

2016 TRIBUTARY AND GROUNDWATER SAMPLING PROGRAM

for

Pennichuck Water Works

December 2016

Prepared For:
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Attachment A: Tributary Sampling Data, 2013 through 2016

Attachment B: Groundwater Sampling Data, 2016

Attachment C: Tributary Graphs

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1.0 Background

Pennichuck Water Works (PWW) has been collecting data from the watershed since 1991. Over this time, sampling locations and parameters varied until around 2005 when a sampling program was developed using a specific set of water quality parameters for nine tributary locations within the watershed. This program was further refined in 2007 to include continuous flow monitoring, and since then, water quality sampling and flow measurements at tributary locations have been ongoing, with modifications and adjustments made as needed. In 2013, PWW initiated a groundwater sampling program to compare phosphorus concentrations those found in the tributaries. This program has also been modified over the past several years, including adding and removing locations, well replacement, and field processing of samples.

2.0 Monitoring Locations

The ten groundwater and tributary sampling locations are shown on **Figure 1** with descriptions provided in **Table 1**.

Table 1 – Groundwater and Tributary Sampling Locations

Sampling Location	Tributary Station ID	Groundwater Station ID	Location / Description
01-BFB	01-BFB-T	01-BFB-MW	Boire Field Brook, Tinker Road
09-PEN	09-PEN-T	N/A ¹	Holt Pond Dam
09T-PEN ²	09T-PEN-T	09T-PEN-MW	Route 101A Bridge
09-XPB	09-XPB-T	09-XPB-MW (01-CML)	Unnamed Tributary to Pennichuck Brook on 101A. (Craftsman Lane Bridge)
01-WCH	01-WCH-T	01-WCH-MW	South Merrimack Road Bridge
01-XWB	01-XWB-T	01-XWB-MW	Unnamed Tributary to Witches Brook
12-PEN	12-PEN-T	12-PEN-MW	Nevins Road Bridge
01-MUD	01-MUD-T	01-MUD-MW	Farley Road Bridge
02-WCH	02-WCH-T	02-WCH-MW	Ames Road Bridge on Route 122
01-HAY ³	01-HAY-T	01-HAY-MW	Hayden Road in PSNH electrical line easement

¹Groundwater monitoring discontinued in 2016.

²Groundwater monitoring well not installed adjacent to tributary sampling locations.

³Groundwater and tributary monitoring was added in 2016, this is the tenth sampling location.

3.0 Data Collection

In 2016, water samples were collected by Comprehensive Environmental Inc. (CEI) on the following dates: April 21st, June 2nd, June 27th, July 28th, August 25th, September 22nd, and October 19th. Due to drought conditions present throughout the 2016 sampling program, some tributary (01-BFB and 01-HAY) and groundwater (02-WCH and 01-HAY) locations had occurrences where no water was present for sample collection, however remaining sampling rounds occurred without issue.

The parameters analyzed both in the field by CEI and in the lab by Granite State Analytical and/or Chemsolve are summarized in **Table 2**.



Table 2 – Sampling Parameters

Field Analysis	Laboratory Analysis	
Groundwater and Tributaries	Tributaries	Groundwater
• Conductivity • Dissolved Oxygen • pH • Temperature • Groundwater Level / Staff Gauge Reading	• Ammonia-N • Chloride • E. Coli • Fecal Coliform • Nitrate/Nitrite-N • TKN • Total Nitrogen • Total Phosphorus • TSS	• Ammonia-N • Chloride • Nitrate/nitrite-N • TKN • Total Nitrogen • Total Phosphorus

The 2016 tributary sampling program continued unchanged from the previous year with the exception of adding 01-HAY as a sampling location.

The 2016 groundwater sampling program was modified to eliminate sample filtering and install replacement wells for a number of previous wells with poor recharge in hopes of improving recharge and providing in-situ filtering through a sand layer. Under this approach, results are expected to show high phosphorus levels in the groundwater that will not be comparable to tributary results or previously collected groundwater data, however will be comparable between 2016 groundwater sampling locations. This will allow potential phosphorus “hot spots” to be identified within the watershed. Additionally, a new groundwater well was added to location 02-WCH while sampling at 09-PEN was discontinued due to the presence of silty soils and historically poor recharge at this location.

Staff gauges and electronic dataloggers were previously installed at nine of the ten tributary locations (exception being 01-HAY due to low or dry water levels) to collect year-round stream elevations, and stage-discharge relationship equations were developed based on field measurements. Data was downloaded by CEI approximately every six weeks during spring, summer, and fall months and converted to an approximate flow for each tributary.

4.0 Data Analysis

The following sections provide a brief data analysis for each location. This report focuses on comparing this year’s data with more recent data collected from 2013 through 2016. For more detailed information, see the attachments at the end of this report.

4.1 01-BFB

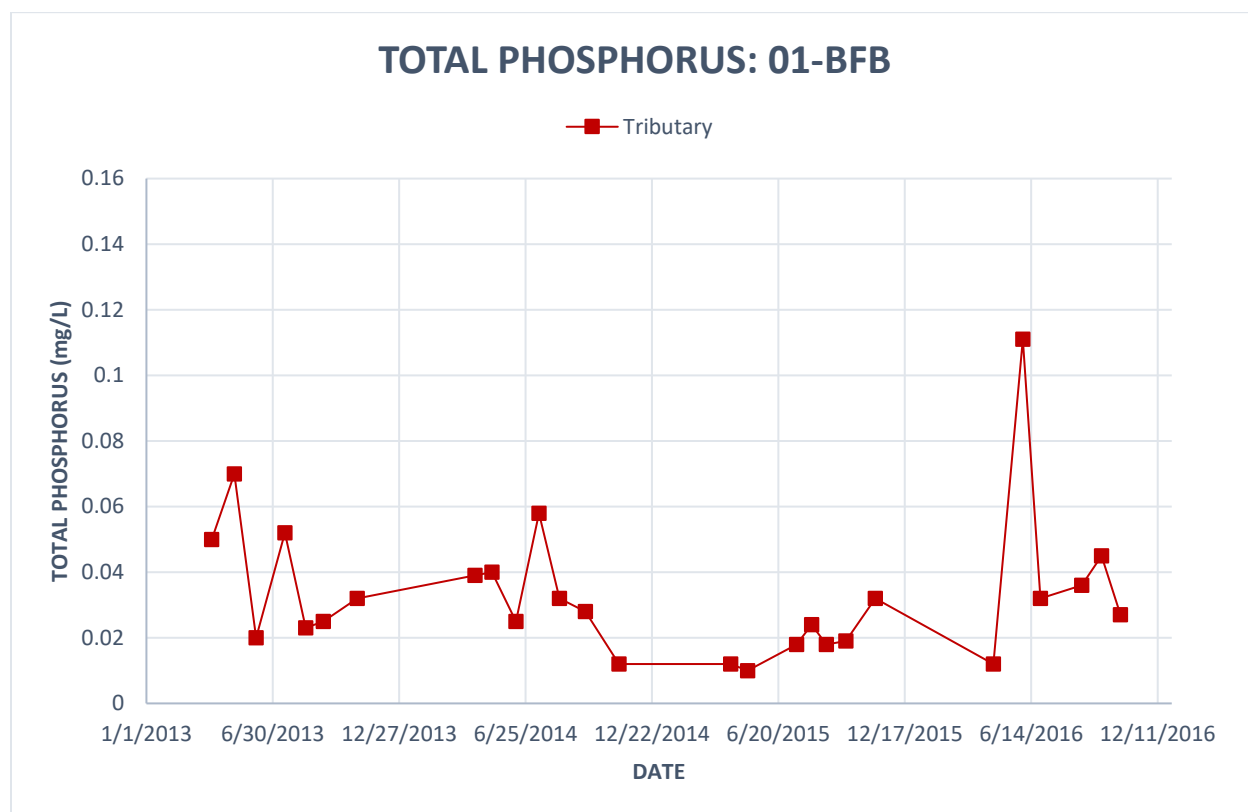
Sampling location 01-BFB is located at the culvert intersection of Tinker Rd. and Boire Field Brook. Immediate vicinity of the sampling location is residential but the upstream watershed includes commercialized sections of 101A in Nashua, including Nashua Municipal Airport.





Total Phosphorus Analysis

Tributary results for 01-BFB have generally been decreasing during recent years, however 2016 results spiked back to high levels not seen since 2007 through 2010, making it one of the top three highest sites in 2016. High phosphorus levels could be potentially due to the extremely dry summer months in 2016 and associated low stream levels. Additionally, the contributing subwatershed is the smallest and most heavily developed within the PWW watershed, likely contributing to elevated phosphorus levels.



Groundwater levels were in the mid to lower range when compared to other sampling locations within the watershed, consistent with other sampling locations in eastern areas of the watershed.



Other Analyses of Note

The pH levels at this location for both the groundwater and tributary have consistently been higher (more basic) than other sampling locations, with highest levels (e.g. pH of 8.94) generally occurring during the mid to late summer. The conductivity levels for the tributary water at 01-BFB have historically been the highest of any sampling locations in the watershed. High levels may be associated with the relatively large quantities of road salt being applied upstream on the Everett Turnpike and at the airfield during the winter months that slowly leaching into the tributary when groundwater levels are high.

4.2 09-PEN

Sampling location 09-PEN is located on the upstream side of the dam separating Holts and Bowers Ponds. This area is preceded by the supply pond, Holts Pond.



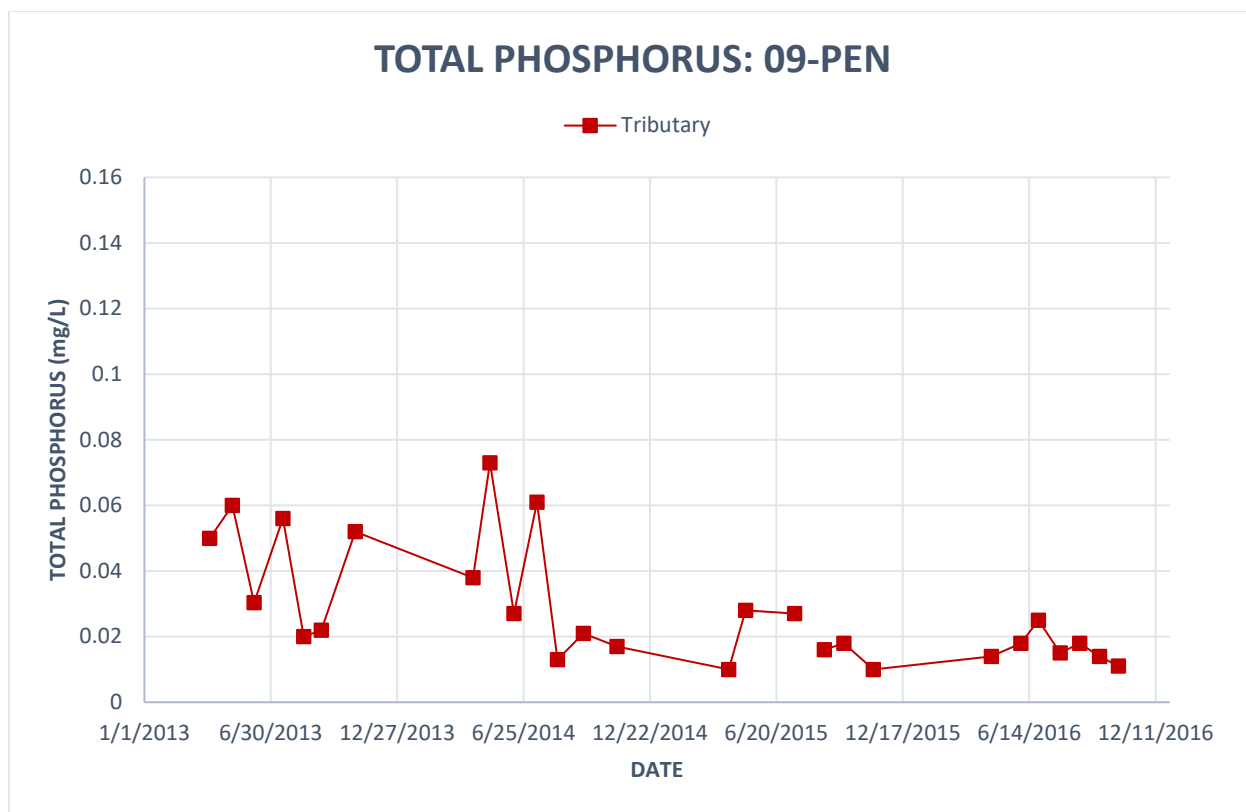
Total Phosphorus Analysis

Tributary results for 09-PEN have generally been decreasing during recent years, and results in 2016 continued this decreasing trend. Tributary total phosphorus levels were the lowest of all tributary locations during 2016, with results less than 20 ppb on all except one occasion of 25 ppb on June 27. It appears that areas of upstream Holts Pond may be reducing phosphorus levels, as phosphorous levels in the next upstream location (09T-PEN) have generally been increasing over the past 4 years.

Groundwater sampling at 09-PEN was discontinued at the end of the 2015 sampling rounds since it has historically been unreliable due to poor recharge associated with silty soils.

Other Analyses of Note

Tributary results in 2016 showed uncharacteristically higher (more basic) pH levels (e.g. pH of 8.21) than in recent years, however other parameters were consistent with previous years.



Note: Surface water data for 8/6/15 was removed due to lab error.

4.3 09T-PEN

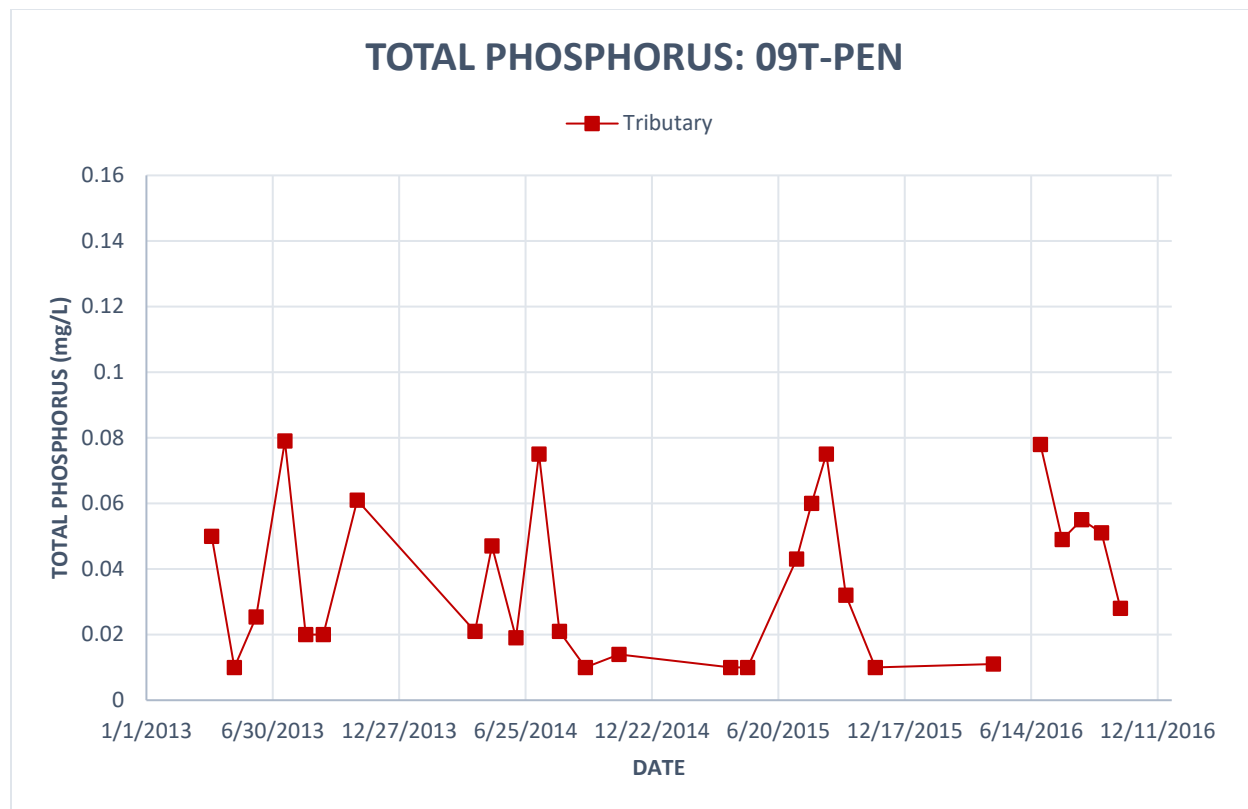
Sampling location 09T-PEN is located at the culvert where Pennichuck Brook passes underneath Route 101A. The terrain at this location is unsuitable for microwell installation so the groundwater sampling is done a few hundred yards downstream, behind the Pennichuck Square shopping complex.



Total Phosphorus Analysis

As this location is positioned immediately downstream of three stations with some of the highest phosphorus concentrations (09-XPB, 12-PEN, and 01-MUD), tributary phosphorus concentrations at this site are also high. 2016 tributary phosphorus levels were somewhat higher

than recent years and among the highest in the watershed, possibly due to drought conditions and associated lower water levels with less flushing. Some dumping of assorted yard wastes has been noted immediately upstream of this location in the vicinity of the groundwater well, potentially contributing to high phosphorus levels at this location.



Note: Surface water data for 6/2/16 was removed due to lab error.

On average, groundwater phosphorus levels at this location are among the lowest in the watershed, except one sample collected on August 25, 2016 with an extraordinarily high phosphorus level. In general, sampling locations in the northeast portion of the watershed have lower concentrations than those located in central and southern areas.

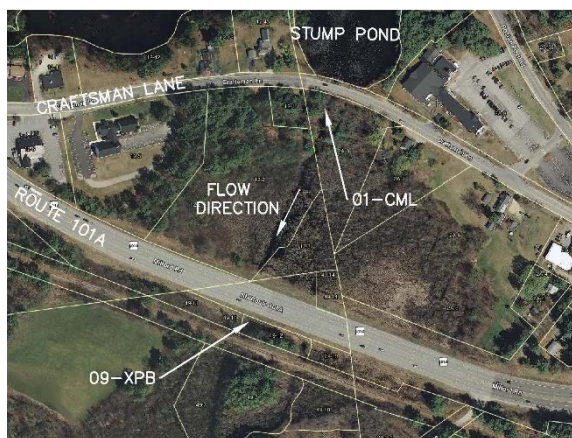
Other Analyses of Note

The pH levels for both the tributary water and the groundwater have been increasing throughout the 2016 sampling rounds. The pH levels for the 2016 sampling rounds are the highest (most basic) recorded levels (e.g. pH of 8.25) at this site since the beginning of the sampling program, and it appears that both surface and groundwater are trending to be less acidic and more basic over time.

4.4 09-XPB / 01-CML

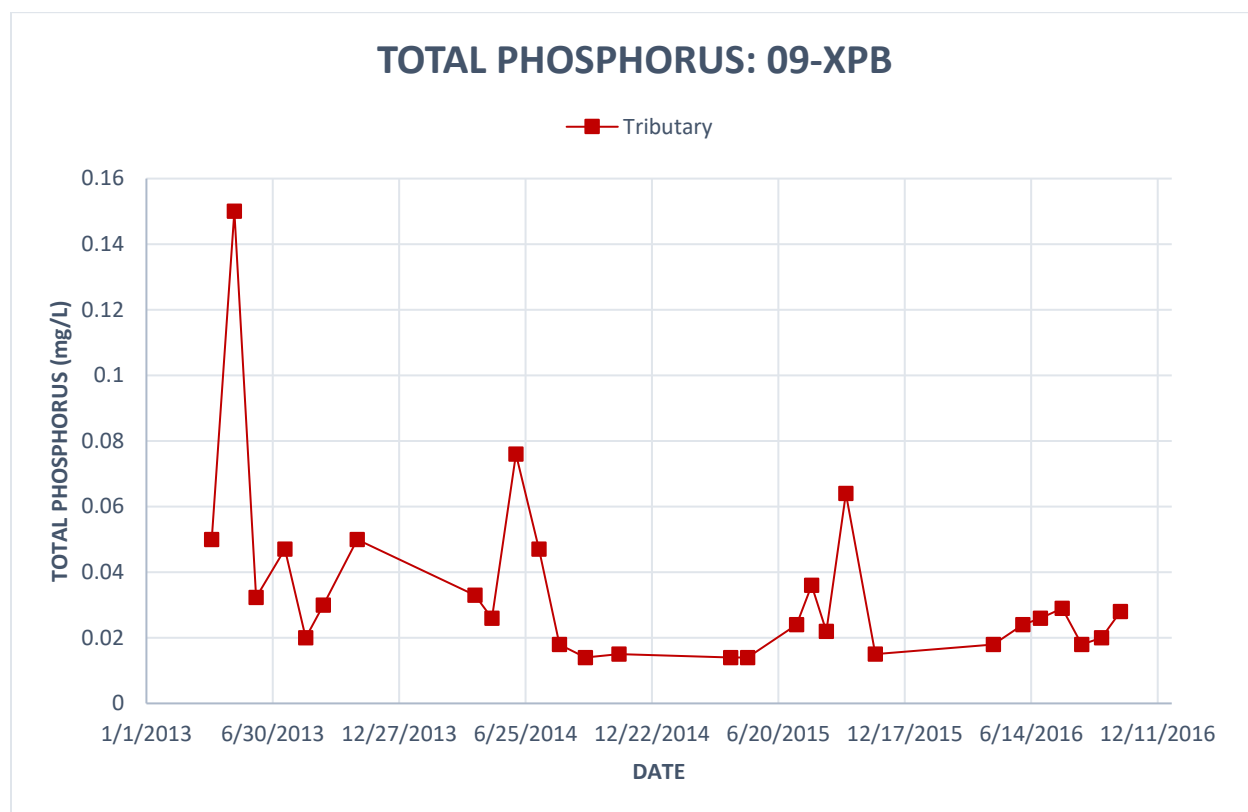
Sampling location 09-XPB is split into two sites. Groundwater and tributary monitoring takes place at site 01-CML while data logging and stage discharge readings are performed at site 09-XPB, located just south of Rt. 101A. Note that during sampling efforts, the culvert under Craftsman Lane was observed to be in generally poor condition.





Total Phosphorus Analysis

Tributary results for 09-XPB have generally been decreasing during recent years and results in 2016 continued this decreasing trend, however, this location still has one of the highest average phosphorus concentrations of all tributary stations. It is possible that the high loads are due to phosphorus contributions from Stump Pond such as septic system leachate, internal recycling, and other non-point sources of phosphorus.



Groundwater phosphorus levels are relatively low when compared to other locations, as in general, sampling locations in the northeast portion of the watershed have lower concentrations than other areas.

Other Analyses of Note

2016 saw four occurrences of ammonia present in tributary water quality samples, whereas the previous three years had only three occurrences total. Remaining parameters, such as nitrogen, pH, and bacteria were consistent with historical values, and thus no apparent correlation is noted.

The stage-discharge relationship at this location remains unreliable due to multiple blockages during 2015 and 2016, and a new relationship should be established during 2017 if free flowing conditions return.

4.5 01-WCH

Sampling location 01-WCH is located on South Merrimack Road, just south of a set of railroad tracks. Large wetlands inhabit both sides of the Witches Brook culvert, with the brook forming a meandering channel through the vegetation. Water velocity is typically slow in this area but water levels are deep, especially after heavy rain events.



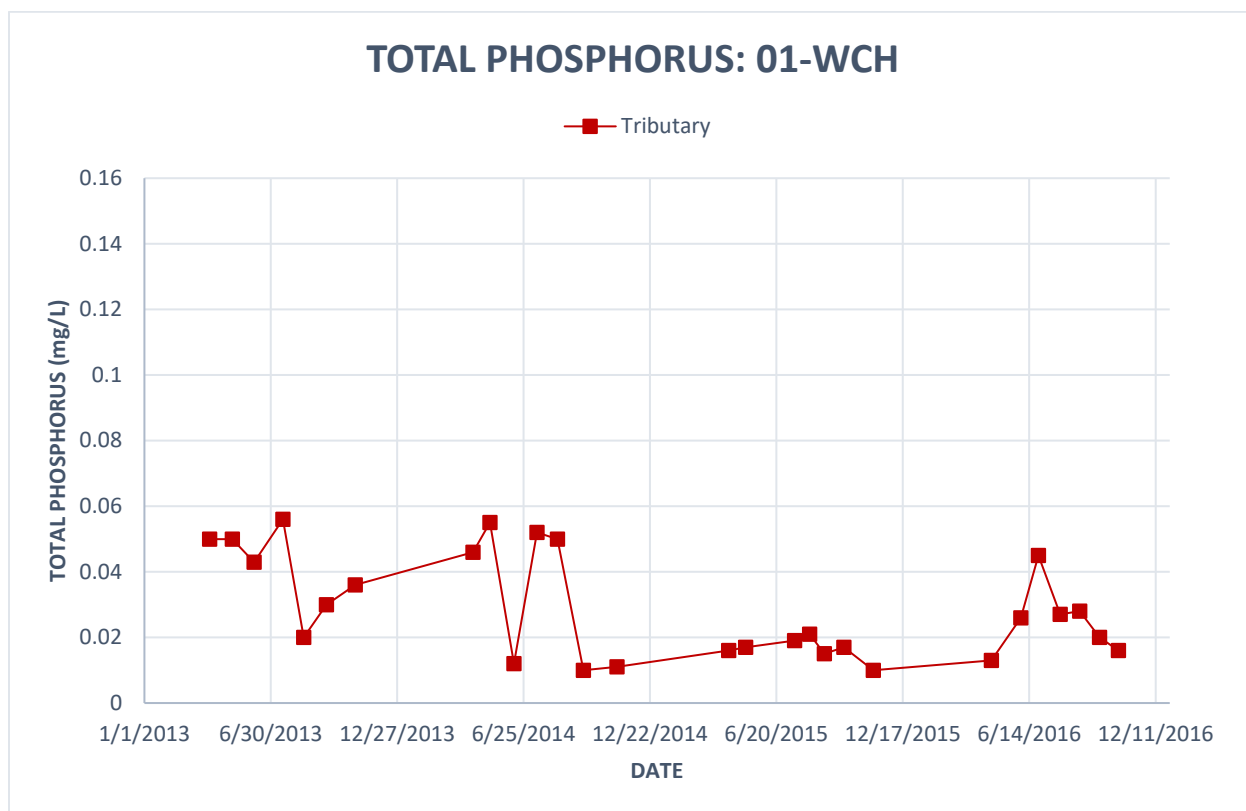
Total Phosphorus Analysis

Tributary results for 01_WCH have generally been decreasing during recent years, however tributary results in 2016 returned to a somewhat higher level, potentially due to drought conditions and overall low water levels. Tributary concentrations are approximately average when compared to other locations.

Groundwater phosphorus concentrations are relatively high at this location, placing it within the top three highest average concentrations within the watershed. It appears that there may be a “hot spot” located in this general area, with higher concentrations located to the south.

Other Analyses of Note

Groundwater at this location had much higher concentrations of total Kjeldahl nitrogen (TKN) than other groundwater locations. Remaining nitrogen components (nitrate, nitrite, and ammonia) were consistent with other locations, thereby indicating a potential organic source of nitrogen in this area. Other anomalies in tributary sampling include a spike in E.coli (1,410 cts/100 mL) in the last sampling round of 2016, however the reason for this spike is unknown. No other potential source indicators were observed during this sampling round.



4.6 01-XWB

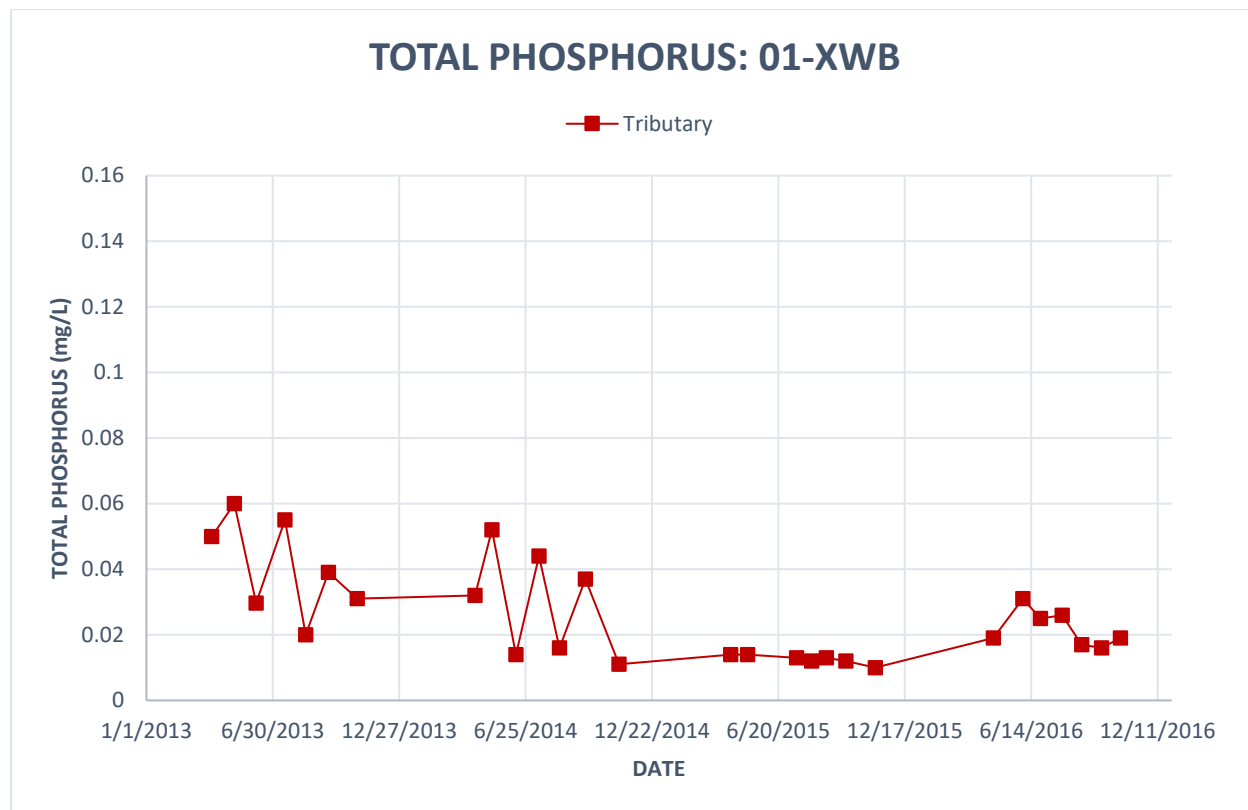
Sampling location 01-XWB is located on the edge of a farm plot off of Witches Spring Road. The tributary is unnamed and travels through a combination of wooded, residential, agricultural and wetland/swamp areas. The farm is used for hay production and there are small livestock enclosures in the area. This portion of the tributary is wide and deep but moves slowly.



Total Phosphorus Analysis

Similar to location 01-WCH, tributary results for 01-XWB have generally been decreasing during recent years, however tributary results in 2016 returned to a somewhat higher level. Tributary concentrations are approximately average when compared to other locations.

Groundwater phosphorus concentrations are relatively high at this location, placing it within the top three highest average concentrations within the watershed. It appears that there may be a “hot spot” located in this general area, with higher concentrations located southwest.



Other Analyses of Note

The water level at this location during 2016 was much higher than previous years and may indicate beaver activity further downstream of this location. The tributary water is also consistently stagnant at this location. This may have changed the flow characteristics of this location, and therefore, a new stage-discharge relationship should be developed during 2017 if free-flowing conditions return.

4.7 12-PEN

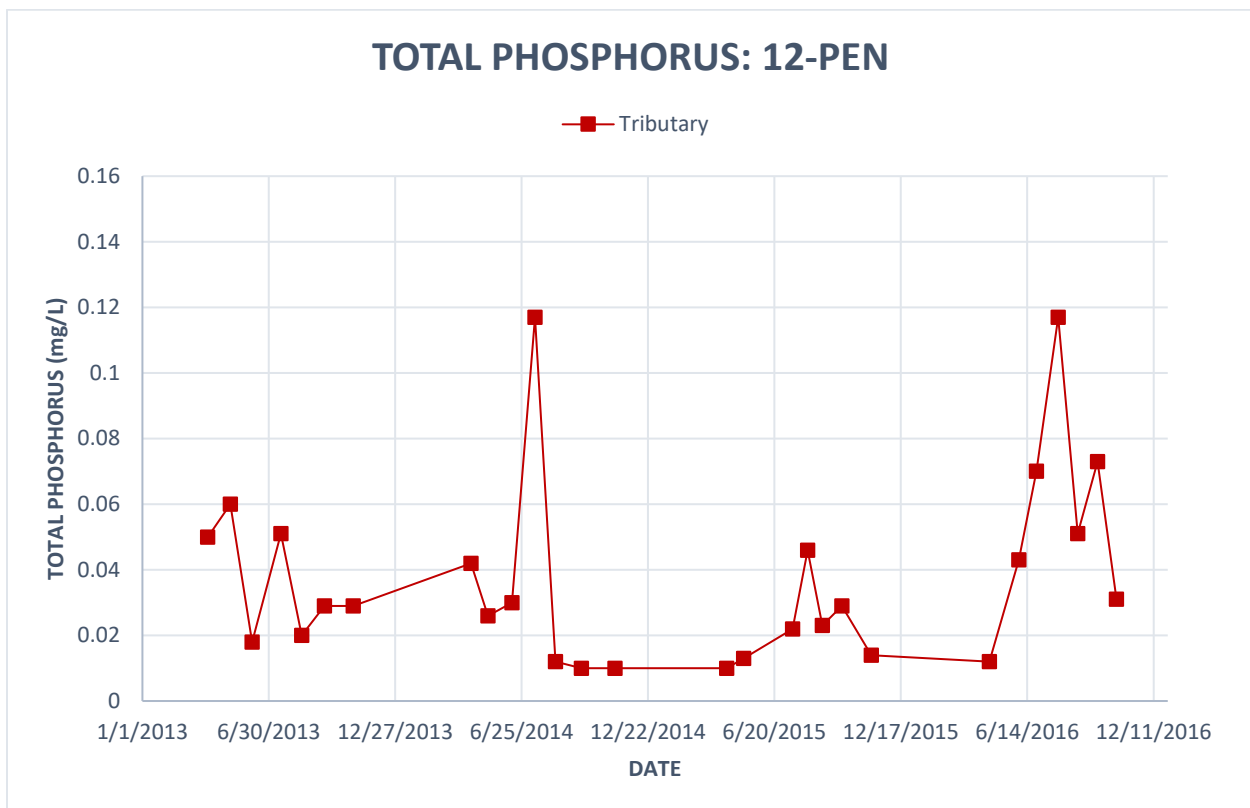
Sampling location 12-PEN is located where Nevins Road crosses Pennichuck Brook. The watershed is mostly wooded and residential, but there are some small livestock enclosures in the area. Water velocity is generally high while water depth is low, however, there have been periodic beaver dams that have been built downstream which has caused the water in this area to stagnate on occasion.





Total Phosphorus Analysis

2016 tributary phosphorus levels were the highest on average of any sampling location. Historically (pre-2013), this site was one of the better locations, however since that time, phosphorus levels have increased substantially. This subwatershed is home to a relatively large farming area known as Scooter's Farm of Woodmont, with much of the crop appearing to consist of apples. It is possible that fertilizer usage may have increased or changed in some way during recent years. Alternatively, elevated readings could be associated with periodically stagnant water associated with beaver dam construction, as well as the extremely dry conditions during 2016 sampling events.



Groundwater concentrations in 2016 were approximately average when compared to other sampling locations within the watershed.

Other Analyses of Note

Total nitrogen and TKN concentrations in the surface water spiked in late July, 2016. The reasons for this anomaly is unknown, although it was particularly dry during that time of the year and may have been caused by stagnation in the tributary. Remaining parameters for tributary water and groundwater appear to align with historical trends from the last few years.

The water levels have been higher than usual indicating a beaver dam or debris build up further downstream. This may have changed the flow characteristics of this location, and therefore, a new stage-discharge relationship should be developed during 2017 if free-flowing conditions return.

4.8 01-MUD

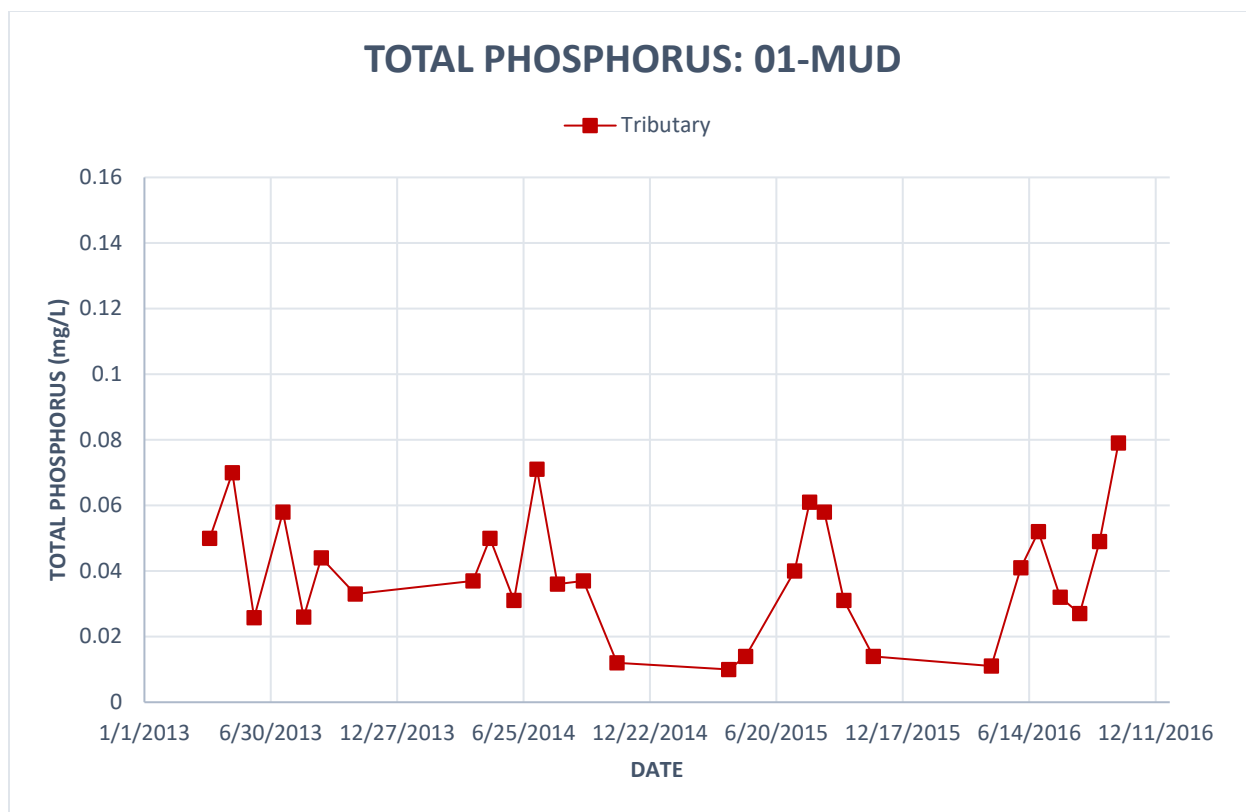
Sampling location 01-MUD is located where Muddy Brook crosses underneath Farley Road. Much like 01-WCH, this area consists of a large wetland with the Muddy Brook stream channel meandering through the vegetation. Water velocity is also low and typical water depth high.



Total Phosphorus Analysis

Tributary phosphorus levels at this location have historically been among the highest in the watershed, and 2016 is no exception. While phosphorus concentrations have been historically decreasing, levels rebounded somewhat during 2016, potentially due to the dry weather and ongoing drought conditions.

Groundwater levels at 01-MUD have the highest phosphorus concentrations at approximately two to three times higher than the next highest locations on average. Due to a combination of other factors (see below), it is possible that high groundwater phosphorus concentrations are contributing to elevated phosphorus concentrations in the tributary.



Other Analyses of Note

01-MUD has the lowest (most acidic) pH levels (e.g. pH of 6.55) and highest conductivity levels of all locations within the watershed. It is possible that due to naturally acidic soils and high conductivity, groundwater may be leaching phosphorus into the tributary at this location.

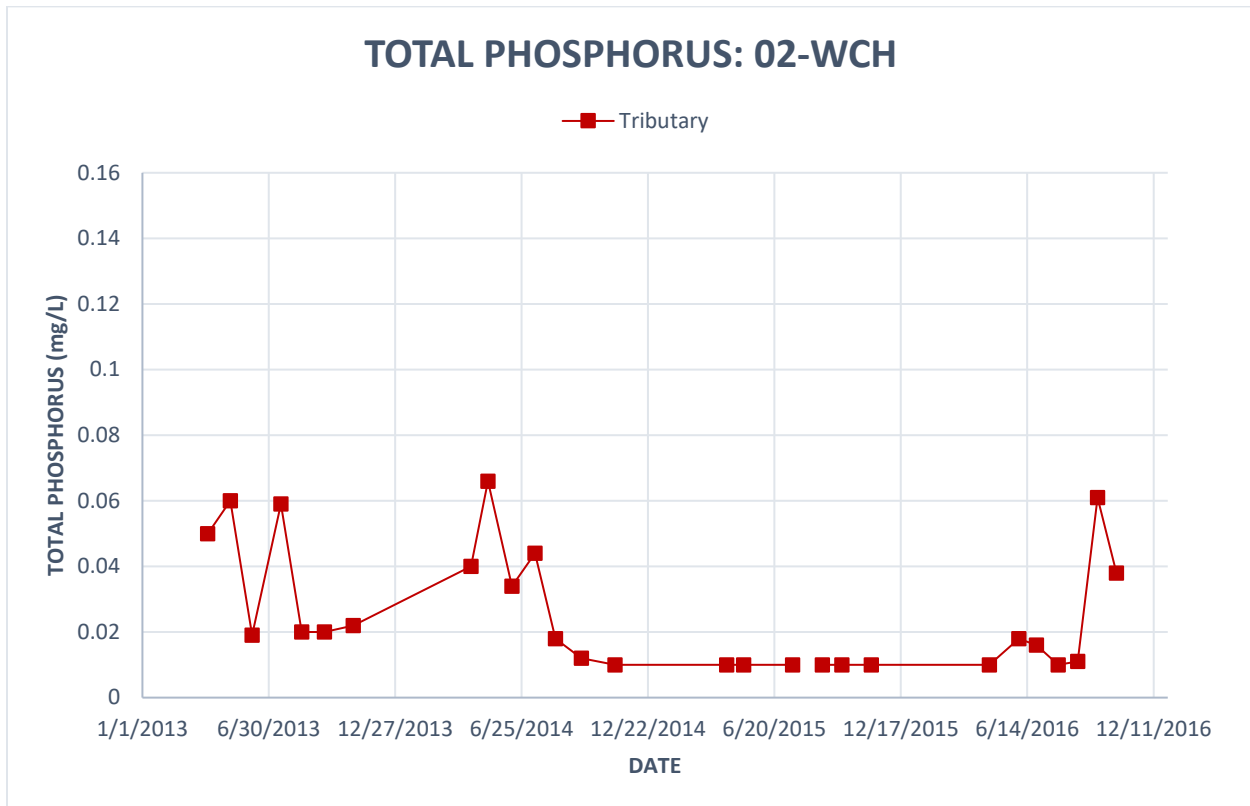
4.9 02-WCH

Sampling location 02-WCH is located where Witches Brook flows underneath Ames Road. The brook travels through a largely wooded and residential area of Hollis, NH. This site has a groundwater well adjacent to the tributary as of 2016, however this well has poor recharge and was often dry during parts of the year and samples could not be obtained during those times.



Total Phosphorus Analysis

Tributary results for 02-WCH have generally been decreasing during recent years, however 2016 results spiked back to levels more consistent with historical values in 2007 through 2010. It is possible that the dry conditions throughout the 2016 sampling program contributed to phosphorus rebound. Phosphorus concentrations at this location are still among the lowest in the watershed and generally representative of the background concentration of the upper watershed.



Note: Surface water data for 8/6/15 was removed due to lab error

Groundwater phosphorus concentrations are the lowest in the watershed, however only limited samples were obtained due to poor groundwater recharge at this location during dry conditions.

Other Analyses of Note

Nitrates at this location have been historically high, however there is no obvious reason for this location to have concentrations approximately three times higher than other locations.

4.10 01-HAY

This site is located on Haynes Rd underneath the power lines. A staff gauge and tributary sampling at this site was added at the beginning of the 2016 sampling rounds.

Total Phosphorus Analysis

Only three tributary and groundwater samples were collected from this site in 2016 since the tributary and groundwater well were both dry during the summer drought conditions. Tributary



concentrations were among the lowest in the watershed. Groundwater concentrations were average, however this was largely due to one high reading collected during dry conditions. More data is needed for both tributary and groundwater to perform an analysis, however it is expected that water quality at this location will be good due to its location in the headwaters.

5.0 Phosphorus Data Summary

Tributary

In general, tributary total phosphorus concentrations decreased from 2013 through 2015, however rebounded during 2016 to levels more consist with those from 2007 through 2010. It is likely that ongoing drought conditions consisting of an approximate 8-inch precipitation deficit throughout the 2016 sampling program were a factor due to overall lower water levels, more stagnant water, and reduced flushing of tributaries. Tributary locations 01-MUD, 09-T-PEN, 12-PEN, and 09-XPB had the highest phosphorus concentrations, similar to previous years.

Groundwater

Phosphorus concentrations further up in the watershed are generally lower, with levels at locations 02-WCH and 01-HAY being among the lowest levels sampled. Concentrations also decrease closer to the supply ponds, as locations 09T-PEN, 09-XPB, and 01-BFB are among the lowest. However, under the new groundwater sampling approach, location 01-MUD had the highest phosphorus values at approximately two to three times higher than the next highest locations on average. This location also had the most acidic soil (lowest pH) and highest conductivity levels as much as twelve times higher than other locations. It is possible that due to naturally acidic soils and high conductivity, groundwater in this area may be leaching phosphorus into the tributary at this location, as 01-MUD has the highest phosphorus concentrations of the tributary locations over the past 4 years.

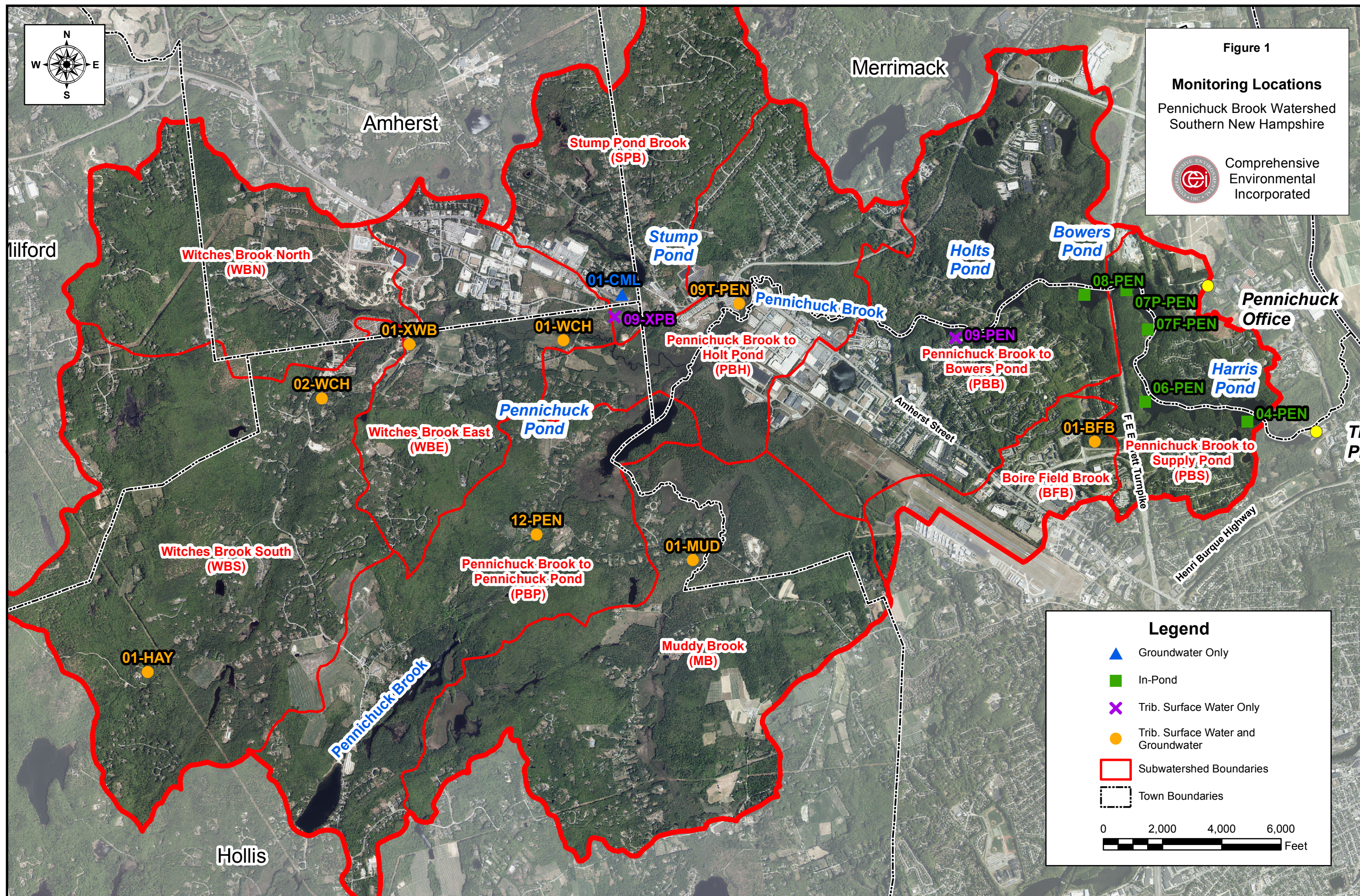
It appears that a “hot spot” of phosphorus may exist near the central-southern portions of the watershed, centered around 01-MUD and radiating out to 12-PEN, 01-WCH, and 01-XWB. Soil samples collected in 2012 from monitoring wells at each location did not reveal substantially higher phosphorus levels at these locations and therefore may indicate a combination of factors leading to higher phosphorus concentrations in groundwater, such as more acidic soils. Additional follow-up should be explored during the 2017 sampling program and proposed Phosphorus Data Analysis and Modeling task outlined in the November 2, 2016 memorandum.

6.0 Recommendations

The following items are recommended as follow-up actions during 2017:

- Continue the existing tributary sampling program in to 2017;
- Monitor tributary locations with existing or historic blockages (09-XPB, 01-XWB, and 12-PEN) and reestablish stage-discharge relationships if required;
- Perform additional analysis of the area around station 01-MUD to attempt to find the reason behind higher groundwater concentrations. This will likely consist of a combination of desktop analysis and supporting field work as part of the proposed Phosphorus Data Analysis and Modeling task; and
- Explore the feasibility of sampling for alkalinity and total dissolved solids (TDS) at groundwater sites.





Attachment A:
Tributary Sampling Data, 2010 through 2016



Pennichuck Water Works
Tributary Sampling Data
2013 through 2016

Total coliform: exceeds detection limits
All others: non-detect

Station	Date	Staff Gauge Reading	Ammonia	Chloride	Conductivity	DO	E. coli	Fecal Coliform	Nitrate	Nitrite	Nitrate/Nitrite	pH	Temperature	TKN	Total Nitrogen	Total Phosphorus	TSS																	
01-BFB	1/1/2013																																	
01-BFB	4/4/2013		0.2	mg/L	240	mg/L	930	µS/cm	10.76	mg/L	1	cts/100 mL	1	cts/100 mL																				
01-BFB	5/6/2013	0.62	0.2	mg/L			813	µS/cm	10.23	mg/L	7.3	cts/100 mL	0																					
01-BFB	6/6/2013	0.52	0.2	mg/L			512	µS/cm	6.28	mg/L	79.4	cts/100 mL	17	cts/100 mL																				
01-BFB	7/17/2013	0.59	0.2	mg/L	167	mg/L	718	µS/cm	8.35	mg/L	140	cts/100 mL	260	cts/100 mL	0.38	mg/L	0.2	mg/L	6.82	pH units	23.6	°C	0.5	mg/L	0.38	mg/L	0.052	mg/L	6	mg/L				
01-BFB	8/16/2013	0.50	0.2	mg/L	139	mg/L	509	µS/cm	7.35	mg/L	98.5	cts/100 mL	140	cts/100 mL	0.3	mg/L	0.2	mg/L	0.3	mg/L	6.79	pH units	18.4	°C	0.5	mg/L	0.3	mg/L	0.023	mg/L	6	mg/L		
01-BFB	9/10/2013	0.48	0.2	mg/L	155	mg/L	533	µS/cm	11.51	mg/L	71.7	cts/100 mL	0		0.28	mg/L	0.2	mg/L	0.28	mg/L	6.89	pH units	17.3	°C	0.5	mg/L	0.28	mg/L	0.025	mg/L	6	mg/L		
01-BFB	10/28/2013	0.43	0.1	mg/L	146	mg/L	417	µS/cm	10.32	mg/L	21.3	cts/100 mL	80	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.86	pH units	6.1	°C	0.5	mg/L	0.2	mg/L	0.032	mg/L	6	mg/L		
01-BFB	1/1/2014																																	
01-BFB	4/14/2014	0.62	0.2	mg/L	259	mg/L	990	µS/cm			17.3	cts/100 mL	28	cts/100 mL	0.55	mg/L	0.2	mg/L	0.55	mg/L	7.45	pH units	10.3	°C	0.2	mg/L	0.55	mg/L	0.039	mg/L	4	mg/L		
01-BFB	5/8/2014	0.54	0.2	mg/L	246	mg/L	934	µS/cm	9.89	mg/L	16.1	cts/100 mL	10	cts/100 mL	0.33	mg/L	0.2	mg/L	0.33	mg/L	7.12	pH units	12.4	°C	0.2	mg/L	0.33	mg/L	0.04	mg/L	4	mg/L		
01-BFB	6/1/2014	0.46	0.2	mg/L	215	mg/L	531	µS/cm	8.28	mg/L	1300	cts/100 mL	1350	cts/100 mL	0.26	mg/L	0.2	mg/L	0.26	mg/L	7.97	pH units	17.6	°C	0.2	mg/L	0.26	mg/L	0.025	mg/L	4	mg/L		
01-BFB	7/14/2014	0.42	0.2	mg/L	172	mg/L	474	µS/cm	7.79	mg/L	201	cts/100 mL	151	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.63	pH units	23.2	°C	0.2	mg/L	0.2	mg/L	0.058	mg/L	4	mg/L		
01-BFB	8/12/2014	0.42	0.2	mg/L	138	mg/L	402	µS/cm	8.34	mg/L	154	cts/100 mL	180	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.20	pH units	21.3	°C	0.2	mg/L	0.2	mg/L	0.032	mg/L	4	mg/L		
01-BFB	9/18/2014	0.36	0.2	mg/L	164	mg/L	418	µS/cm	10.61	mg/L	24.6	cts/100 mL	24	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.56	pH units	13.4	°C	0.2	mg/L	0.2	mg/L	0.028	mg/L	4	mg/L		
01-BFB	11/5/2014	0.52	0.2	mg/L	157	mg/L	400	µS/cm	11.38	mg/L	9.6	cts/100 mL	14	cts/100 mL	0.3	mg/L	0.2	mg/L	0.3	mg/L	7.18	pH units	9.7	°C	0.2	mg/L	0.3	mg/L	0.012	mg/L	4	mg/L		
01-BFB	1/1/2015																																	
01-BFB	4/13/2015	0.66	0.2	mg/L	257	mg/L	1022	µS/cm	11.70	mg/L	1	cts/100 mL	2	cts/100 mL	0.5	mg/L	0.2	mg/L	0.5	mg/L	7.66	pH units	9.3	°C	1.14	mg/L	1.64	mg/L	0.012	mg/L	4	mg/L		
01-BFB	5/7/2015	0.53	0.2	mg/L	251	mg/L	970	µS/cm	9.70	mg/L	30.9	cts/100 mL	34	cts/100 mL	0.25	mg/L	0.2	mg/L	0.25	mg/L			14.2	°C	0.557	mg/L	0.81	mg/L	0.01	mg/L	4	mg/L		
01-BFB	7/16/2015	0.46	0.2	mg/L	194	mg/L	708	µS/cm	4.04	mg/L	127	cts/100 mL	310	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.52	pH units	18.7	°C	0.537	mg/L	0.537	mg/L	0.018	mg/L	4	mg/L		
01-BFB	8/6/2015	0.38	0.2	mg/L	207	mg/L	774	µS/cm	5.35	mg/L	162	cts/100 mL	110	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.66	pH units	18.9	°C	1.18	mg/L	1.18	mg/L	0.024	mg/L	4	mg/L		
01-BFB	8/27/2015	0.32	0.2	mg/L	203	mg/L	742	µS/cm	5.96	mg/L	55.6	cts/100 mL	110	cts/100 mL	0.28	mg/L	0.2	mg/L	0.28	mg/L	7.62	pH units	19.3	°C	0.495	mg/L	0.78	mg/L	0.018	mg/L	4	mg/L		
01-BFB	9/24/2015	0.32	0.2	mg/L	171	mg/L	561	µS/cm	7.45	mg/L	53	cts/100 mL	50	cts/100 mL	0.22	mg/L	0.2	mg/L	0.22	mg/L	8.27	pH units	14.2	°C	0.569	mg/L	0.79	mg/L	0.019	mg/L	4	mg/L		
01-BFB	11/5/2015	0.38	0.2	mg/L	150	mg/L	481.3	µS/cm			5.2	cts/100 mL	5	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.82	pH units	8.9	°C	0.2	mg/L	0.2	mg/L	0.032	mg/L	4	mg/L		
01-BFB	1/1/2016																																	
01-BFB	4/21/2016	0.49			254	mg/L	1059	µS/cm			6.3	cts/100 mL	4	cts/100 mL	0.21	mg/L	0.2	mg/L	0.21	mg/L	7.53	pH units	10.45	°C					0.012	mg/L	4	mg/L		
01-BFB	6/2/2016	0.41	0.2	mg/L	218	mg/L	770	µS/cm	4.15	mg/L	116	cts/100 mL			0.2	mg/L	0.2	mg/L	0.2	mg/L	8.11	pH units	16.6	°C	1.98	mg/L	1.98	mg/L	0.111	mg/L	8	mg/L		
01-BFB	6/27/2016	3.00	0.2	mg/L	226	mg/L	859	µS/cm	4.19	mg/L	73.3	cts/100 mL	100	cts/100 mL	0.25	mg/L	0.2	mg/L	0.25	mg/L	8.18	pH units	20.7	°C	0.203	mg/L	0.45	mg/L	0.032	mg/L	4	mg/L		
01-BFB	7/28/2016																																	
01-BFB	8/25/2016	0.30	0.2	mg/L	158	mg/L	680	µS/cm	5.74	mg/L	248	cts/100 mL	170	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	8.19	pH units	20.3	°C	0.797	mg/L	0.8	mg/L	0.036	mg/L	4	mg/L		
01-BFB	9/22/2016	0.30	0.2	mg/L	126	mg/L	515	µS/cm	6.15	mg/L	121	cts/100 mL			0.2	mg/L	0.2	mg/L	0.2	mg/L	8.08	pH units	17.2	°C	0.45	mg/L	0.45	mg/L	0.045	mg/L	4	mg/L		
01-BFB	10/19/2016	0.30	0.2	mg/L	119	mg/L	459.9	µS/cm	6.98	mg/L	56.5	cts/100 mL	59	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	8.94	pH units	14.7	°C	0.685	mg/L	0.68	mg/L	0.027	mg/L	4	mg/L		
09-PEN	1/1/2013																																	
09-PEN	4/4/2013	0.46	0.2	mg/L	27	mg/L	127.3	µS/cm	10.09	mg/L	18.7	cts/100 mL	6	cts/100 mL							0.5	mg/L	6.56	pH units	4.7	°C	0.5	mg/L	0.5	mg/L	0.05	mg/L	6	mg/L
09-PEN	5/6/2013	0.30	0.365	mg/L			195.9	µS/cm	7.26	mg/L	52	cts/100 mL	22	cts/100 mL							7.11	pH units	20.1	°C	0.5	mg/L			0.06	mg/L	6	mg/L		
09-PEN	6/6/2013	0.25	0.2	mg/L			138.5	µS/cm	5.36	mg/L	49.6	cts/100 mL	48	cts/100 mL							6.42	pH units	21.2	°C	0.5	mg/L			0.0304	mg/L	6	mg/L		
09-PEN	7/17/2013	0.30	0.2	mg/L	41	mg/L	188.2	µS/cm	2.40	mg/L	34.5	cts/100 mL	70	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.64	pH units	26.4	°C	0.5	mg/L	0.2	mg/L	0.056	mg/L	6	mg/L		
09-PEN	8/16/2013	0.35	0.2	mg/L	38	mg/L	141.7	µS/cm	3.49	mg/L	52.8	cts/100 mL	260	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.59	pH units	19.6	°C	0.5	mg/L	0.2	mg/L	0.02	mg/L	6	mg/L		
09-PEN	9/10/2013	0.18	0.2	mg/L	71	mg/L	226	µS/cm	8.75	mg/L	21.3	cts/100 mL	48	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.84	pH units	17.8	°C	0.5	mg/L	0.2	mg/L	0.022	mg/L	6	mg/L		
09-PEN	10/28/2013	0.20	0.1	mg/L	68	mg/L	179.5	µS/cm	9.16	mg/L	18.7	cts/100 mL	15	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.58	pH units	7.7	°C	0.5	mg/L	0.2	mg/L	0.052	mg/L	6	mg/L		
09-PEN	1/1/2014																																	
09-PEN	4/14/2014	0.54	0.2	mg/L	33	mg/L	150	µS/cm			27.8	cts/100 mL	26	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.66	pH units	12	°C	0.2	mg/L	0.2	mg/L	0.038	mg/L	4	mg/L		
09-PEN	5/8/2014	0.42	0.2	mg/L	38	mg/L	169.1	µS/cm	7.63	mg/L	24.9	cts/100 mL	38	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.06	pH units	13.9	°C	0.2	mg/L	0.2	mg/L	0.073	mg/L	4	mg/L		
09-PEN	6/11/2014	0.15	0.2	mg/L	55	mg/L	144.6	µS/cm	5.98	mg/L	38.8	cts/100 mL	52	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.20	pH units	21	°C	0.2	mg/L	0.2	mg/L	0.027	mg/L	4	mg/L		
09-PEN	7/14/2014	0.24	0.2	mg/L	53	mg/L	157.5	µS/cm	4.49	mg/L	16.1	cts/100 mL	9	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.98	pH units	25	°C	0.992	mg/L	0.99	mg/L	0.061	mg/L	4	mg/L		
09-PEN	8/12/2014	0.15	0.2	mg/L	70	mg/L	185.2	µS/cm	5.55	mg/L	10.7	cts/100 mL	16	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.00	pH units	22.9	°C	0.2	mg/L	0.2	mg/L	0.013	mg/L	4	mg/L		
09-PEN	9/18/2014	0.18	0.2	mg/L	81	mg/L	198.8	µS/cm	6.87	mg/L	21.1	cts/100 mL	67	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.95	pH units	14.8	°C	0.2	mg/L	0.2	mg/L	0.021	mg/L	4	mg/L		
09-PEN	11/5/2014	0.32	0.2	mg/L	46	mg/L	109.6	µS/cm	9.39	mg/L	35.9	cts/100 mL	18	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.54	pH units	7.3	°C	0.2	mg/L	0.2	mg/L	0.017	mg/L	4	mg/L		
09-PEN	1/1/2015																																	
09-PEN	4/13/2015	0.80	0.2	mg/L	31	mg/L	139.7	µS/cm	9.61	mg/L	15.6	cts/100 mL	10	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.25	pH units	9.3	°C	0.976	mg/L	0.98	mg/L	0.01	mg/L	4	mg/L		
09-PEN	5/7/2015	0.44	0.2	mg/L	47	mg/L	196.1	µS/cm	6.63	mg/L	152	cts/100 mL	116	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L			18.4	°C	0.597	mg/L	0.6	mg/L	0.028	mg/L	4	mg/L		
09-PEN	7/16/2015	0.22	0.2	mg/L	54	mg/L	231.8	µS/cm	2.44	mg/L	21.6	cts/100 mL	46	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.74	pH units	23.5											

Pennichuck Water Works
Tributary Sampling Data
2013 through 2016

Total coliform: exceeds detection limits
All others: non-detect

Station	Date	Staff Gauge Reading	Ammonia	Chloride	Conductivity	DO	E. coli	Fecal Coliform	Nitrate	Nitrite	Nitrate/Nitrite	pH	Temperature	TKN	Total Nitrogen	Total Phosphorus	TSS															
09T-PEN	1/1/2013																															
09T-PEN	4/4/2013	3.00	0.2	mg/L	24	mg/L	115.3	µS/cm	9.73	mg/L	4.1	cts/100 mL	3	cts/100 mL																		
09T-PEN	5/6/2013	2.24	0.2	mg/L			163.1	µS/cm	8.53	mg/L	21.3	cts/100 mL	12	cts/100 mL																		
09T-PEN	6/6/2013	2.22	0.2	mg/L			116.3	µS/cm	4.05	mg/L	47.1	cts/100 mL	100	cts/100 mL																		
09T-PEN	7/17/2013	2.59	0.2	mg/L	35	mg/L	166.9	µS/cm	0.91	mg/L	46.5	cts/100 mL	100	cts/100 mL	0.2	mg/L	0.2	mg/L	6.15	pH units	25.6	°C	0.5	mg/L	0.2	mg/L	0.079	mg/L	7	mg/L		
09T-PEN	8/16/2013	2.54	0.2	mg/L	33	mg/L	128	µS/cm	2.72	mg/L	75.9	cts/100 mL	240	cts/100 mL	0.2	mg/L	0.2	mg/L	6.23	pH units	19.3	°C	0.5	mg/L	0.2	mg/L	0.02	mg/L	6	mg/L		
09T-PEN	9/10/2013	1.63	0.2	mg/L	59	mg/L	187.8	µS/cm	3.85	mg/L	179	cts/100 mL	220	cts/100 mL	0.2	mg/L	0.2	mg/L	7.06	pH units	16.6	°C	0.5	mg/L	0.2	mg/L	0.02	mg/L	6	mg/L		
09T-PEN	10/28/2013	1.84	0.1	mg/L	55	mg/L	147.1	µS/cm	7.57	mg/L	7.4	cts/100 mL	19	cts/100 mL	0.2	mg/L	0.2	mg/L	6.41	pH units	5.5	°C	0.5	mg/L	0.2	mg/L	0.061	mg/L	6	mg/L		
09T-PEN	1/1/2014																															
09T-PEN	4/14/2014	3.06	0.2	mg/L	29	mg/L	120	µS/cm			34.5	cts/100 mL	8	cts/100 mL	0.2	mg/L	0.2	mg/L	7.23	pH units	11.8	°C	0.2	mg/L	0.2	mg/L	0.021	mg/L	4	mg/L		
09T-PEN	5/8/2014	2.64	0.2	mg/L	34	mg/L	149.2	µS/cm	7.86	mg/L	20.1	cts/100 mL	26	cts/100 mL	0.2	mg/L	0.2	mg/L	7.06	pH units	14.7	°C	0.2	mg/L	0.2	mg/L	0.047	mg/L	4	mg/L		
09T-PEN	6/11/2014	2.14	0.2	mg/L	42	mg/L	117	µS/cm	5.12	mg/L	33.1	cts/100 mL	20	cts/100 mL	0.2	mg/L	0.2	mg/L	7.14	pH units	20.5	°C	0.2	mg/L	0.2	mg/L	0.019	mg/L	4	mg/L		
09T-PEN	7/14/2014	2.24	0.2	mg/L	41	mg/L	130.9	µS/cm	1.66	mg/L	184	cts/100 mL	87	cts/100 mL	0.2	mg/L	0.2	mg/L	6.58	pH units	24.4	°C	1.21	mg/L	1.21	mg/L	0.075	mg/L	6	mg/L		
09T-PEN	8/12/2014	1.86	0.2	mg/L	54	mg/L	145.2	µS/cm	2.18	mg/L	41.9	cts/100 mL	68	cts/100 mL	0.2	mg/L	0.2	mg/L	6.63	pH units	20.9	°C	0.2	mg/L	0.2	mg/L	0.021	mg/L	4	mg/L		
09T-PEN	9/18/2014	1.72	0.2	mg/L	57	mg/L	138.9	µS/cm	4.16	mg/L	98.5	cts/100 mL	27	cts/100 mL	0.2	mg/L	0.2	mg/L	6.69	pH units	13.6	°C	0.798	mg/L	0.8	mg/L	0.01	mg/L	4	mg/L		
09T-PEN	11/5/2014	3.00	0.2	mg/L	39	mg/L	94.5	µS/cm	7.53	mg/L	12.2	cts/100 mL	16	cts/100 mL	0.2	mg/L	0.2	mg/L	7.08	pH units	7.4	°C	0.2	mg/L	0.2	mg/L	0.014	mg/L	4	mg/L		
09T-PEN	1/1/2015																															
09T-PEN	4/13/2015	3.30	0.2	mg/L	26	mg/L	121.5	µS/cm	9.96	mg/L	4.1	cts/100 mL	6	cts/100 mL	0.2	mg/L	0.2	mg/L	6.34	pH units	10	°C	0.876	mg/L	0.88	mg/L	0.01	mg/L	4	mg/L		
09T-PEN	5/7/2015	2.53	0.2	mg/L	40	mg/L	171.1	µS/cm	6.72	mg/L	34.1	cts/100 mL	26	cts/100 mL	0.2	mg/L	0.2	mg/L	19.4	°C	0.478	mg/L	0.48	mg/L	0.01	mg/L	4	mg/L				
09T-PEN	7/16/2015	2.30	0.2	mg/L	42	mg/L	185.5	µS/cm	1.01	mg/L	61.3	cts/100 mL	74	cts/100 mL	0.2	mg/L	0.2	mg/L	6.49	pH units	21.8	°C	0.573	mg/L	0.573	mg/L	0.043	mg/L	7	mg/L		
09T-PEN	8/6/2015	1.95	0.2	mg/L	52	mg/L	223.4	µS/cm	0.81	mg/L	73.8	cts/100 mL	343	cts/100 mL	0.2	mg/L	0.2	mg/L	6.40	pH units	21.4	°C	0.889	mg/L	0.89	mg/L	0.06	mg/L	22	mg/L		
09T-PEN	8/27/2015	-	0.2	mg/L	58	mg/L	244	µS/cm	1.02	mg/L	88.2	cts/100 mL	45	cts/100 mL	0.2	mg/L	0.2	mg/L	6.38	pH units	21.6	°C	0.987	mg/L	0.99	mg/L	0.075	mg/L	8	mg/L		
09T-PEN	9/24/2015	1.10	0.2	mg/L	75	mg/L	260	µS/cm	2.75	mg/L	32.2	cts/100 mL	15	cts/100 mL	0.2	mg/L	0.2	mg/L	6.77	pH units	15.6	°C	0.701	mg/L	0.7	mg/L	0.032	mg/L	4	mg/L		
09T-PEN	11/5/2015	1.97	0.2	mg/L	51	mg/L	157.2	µS/cm			4.1	cts/100 mL	5	cts/100 mL	0.2	mg/L	0.2	mg/L	6.68	pH units	9	°C	0.393	mg/L	0.39	mg/L	0.01	mg/L	4	mg/L		
09T-PEN	1/1/2016																															
09T-PEN	4/21/2016	0.34	0.2	mg/L	41	mg/L	191	µS/cm			16.1	cts/100 mL	5	cts/100 mL	0.2	mg/L	0.2	mg/L	6.48	pH units	13.52	°C	0.538	mg/L	0.54	mg/L	0.011	mg/L	4	mg/L		
09T-PEN	6/2/2016	1.82	0.2	mg/L	51	mg/L	216.7	µS/cm	1.32	mg/L	55.6	cts/100 mL			0.2	mg/L	0.2	mg/L	7.33	pH units	20.2	°C	1.84	mg/L	1.84	mg/L	0.397	mg/L	16	mg/L		
09T-PEN	6/27/2016	1.20	0.2	mg/L	57	mg/L	256.5	µS/cm	1.58	mg/L	63.8	cts/100 mL	82	cts/100 mL	0.2	mg/L	0.2	mg/L	7.28	pH units	23.3	°C	1.19	mg/L	1.19	mg/L	0.078	mg/L	13	mg/L		
09T-PEN	7/28/2016	0.90	0.2	mg/L	78	mg/L	328	µS/cm	1.12	mg/L	32.3	cts/100 mL	61	cts/100 mL	0.2	mg/L	0.2	mg/L	7.40	pH units	22.7	°C	1.17	mg/L	1.17	mg/L	0.049	mg/L	4	mg/L		
09T-PEN	8/25/2016	1.50	0.2	mg/L	68	mg/L	306.5	µS/cm	1.50	mg/L	87.8	cts/100 mL	47	cts/100 mL	0.2	mg/L	0.2	mg/L	7.25	pH units	21	°C	0.728	mg/L	0.73	mg/L	0.055	mg/L	7	mg/L		
09T-PEN	9/22/2016	2.50	0.2	mg/L	63	mg/L	255.3	µS/cm	2.43	mg/L	104	cts/100 mL	36	cts/100 mL	0.2	mg/L	0.2	mg/L	7.74	pH units	20.2	°C	0.38	mg/L	0.38	mg/L	0.051	mg/L	24	mg/L		
09T-PEN	10/19/2016	1.55	0.2	mg/L	72	mg/L	239.1	µS/cm	4.66	mg/L	228	cts/100 mL	261	cts/100 mL	0.2	mg/L	0.2	mg/L	8.25	pH units	13.7	°C	0.64	mg/L	0.64	mg/L	0.028	mg/L	4	mg/L		
09-XPB	1/1/2013																															
09-XPB	4/4/2013	1.26	0.2	mg/L	45	mg/L	182.6	µS/cm	11.37	mg/L	1	cts/100 mL	0				0.5	mg/L	6.27	pH units	5.5	°C	0.5	mg/L	0.5	mg/L	0.05	mg/L	6	mg/L		
09-XPB	5/6/2013	1.10	0.402	mg/L			230	µS/cm	9.90	mg/L	15.8	cts/100 mL	30	cts/100 mL					7.23	pH units	21.4	°C	0.5	mg/L			0.15	mg/L	6	mg/L		
09-XPB	6/6/2013	0.92	0.2	mg/L			145.5	µS/cm	5.62	mg/L	11	cts/100 mL	120	cts/100 mL					6.30	pH units	21.2	°C	0.5	mg/L			0.0323	mg/L	6	mg/L		
09-XPB	7/17/2013	0.90	0.2	mg/L	46	mg/L	208.2	µS/cm	4.53	mg/L	98.7	cts/100 mL	120	cts/100 mL	0.2	mg/L	0.2	mg/L	6.17	pH units	27.3	°C	0.5	mg/L	0.2	mg/L	0.047	mg/L	6	mg/L		
09-XPB	8/16/2013	0.80	0.2	mg/L	38	mg/L	144.7	µS/cm	4.76	mg/L	38.9	cts/100 mL	60	cts/100 mL	0.2	mg/L	0.2	mg/L	6.15	pH units	21.3	°C	0.5	mg/L	0.2	mg/L	0.02	mg/L	6	mg/L		
09-XPB	9/10/2013		0.2	mg/L	56	mg/L	190.9	µS/cm	5.97	mg/L	12.2	cts/100 mL	24	cts/100 mL	0.2	mg/L	0.2	mg/L	7.35	pH units	17.8	°C	0.5	mg/L	0.2	mg/L	0.03	mg/L	22	mg/L		
09-XPB	10/28/2013	0.56	0.1	mg/L	28.9	mg/L	150.9	µS/cm	7.44	mg/L	2	cts/100 mL	3	cts/100 mL	0.2	mg/L	0.2	mg/L	7.08	pH units	9.8	°C	0.5	mg/L	0.2	mg/L	0.05	mg/L	6	mg/L		
09-XPB	1/1/2014																															
09-XPB	4/14/2014	1.46	0.2	mg/L	46	mg/L	170	µS/cm			2	cts/100 mL	0		0.52	mg/L	0.2	mg/L	0.52	mg/L		13.8	°C	0.2	mg/L	0.52	mg/L	0.033	mg/L	4	mg/L	
09-XPB	5/8/2014	1.28	0.2	mg/L	51	mg/L	215.1	µS/cm	10.58	mg/L	1	cts/100 mL	0		0.2	mg/L	0.2	mg/L	6.55	pH units	15.4	°C	0.2	mg/L	0.2	mg/L	0.026	mg/L	4	mg/L		
09-XPB	6/11/2014	0.74	0.2	mg/L	453	mg/L	158.3	µS/cm	7.95	mg/L	5.2	cts/100 mL	5	cts/100 mL	0.2	mg/L	0.2	mg/L	6.71	pH units	21.1	°C	0.2	mg/L	0.2	mg/L	0.076	mg/L	4	mg/L		
09-XPB	7/14/2014		0.2	mg/L	54	mg/L	161.2	µS/cm	3.43	mg/L	4.1	cts/100 mL	5	cts/100 mL	0.2	mg/L	0.2	mg/L	6.75	pH units	24.5	°C	1.21	mg/L	1.21	mg/L	0.047	mg/L	4	mg/L		
09-XPB	8/12/2014	0.78	0.2	mg/L	57	mg/L	177.4	µS/cm	3.85	mg/L	7.3	cts/100 mL	<1	cts/100 mL	0.2	mg/L	0.2	mg/L	6.64	pH units	20.2	°C	0.2	mg/L	0.2	mg/L	0.018	mg/L	4	mg/L		
09-XPB	9/18/2014	0.76	0.2	mg/L	56	mg/L	155	µS/cm	5.46	mg/L	6.3	cts/100 mL	5	cts/100 mL	0.2	mg/L	0.2	mg/L	6.49	pH units	15.6	°C	0.2	mg/L	0.2	mg/L	0.014	mg/L	4	mg/L		
09-XPB	11/5/2014	1.67	0.2	mg/L	53	mg/L	132.1	µS/cm	9.83	mg/L	1	cts/100 mL	2	cts/100 mL	0.2	mg/L	0.2	mg/L	6.46	pH units	8.7	°C	0.2	mg/L	0.2	mg/L	0.015	mg/L	4	mg/L		
09-XPB	1/1/2015																															
09-XPB	4/13/2015	1.60	0.2	mg/L	42	mg/L	180.8	µS/cm	11.78	mg/L	1	cts/100 mL	2	cts/100 mL	0.51	mg/L	0.2	mg/L	0.51	mg/L	6.68	pH units	6.9	°C	0.2	mg/L	0.51	mg/L	0.014	mg/L	4	mg/L
09-XPB	5/7/2015	1.24	0.2	mg/L	55	mg/L	226	µS/cm	9.31	mg/L	1	cts/100 mL	4	cts/100 mL	0.2	mg/L	0.2	mg/L	20.8	°C	0.537	mg/L	0.54	mg/L	0.014	mg/L	4	mg/L				
09-XPB	7/16/2015	1.50	0.2	mg/L	54	mg/L	223	µS/cm	4.97	mg/L	34.1	cts/100 mL	22	cts/100 mL	1.08	mg/L	0.2	mg/L	6.55	pH units	22	°C	0.83	mg/L	1.91	mg/L	0.024	mg/L	4	mg/L		
09-XPB	8/6/2015	2.04	0.2	mg/L	63	mg/L	263.5	µS/cm	2.41	mg/L	37.9	cts/100 mL	56	cts/100 mL	0.2	mg/L	0.2	mg/L	6.47	pH units	23.6	°C	1.3	mg/L	1.3	mg/L	0.036	mg/L	4	mg/L		
09-XPB	8/27/2015	1.46	0.75	mg/L																												

Pennichuck Water Works
Tributary Sampling Data
2013 through 2016

Total coliform: exceeds detection limits
All others: non-detect

Station	Date	Staff Gauge Reading	Ammonia		Chloride		Conductivity		DO		E. coli		Fecal Coliform		Nitrate		Nitrite		Nitrate/Nitrite		pH		Temperature		TKN		Total Nitrogen		Total Phosphorus		TSS		
01-WCH	1/1/2013																																
01-WCH	4/4/2013	1.46	0.2	mg/L	240	mg/L	104.2	µS/cm	10.69	mg/L	3.1	cts/100 mL	3	cts/100 mL					0.5	mg/L	6.20	pH units	5.8	°C	0.5	mg/L	0.5	mg/L	0.05	mg/L	6	mg/L	
01-WCH	5/6/2013	1.04	0.2	mg/L			161.4	µS/cm	6.54	mg/L	14.6	cts/100 mL	2	cts/100 mL							7.06	pH units	15.1	°C	0.5	mg/L			0.05	mg/L	6	mg/L	
01-WCH	6/6/2013	1.00	0.2	mg/L			122.2	µS/cm	4.10	mg/L	219	cts/100 mL	261	cts/100 mL							5.99	pH units	19	°C	0.5	mg/L			0.0429	mg/L	6	mg/L	
01-WCH	7/17/2013	1.07	0.2	mg/L	42	mg/L	179.3	µS/cm	6.13	mg/L	95.9	cts/100 mL	120	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.27	pH units	26.4	°C	0.5	mg/L	0.2	mg/L	0.056	mg/L	6	mg/L	
01-WCH	8/16/2013	1.00	0.2	mg/L	39	mg/L	133.3	µS/cm	8.04	mg/L	111	cts/100 mL	120	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.27	pH units	19.9	°C	0.5	mg/L	0.2	mg/L	0.02	mg/L	6	mg/L	
01-WCH	9/17/2013	1.12	0.2	mg/L	48	mg/L	147.7	µS/cm	6.68	mg/L	190	cts/100 mL	0		0.2	mg/L	0.2	mg/L	0.2	mg/L	5.99	pH units	13.2	°C	0.5	mg/L	0.2	mg/L	0.03	mg/L	6	mg/L	
01-WCH	10/28/2013	1.48	0.1	mg/L	56	mg/L	146.4	µS/cm	6.20	mg/L	41	cts/100 mL	38	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.08	pH units	6.4	°C	0.5	mg/L	0.2	mg/L	0.036	mg/L	6	mg/L	
01-WCH	1/1/2014																																
01-WCH	4/14/2014	1.65	0.2	mg/L	28	mg/L	100	µS/cm			6.3	cts/100 mL	3	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L			12.4	°C	0.2	mg/L	0.2	mg/L	0.046	mg/L	4	mg/L	
01-WCH	5/8/2014	1.40	0.2	mg/L	35	mg/L	148.3	µS/cm	7.84	mg/L	8.6	cts/100 mL	16	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.56	pH units	14.4	°C	0.2	mg/L	0.2	mg/L	0.055	mg/L	4	mg/L	
01-WCH	6/11/2014	1.44	0.2	mg/L	47	mg/L	123.7	µS/cm	5.50	mg/L	140	cts/100 mL	97	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.60	pH units	20	°C	0.2	mg/L	0.2	mg/L	0.012	mg/L	4	mg/L	
01-WCH	7/14/2014	1.25	0.2	mg/L	52	mg/L	141.5	µS/cm	3.56	mg/L	38.4	cts/100 mL	23	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.50	pH units	25.5	°C	0.2	mg/L	0.2	mg/L	0.052	mg/L	4	mg/L	
01-WCH	8/12/2014	1.08	0.2	mg/L	60	mg/L	155.2	µS/cm	5.51	mg/L	41.9	cts/100 mL	6	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.50	pH units	21	°C	0.2	mg/L	0.2	mg/L	0.05	mg/L	6	mg/L	
01-WCH	9/18/2014	1.12	0.2	mg/L	61	mg/L	146.2	µS/cm	6.51	mg/L	42.6	cts/100 mL	22	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.44	pH units	14	°C	0.2	mg/L	0.2	mg/L	0.01	mg/L	4	mg/L	
01-WCH	11/5/2014	1.59	0.2	mg/L	40	mg/L	105.4	µS/cm	5.16	mg/L	55.6	cts/100 mL	32	cts/100 mL	0.21	mg/L	0.2	mg/L	0.21	mg/L	6.25	pH units	7.4	°C	0.2	mg/L		0.21	mg/L	0.011	mg/L	4	mg/L
01-WCH	1/1/2015																																
01-WCH	4/13/2015	1.90	0.2	mg/L	25	mg/L	113.1	µS/cm	10.12	mg/L	2	cts/100 mL	2	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.81	pH units	10.4	°C	0.2	mg/L	0.2	mg/L	0.016	mg/L	4	mg/L	
01-WCH	5/7/2015	1.49	0.2	mg/L	43	mg/L	171.6	µS/cm	6.92	mg/L	58.3	cts/100 mL	56	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L			18.5	°C		0.438	mg/L	0.44	mg/L	0.017	mg/L	4	mg/L
01-WCH	7/16/2015	1.10	0.2	mg/L	51	mg/L	198.2	µS/cm	3.25	mg/L	39.9	cts/100 mL	72	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.45	pH units	21.1	°C		0.672	mg/L	0.672	mg/L	0.019	mg/L	4	mg/L
01-WCH	8/6/2015	0.94	0.2	mg/L	61	mg/L	235.4	µS/cm	4.26	mg/L	61.3	cts/100 mL	106	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.42	pH units	21.6	°C		1.01	mg/L	1.01	mg/L	0.021	mg/L	4	mg/L
01-WCH	8/27/2015	0.96	0.2	mg/L	64	mg/L	249.1	µS/cm	4.00	mg/L	131	cts/100 mL	105	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.30	pH units	21.5	°C		0.593	mg/L	0.59	mg/L	0.015	mg/L	4	mg/L
01-WCH	9/24/2015	1.00	0.2	mg/L	222.5	mg/L	222.5	µS/cm			152	cts/100 mL	55	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.40	pH units	15	°C		0.613	mg/L	0.61	mg/L	0.017	mg/L	4	mg/L
01-WCH	11/5/2015	1.49	0.2	mg/L	60	mg/L	179.1	µS/cm			33.2	cts/100 mL	15	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.52	pH units	8.5	°C		0.349	mg/L	0.35	mg/L	0.01	mg/L	4	mg/L
01-WCH	1/1/2016																																
01-WCH	4/21/2016	1.38	0.2	mg/L	40	mg/L	183	µS/cm			5.2	cts/100 mL	10	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.22	pH units	13.32	°C	0.2	mg/L	0.2	mg/L	0.013	mg/L	4	mg/L	
01-WCH	6/2/2016	1.20	0.2	mg/L	52	mg/L	202.6	µS/cm	2.18	mg/L	104	cts/100 mL			0.2	mg/L	0.2	mg/L	0.2	mg/L	6.72	pH units	18.3	°C		0.538	mg/L	0.54	mg/L	0.026	mg/L	4	mg/L
01-WCH	6/27/2016	1.24	0.2	mg/L	63	mg/L	277.7	µS/cm	2.53	mg/L	86.2	cts/100 mL	88	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.52	pH units	25.8	°C		0.29	mg/L	0.29	mg/L	0.045	mg/L	4	mg/L
01-WCH	7/28/2016	1.20	0.2	mg/L	74	mg/L	334.2	µS/cm	2.55	mg/L	41.3	cts/100 mL	50	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.81	pH units	26.5	°C		0.589	mg/L	0.59	mg/L	0.027	mg/L	4	mg/L
01-WCH	8/25/2016	1.40	0.2	mg/L	68	mg/L	281.1	µS/cm	3.25	mg/L	98.7	cts/100 mL	24	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.85	pH units	23.7	°C		0.612	mg/L	0.61	mg/L	0.028	mg/L	4	mg/L
01-WCH	9/22/2016	1.50	0.2	mg/L	58	mg/L	226.8	µS/cm	3.05	mg/L	118	cts/100 mL	101	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.75	pH units	20.7	°C	0.2	mg/L	0.2	mg/L	0.02	mg/L	4	mg/L	
01-WCH	10/19/2016	1.50	0.2	mg/L	70	mg/L	234.3	µS/cm	2.28	mg/L	1410	cts/100 mL	173	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.63	pH units	14.4	°C		0.708	mg/L	0.71	mg/L	0.016	mg/L	4	mg/L
12-PEN	1/1/2013																																
12-PEN	4/4/2013	0.82	0.2	mg/L	24	mg/L	118.2	µS/cm	12.05	mg/L	2	cts/100 mL	1	cts/100 mL						0.5	mg/L	6.63	pH units	5.3	°C	0.5	mg/L	0.5	mg/L	0.05	mg/L	6	mg/L
12-PEN	5/6/2013	0.52	0.2	mg/L			138.1	µS/cm	9.73	mg/L	4.1	cts/100 mL	0								7.12	pH units	13.7	°C		0.5	mg/L		0.06	mg/L	6	mg/L	
12-PEN	6/6/2013	0.68	0.2	mg/L			96.6	µS/cm	8.67	mg/L	16	cts/100 mL	17	cts/100 mL							6.54	pH units	16.8	°C		0.5	mg/L		0.018	mg/L	6	mg/L	
12-PEN	7/17/2013	0.59	0.2	mg/L	30	mg/L	147	µS/cm	11.24	mg/L	119	cts/100 mL	56	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2														

Pennichuck Water Works
Tributary Sampling Data
2013 through 2016

Total coliform: exceeds detection limits
All others: non-detect

Station	Date	Staff Gauge Reading	Ammonia	Chloride	Conductivity	DO	E. coli	Fecal Coliform	Nitrate	Nitrite	Nitrate/Nitrite	pH	Temperature	TKN	Total Nitrogen	Total Phosphorus	TSS				
01-MUD	1/1/2013																				
01-MUD	4/4/2013	2.38	0.2 mg/L	23 mg/L	129.7 μS/cm	10.37 mg/L	2 cts/100 mL	4 cts/100 mL						0.6 mg/L	6.75 pH units	6.1 °C	0.5 mg/L	0.5 mg/L	0.05 mg/L	6 mg/L	
01-MUD	5/6/2013	2.42	0.2 mg/L		151.6 μS/cm	7.10 mg/L	48 cts/100 mL	30 cts/100 mL						7.09 pH units	14.3 °C	0.5 mg/L		0.07 mg/L	6 mg/L	6 mg/L	
01-MUD	6/6/2013	2.38	0.374 mg/L		115.2 μS/cm	3.30 mg/L	66.9 cts/100 mL	119 cts/100 mL						6.64 pH units	17.8 °C	0.5 mg/L		0.0258 mg/L	6 mg/L	6 mg/L	
01-MUD	7/17/2013	1.82		19 mg/L	161.9 μS/cm	8.95 mg/L	166 cts/100 mL	160 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.90 pH units	25.8 °C	0.5 mg/L	0.2 mg/L	0.058 mg/L	6 mg/L	6 mg/L	6 mg/L	6 mg/L	
01-MUD	8/16/2013	1.97	0.2 mg/L	25 mg/L	120.2 μS/cm	5.18 mg/L	43.7 cts/100 mL	260 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.50 pH units	18.5 °C	0.5 mg/L	0.2 mg/L	0.026 mg/L	6 mg/L	6 mg/L	6 mg/L	6 mg/L	
01-MUD	9/10/2013	1.96	0.2 mg/L	15 mg/L	112.6 μS/cm	3.88 mg/L	33.1 cts/100 mL	36 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.54 pH units	12.4 °C	0.5 mg/L	0.2 mg/L	0.044 mg/L	6 mg/L	6 mg/L	6 mg/L	6 mg/L	
01-MUD	10/28/2013	1.87	0.1 mg/L	33 mg/L	98.3 μS/cm	7.14 mg/L	5.2 cts/100 mL	1 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.62 pH units	10 °C	0.5 mg/L	0.2 mg/L	0.033 mg/L	6 mg/L	6 mg/L	6 mg/L	6 mg/L	
01-MUD	1/1/2014																				
01-MUD	4/14/2014	2.42	0.2 mg/L	31 mg/L	140 μS/cm		13.4 cts/100 mL	5 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L		12.6 °C	0.2 mg/L	0.2 mg/L	0.037 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	5/8/2014	2.28	0.2 mg/L	23 mg/L	146.7 μS/cm	8.62 mg/L	41 cts/100 mL	53 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.85 pH units	13.7 °C	0.2 mg/L	0.2 mg/L	0.05 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	6/11/2014	2.29	0.2 mg/L	19 mg/L	96.7 μS/cm	4.87 mg/L	83.6 cts/100 mL	50 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.68 pH units	19.9 °C	0.2 mg/L	0.2 mg/L	0.031 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	7/14/2014	2.22	0.2 mg/L	17 mg/L	168.2 μS/cm	3.47 mg/L	14.6 cts/100 mL	9 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.72 pH units	21.6 °C	0.2 mg/L	0.2 mg/L	0.071 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	8/12/2014	2.22	0.2 mg/L	27 mg/L	126.7 μS/cm	4.61 mg/L	326 cts/100 mL	208 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.83 pH units	20.1 °C	0.2 mg/L	0.2 mg/L	0.036 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	9/18/2014	2.58	0.2 mg/L	26 mg/L	109.9 μS/cm	2.25 mg/L	7.3 cts/100 mL	3 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.49 pH units	12.4 °C	0.2 mg/L	0.2 mg/L	0.037 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	11/5/2014	2.48	0.2 mg/L	23 mg/L	85.7 μS/cm	8.17 mg/L	78.9 cts/100 mL	36 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.36 pH units	7.8 °C	0.2 mg/L	0.2 mg/L	0.012 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	1/1/2015																				
01-MUD	4/13/2015	2.70	0.2 mg/L	23 mg/L	85 μS/cm	9.62 mg/L	3.1 cts/100 mL	2 cts/100 mL	0.22 mg/L	0.2 mg/L	0.22 mg/L	7.61 pH units	9.8 °C	0.2 mg/L	0.22 mg/L	0.01 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	5/7/2015	2.48	0.2 mg/L	31 mg/L	148.8 μS/cm	6.91 mg/L	21.1 cts/100 mL	30 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L		18.6 °C	0.458 mg/L	0.46 mg/L	0.014 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	7/16/2015		0.2 mg/L	22 mg/L	145.4 μS/cm	0.48 mg/L	36.4 cts/100 mL	56 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.52 pH units	20.3 °C	1.03 mg/L	1.03 mg/L	0.04 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	8/6/2015	2.20	0.2 mg/L	22 mg/L	151.3 μS/cm	0.86 mg/L	28 cts/100 mL	28 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.51 pH units	19.3 °C	1.42 mg/L	1.42 mg/L	0.061 mg/L	9 mg/L	9 mg/L	9 mg/L	9 mg/L	
01-MUD	8/27/2015	1.80	0.2 mg/L	30 mg/L	195 μS/cm	2.57 mg/L	3.1 cts/100 mL	5 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.79 pH units	21.1 °C	0.593 mg/L	0.59 mg/L	0.058 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	9/24/2015	1.62	0.2 mg/L	28 mg/L	147.1 μS/cm	3.91 mg/L	10.9 cts/100 mL	5 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.69 pH units	16.3 °C	0.679 mg/L	0.68 mg/L	0.031 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	11/5/2015	2.01	0.2 mg/L	17 mg/L	82.1 μS/cm		8.6 cts/100 mL	10 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.48 pH units	7.4 °C	0.481 mg/L	0.48 mg/L	0.014 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	1/1/2016																				
01-MUD	4/21/2016	2.36	0.2 mg/L	34 mg/L	184 μS/cm		3.1 cts/100 mL	1 cts/100 mL	0.22 mg/L	0.2 mg/L	0.22 mg/L	6.55 pH units	13.03 °C	0.631 mg/L	0.85 mg/L	0.011 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	6/2/2016	3.20	0.2 mg/L	22 mg/L	161.7 μS/cm	0.54 mg/L	50.4 cts/100 mL		0.2 mg/L	0.2 mg/L	0.2 mg/L	6.74 pH units	19.2 °C	0.747 mg/L	0.75 mg/L	0.041 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	6/27/2016	2.12	0.2 mg/L	28 mg/L	194.4 μS/cm	3.51 mg/L	313 cts/100 mL	210 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.91 pH units	25.8 °C	0.509 mg/L	0.51 mg/L	0.052 mg/L	7 mg/L	7 mg/L	7 mg/L	7 mg/L	
01-MUD	7/28/2016	1.60	0.2 mg/L	28 mg/L	214.6 μS/cm	4.70 mg/L	8.5 cts/100 mL	15 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.00 pH units	29 °C	0.542 mg/L	0.54 mg/L	0.032 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	8/25/2016	1.60	0.2 mg/L	19 mg/L	153 μS/cm	6.73 mg/L	48.7 cts/100 mL	19 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.86 pH units	25.6 °C	0.45 mg/L	0.45 mg/L	0.027 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	9/22/2016	1.60	0.2 mg/L	27 mg/L	189.8 μS/cm	2.04 mg/L	28.2 cts/100 mL	5 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.83 pH units	21.2 °C	0.38 mg/L	0.38 mg/L	0.049 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-MUD	10/19/2016	1.55	0.2 mg/L	33 mg/L	175.4 μS/cm	3.76 mg/L	44.1 cts/100 mL	16 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.66 pH units	17 °C	1.44 mg/L	1.44 mg/L	0.079 mg/L	23 mg/L	23 mg/L	23 mg/L	23 mg/L	
01-XWB	1/1/2013																				
01-XWB	4/4/2013	2.46	0.2 mg/L	18 mg/L	87.1 μS/cm	12.10 mg/L	1 cts/100 mL	2 cts/100 mL				0.5 mg/L	6.81 pH units	7.6 °C	0.5 mg/L	0.5 mg/L	0.05 mg/L	6 mg/L	6 mg/L	6 mg/L	6 mg/L
01-XWB	5/6/2013	1.98	0.2 mg/L		123 μS/cm	8.77 mg/L	34.1 cts/100 mL	30 cts/100 mL				7.21 pH units	16.8 °C	0.5 mg/L		0.06 mg/L	6 mg/L	6 mg/L	6 mg/L	6 mg/L	
01-XWB	6/6/2013	2.32	0.374 mg/L		91.5 μS/cm	6.02 mg/L	142 cts/100 mL	123 cts/100 mL				6.10 pH units	17.3 °C	0.5 mg/L		0.0297 mg/L	6 mg/L	6 mg/L	6 mg/L	6 mg/L	
01-XWB	7/17/2013	2.42	0.2 mg/L	31 mg/L	139.4 μS/cm	8.57 mg/L	67.6 cts/100 mL	38 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.03 pH units	25.5 °C	0.5 mg/L	0.2 mg/L	0.055 mg/L	6 mg/L	6 mg/L	6 mg/L	6 mg/L	
01-XWB	8/16/2013	2.44	0.2 mg/L	29 mg/L	106.9 μS/cm	5.82 mg/L	98.5 cts/100 mL	70 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.08 pH units	18.2 °C	0.5 mg/L	0.2 mg/L	0.02 mg/L	6 mg/L	6 mg/L	6 mg/L	6 mg/L	
01-XWB	9/10/2013	2.25	0.2 mg/L	31 mg/L	104.7 μS/cm	9.39 mg/L	179 cts/100 mL	6 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.10 pH units	13.1 °C	0.5 mg/L	0.2 mg/L	0.039 mg/L	6 mg/L	6 mg/L	6 mg/L	6 mg/L	
01-XWB	10/28/2013	2.67	0.1 mg/L	33 mg/L	97.6 μS/cm	7.11 mg/L	166 cts/100 mL	120 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.30 pH units	7.4 °C	0.5 mg/L	0.2 mg/L	0.031 mg/L	6 mg/L	6 mg/L	6 mg/L	6 mg/L	
01-XWB	1/1/2014																				
01-XWB	4/14/2014	2.76	0.2 mg/L	24 mg/L	110 μS/cm		6.3 cts/100 mL	2 cts/100 mL	0.21 mg/L	0.2 mg/L	0.21 mg/L		11.8 °C	0.2 mg/L	0.21 mg/L	0.032 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-XWB	5/8/2014	2.77	0.2 mg/L	28 mg/L	124.5 μS/cm	8.46 mg/L	18.5 cts/100 mL	13 cts/100 mL	0.22 mg/L	0.2 mg/L	0.22 mg/L	6.77 pH units	15.2 °C	0.2 mg/L	0.22 mg/L	0.052 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-XWB	6/11/2014	2.62	0.2 mg/L	34 mg/L	94.5 μS/cm	8.47 mg/L	248 cts/100 mL	198 cts/100 mL	0.26 mg/L	0.2 mg/L	0.26 mg/L	6.42 pH units	18.3 °C	0.2 mg/L	0.26 mg/L	0.014 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-XWB	7/14/2014	2.60	0.2 mg/L	36 mg/L	103.1 μS/cm	6.39 mg/L	41.9 cts/100 mL	38 cts/100 mL	0.21 mg/L	0.2 mg/L	0.21 mg/L	6.58 pH units	24.4 °C	0.2 mg/L	0.21 mg/L	0.044 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-XWB	8/12/2014	2.26	0.2 mg/L	38 mg/L	106.7 μS/cm	7.70 mg/L	124 cts/100 mL	114 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.58 pH units	21 °C	0.2 mg/L	0.2 mg/L	0.016 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-XWB	9/18/2014	2.30	0.2 mg/L	37 mg/L	96.7 μS/cm	8.18 mg/L	29.5 cts/100 mL	26 cts/100 mL	0.27 mg/L	0.2 mg/L	0.27 mg/L	6.64 pH units	13.8 °C	0.2 mg/L	0.27 mg/L	0.037 mg/L	7 mg/L	7 mg/L	7 mg/L	7 mg/L	
01-XWB	11/5/2014	2.58	0.2 mg/L	27 mg/L	76 μS/cm	9.76 mg/L	11 cts/100 mL	4 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	9.40 pH units	6.48 °C	0.2 mg/L	0.2 mg/L	0.011 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-XWB	1/1/2015																				
01-XWB	4/13/2015	1.90	0.2 mg/L	21 mg/L	134.9 μS/cm	12.27 mg/L	1 cts/100 mL	2 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.54 pH units	11.4 °C	0.2 mg/L	0.2 mg/L	0.014 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-XWB	5/7/2015	2.57	0.2 mg/L	34 mg/L	136.8 μS/cm	9.82 mg/L	7.4 cts/100 mL	12 cts/100 mL	0.22 mg/L	0.2 mg/L	0.22 mg/L		19.2 °C	0.378 mg/L	0.6 mg/L	0.014 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-XWB	7/16/2015	2.51	0.2 mg/L	39 mg/L	150.6 μS/cm	6.62 mg/L	39.9 cts/100 mL	58 cts/100 mL	0.28 mg/L	0.2 mg/L	0.28 mg/L	6.55 pH units	19.8 °C	0.77 mg/L	1.05 mg/L	0.013 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-XWB	8/6/2015	2.73	0.2 mg/L	42 mg/L	164 μS/cm	5.24 mg/L	98.7 cts/100 mL	136 cts/100 mL	0.29 mg/L	0.2 mg/L	0.29 mg/L	6.51 pH units	19.8 °C	0.692 mg/L	0.98 mg/L	0.012 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-XWB	8/27/2015	2.81	0.2 mg/L	43 mg/L	164.1 μS/cm	4.77 mg/L	125 cts/100 mL	145 cts/100 mL	0.26 mg/L	0.2 mg/L	0.26 mg/L	6.34 pH units	19.8 °C	0.79 mg/L	1.05 mg/L	0.013 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-XWB	9/24/2015	2.87	0.2 mg/L	43 mg/L	147.1 μS/cm	5.03 mg/L	225 cts/100 mL	70 cts/100 mL	0.32 mg/L	0.2 mg/L	0.32 mg/L	6.34 pH units	14.6 °C	0.481 mg/L	0.8 mg/L	0.012 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-XWB	11/5/2015	2.96	0.2 mg/L	39 mg/L	126.7 μS/cm		16.1 cts/100 mL	10 cts/100 mL	0.26 mg/L	0.2 mg/L	0.26 mg/L	6.35 pH units	8.9 °C	0.459 mg/L	0.72 mg/L	0.01 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-XWB	1/1/2016																				
01-XWB	4/21/2016	3.14	0.2 mg/L	30 mg/L	142 μS/cm		7.4 cts/100 mL	12 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.36 pH units	14.45 °C	0.2 mg/L	0.2 mg/L	0.019 mg/L	7 mg/L	7 mg/L	7 mg/L	7 mg/L	
01-XWB	6/2/2016		0.2 mg/L	40 mg/L	153.9 μS/cm	2.69 mg/L	178 cts/100 mL		0.2 mg/L	0.2 mg/L	0.2 mg/L	6.46 pH units	17.9 °C	0.2 mg/L	0.2 mg/L	0.031 mg/L	4 mg/L	4 mg/L	4 mg/L	4 mg/L	
01-XWB	6/27/2016		0.2 mg/L	45 mg/L	195.6 μS/cm	3.09 mg/L	67.7 cts/100 mL	61 cts/100 mL	0.2 mg/L	0.2 mg/L	0										

Pennichuck Water Works
Tributary Sampling Data
2013 through 2016

Total coliform: exceeds detection limits

All others: non-detect

Station	Date	Staff Gauge Reading	Ammonia		Chloride		Conductivity		DO		E. coli		Fecal Coliform		Nitrate		Nitrite		Nitrate/Nitrite		pH		Temperature		TKN		Total Nitrogen		Total Phosphorus		TSS	
02-WCH	1/1/2013																															
02-WCH	4/4/2013	1.28	0.2	mg/L	14	mg/L	74	µS/cm	12.15	mg/L	2	cts/100 mL	1	cts/100 mL					0.5	mg/L	6.49	pH units	5.8	°C	0.5	mg/L	0.5	mg/L	0.05	mg/L	6	mg/L
02-WCH	5/6/2013	0.76	0.2	mg/L			109.4	µS/cm	10.10	mg/L	12.2	cts/100 mL	0								7.21	pH units	14.2	°C	0.5	mg/L			0.06	mg/L	6	mg/L
02-WCH	6/6/2013		0.2	mg/L			84.6	µS/cm	9.28	mg/L	6.3	cts/100 mL	7	cts/100 mL							6.87	pH units	15.2	°C	0.5	mg/L			0.019	mg/L	6	mg/L
02-WCH	7/17/2013	0.61	0.2	mg/L	30	mg/L	129.7	µS/cm	12.18	mg/L	10.8	cts/100 mL	6	cts/100 mL	0.47	mg/L	0.2	mg/L	0.47	mg/L	6.35	pH units	21.2	°C	0.5	mg/L	0.47	mg/L	0.059	mg/L	6	mg/L
02-WCH	8/16/2013	0.59	0.2	mg/L	30	mg/L	108.9	µS/cm	9.43	mg/L	9.8	cts/100 mL	0		0.49	mg/L	0.2	mg/L	0.49	mg/L	6.03	pH units	16.3	°C	0.5	mg/L	0.49	mg/L	0.02	mg/L	6	mg/L
02-WCH	9/10/2013	0.55	0.2	mg/L	30	mg/L	103.5	µS/cm	14.40	mg/L	16.1	cts/100 mL	0		0.48	mg/L	0.2	mg/L	0.48	mg/L	6.19	pH units	11.5	°C	0.5	mg/L	0.48	mg/L	0.02	mg/L	6	mg/L
02-WCH	10/28/2013	0.58	0.1	mg/L	32	mg/L	94.6	µS/cm	10.89	mg/L	1	cts/100 mL	1	cts/100 mL	0.49	mg/L	0.2	mg/L	0.49	mg/L	6.26	pH units	7.8	°C	0.5	mg/L	0.49	mg/L	0.022	mg/L	6	mg/L
02-WCH	1/1/2014																															
02-WCH	4/14/2014	1.28	0.2	mg/L	21	mg/L	70	µS/cm			3.1	cts/100 mL	1	cts/100 mL	0.22	mg/L	0.2	mg/L	0.22	mg/L			11.3	°C	0.2	mg/L	0.22	mg/L	0.04	mg/L	5	mg/L
02-WCH	5/8/2014	0.98	0.2	mg/L	26	mg/L	110.2	µS/cm	11.18	mg/L	1	cts/100 mL	2	cts/100 mL	0.25	mg/L	0.2	mg/L	0.25	mg/L	6.54	pH units	13.2	°C	0.2	mg/L	0.25	mg/L	0.066	mg/L	4	mg/L
02-WCH	6/11/2014	0.66	0.2	mg/L	34	mg/L	90.7	µS/cm	11.00	mg/L	8.6	cts/100 mL	2	cts/100 mL	0.48	mg/L	0.2	mg/L	0.48	mg/L	6.80	pH units	15.2	°C	0.2	mg/L	0.48	mg/L	0.034	mg/L	4	mg/L
02-WCH	7/14/2014	0.54	0.2	mg/L	37	mg/L	104.8	µS/cm	10.17	mg/L	236	cts/100 mL	175	cts/100 mL	0.58	mg/L	0.2	mg/L	0.58	mg/L	7.06	pH units	19	°C	0.2	mg/L	0.58	mg/L	0.044	mg/L	4	mg/L
02-WCH	8/12/2014	0.51	0.2	mg/L	40	mg/L	105.9	µS/cm	11.00	mg/L	108	cts/100 mL	8	cts/100 mL	0.62	mg/L	0.2	mg/L	0.62	mg/L	6.55	pH units	17	°C	0.2	mg/L	0.62	mg/L	0.018	mg/L	4	mg/L
02-WCH	9/18/2014	0.48	0.2	mg/L	38	mg/L	96.6	µS/cm	11.92	mg/L	8.5	cts/100 mL	17	cts/100 mL	0.6	mg/L	0.2	mg/L	0.6	mg/L	6.46	pH units	12.7	°C	0.2	mg/L	0.6	mg/L	0.012	mg/L	4	mg/L
02-WCH	11/5/2014	0.90	0.2	mg/L	26	mg/L	68.8	µS/cm	12.44	mg/L	4.1	cts/100 mL	2	cts/100 mL	0.26	mg/L	0.2	mg/L	0.26	mg/L	6.32	pH units	9.4	°C	0.2	mg/L	0.26	mg/L	0.01	mg/L	4	mg/L
02-WCH	1/1/2015																															
02-WCH	4/13/2015	1.48	0.2	mg/L	18	mg/L	142.5	µS/cm	13.02	mg/L	1	cts/100 mL	2	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.98	pH units	9.1	°C	0.2	mg/L	0.2	mg/L	0.01	mg/L	4	mg/L
02-WCH	5/7/2015	0.89	0.2	mg/L	33	mg/L	131.5	µS/cm	10.72	mg/L	5.2	cts/100 mL	2	cts/100 mL	0.3	mg/L	0.2	mg/L	0.3	mg/L			16.3	°C	0.318	mg/L	0.62	mg/L	0.01	mg/L	4	mg/L
02-WCH	7/16/2015	0.60	0.2	mg/L	42	mg/L	146.2	µS/cm	10.19	mg/L	35.9	cts/100 mL	40	cts/100 mL	0.67	mg/L	0.2	mg/L	0.67	mg/L	6.64	pH units	16	°C	0.396	mg/L	1.07	mg/L	0.01	mg/L	4	mg/L
02-WCH	8/6/2015	0.57	0.2	mg/L	45	mg/L	157.1	µS/cm	6.89	mg/L	16	cts/100 mL	6	cts/100 mL	0.64	mg/L	0.2	mg/L	0.64	mg/L	6.56	pH units	16	°C	0.475	mg/L	1.12	mg/L	1.29	mg/L	4	mg/L
02-WCH	8/27/2015	0.52	0.2	mg/L	46	mg/L	96.6	µS/cm	9.31	mg/L	29.2	cts/100 mL	15	cts/100 mL	0.61	mg/L	0.2	mg/L	0.61	mg/L	6.69	pH units	16.9	°C	0.396	mg/L	1.01	mg/L	0.01	mg/L	4	mg/L
02-WCH	9/24/2015	0.50	0.2	mg/L	46	mg/L	150	µS/cm	8.70	mg/L	13.4	cts/100 mL	5	cts/100 mL	0.64	mg/L	0.2	mg/L	0.64	mg/L	6.53	pH units	13.4	°C	0.37	mg/L	1.01	mg/L	0.01	mg/L	4	mg/L
02-WCH	11/5/2015	0.56	0.2	mg/L	41	mg/L	130.4	µS/cm			3	cts/100 mL	5	cts/100 mL	0.46	mg/L	0.2	mg/L	0.46	mg/L	6.39	pH units	9.9	°C	0.217	mg/L	0.68	mg/L	0.01	mg/L	4	mg/L
02-WCH	1/1/2016																															
02-WCH	4/21/2016	1.52	0.2	mg/L	27	mg/L	127	µS/cm			1	cts/100 mL	5	cts/100 mL	0.23	mg/L	0.2	mg/L	0.23	mg/L	6.30	pH units	12.7	°C	0.2	mg/L	0.23	mg/L	0.01	mg/L	4	mg/L
02-WCH	6/2/2016	1.70	0.2	mg/L	40	mg/L	137.9	µS/cm	6.71	mg/L	19.9	cts/100 mL			0.53	mg/L	0.2	mg/L	0.53	mg/L	6.49	pH units	14.2	°C	1.03	mg/L	1.56	mg/L	0.018	mg/L	4	mg/L
02-WCH	6/27/2016	2.60	0.2	mg/L	47	mg/L	179.9	µS/cm	6.03	mg/L	17.3	cts/100 mL	33	cts/100 mL	0.62	mg/L	0.2	mg/L	0.62	mg/L	6.71	pH units	19.8	°C	0.203	mg/L	0.82	mg/L	0.016	mg/L	4	mg/L
02-WCH	7/28/2016	1.45	0.2	mg/L	50	mg/L	199.6	µS/cm	6.44	mg/L	43.2	cts/100 mL	36	cts/100 mL	0.5	mg/L	0.2	mg/L	0.5	mg/L	6.65	pH units	21.6	°C	2.6	mg/L	3.1	mg/L	0.01	mg/L	4	mg/L
02-WCH	8/25/2016	1.60	0.2	mg/L	47	mg/L	185.7	µS/cm	6.48	mg/L	82	cts/100 mL	30	cts/100 mL	0.51	mg/L	0.2	mg/L	0.51	mg/L	6.40	pH units	20.1	°C	3.97	mg/L	4.48	mg/L	0.011	mg/L	4	mg/L
02-WCH	9/22/2016	1.80	0.2	mg/L	48	mg/L	175.2	µS/cm	7.24	mg/L	365	cts/100 mL	299	cts/100 mL	0.52	mg/L	0.2	mg/L	0.52	mg/L	6.48	pH units	17.1	°C	0.311	mg/L	0.83	mg/L	0.061	mg/L	21	mg/L
02-WCH	10/19/2016	2.00	0.2	mg/L	49	mg/L	167.7	µS/cm	6.54	mg/L	21.6	cts/100 mL	54	cts/100 mL	0.37	mg/L	0.2	mg/L	0.37	mg/L	6.50	pH units	14.9	°C	0.845	mg/L	1.22	mg/L	0.038	mg/L	12	mg/L
01-HAY	1/1/2016																															
01-HAY	4/21/2016	0.98	0.2	mg/L	8	mg/L	51	µS/cm			1	cts/100 mL	1	cts/100 mL	0.2	mg/L	0.2	mg/L			6.32	pH units	12.54	°C	0.2	mg/L	0.2	mg/L	0.01	mg/L	4	mg/L
01-HAY	6/2/2016	1.71	0.2	mg/L	8	mg/L	41.9	µS/cm	6.75	mg/L	135	cts/100 mL			0.2	mg/L	0.2	mg/L			6.57	pH units	15.1	°C	0.2	mg/L	0.2	mg/L	0.01	mg/L	4	mg/L
01-HAY	6/27/2016	0.00	0.2	mg/L	21	mg/L	107.2	µS/cm	3.05	mg/L	6.3	cts/100 mL	96	cts/100 mL	0.2	mg/L	0.2	mg/L			6.82	pH units	20.7	°C	0.247	mg/L	0.25	mg/L	0.034	mg/L	4	mg/L
01-HAY	7/28/2016	0.00																														
01-HAY	8/25/2016	0.00																														
01-HAY	9/22/2016	0.00																														
01-HAY	10/19/2016	0.00																														

Attachment B:
Groundwater Sampling Data, 2012 through 2016



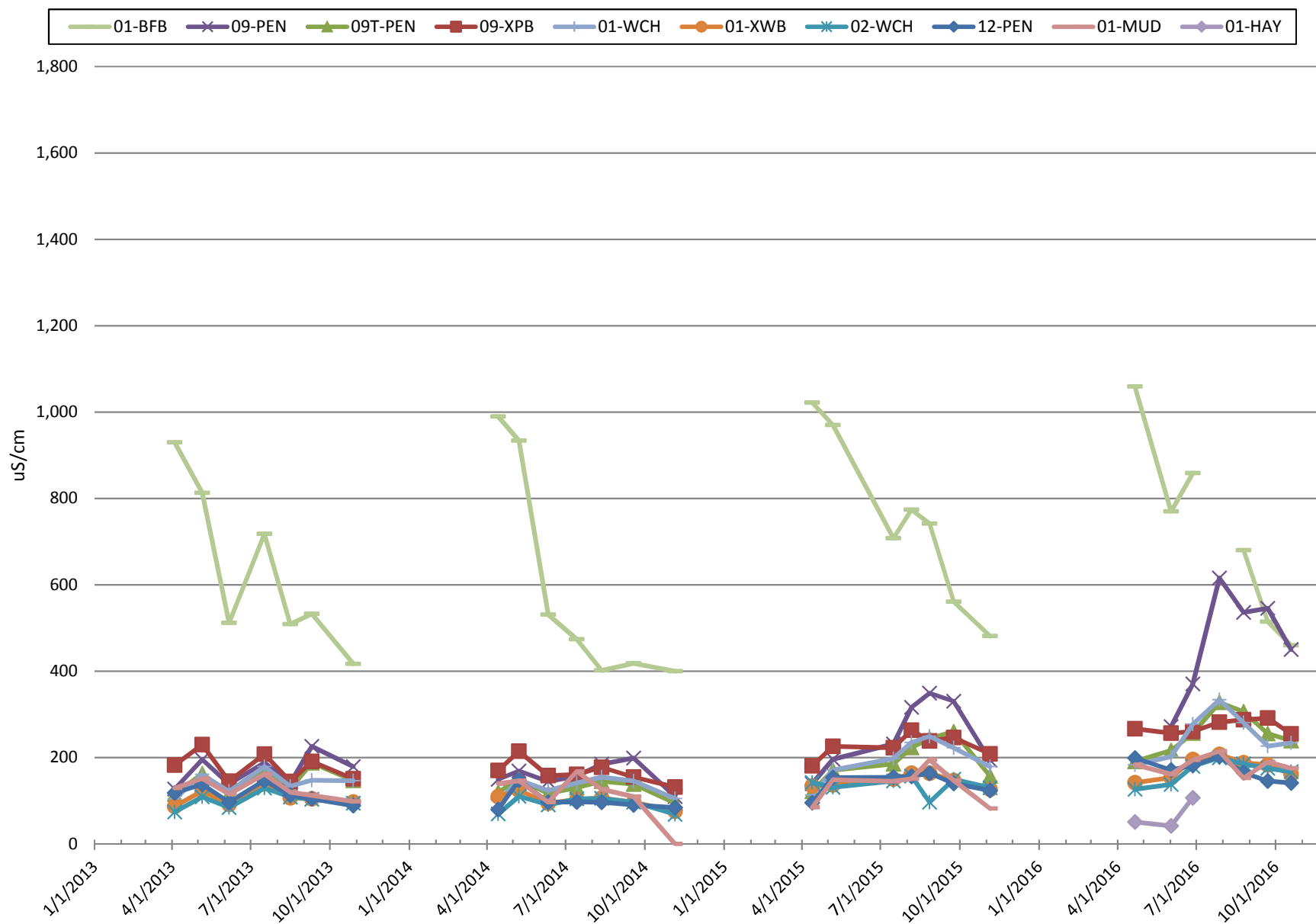
Pennichuck Water Works
2016 Groundwater Sampling Data

Non-detect																										
Station	Date	Water Level Depth	Ammonia		Chloride		Conductivity		DO		Nitrate		Nitrite		Nitrate/Nitrite		pH		Temperature		TKN		Total Nitrogen		Total Phosphorus, Filtered	
01-BFB	1/1/2016																									
01-BFB	4/21/2016	2.45	0.2	mg/L	282	mg/L	1090	µS/cm			0.2	mg/L	0.2	mg/L	0.2	mg/L	6.80	pH units	7.36	°C	1.14	mg/L	1.14	mg/L	0.568	mg/L
01-BFB	6/2/2016	2.80	0.2	mg/L	239	mg/L	690	µS/cm	3.46	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.70	pH units	10.5	°C	0.608	mg/L	0.61	mg/L	0.633	mg/L
01-BFB	6/27/2016	2.96	0.2	mg/L	227	mg/L	752	µS/cm	2.61	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	8.63	pH units	14.3	°C	1.58	mg/L	1.58	mg/L	1.320	mg/L
01-BFB	7/28/2016	3.80	0.2	mg/L	212	mg/L	736	µS/cm	2.37	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	8.27	pH units	17.1	°C	1.47	mg/L	1.47	mg/L	0.825	mg/L
01-BFB	8/25/2016	3.20	0.2	mg/L	152	mg/L	631	µS/cm	3.10	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.99	pH units	18.6	°C	3.3	mg/L	3.3	mg/L	1.200	mg/L
01-BFB	9/22/2016	2.90	0.2	mg/L	127	mg/L	552	µS/cm	3.38	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.93	pH units	18.4	°C	0.589	mg/L	0.59	mg/L	0.391	mg/L
01-BFB	10/19/2016	2.80	0.2	mg/L	121	mg/L	487.4	µS/cm	1.91	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	8.50	pH units	16.9	°C	0.662	mg/L	0.66	mg/L	0.119	mg/L
09T-PEN	1/1/2016																									
09T-PEN	4/21/2016	3.49	0.2	mg/L	41	mg/L	204	µS/cm			0.2	mg/L	0.2	mg/L	0.2	mg/L	5.90	pH units	9.51	°C	0.794	mg/L	0.79	mg/L	0.348	mg/L
09T-PEN	6/2/2016	3.90	0.2	mg/L	44	mg/L	128.9	µS/cm	6.17	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.17	pH units	11.6	°C	1.03	mg/L	1.03	mg/L	0.267	mg/L
09T-PEN	6/27/2016	1.03	0.2	mg/L	43	mg/L	163.7	µS/cm	5.85	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.32	pH units	15.6	°C	3.12	mg/L	3.12	mg/L	1.77	mg/L
09T-PEN	7/28/2016	4.84	0.2	mg/L	55	mg/L	237.2	µS/cm	5.54	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.96	pH units	18.4	°C	1.61	mg/L	1.61	mg/L	0.893	mg/L
09T-PEN	8/25/2016	4.35	0.2	mg/L	47	mg/L	255.3	µS/cm	6.08	mg/L	0.57	mg/L	0.2	mg/L	0.57	mg/L	7.07	pH units	18.1	°C	3.14	mg/L	3.71	mg/L	4.28	mg/L
09T-PEN	9/22/2016	4.09	0.2	mg/L	22	mg/L	198.7	µS/cm	6.66	mg/L	0.56	mg/L	0.2	mg/L	0.56	mg/L	7.62	pH units	17.4	°C	4.27	mg/L	4.38	mg/L	0.02	mg/L
09T-PEN	10/19/2016	4.13	0.2	mg/L	43	mg/L	213.8	µS/cm	5.63	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.53	pH units	16.4	°C	0.754	mg/L	0.75	mg/L	0.343	mg/L
01-CML (09	1/1/2016																									
01-CML (09	4/21/2016	3.25	0.28	mg/L	73	mg/L	325	µS/cm			0.2	mg/L	0.2	mg/L	0.2	mg/L	6.05	pH units	11.56	°C	4.37	mg/L	4.65	mg/L	1.13	mg/L
01-CML (09	6/2/2016	3.05	0.2	mg/L	137	mg/L	384	µS/cm	5.12	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.60	pH units	12.6	°C	0.957	mg/L	0.96	mg/L	0.282	mg/L
01-CML (09	6/27/2016	1.08	0.2	mg/L	92	mg/L	321.3	µS/cm	3.45	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.62	pH units	16.5	°C	10.1	mg/L	10.1	mg/L	2.49	mg/L
01-CML (09	7/28/2016	3.75	0.2	mg/L	59	mg/L	203.1	µS/cm	6.16	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.04	pH units	14.7	°C	2.21	mg/L	2.21	mg/L	0.845	mg/L
01-CML (09	8/25/2016	4.60	0.2	mg/L	66	mg/L	224.6	µS/cm	6.17	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.90	pH units	16.1	°C	2.35	mg/L	2.35	mg/L	0.696	mg/L
01-CML (09	9/22/2016	2.72	0.2	mg/L	71	mg/L	250.8	µS/cm	7.15	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	7.28	pH units	17	°C	1.24	mg/L	1.24	mg/L	0.341	mg/L
01-CML (09	10/19/2016	3.55	0.2	mg/L	74	mg/L	257.2	µS/cm	6.77	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.82	pH units	15.2	°C	1.19	mg/L	1.19	mg/L	0.087	mg/L
01-WCH	1/1/2016																									
01-WCH	4/21/2016	2.24	0.2	mg/L	79	mg/L	370	µS/cm			2.35	mg/L	0.2	mg/L	2.35	mg/L	5.79	pH units	10.55	°C	6.28	mg/L	8.63	mg/L	0.625	mg/L
01-WCH	6/2/2016	2.30	0.2	mg/L	26	mg/L	109.2	µS/cm	4.96	mg/L	1.6	mg/L	0.2	mg/L	1.6	mg/L	6.54	pH units	11.3	°C	3.14	mg/L	4.74	mg/L	1.15	mg/L
01-WCH	6/27/2016	2.35	0.2	mg/L	61	mg/L	208.5	µS/cm	1.67	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.01	pH units	18	°C	43.5	mg/L	43.5	mg/L	2.11	mg/L
01-WCH	7/28/2016	2.98	0.36	mg/L	74	mg/L	287.9	µS/cm	1.99	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.15	pH units	25	°C	21.2	mg/L	21.6	mg/L	2.84	mg/L
01-WCH	8/25/2016	3.30	0.26	mg/L	86	mg/L	345.6	µS/cm	2.68	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.55	pH units	24	°C	18.0	mg/L	18.3	mg/L	2.27	mg/L
01-WCH	9/22/2016	2.82	0.2	mg/L	114	mg/L	418.8	µS/cm	2.79	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.67	pH units	20.5	°C	3.3	mg/L	3.3	mg/L	0.299	mg/L
01-WCH	10/19/2016	3.13	0.2	mg/L	73	mg/L	233	µS/cm	3.57	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.45	pH units	12.6	°C	2.4	mg/L	2.4	mg/L	0.283	mg/L
12-PEN	1/1/2016																									
12-PEN	4/21/2016	2.06	0.2	mg/L	43	mg/L	200	µS/cm			0.54	mg/L	0.2	mg/L	0.54	mg/L	5.75	pH units	7.89	°C	1.31	mg/L	1.85	mg/L	0.425	mg/L
12-PEN	6/2/2016	2.02	0.2	mg/L	45	mg/L	143	µS/cm	3.47	mg/L	0.48	mg/L	0.2	mg/L	0.48	mg/L	6.46	pH units	9.5	°C	7.65	mg/L	8.13	mg/L	0.712	mg/L
12-PEN	6/27/2016	1.91	0.2	mg/L	46	mg/L	163.5	µS/cm	2.15	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.22	pH units	14.3	°C	3.61	mg/L	3.61	mg/L	1.88	mg/L
12-PEN	7/28/2016	1.35	0.21	mg/L	47	mg/L	189.5	µS/cm	2.41	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.05	pH units	20.5	°C	1.1	mg/L	1.31	mg/L	0.559	mg/L
12-PEN	8/25/2016	2.40	0.23	mg/L	40	mg/L	162.5	µS/cm	2.20	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.07	pH units	20.2	°C	2.86	mg/L	3.09	mg/L	1.01	mg/L
12-PEN	9/22/2016	2.43	0.26	mg/L	36	mg/L	135.4	µS/cm	2.27	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.47	pH units	18.7	°C	0.519	mg/L	0.78	mg/L	0.829	mg/L
12-PEN	10/19/2016	3.17	0.2	mg/L	44	mg/L	164.9	µS/cm	1.88	mg/L	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.28	pH units	16	°C	1.01	mg/L	1.01	mg/L	0.309	mg/L
01-MUD	1/1/2016																									
01-MUD	4/21/2016	1.14	0.2	mg/L	357	mg/L	1351	µS/cm			0.2	mg/L	0.2	mg/L	0.2	mg/L	5.60	pH units	10.79	°C	0.2	mg/L	0.2	mg/L	0.915	mg/L
01-MUD	6/2/2016	0.73	0.2	mg/L	458	mg/L	1303	µS/cm																		

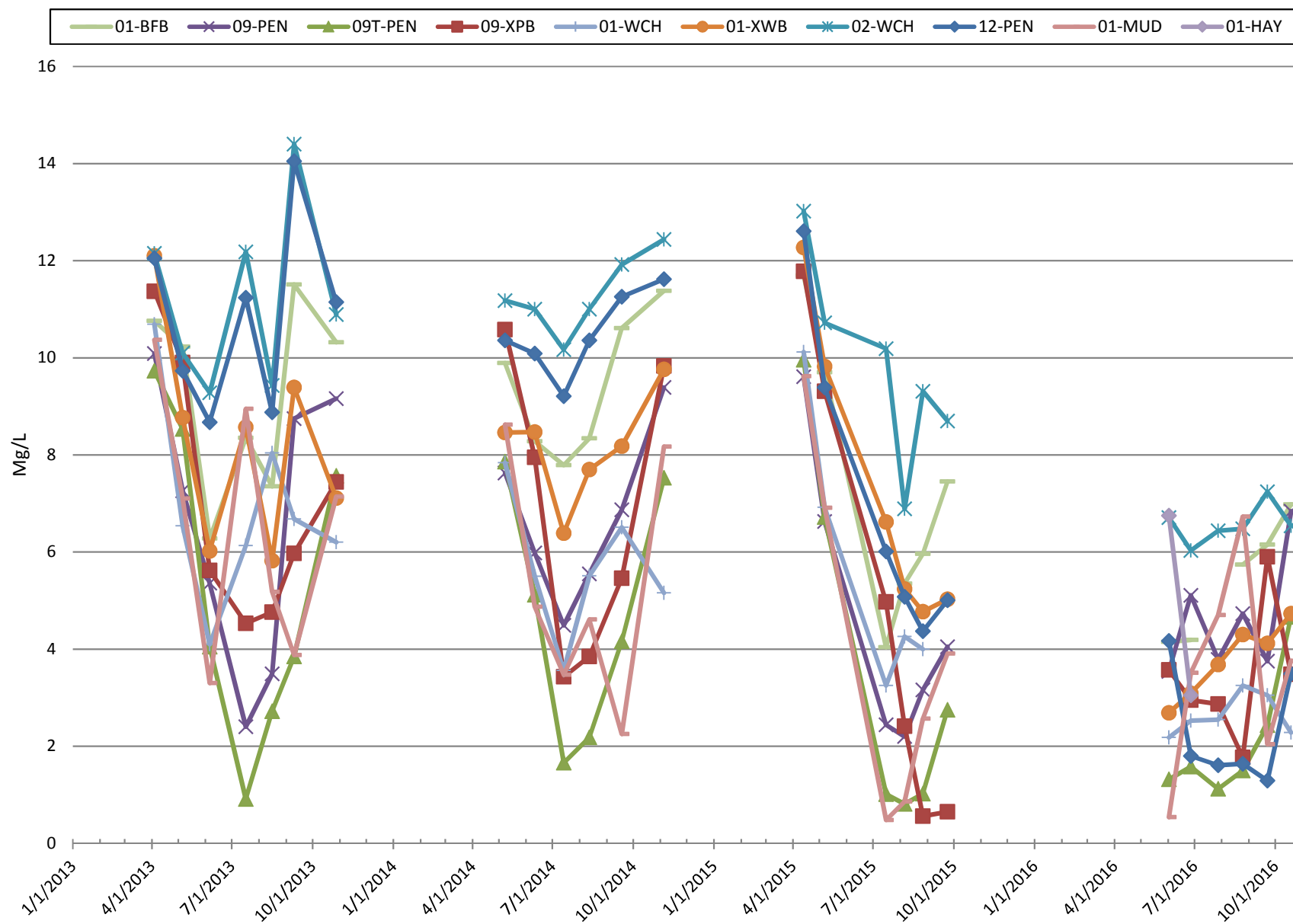
Attachment C:
Select Tributary Graphs



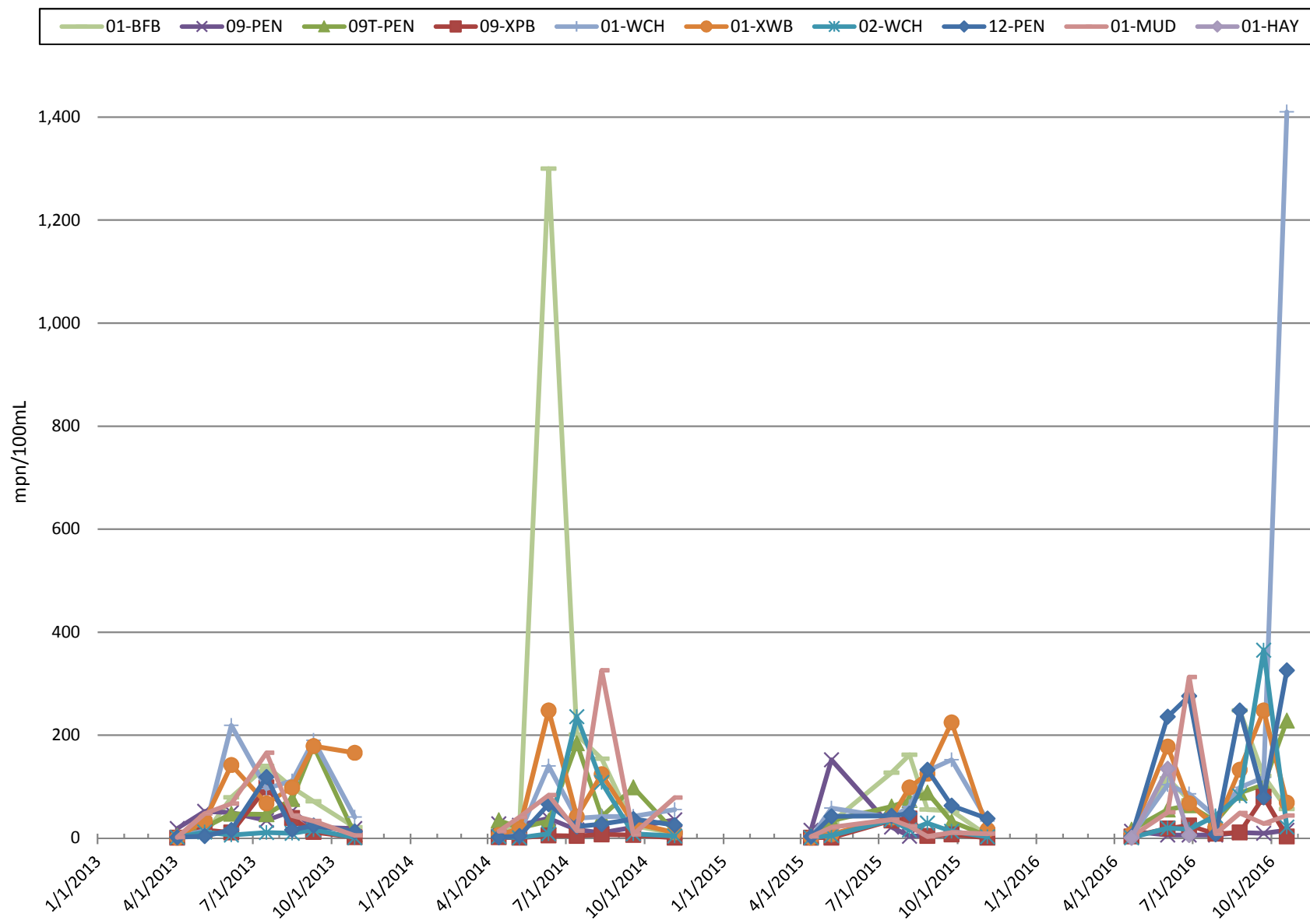
Tributary Dry Weather Sampling - Conductivity Levels 2013-2016



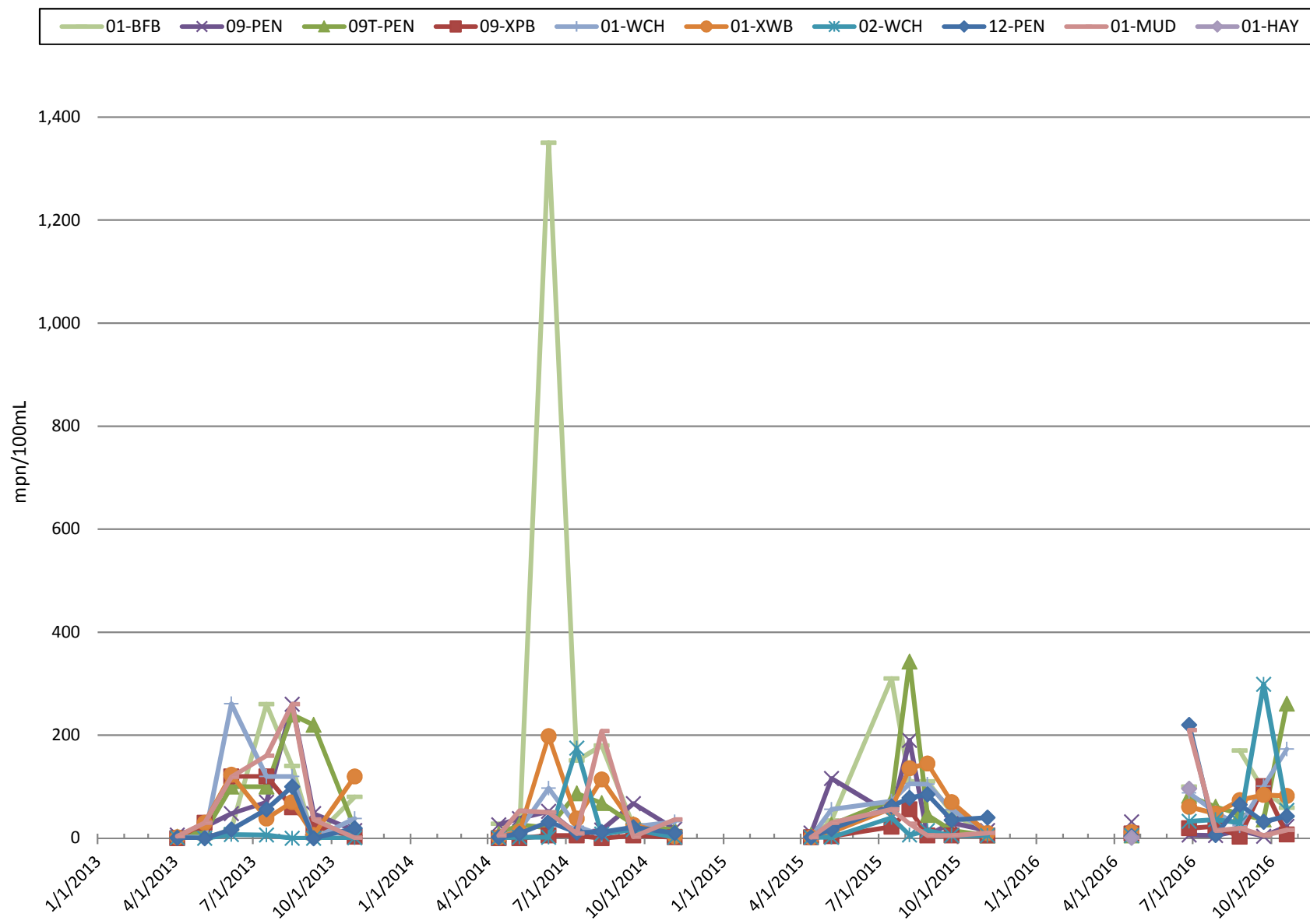
Tributary Dry Weather Sampling - Dissolved Oxygen 2013-2016



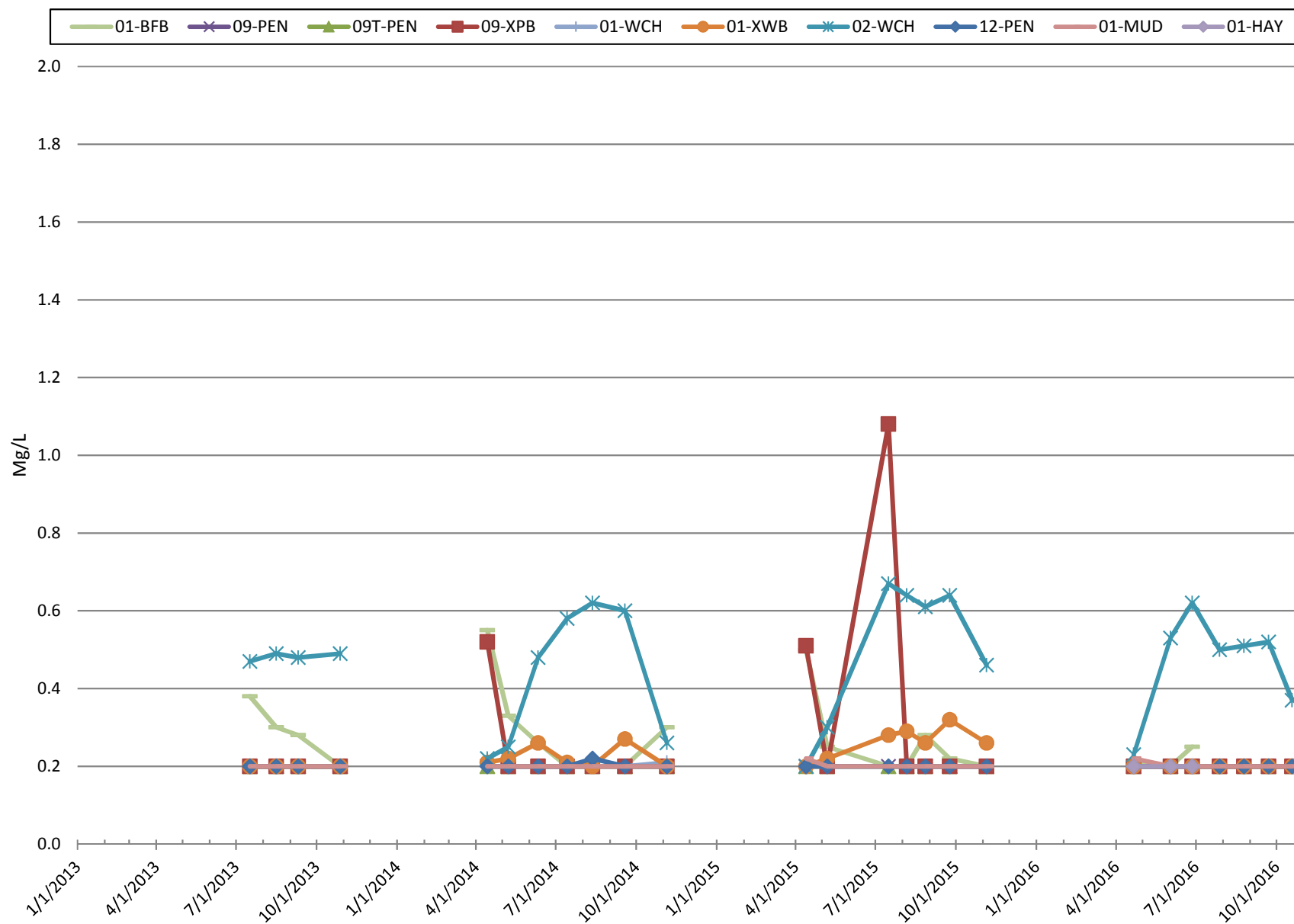
Tributary Dry Weather Sampling - E.Coli Levels 2013-2016



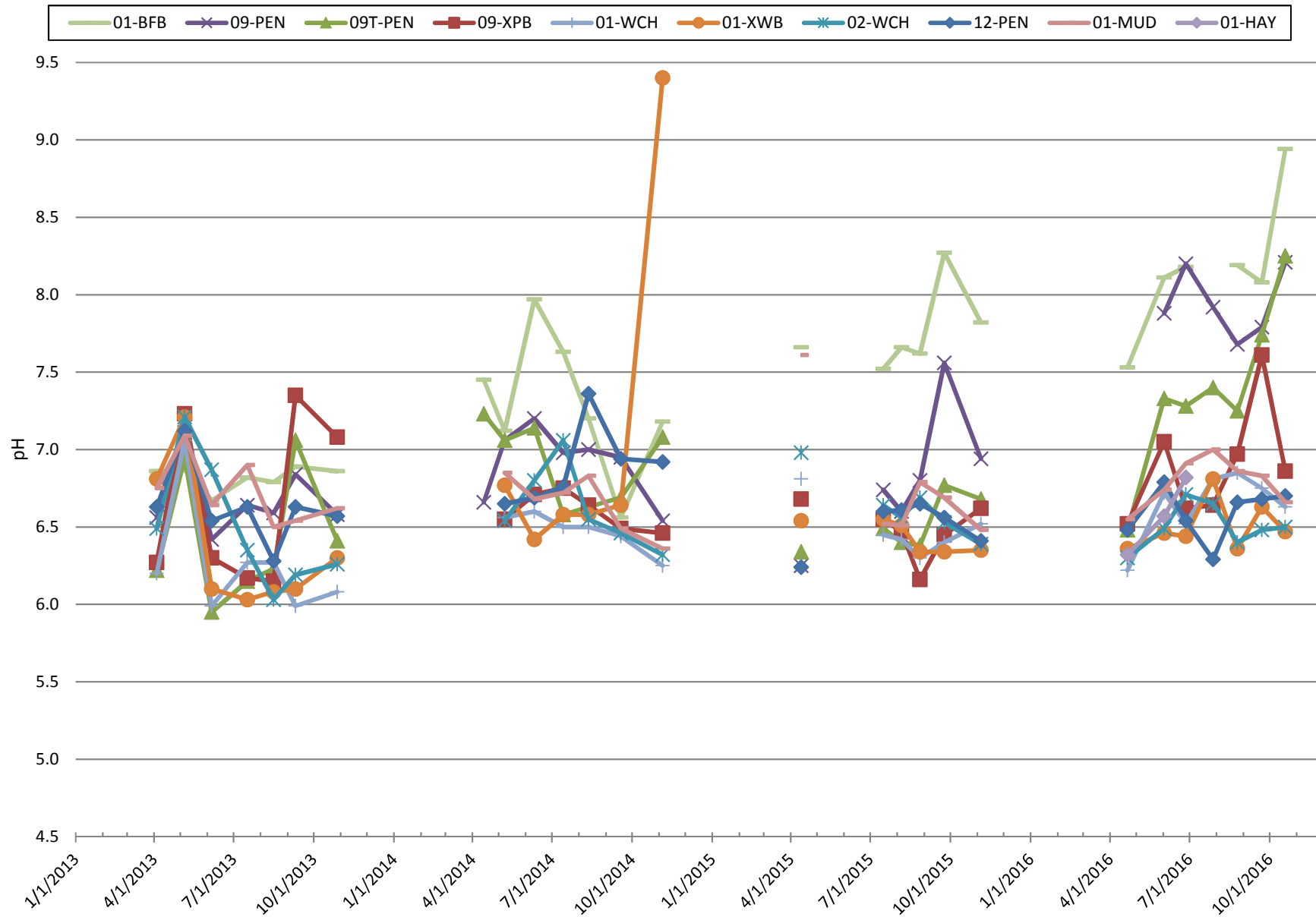
Tributary Dry Weather Sampling - Fecal Coliform Levels 2013-2016



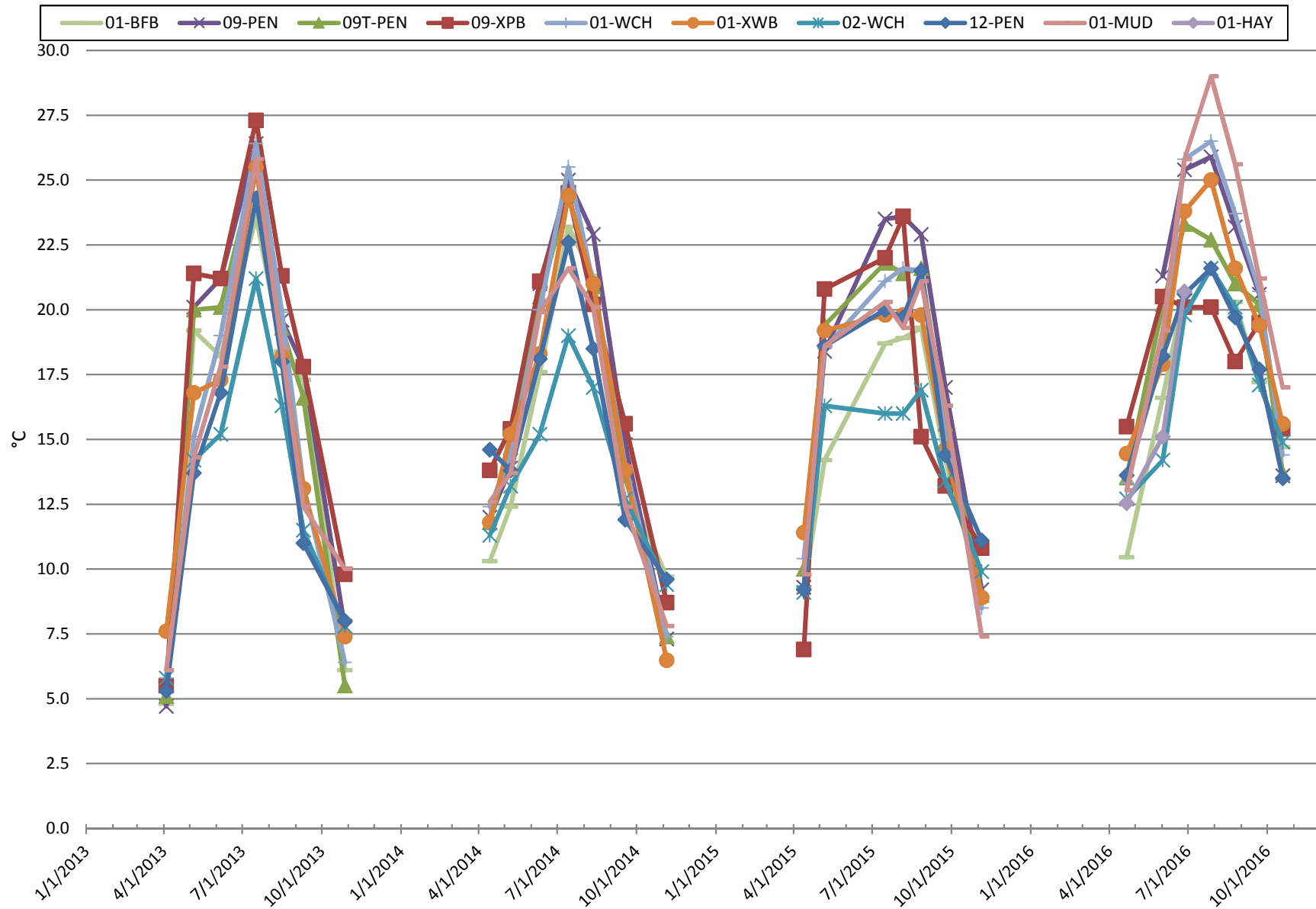
Tributary Dry Weather Sampling - Nitrate Levels 2013-2016



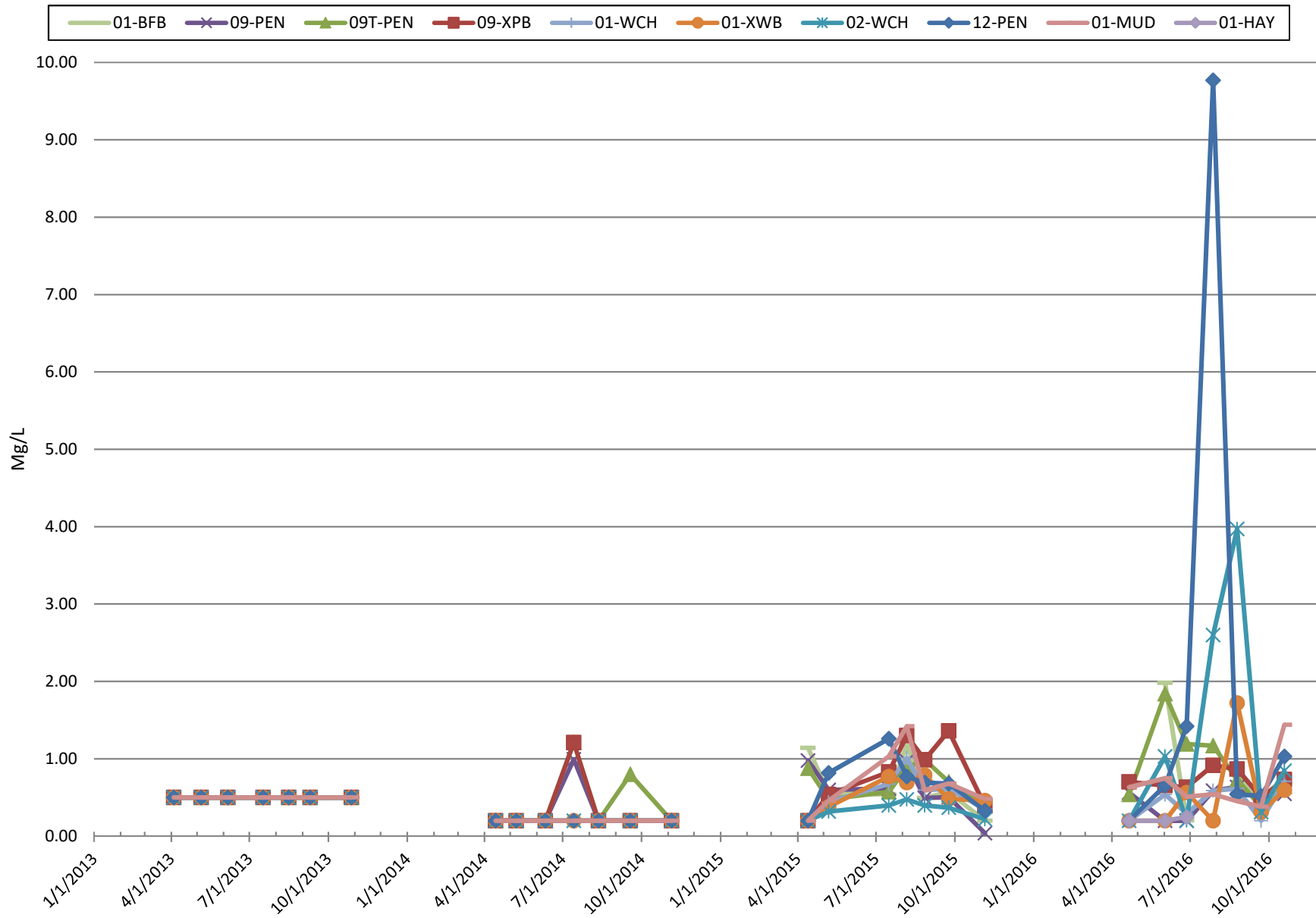
Tributary Dry Weather Sampling - pH 2013-2016



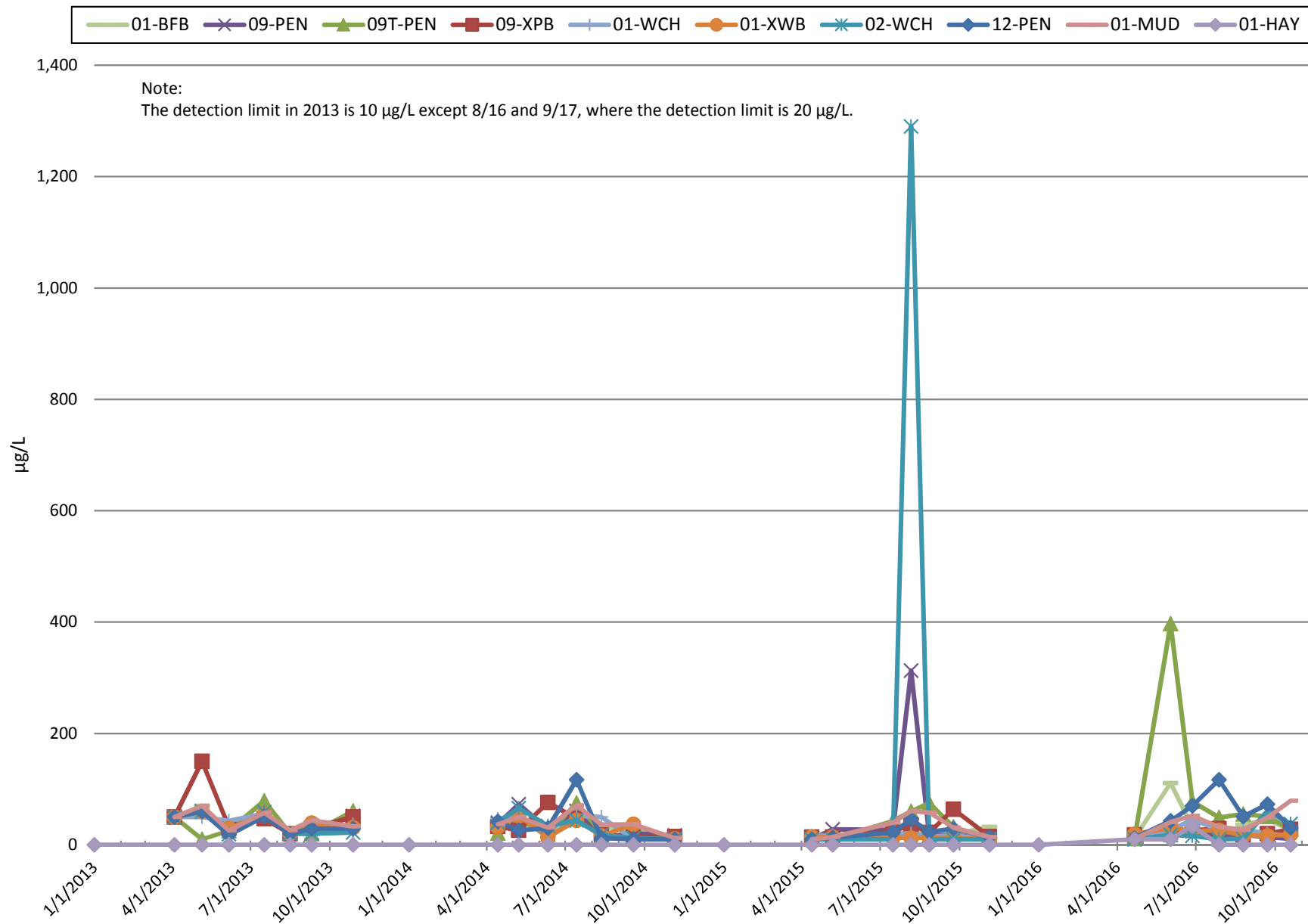
Tributary Dry Weather Sampling - Temperature 2013-2016



Tributary Dry Weather Sampling - TKN Levels 2013-2016



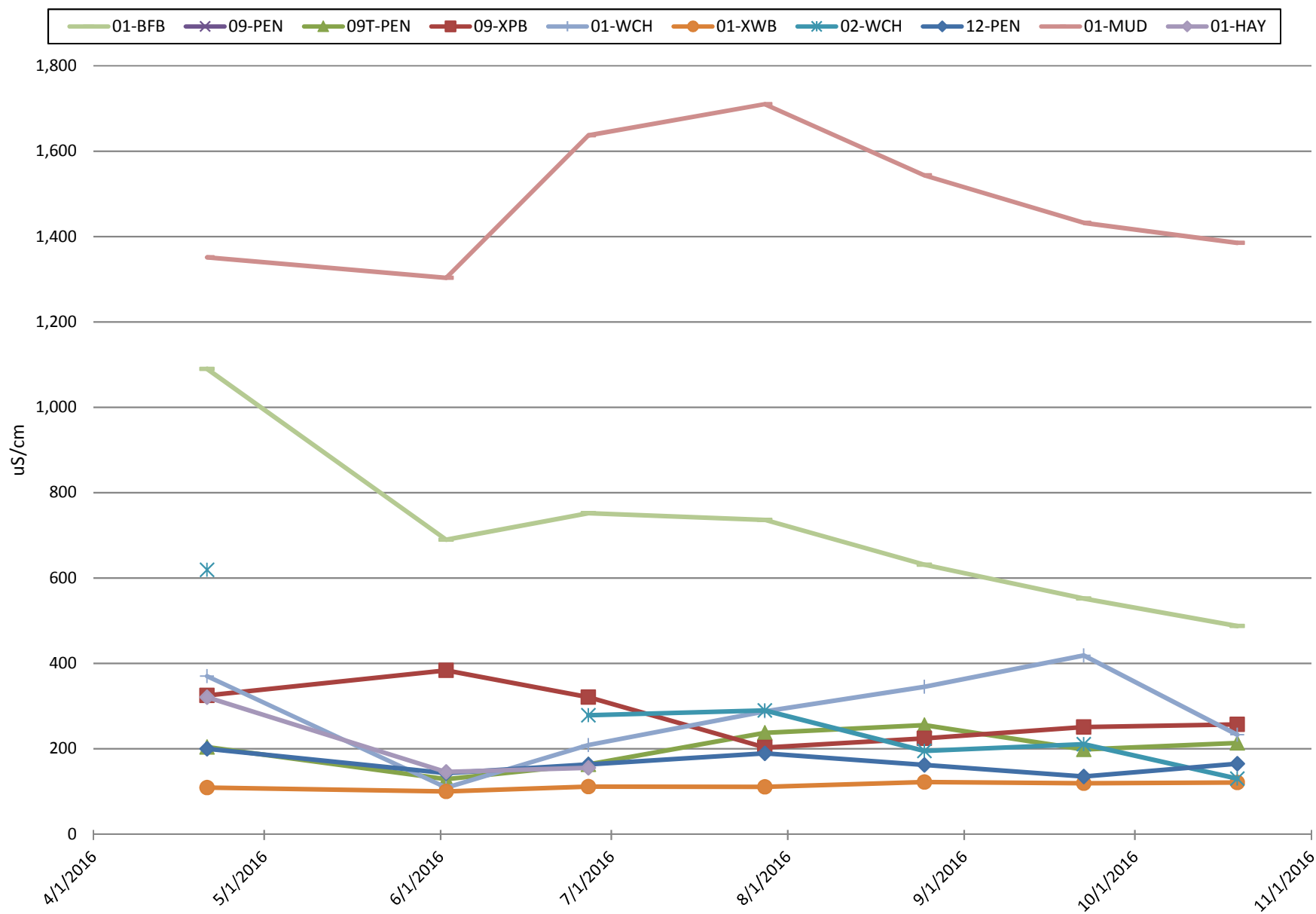
Tributary Dry Weather Sampling - Phosphorus Levels 2013-2016



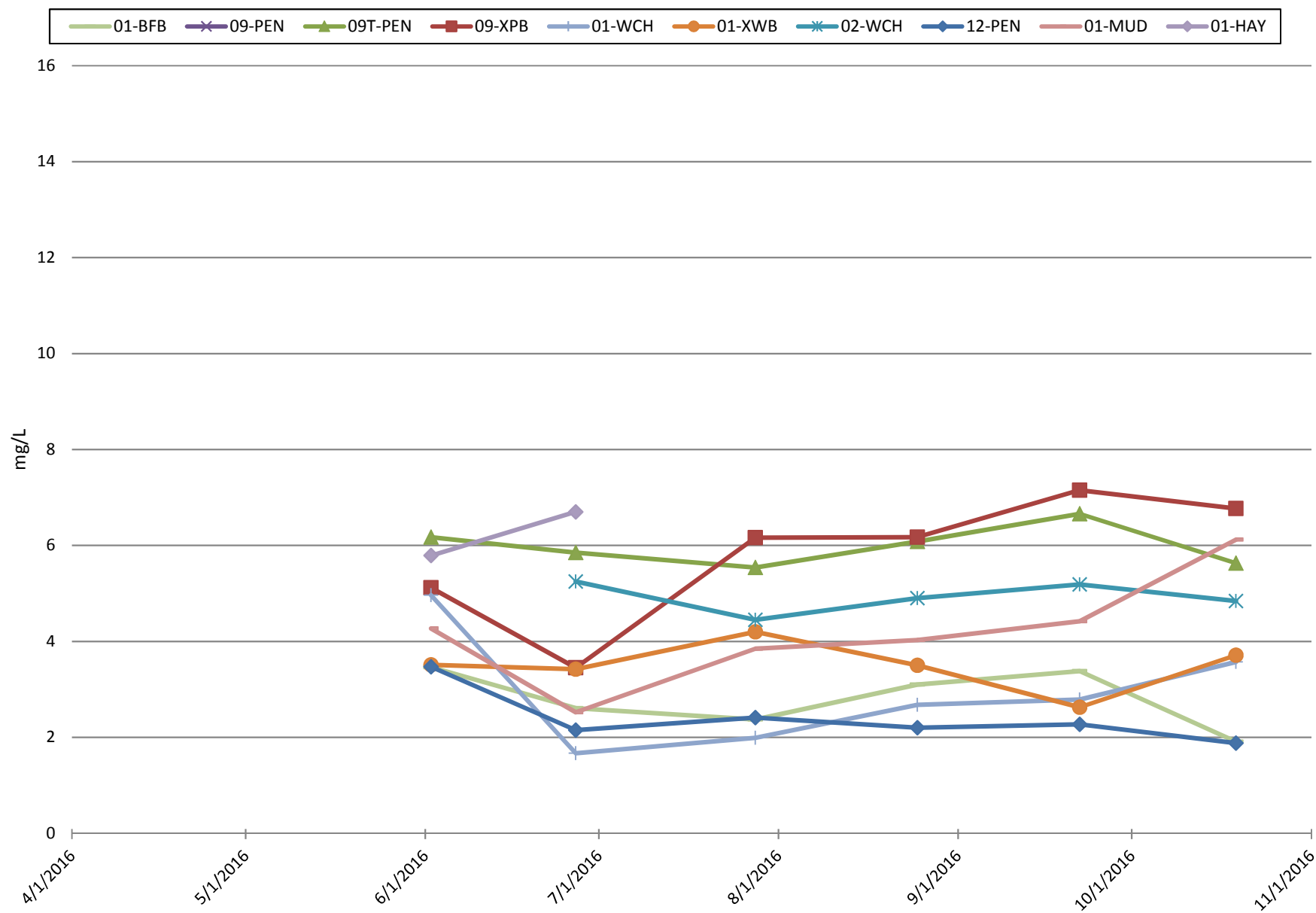
Attachment D:
Select Groundwater Graphs



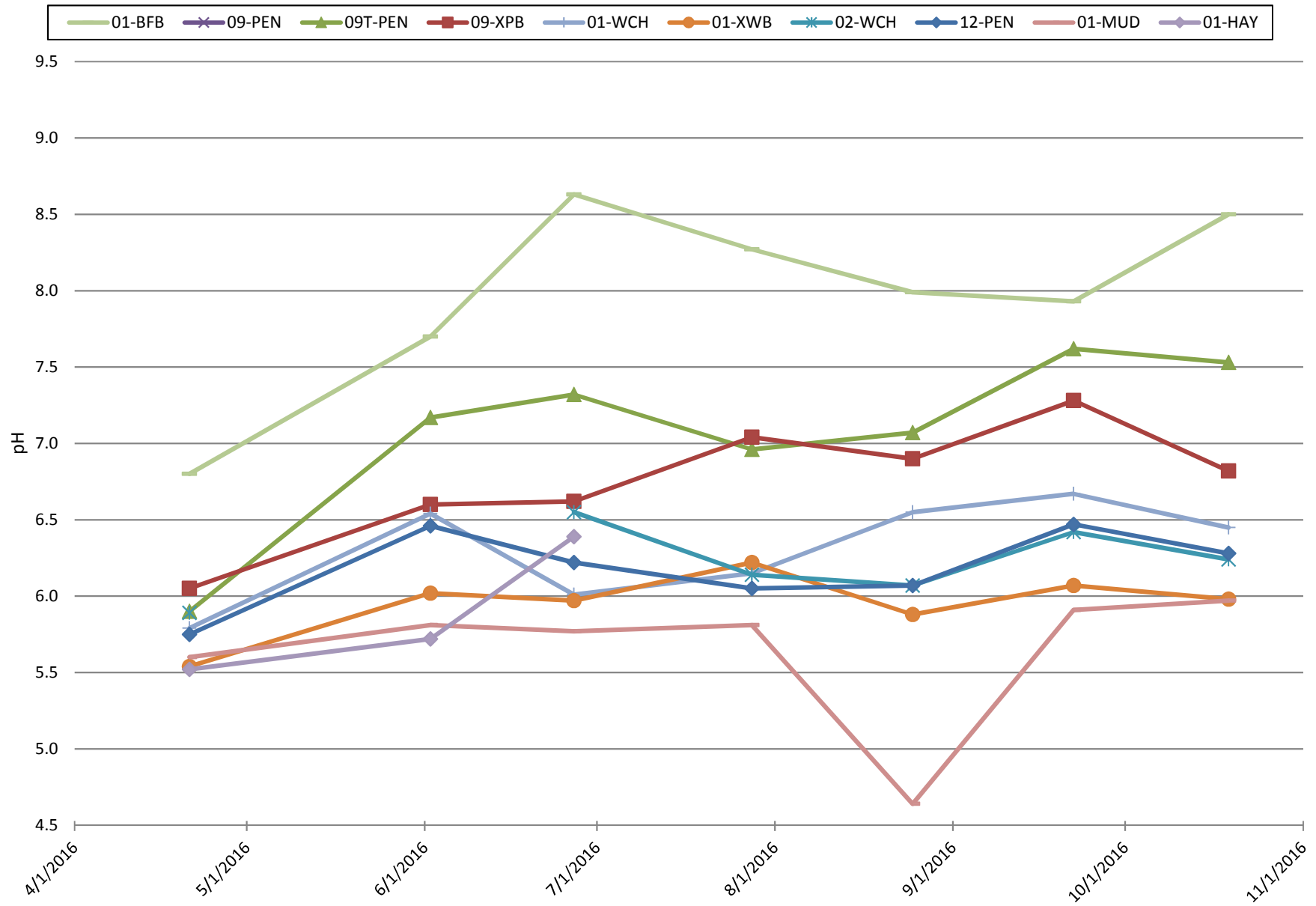
Groundwater Dry Weather Sampling - Conductivity Levels in 2016



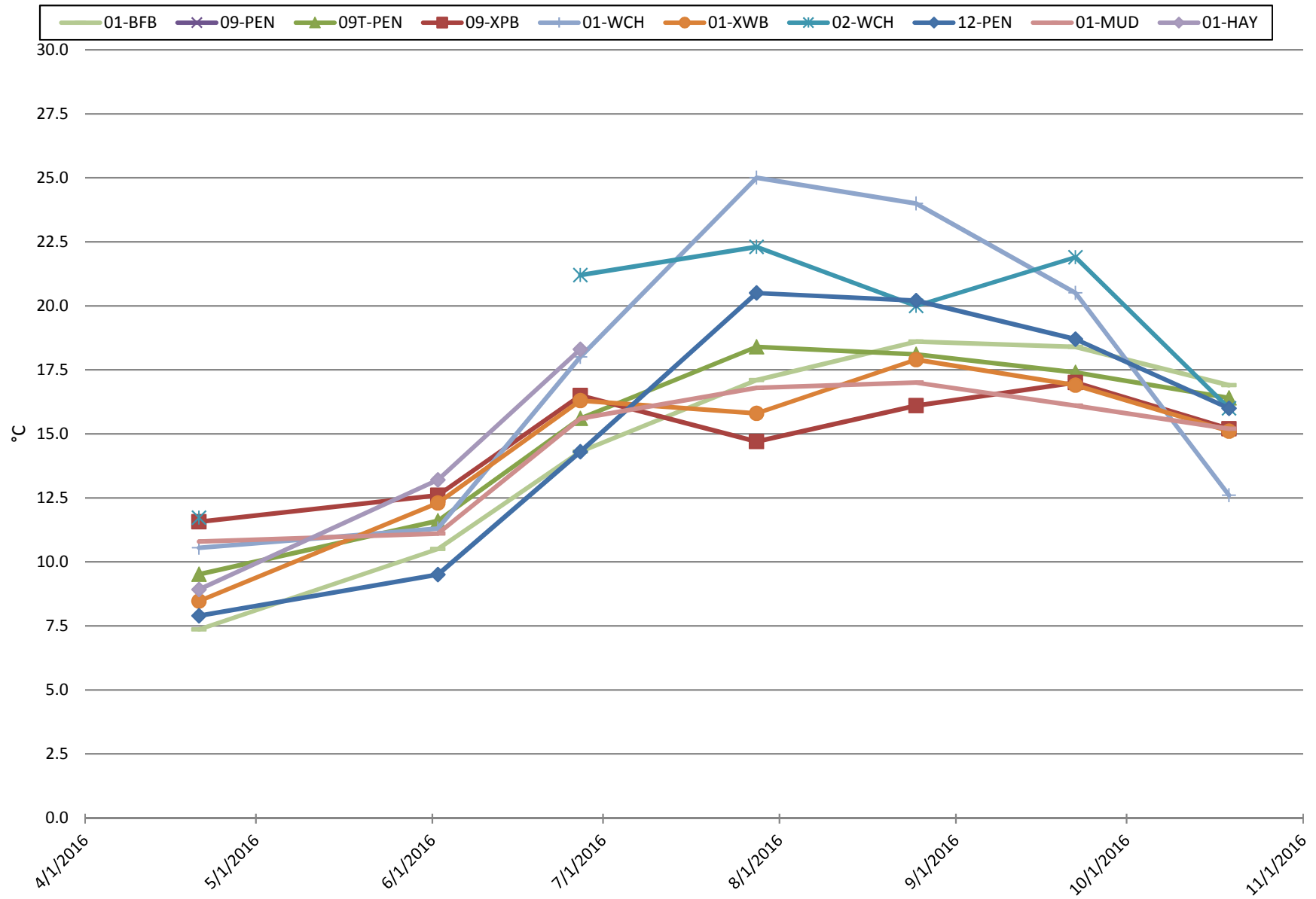
Groundwater Dry Weather Sampling - Dissolved Oxygen in 2016



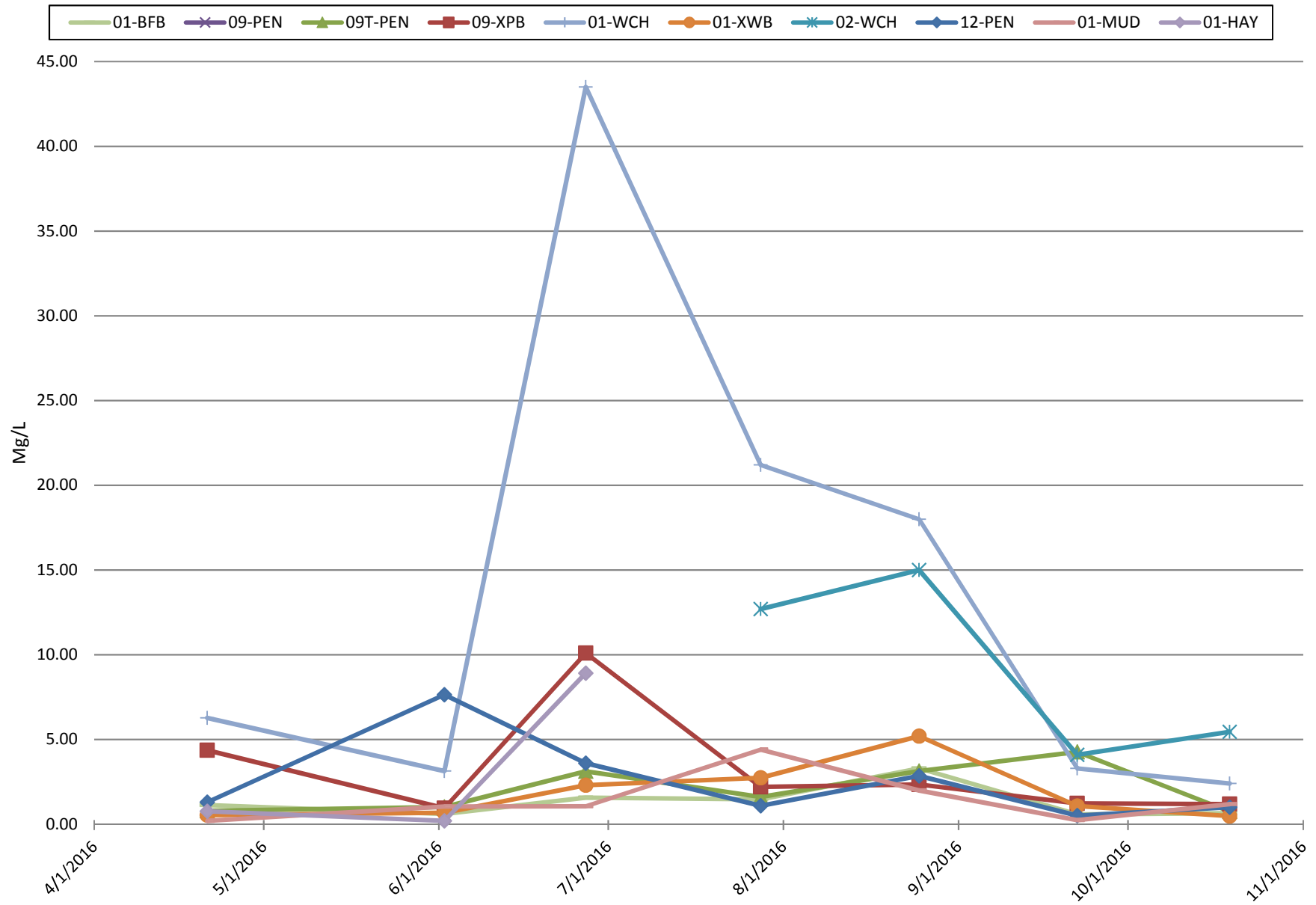
Groundwater Dry Weather Sampling - pH in 2016



Groundwater Dry Weather Sampling - Temperature in 2016



Groundwater Dry Weather Sampling - TKN Levels in 2016



Groundwater Dry Weather Sampling - Phosphorus Levels in 2016

