-1 | JBT16 | 7/5/2017 | 1 | 41.0 | 28.9 | 14.85 |  |
| JBT16-07052017-2+3 | JBT16 | 7/5/2017 | 2+3 | 34.3 | 27.6 | 12.43 |  |
| JBT16-07112017-1 | JBT16 | 7/11/2017 | 1 | 32.8 | 29.8 | 9.75 |  |
| JBT16-07182017-1 | JBT16 | 7/18/2017 | 1 | 35.4 | 22.3 | 8.40 |  |
| JBT16-07262017-1 | JBT16 | 7/26/2017 | 1 | 51.7 | 45.9 | 8.87 |  |
| JBT16-08012017-1 | JBT16 | 8/1/2017 | 1 | 54.7 | 39.1 | 8.52 |  |
| JBT16-08152017-1 | JBT16 | 8/15/2017 | 1 | 159 | 32.6 | 6.41 |  |
| JBT16-08222017-1 | JBT16 | 8/22/2017 | 1 | 81.9 | 59.9 | 6.67 |  |
| JBT16-08302017-1 | JBT16 | 8/30/2017 | 1 | 59.6 | 36.8 | NS |  |
| JBT16-091217-1+2 | JBT16 | 9/12/2017 | 1+2 | 84.1 | 48.5 | NS |  |
| JBT16-091917-1 | JBT16 | 9/19/2017 | 1 | 63.5 | 35.3 | 5.66 |  |
| JBT16-101017-1 | JBT16 | 10/10/2017 | 1 | 1025 | 630 | NS | TDP filtered at VAEL on 10/12/17 |
| JBT16-101717-1 | JBT16 | 10/17/2017 | 1 | 169 | 133 | 7.09 |  |
| JBT16-110117-1 | JBT16 | 11/1/2017 | 1 | 161 | 115 | NS |  |
| JBT16-110717-3 | JBT16 | 11/7/2017 | 3 | 120 | 106 | NS |  |
| JBT16-111417-1 | JBT16 | 11/14/2017 | 1 | 44.5 | 31.5 | NS | Carboy partially frozen--only liquid sampled |
| JBT16-112017-1 | JBT16 | 11/20/2017 | 1 | 18.0 | 10.5 | NS | Carboy frozen--processed in office |
| JBT16-112917-GR | JBT16 | 11/29/2017 | GR | 53.7 | 10.7 | NS |  |
| JBT16-120417-GR | JBT16 | 12/4/2017 | GR | 40.5 | 9.6 | 6.96 | TN sample acidified 24 hrs later, kept cold |
| JBT16-121517-GR | JBT16 | 12/15/2017 | GR | 12 | 9.94 | 6.5 |  |
| JBT16-121917-GR | JBT16 | 12/19/2017 | GR | 24.55 | 19.3 | 3.03 |  |
| JBT16-122717-GR | JBT16 | 12/27/2017 | GR | 26.4 | 12.1 | NS |  |
| JBT16-010918-GR | JBT16 | 1/9/2018 | GR | 71.15 | 12.1 | NS |  |
| JBT16-011618-GR | JBT16 | 1/16/2018 | GR | 30.65 | 11.95 | 8.24 |  |

| LAB ID | Site | Sampling Date | Carboy | TP (µg/L) | TDP (µg/L) | TN (mg/L) | Comment |
| --- | --- | --- | --- | --- | --- | --- | --- |
| JBT18-04252017-1 | JBT18 | 4/25/2017 | 1 | 87.4 | 46.1 | 1.16 |  |
| JBT18-05022017-1 | JBT18 | 5/2/2017 | 1 | 170 | 42.3 | 1.26 |  |
| JBT18-05092017-1 | JBT18 | 5/9/2017 | 1 | 140 | 40.1 | 1.13 |  |
| JBT18-05092017-2 | JBT18 | 5/9/2017 | 2 | 77.5 | 37.5 | 0.99 |  |
| JBT18-05092017-3 | JBT18 | 5/9/2017 | 3 | 159 | 32.5 | 1.06 |  |
| JBT18-05092017-4 | JBT18 | 5/9/2017 | 4 | 199 | 38.6 | 1.10 |  |
| JBT18-05162017-1 | JBT18 | 5/16/2017 | 1 | 80.8 | 35.9 | 0.71 |  |
| JBT18-05232017-1 | JBT18 | 5/23/2017 | 1 | 49.7 | 16.0 | 0.78 |  |
| JBT18-05302017-1 | JBT18 | 5/30/2017 | 1 | 89.1 | 23.0 | 0.95 |  |
| JBT18-06062017-1 | JBT18 | 6/6/2017 | 1 | 46.5 | 8.6 | 0.79 | VAEL remark: TDP biased low |
| JBT18-06132017-1 | JBT18 | 6/13/2017 | 1 | 160 | 31.1 | 1.25 |  |
| JBT18-06222017-1 | JBT18 | 6/22/2017 | 1 | 71.2 | NS | 1.33 | Lab broke TDP sample vial |
| JBT18-06302017-1 | JBT18 | 6/30/2017 | 1 | 261 | 57.2 | 2.04 |  |
| JBT18-06302017-2 | JBT18 | 6/30/2017 | 2 | 234 | 71.5 | 1.90 |  |
| JBT18-06302017-3 | JBT18 | 6/30/2017 | 3 | 206 | 58.9 | 1.61 |  |
| JBT18-06302017-4 | JBT18 | 6/30/2017 | 4 | 142 | 57.9 | 1.38 |  |
| JBT18-07052017-1+2+3+4 | JBT18 | 7/5/2017 | 1+2+3+4 | 143 | 74.4 | 0.98 |  |
| JBT18-07112017-1 | JBT18 | 7/11/2017 | 1 | 135 | 59.5 | 1.06 |  |
| JBT18-07182017-1 | JBT18 | 7/18/2017 | 1 | 183 | 166 | 1.15 | Reversed TP and TDP result |
| JBT18-07262017-1 | JBT18 | 7/26/2017 | 1 | 66.5 | 40.0 | 1.10 |  |
| JBT18-08012017-1 | JBT18 | 8/1/2017 | 1 | 43.3 | 28.2 | 0.83 |  |
| JBT18-08082017-1 | JBT18 | 8/8/2017 | 1 | 34.5 | 16.1 | NS |  |
| JBT18-08222017-1 | JBT18 | 8/22/2017 | 1 | 75.9 | 33.1 | 2.18 |  |
| JBT18-08302017-1 | JBT18 | 8/30/2017 | 1 | 46.2 | 26.6 | NS |  |
| JBT18-090517-1 | JBT18 | 9/5/2017 | 1 | 75.9 | 28.3 | 3.15 |  |
| JBT18-091217-1 | JBT18 | 9/12/2017 | 1 | 186 | 114 | NS |  |
| JBT18-091217-2 | JBT18 | 9/12/2017 | 2 | 117 | 71.2 | NS |  |
| JBT18-091917-1 | JBT18 | 9/19/2017 | 1 | 64.6 | 26.9 | 0.84 |  |
| JBT18-092617-1 | JBT18 | 9/26/2017 | 1 | 180 | 28.6 | NS |  |
| JBT18-101017-1 | JBT18 | 10/10/2017 | 1 | 223 | 80.9 | NS |  |
| JBT18-101717-1 | JBT18 | 10/17/2017 | 1 | 195 | 47.9 | 1.58 |  |
| JBT18-102417-1 | JBT18 | 10/24/2017 | 1 | 97.0 | 68.5 | NS |  |
| JBT18-110117-1 | JBT18 | 11/1/2017 | 1 | 432 | 194 | NS |  |
| JBT18-110717-3 | JBT18 | 11/7/2017 | 3 | 130 | 73.2 | NS |  |
| JBT18-111417-1 | JBT18 | 11/14/2017 | 1 | 46.0 | 33.5 | NS | Carboy partially frozen--only liquid sampled |
| JBT18-112017-1 | JBT18 | 11/20/2017 | 1 | 61.5 | 43.4 | NS | Carboy frozen--processed in office |
| JBT18-112917-GR | JBT18 | 11/29/2017 | GR | 59.7 | 19.5 | NS |  |
| JBT18-120417-GR | JBT18 | 12/4/2017 | GR | 35.4 | 15.3 | 0.51 | TN sample acidified 24 hrs later, kept cold |
| JBT18-121917-GR | JBT18 | 12/19/2017 | GR | 33.4 | 19.9 | 0.35 |  |
| JBT18-010918-GR | JBT18 | 1/9/2018 | GR | 23.5 | 12.8 | NS |  |
| JBT18-011218-GR | JBT18 | 1/12/2018 | GR | 264.5 | 219.3 | 1.24 | Reversed TP and TDP result |

| LAB ID | Site | Sampling Date | Carboy | TP (µg/L) | TDP (µg/L) | TN (mg/L) | Comment |
| --- | --- | --- | --- | --- | --- | --- | --- |
| JBT19-04252017-1 | JBT19 | 4/25/2017 | 1 | 31.7 | 27.2 | 1.00 | Reversed TP and TDP result |
| JBT19-05022017-1 | JBT19 | 5/2/2017 | 1 | 56.0 | 21.1 | 1.10 |  |
| JBT19-05092017-1 | JBT19 | 5/9/2017 | 1 | 40.1 | 29.1 | 0.76 |  |
| JBT19-05092017-2 | JBT19 | 5/9/2017 | 2 | 20.9 | 12.2 | 0.61 |  |
| JBT19-05092017-3+4 | JBT19 | 5/9/2017 | 3+4 | 55.2 | 20.4 | 0.82 |  |
| JBT19-05162017-1 | JBT19 | 5/16/2017 | 1 | 17.6 | 12.6 | 0.45 |  |
| JBT19-05232017-1 | JBT19 | 5/23/2017 | 1 | 54.6 | 22.1 | 1.00 |  |
| JBT19-05302017-1 | JBT19 | 5/30/2017 | 1 | 21.8 | 10.4 | 0.49 |  |
| JBT19-06132017-1 | JBT19 | 6/13/2017 | 1 | 81.1 | 23.1 | 0.91 |  |
| JBT19-06222017-1 | JBT19 | 6/22/2017 | 1 | 151 | NS | 1.24 | Lab broke TDP sample vial |
| JBT19-06302017-1 | JBT19 | 6/30/2017 | 1 | 163 | 73.7 | 2.04 |  |
| JBT19-06302017-2 | JBT19 | 6/30/2017 | 2 | 52.2 | 39.4 | 0.88 |  |
| JBT19-06302017-3+4 | JBT19 | 6/30/2017 | 3+4 | 51.8 | 40.9 | 0.94 |  |
| JBT19-07052017-1+2+3+4 | JBT19 | 7/5/2017 | 1+2+3+4 | 41.4 | 31.3 | 0.71 |  |
| JBT19-07112017-1 | JBT19 | 7/11/2017 | 1 | 45.3 | 21.8 | 0.57 |  |
| JBT19-07182017-1+2 | JBT19 | 7/18/2017 | 1+2 | 79.3 | 74.2 | 1.05 |  |
| JBT19-07262017-1 | JBT19 | 7/26/2017 | 1 | 29.3 | 27.5 | 0.73 |  |
| JBT19-08012017-1 | JBT19 | 8/1/2017 | 1 | 32.8 | 18.7 | 0.58 |  |
| JBT19-08082017-1 | JBT19 | 8/8/2017 | 1 | 111 | 22.6 | NS |  |
| JBT19-08302017-1 | JBT19 | 8/30/2017 | 1 | 29.1 | 13.8 | NS |  |
| JBT19-090517-1 | JBT19 | 9/5/2017 | 1 | 55.5 | 17.4 | 1.92 |  |
| JBT19-091217-1+2 | JBT19 | 9/12/2017 | 1+2 | 62.4 | 28.9 | NS |  |
| JBT19-091917-1 | JBT19 | 9/19/2017 | 1 | 62.1 | 12.5 | 0.75 |  |
| JBT19-101717-1 | JBT19 | 10/17/2017 | 1 | 209 | 16.4 | 1.46 |  |
| JBT19-102417-1 | JBT19 | 10/24/2017 | 1 | 318 | 15.0 | NS |  |
| JBT19-110117-1 | JBT19 | 11/1/2017 | 1 | 95.9 | 14.8 | NS |  |
| JBT19-110717-3 | JBT19 | 11/7/2017 | 3 | 63.8 | 16.0 | NS |  |
| JBT19-111417-1 | JBT19 | 11/14/2017 | 1 | 35.7 | 18.5 | NS | Carboy partially frozen--only liquid sampled |
| JBT19-112017-1 | JBT19 | 11/20/2017 | 1 | 27.5 | 11.4 | NS | Carboy frozen--processed in office |
| JBT19-112917-GR | JBT19 | 11/29/2017 | GR | 50.6 | 12.7 | NS |  |
| JBT19-120417-GR | JBT19 | 12/4/2017 | GR | 54.9 | 10.5 | 0.39 | TN sample acidified 24 hrs later, kept cold |
| JBT19-121917-GR | JBT19 | 12/19/2017 | GR | 29.5 | 16.5 | 0.41 |  |
| JBT19-011218-GR | JBT19 | 1/12/2018 | GR | 2445 | 225 | 1.39 |  |

Figure . Flow rate at the JBT01 tile drain monitoring station