

**X=station not functioning**

[illegible]

**SL103(Cherry D)** Base turbidity is 3-4 NTU. Shannon put new 2G board on (May 2020).

**SL104 (Cherry U)** Baseline turbidity is 2-3 NTU.

**SL111 (PUPP2S:Pennypack U-Pennypack Parkway)** This stream fouls daily and very warm. Base turbidity is 2-4 NTU.  
1/6 – 12/7 –Sensors off line.  
2020

**SL112(PUPP3S:Pennypack D-PaperMillBridge)** Rachel replaced the CTD sensor on 12/14/18 (damaged in storm on 11/25). Baseline turbidity is 1-2 NTU.

8/23,9/3 – Last data was 8/11/20, Battery died, might need reinstall or rebuild according to Bressler notes.

9/12 – Station back on line, but battery betw 3.54 to 3.56v.

9/27 – Data transmitted periodically, battery at floor of 3.55v and recharges only to 3.56 since 9/6/20.

10/10 – Water depth fluctuates with temperature, and does not show evapotranspiration expected pattern. It is drawn down during night and increases in the afternoon.

10/18 – Depth showing evapotranspiration patterns again, and depth does not appear to correlate abnormally with temp. Battery was recharged on 10/3, but declines rapidly.

**SL113(SHPK3S: Pickering, Str 1 (east))** May have bad CTD sensors (Hicks, 8/6). New CTD sensor installed by Bullard on 12/3/18. Baseline turbidity is 3-4 NTU. 5/28/19 Bressler: the quick dips in battery are an artifact but partially accurate representation of actual battery level.

**SL114 (SHPK4S: Pickering, Str 2, West)** CTD probably needs to be replaced but may freeze this winter and should wait until 2019 to replace. Baseline turbidity is 3-4 NTU. Depth readings are abnormal at this site.

**SL105 (NHPK7S:Paulinskill-Memory Pk)** Nature Conserv. May have bad CTD sensors (Hicks, 8/6/18). Baseline turbidity is 1-3 NTU.

9/27 – This site shows long term pattern of daily fluctuations in depth that correlate with temperature, and that do not appear to be natural daily evapotranspiration fluctuations in that depth begins to increase at noon and water level reaches peak in mid afternoon, although it then remains high through the night. Temperature reaches its peak after sunset.

11/4 – Sudden changes in conductivity continue. Shannon will email Rogers and DiBlasio.

11/15 – Sudden changes in conductivity continue. Turbidity sensor may have blackened. Stroud emailed DiBlasio, who will try to get there to view the sensor. No info on sudden changes in conductivity.

2020

**SL116(NHPB1S:West Portal B at Woverton Rd(NJ))** Baseline turbidity is 2-3 NTU. Cole Baldino no longer with TU.

Bressler inquiring if Nancy/Christa could maintain Lubbers, West Portal, and Merrill/Trout/Unkn until replacement found for Baldino. On hold until Cole's replacement is found. Replacement found; no info on maintenance.

Site is off-line: 6/27 – 12/7

2020

**SL117(PUSR1S:Sandy Run)** Battery ran down to 3.7v in less than a month. Lindsay will swap battery, and plans to work with a volunteer to see if she is comfortable swapping the battery and backing up. Baseline turbidity was ~1 NTU. Turbidity sensor was removed. Rachel is resetting up Sandy Run on pipes and solar on 2/5/20.

8/10 – Battery dropping steadily but still >3.7v.

8/23 – Battery rarely recharges, and is steadily dropping, now 3.6v.

9/12 – Battery at 3.55v, but signals transmitted very infrequently – last observation 9/10/20.

9/27 – Long gaps in signal occurring, battery at 3.5v.

11/15 – Battery at 3.58v, gaps in signal.

12/7 – Battery at 3.58v, frequent gaps in signal.

12/21 – Battery at 3.61v, but signal appears recently stable.

2020

**SL118(PUSR3S:UT to Sandy Run)** Wissahickon Ck sensor station moved here 8/30/19.

7/19,8/10 – Battery dropped and stabilized at 3.53-3.64v.

8/23 – Battery same.

9/12 – Transmission stops when battery goes low t 3.53v, until it is recharged up to 3.56v and then transmits for a few hours.

9/27 – Frequent long gaps in signal occurring, battery at 3.5v.

2020

**SL119(ULAQ1S:Aquashicola)** Wildlands Conservancy. This site is a control for Cherry. Baseline turbidity is 3-4 NTU. CTD replaced on 10/14/19.

2020

**SL120(NHLP5S: Lopatcong at Morris Canal Greenway)** Whenever we visit that site next to reprogram the station, we'll replace whatever part is causing the inaccurate battery measurement (Shannon). Data is logged to the sd card but not transmitted, and is being backed up. Baseline turbidity is 1-2 NTU. Needs to replace the 4G board.

**10/10** – Water is frequently in negative range and very variable – Hicks will visit.

**12/21** – Only temperature on the CTD sensor is flatlined since midnight of 12/16/20. Battery is fine.

2020

**SL121(ULHC2S: Hunter D, Borger Property)** TU Brodhead. Solar panel stopped charging battery on 6/18. Squirrel chewing-AI Barney will repair (7/23). May have bad CTD sensors (Hicks, 8/6). Baseline turbidity is ~2 NTU.

2020

**SL122(ULBC1S: Buckwha D-Creyer)** TU Brodhead Appears to be a problem with just the CTD probe, possibly broken. Hicks will return on 10/23 to replace entire sensor/cable and possibly Mayfly. Baseline turbidity is 1-2 NTU. Since August 2019 this site is not transmitting to either data portal, but data is being saved on sd card.

2020

**SL123(PUJC2S:Jenkintown D-Osceola Av)** Data for Temple U. Station offline. Put in 4G according to Ryan Neuman email on 6/18.

2020

**SL124(PUJC1S:Jenkintown U-Cadwalader Av)** Data for Temple U. Station off line. Put in 4G according to Ryan Neuman email on 6/18.

2020

**SL130 (BCRC7S:W Branch Red Clay-Bucktoe Preserve)** Baseline turbidity is 2-3 NTU. Diane McGovern saved the sd data. 6/20/20 has a bad 2G board; apparently there is no longer a strong enough 2G signal at that locations, so that station will have to be upgraded to a 4G LTE module. It's possible the current lack of signal drained the battery and is causing the board to act strangely.

**12/21** – No data from this station since 12/18/20. Battery was 3.99v.

2020

**SL131(ULLL2S:Little Lehigh at Mill Brook Farms)** David will check if solar cells blocked-10/19/18. Baseline turbidity is ~1.5 NTU. Ebel is waiting for levels to go down to address the problem. Data is recorded on SD card, but not transmitted. Plan to move the stations when conditions are favorable (6/5/19). Upgrading to 4G soon.

**7/19** – Battery at 3.65v.

**8/23** – Battery is slowly dropping, now ~3.6v.

**9/12** – Last transmission was 2:55a EST, longer gap than usual. Battery is >3.8v. May just be cellular gap.

**9/27** – Station still has not transmitted since 9/12/20 when battery was 3.8v.

**10/10** – Station is back on line since 10/6 when SWRC replaced mayfly board, LTE adapter, battery, and 4G board. Sediment fills in.

**10/18** –Sediment filled in, turbidity is >1300 NTU.

**10/27** –Sediment filled in, turbidity is almost 800 NTU.

2020

**SL132(BCMC2S:Mill C-Hickory Hills)** Shannon will revisit/troubleshoot, good cell signal. Baseline turbidity is <1 NTU.

**8/10** – Battery steadily, slowly dropping, now at 3.59v.

**9/12** – Battery declined and plateaued 3.59 and then transmissions stopped on 9/10/20.

**10/18** – Data is transmitting and up to date, but Signal strength and percent full scale became -9999 around 10/15.

**10/27** – Logger stopped transmitting on 10/25 at 11:40 pm EDT. Battery was 3.59v. Is this battery failure? MonMW does not indicate the logger has a 4G board, but was it upgraded, so possible 4G failure?

**11/4** – Battery still dead.

**12/21** – 9+ NTU gap in turbidity meter readings.

2020

**SL133(NHPK9S:Upper Paulinskill-Sussex C)** Kristine Rogers and Nature Conservancy. Shannon will visit week of 6/11-15 to replace the bad sensor. Baseline turbidity is 1.5-3 NTU. 5/28/19 Bressler: battery changes do not appear to represent actual voltage, and is a problem of the Mayfly logger per Hicks. 9/18/19; Bressler requests Damiano to add turbidity to MMW, and Hicks will check station in September. Kristine Rogers tried to resynchronize battery with no change in flashiness. The water comes out of a culvert here, and is about 2 feet deep. 11/2020: Black staining on turb, needs to clean w acid, Christa scraped black film off but still reading -9999. Mayfly board issue (board assigns -9999). 12/2020 Christa checked all connections. There was condensation around battery. Upgrade w new code. Shannon will upgrade to 4G in 1-2 months or when allowed to travel out of state. Previously replaced CTD 2x, solar panel 1x, board? David w Juniper and Kristen will make a description of that watershed that will be a template. 12/7/20 - inconsistent transmissions due to old 2G cellular board that is malfunctioning, according to Hicks.

**10/27** – First time this year drop in turbidity to -0.59 NTU; occurred 3 times from 11:00a to 12:20p  
**11/4** – Turbidity sensor bad, persistently in -1 to -100 NTU range. Shannon will email Rogers and DiBlasio.  
**11/15** – Turbidity sensor continues to give bad values. DiBlasio will check to see if optic window blackened.  
**12/7** – Battery at 3.7v but data is transmitting with frequent and long gaps in a developed area. Turbidity sensor continues to give bad values. Christi fingernail scraped blackened window, but no photos.  
**12/21** – Battery at 3.7v but still transmitting with frequent and long gaps in a developed area. Turbidity sensor continues to give bad values.

**2020**

**SL134(PKMH2S:Mine Hole at Foordemoor Rd)** Baseline turbidity is <1 NTU. Permission needed to access this station?

**7/19** – Battery continues to drop, now at 3.65v.  
**8/10** – Battery at 3.52-3.56v.  
**8/23** – Battery is at 3.49v, is recharging to 3.5v or 3.6v, but should be recharged to prevent logger failure.  
**9/3** – Battery is same.  
**9/12** – Battery at 3.59v  
**9/27** – Battery dropped, now at 3.50v.  
**10/10** – Battery is still low but gaps are not large.  
**10/18** – Battery remains low, 3.52v, with gaps in signal.  
**10/27** – Battery remains low, 3.50v, with gaps in signal.  
**11/15** – Battery at 3.55v, needs replacement. Needs permission to go there.  
**12/7** – Battery at 3.50v, needs replacement. Needs permission to go there.  
**12/21** – Battery at 3.49v, needs replacement.

**2020**

**SL135(SHPK5S:Pickering U, Montg. Sch.)** Baseline turbidity is <2 NTU. Installed (8/30/20) QC rebar which was directing debris towards sensors. Moved rebar (11/22/20) which has improved degree/frequency of fouling.

**11/4** – Turbidity has been >1000 NTU for a week.

**2020**

**SL136(MSHO2S:Hosensack C, Hwy 29)** Stroud in communication with Jim about periods of loss of signal. Jim will get replacement battery and charger(10/8/18). Baseline turbidity is ~1 NTU. New volunteer assistance from Jacqueline Wolf Tice & Simon Molloy. Jim Coffey getting new battery and charger.

**9/3** – Battery is no longer charging from solar panel since 9/1/20, and remains at 3.55v. The sunlight is enough to keep it functioning at 3.55v (Hicks, 9/4).

**2020**

**SL137(PUCC2S:UT to Cobbs at Golf Club)** Derron Labrake, Ann Jackson. Stream is completely piped upstream of sensors, so water volume changes quickly. The peaks are so sharp that they are changing significantly as you are making the measurements. The water depth changes almost inches over a few minutes. Baseline turbidity is 1-3 NTU. As of 9/9/19, this site only transmitting to MMW.

**11/15** – Off line since 11/11, at 3.9v; signal had been intermittent.

**2020**

**SL138(SHPK6S:Lower Pickering)** Foliage shade/solar charge may be cause of low signal rate and low battery performance. Sensors foul quickly from strong currents bringing leaves and other debris past sensors. Baseline turbidity is <1 NTU. Shannon will trouble shoot the uncoupling of turbidity-high and turbidity-low (August 2019)

**2020**

**SL139(PUCH1S:Chester)** Station damaged by logs and flood of 4/16; need replacing and repositioning. Baseline turbidity is 1-2 NTU.

**2020**

**SL149 (BCMC3S:Marsh Creek U) Moore's Rd.** Jim Moore. Beaver damage to CTD, and still water trapped inside vent tube in the cable that is connected to the back side of the pressure sensor and no way to draw the water out (Hicks). Turbidity at installation was 3-10 NTU. New CTD installed by Moore on 10/23/18. When Moore removes the sensors for cleaning, the depth and conductivity drop to 0. Baseline turbidity is 2-6 NTU.

**2020**

**SL150 (BCMC4S:Marsh Creek D) Fairview Rd.** French&Pickering Conservation Trust; Will Macaluso Preserve mgr. Jim Moore. Turbidity sensor replaced 10/4/18. 4/14/19-GMI will take over maintenance of this station. Baseline turbidity is ~1-4 NTU. Lori Moore will take over QC of site and Tom Kalusky of sensor cleaning. Sensors were moved on 9/23 to deeper water. As of 10/7/19,

Tom K will do maintenance *and* QC at this site. Jim states beaver damage to CTD on 5/27/20, and he spliced cable but depth measurements not correct.

**11/4** – The values for all the sensors are up to date and look normal on the Time Series graphs, but on Browse Sites the CTD spark line values are displayed as -9999.

**11/15** – Off

**12/7** – CTD sensor data is normal on

**12/21** – All stream sensor data (CTD, turbidity) is malfunctioning but station is transmitting. Battery is ~4.0v; Mayfly temp appears normal. Are the sensors out of the water?

**2020**

**SL151 (PUNR1S:Naylor's Run)** Jamie Anderson manager; Heather Gosse MWS is assisting in management. Site becomes easily fouled. Baseline turbidity is 1-2 NTU. Planning to remove the station while the stream bank is stabilized beginning 7/21 for a few weeks, then replace the station.

**8/10,8/23,9/3,9/12,9/27,10/10,10/18,10/27,11/4,11/15** – Stream station is not yet reinstalled.

**12/7** – Station is back on line since 11/19/20 after stream was restructured. After re-installation of the sensor station, turbidity went to maximum (>1400 NTU) suggesting sediment might be burying the sensors.

**2020**

**SL152 (ULBC2S:Buckwha CK U-Christman prop)** TU Brodhead. Baseline turbidity is <2 NTU.

**9/3,9/12,9/27** – Last transmission was 8/28/20

**10/10** – Station is back on line since 10/6/20; Rachel replaced battery when there for maintenance.

**2020**

**SL153 (ULHC3S:Hunter Ck U-Strohl Valley)** TU Brodhead. This sensor collects sediment under it. Baseline turbidity is <2 NTU. This site is suitable for 4G (Hicks), and eventually will be installed when supplies are available. ULHC3S is Hunter upstream of border property; now ULHC2S is Hunter Creek Stroll Valley. Upgraded 2/2020 to MMW code, and data is being saved. Will get new 2G modules when they arrive (2/24/20).

**11/15** – Depth signals became highly exaggerated from Oct. 27 to present; not seen in past 13 months..

**2020**

**SL155 (PURC1S:Ridley Ck U)** Sewage treatment plant effluence affecting streams, closest to SL155; very high rates of conductivity. Baseline turbidity is 1-1.5 NTU.

**8/10** – Battery has dropped, stable at 3.55-3.6v.

**8/23** – Battery same

**9/3** – Battery still charges but only up to 3.58v, from 3.55v.

**10/27** – No readings since 10/25 at 4:50am EDT. Battery was at 3.8v and 16.0% cellular signal.

**12/7** – No transmissions since 12/7 at 6:05am EST, which is 13.5 hours ago as of this writing. Battery was at 4.0v.

**2020**

**SL156 (PURC2S:Ridley Ck D)** This site easily becomes fouled. Baseline turbidity is ~1 NTU.

**9/27** – CTD not functioning as of 9/23, reading -9999.0

**10/10** – Readings are normal again. Sensor was not broken, but the headphone jack was corroded from water in the pelican case; Rachel replaced the headphone jack and the grove cable, and replaced the pelican case foam with dry foam, and tightened the cable gland.

**2020**

**SL157 (BCMR1S:UT Middle Run at Middle Run Natural Area)** This site has been filling in with sediment. Shane will replace battery (note of 10/8/18). Baseline turbidity is 1-1.5 NTU.

**8/23** – Battery down to 3.58v.

**9/3** – Battery recharging less and less, now up to 3.59v, from 3.55v.

**9/12** – Battery is low and station only transmitting intermittently.

**9/27** – No change in battery; remains low in voltage and station transmitting infrequently.

**10/10** – Battery higher, recharged up to 3.72v.

**10/18** – Battery higher, recharged up to 3.72v.

**12/21** – Battery declined precipitously today, now at 3.6v.

**2020**

**SL158 (PUPC2S:Primrose Ck U-Solebury School)** Frequent gaps in signal due to low cell phone coverage. Francis Collins is checking it. Lack of water in stream - Quarry downstream of station, sinkholes (on Solebury Sch campus?) are attributed to water withdrawals from the quarry (currently being phased out). Upstream creek flows normally. Freezing in winter could be a problem; sensor was removed 12/4/18 for the winter. 5/28/19 Bressler: battery changes do not appear to represent actual voltage, and is a problem of the Mayfly logger per Hicks. Although depth is very low today: -50mm reading, per Stroud team, this stream goes dry

and there is no need to fix or replace anything. Now on 4G. Replaced CTD 2020. Sinkhole upstream from the sensor swallowed all the water.

**9/27** – Station and sensors still transmitting but data does not appear valid; water depth and temperature are correlating. Should the station be removed from the stream site?

**10/10** – Depth measurements are highly variable, seem abnormal.

**10/18** – Depth measurements continue to be highly variable.

**2020**

**SL159 (PUPC3S:Primrose Ck D at Delaware R)** This sensor is downstream from a quarry and the release schedule causes the drops in depth. This station is offline but data being saved to sd card. Station back on line. Now on 4G.

**10/10** – battery has declined persistently since late August, now at 3.6v. Data does not appear interrupted.

**10/18** – Battery is at 3.52v and there are gaps in transmission.

**11/4** – Last data transmission was on 11/1; battery was at 3.64v.

**11/15** – Last data transmission was on 11/1; battery was at 3.64v.

**2020**

**SL167 (MSAC1S:Angelica Ck-St. Bernadine)** Berks Nature. Baseline turbidity is 1-2 NTU. No transmission but data saved on sd card. Sensors back online as of 9/18/19. St. Bernadine-battery keeps dying, and Hicks replaced twice in a month; will troubleshoot in November 2019. St. Bernadine site fouls at very high levels frequently.

**8/23** – Turbidity has been >1200 NTU since 8/12

**10/27** – Offline since 10/18. Needs 4G board replacement.

**2020**

**SL168 (MSPR2S:Punches Run)** Berks Nature. Poor cell coverage. Battery seems to drain slowly but there has been some charging. Punches sends data every now and again so is probably draining because of unsuccessful multiple attempts (DB). In shady forest, needs bigger panel and battery; waiting for action by Berks Nature. Transmission is on and off. Baseline turbidity is 3-4 NTU. No transmission but data saved on sd card. Back online on 9/25/19. This site fouls easily. Station was repositioned. Shannon thinks 3.7-3.8 v during summer foliage is not a concern.

**7/19** – Battery is on downward slope, now at 3.47v.

**9/4** – Turbidity is flatlined and may indicate failure.

**10/27** – Offline since 10/17. Needs 4G board replacement.

**2020**

**SL169 (PKCV4S:Cherry Ck-pour point)** Turbidity sensor appears ok, just fouls easily. Baseline turbidity is 3-4 NTU.

**2020**

**SL170 (KCCR1S:Chestnut Run)** Base turbidity is ab. 7 NTU. 11/2/18-Shannon and Rachel will check turbidity sensor. Shannon suggested 11/16 to check if sensors are buried in mud. Sarah and Michelle will check on the sensors and found sensors were buried in mud, and will clean. Baseline turbidity is 2-3 NTU. As of May 2020, 2G board failure, which causes the battery power to drop. It will need a new 2G board or a more expensive hardware upgrade and Mayfly reprogramming to convert it to AT&T 4G LTE. It's still working fine, recording data to the mem card, but the 2G board is unplugged so it won't cause excessive battery draw in the meantime (Hicks).

**6/6,6/14,6/20,6/27,7/11,7/19** - Last observation was 5/16.

**2020**

**SL171 (KCLR1S:Loper Run)** Was Sarah Johnson; don't know current station manager at Am Littoral Soc. Re changes in conductivity, let it run as-is for a little longer but keep an eye on it and see if it continues to have unexplained rapid changes (Hicks). Shannon suggested 11/16/18 to check if sensors are buried in mud. Sarah and Michelle will check on the sensors, and found they were buried in mud and will clean. Baseline turbidity is 3-4 NTU.

**8/23** – Battery dropping now ~3.53-3/55v.

**9/3** – Battery continues the same, charging from 3.53v to 3.58v. There is still positive correlation between temperature and depth, without dilution of conductivity during depth spikes, which went to 2.5 meters. Bressler thinks CTD is malfunctioning, but no info on response from station owners.

**9/12** – Battery has remained low since 8/29 and station is transmitting intermittently.

**9/27** – Battery has remained low since 8/29, now at 3.56v; station is transmitting intermittently.

**10/10** – Battery has remained low, now at 3.55v; station is transmitting intermittently.

**10/18** – Battery remains low and transmits intermittently, now at 3.6v; station is transmitting intermittently.

**10/27** – Battery remains low and transmits intermittently, now at 3.6v; station is transmitting intermittently.

**11/4** – Battery is low and transmits intermittently, now at 3.6v; station is transmitting intermittently.

**11/15** – Battery is low, now at 3.6v.

**12/7** – Battery is low, now at 3.55v.

**12/21** – Battery is now at 3.53v.

**2020**

**SL172 (KCFB1S:Indian Field Br)** Baseline turbidity is ~5 NTU.

7/19 – Battery is slowing but persistently dropping, now 3.56v.

8/10 – Battery remains 3.5-3.6v.

8/23, 9/3, 9/12 – Battery unchanged, always <3.6v.

9/27 – Battery remains 3.5-3.6v; data transmitting intermittently.

10/10 – Battery remains 3.5-3.6v; data transmitting regularly.

10/18 – Battery remains 3.5-3.6v; data transmitting irregularly.

10/27 – Battery remains 3.5-3.6v; data transmitting irregularly.

11/4 – Battery is low, currently at 3.6v.

11/15 – Battery is low, currently at 3.6v.

2020

**SL176 (PUSR2S:Schuylkill River-Bartram's Garden)** Abnormal signals from 1/21 were due to unusually low tides and the sensors were out of water. Baseline turbidity is ~2-5 NTU. Beth Iannelli will be trained on maintenance and QC, who will help Chloe. This site lost cell coverage 7/19/19 Back online as of 9/24/19. 4G was installed on 4/28/20. Hicks will need to test problem with DO sensors: "the occasional -9999 reading is due to a communication problem between the DO sensor and the Mayfly". Will require building a new complete copy of the station with all sensors and cell board and then testing to discover problem. Ongoing Zebra-Tech DO pbms discovered due to programming problems; Hicks brought DO sensor back to SWRC to deal with programming.

10/18 – Last observation from station is recorded on MonMW was 10/13/20. Battery was >4.0v.

10/27 – New 4G board replaced on 10/20

2020

**SL177 (BCBR1S:Broad Run upstream of Somerset)** 10/19-David will check with Bill Ward if the 2G reception dropped out. Sensors were removed to prevent winter freezing. Baseline turbidity is ~3 NTU. Reinstalled sensors and logger but not online. Needs a new cellular board, but either 2G or bad 2G.

1/6 to 11/4 – Offline.

12/21 – Station stopped transmitting on 12/15/20.

2020

**SL179 (NHLR1S:Lubbers Run)** Managed by Nancy Lawler, Musconetcong WA, and Cole Baldino of TU (no longer associated as of October 2019). Baseline turbidity is 1-1.5 NTU. Bressler inquiring if Nancy/Christa could maintain Lubbers, West Portal, and Merrill/Trout/Unkn until replacement found for Baldino.

1/6, 1/13, 1/20, 1/27, 2/3, 2/10, 2/17, 2/24, 3/2, 3/30, 4/8, 4/20, 4/28, 5/7, 5/19, 5/30, 6/6, 6/14, 6/20, 6/27, 7/11 – Offline.

12/7 – Battery declining, now at 3.68v.

12/21 – Battery declining, now at 3.49v.

2020

**SL188 (KCMR1S:UT to Muddy run, Sheep Pen Rd, NJ)** Sensors were relocated 5/20/19. Conductivity is way off, CTD sensor should be under warranty, internal circuit error, and Shannon/Rachel will replace when they can. Plan to put online 4G.

1/6, 1/13, 1/20, 1/27, 2/3, 2/10, 2/17, 2/24, 3/2, 3/30, 4/8, 4/20, 4/28, 5/7, 5/19, 5/30, 6/6, 6/14, 6/20, 6/27, 7/11, 7/19 – Offline since 12/6.

8/23 – Battery dropped to 3.53v.

9/3 – Battery between 3.44v and recharging only to 3.5v. Signals less frequent, occurring in clusters. Station needs new battery and new solar panel and new Mayfly; when battery goes below 3.45v the battery is not drawn, and thus is only transmitting during daylight when it can be recharged.

9/12 – Battery remains very low.

2020

**SL189 (BCPC1S:Independence School-UT to Pike Ck)** Sensors were relocated 5/20/19.

1/6, 1/13 – No transmissions since 12/6.

9/27 – Battery is very low – 3.55v, and the station is transmitting intermittently.

10/10 – Battery is very low – 3.56v, and the station is transmitting intermittently.

10/18 – Battery is very low – 3.58v, and the station is transmitting less frequently.

10/27 – Battery is very low – 3.55v; station transmitting only once/day.

11/4 – Battery is very low – 3.56v; station transmitting for a period only once/day.

11/15 – Battery is very low, 3.6v; station transmitting intermittently.

2020

**SL190 (BCPC2S:Independence School-Pike Creek)** Logger pole damaged during Thanksgiving '18 storm, replaced on 2020

11/1, 11/11, 11/22 – No transmissions since 10/28/19 9:40a.

12/10 – Hicks cleaned sediment-buried sensors on 12/10.

**SL191 (MSSR4S:Schuylkill Greenways)** Water depth was unusually high at installation. Battery is slowing draining 11/7/18. Tim Fenchel indicated the battery voltage was improving 12/4/18. Baseline turbidity is 2-4 NTU. Ongoing Zebra-Tech DO pbms discovered due to programming problems; Hicks brought DO sensor back to SWRC to deal with programming. Station relocated from Towpath Park MSSR2S) to Greenways on 7/24/20). Getting new Mayfly with programming for DO and 4G as of 8/2020.

2020

**SL246 (PUMC1S:Mill Creek - Silver Lake Nature Center)** Base turbidity is 2-3 NTU.

10/10 – Turbidity has begun to read very frequently below 0 NTU since early October, sometimes <-20 NTU.

11/15 – Station has not transmitted since 11/13 EST, battery at 4.08v.

12/7 – Station transmitting very infrequently, more time with no transmissions than with transmissions. Battery at 4.14.

12/21 – Station no longer transmitting. Last battery at 4.14v.

2020

**SL248 (PURC3S:Ridley Creek – Garrett Mill)** Base turbidity is 1-2 NTU.

2020

**SL249 (MSPL2S:UT to Plum Run)** Base turbidity is <1 NTU. Hicks installed a larger solar panel and battery. Shannon will activate the new sim card, owner needs to reactivate the hologram account (Natalie).

11/4 – Battery is declining since September, very low – 3.6v.

2020

**SL276 (MSAC2S:Angelica Ck – Berks Nature)** Base turbidity is <1 NTU.

12/7 – Station has not transmitted since 11/17 EST, battery at 4.08v. Possible cell board issue.

2020

**SL279(SHVC1S:Valley Creek – Ecology Park)** Base turbidity is <1 NTU. Hicks installed a larger solar panel and battery on 10/25/19.

7/19 – Battery continues to decline, now at 3.59v.

10/18 – Last observation from this site is 7:25pm today (4.5 hrs ago), battery was 3.73v.

2020

**SL286 (SHVC2S:Valley Creek – Valley Ck Park)**

7/19 – Battery continues to decline, now at 3.67v.

12/21 – No data transmitted from the site since 12/13. Battery was 4.06v

2020

**SL289 (PUSR4S:Schuylkill River at SCEE)**

9/12 – Battery needs regular recharging. Now at 3.56v.

9/27 – Battery at 3.53 and transmitting only intermittently.

10/10 – Station not back on line since transmitting since 9/27; last available data is from 9/26. Battery died according to SWRC. See SWRC notes re: hologram account problems.

9/27-11/4 – Station offline.

12/7 – Battery at 3.70v.

12/21 – Battery at 3.53v.

2020

## BATTERY

I just wanted to clarify the explanation about the negative numbers on the received signal strength panel. dBm is a measure of how strong the cell tower signal is, similar to how many bars you have on your cell phone. The farther away from the tower the more signal loss hence the negative number. If you were right at the tower the signal would theoretically be 0 dBm. An excellent signal is -45 dBm a poor signal would be -89 dBm. No signal is at -110 dBm. This is a logarithmic scale. The Received signal strength parameter only shows up on 4G stations but not all of them. There is a direct relationship between it and Percent full scale parameter.

-45 dBm = 109.0%

-57 dBm = 90.0%

-69 dBm = 71.0%

These are the only 3 values i've seen since I started in June.

I hope this helps.

Yours,

Charlie Coulter

dBm is a technical measurement of signal strength, and Sara programed all the Mayfly boards after we started rolling out the LTE updates. It's not a useful measurement for anyone, so I stopped using it on any of the boards I program. The signal percent parameter gives us the same information, but in a much more user-friendly format.

Shannon Hicks