

QUITTAPAHILLA WATERSHED ASSOCIATION
Meeting Minutes
Virtually via Zoom
June 20, 2023

Present: Michael Schroeder, Bob Connell, Kent Crawford, Karen Feather, Kara Lubold, Lauren Rius

The meeting opened at 7:02 p.m.

1. Project & grant updates.

- A. Beck Creek Project 6 – Stream and Floodplain Restoration.** On June 16, 2023 the QWA submitted on behalf of Doc Fritchey Trout Unlimited a grant proposal written by Rocky Powell to PA-DEP's Growing Greener Plus program for \$494,449.00; On June 15, 2023 the Lebanon County Conservation District Board voted to approve a Agriculture Conservation Assistance Program (ACAP) grant for \$173,100 to support this \$934,146 project. A PDF file of the application is housed on the Studies & Documents page of our website (<http://www.quittiecreek.org/documents.html>, at present the top item with a date of 16 June 2023).
- B. Snitz Creek Project 4.** Post-meeting update: On June 23, 2023, Mr. Karinch told Russ Collins he will not be participating in the project. Russ Collins in consultation with Rocky Powell has decided to inform PADEP that Doc Fritchey Trout Unlimited is moving forward with the project. Whether this will negatively impact the project cannot be determined until after the two pipelines that transect the project area are flagged and surveyed and the topographic survey and design base maps completed.
- C. Killinger Creek Project.** On June 12, Russ Collins and Rocky Powell met with the landowners to present the Preliminary Design. Mr. Huber has signed off on the design for his property. Mr. Burkholder has requested a second meeting, scheduled for June 30, 2023 to discuss the benefits of the project prior to signing off.
- D. Bachman Run Project.** Preliminary channel alignment and buffer design was approved by landowners. Preliminary Design moving forward. Rocky Powell contacted Mr. Horst the largest landowner along the project area. He confirmed that Mrs. Bachman's Property is up for sale at a Public Auction scheduled for June 24, 2023. He indicated that whether her property remains a part of the project will depend on the new landowner and their willingness to participate. He confirmed he would keep us updated on the results of the sale.
- E. Possible Snitz Creek Project.** Mike reported on an email exchange with the owners of a farm along 700 feet of Snitz Creek in W. Cornwall Twp and Cornwall Borough who are interested in having stream restoration work done. Further details will be forthcoming.

2. Monitoring Program Update.

- A. Kent reported on the results of our recent monitoring efforts. He did so before the meeting by circulating a 4-page document titled, "Recap of Water-Quality Sampling Quittapahilla Creek Watershed, May 24 and 25, 2023," appended to these minutes in **Appendix 1**. Kent summarized our findings, his interpretation of those findings, and recommended several steps moving forward, including (a) checking the velocity meters, (b) servicing the stream gauging stations, downloading data, installing new batteries, etc.
- B. Kent also reported that a study undertaken by two Environmental Science majors at Lebanon Valley College Jessica Koch and Evelyn Dyer to generate a longitudinal temperature profile of the Quittapahilla mainstem has yielded some revealing and potentially important findings. Kent noted that these same two students were also awarded scholarships by The Lebanon Valley Conservancy (see <https://lebanonvalleyconservancy.org/scholarship/>). He expects their final report to be completed soon, at which time he asked that it be posted on the QWA website. It was suggested that they be invited to offer the QWA an oral presentation of their findings, and Kent said he would invite them to do so.

3. Summer 2023 Internship Program Update

- A. Kara reported that the internship is going well from the perspective of TLVC's administration of the grant, developing pay sheets and the like.
- B. Mike reported on three expenditures from the QWA bank account for equipment for the interns:

\$46.63 300-ft. measuring tape (Kent reimbursed)
 \$296.78 Ilyssa McLaughlin waders (Ilyssa reimbursed)
 \$296.18 Hannah Horengic waders (Hannah reimbursed)

 \$639.59 total expenses May 2023

4. Treasurer Report. Mike, as Acting Treasurer, reported financial expenditures and balances in our M&T Bank account from October 2020 to the present date as follows:

\$3,969.07	10/5/20	account balance
-\$579.47	9/28/20	monitoring equipment (Kent)
-\$46.63	5/30/23	300-ft. measuring tape (Kent)
-\$296.78	5/31/23	Ilyssa McLaughlin waders
-\$296.18	5/31/23	Hannah Horengic waders

\$2,750.01		account balance as of June 20, 2023

5. Outreach & Education. Mike and Bob reported a very successful day at Historic Old Annville Day, with lots of community interest in our work. Our sign-up sheet, now in Mike's hands, yielded quite a few names of people expressing interest in our work and our

meetings. Bob noted that people especially asked about our website, suggesting that a simple half-page handout or business card with a QR code and the URL spelled out would be helpful. Another common question was, “How’s the Quittie doing?” Bob also noted that the LCDC’s Katie Hollen’s watershed model was a real hit with the kids, which then drew in the parents. Joseph Connor of DFTU was also thanked for his efforts.

6. **Leb Co Stormwater Consortium Update.** Mike noted that lots of trees have been taken down and earth moved in the floodplain between the Hazel Dike and the 22nd Street bridge in North Cornwall Twp, which means that the construction project that Bryan Hoffman and the LCSC have been talking about for so long has finally begun.
7. **Start meeting in person again at the Annville Town Hall?** After discussion, consensus was reached that we should try to meet in person in the Annville Town Hall for our meeting of Tuesday, August 15. Mike will ask the Township. The suggestion was made to meet in-person quarterly, for each season – such as August, November, February, and May.
8. **Matters arising.** Kent noted that Lebanon resident D.M. is a contributor to the Bay Journal Fund, and that we might consider reaching out to them to solicit interest in our work here locally.

Respectfully submitted,

Michael Schroeder

Secretary Pro Tem

Appendix 1. Recap of Water-Quality Sampling in the Quittapahilla Creek Watershed, May 24 and 25, 2023

By Kent Crawford

On May 24 and May 25, 2023, our group of volunteer monitors conducted our first water-quality sampling for the Quittapahilla Creek Watershed. We had great participation from our volunteers with 6 individuals participating.

- David Ethridge
- Howard Bixler
- Mike Schroeder
- Bob Connell
- Katie Hollen
- Kent Crawford

A big THANK YOU to these volunteers. The volunteer group proved to be quick learners and quite competent in carrying out their monitoring activities.

We sampled all six established monitoring sites:

1. Quittapahilla Creek at Garfield Street
2. Quittapahilla Creek at Palmyra-Bellegrove Road
3. Snitz Creek at Dairy Road
4. Beck Creek at Bricker Lane
5. Bachman Run at Louser Road
6. Killinger Creek at Killinger Road

We sampled the two mainstem sites on Wednesday, May 24 and the four tributary sites on Thursday, May 25.

Water-Quality Sampling

I am particularly proud of our water-quality sampling efforts. We followed the prescribed protocols to the letter. The samples were collected from the main flow of the stream at mid depth. We rinsed each bottle three times with stream water, being careful to avoid the surface film. Our preservations were done quickly and according to protocol. There was one TOC sample that had a bubble in it, so we did that collection over. The filtrations also went well. In this case, we did our required rinses with ultra-pure water, then with native water. The sampling was done at low flow with very little suspended material in the water, so none of the filters clogged. The samples were cooled with ice packs and placed in a cooler for delivery to the lab. There was a slight glitch at the lab because we were using an outdated sample submission sheet. But, Denise Greenwalt at the DEP laboratory stayed late after work and helped with that issue and the samples went directly into the DEP refrigerator to be processed starting the next day. All good!!

Not sure when the analyses from the lab will be ready. Probably will take a few weeks for some of the parameters. I will keep you posted.

Field Water-Quality Measurements

Our multi-parameter water-quality sonde calibrated nicely and performed well on both days. Thank you DEP for the loan of this valuable instrument.

Here is a summary of our field readings taken from the water-quality sonde:

Station	Date	Time of sampling (EST)	Water temp. (°C)	Specific conductance (µS/cm)	pH (pH units)	Dissolved oxygen (mg/L)	Dissolved oxygen (% saturation)
Q1	5-24-23	0930	16.0	718	7.92	9.68	98.3
Q2	5-24-23						
S1	5-25-23	0915	14.2	588	8.14	9.42	92.4
BK1	5-25-23	1014	16.1	639	8.15	12.66	128.1
BM1	5-25-23	1120	14.2	653	7.95	10.8	105.4
K1	5-25-23	1218	14.9	627	7.88	10.7	105.3

Somehow, I cannot locate our field meter readings for station Q2. Perhaps this sheet blew away when we were at Snitz Creek the following morning and the wind kicked up. Katie, is this a possibility?

So, let's look at the data. Specific conductance values were high at all stations. Values for pH were above 7.0 (7.0 is neutral). Dissolved oxygen concentrations were near or larger than 100% saturation at all stations.

Test question number 1: Specific conductance values for Kettle Creek on May 24 were about 60 µS/cm. In the Brandywine Creek, the specific conductance values were around 360 µS/cm. At White Clay Creek in Chester County, the reading was 350 µS/cm. **Why are the specific conductance values so high at our Quittapahilla Creek Watershed stations? Are our readings in error?**

Test question number 2: We have acid rain impacting the entire state. We have the city of Lebanon sitting at the head of the watershed. We have lots of plant growth and algae in the creek. **Shouldn't the pH values be more acid (less than 7.0)?**

Test question number 3: We are getting dissolved oxygen percent saturations values greater than 100 percent. **How is it even possible to get DO values greater than 100% saturation.**

Stream Discharge Measurements

We did streamflow measurements at each of our sampling sites. We know that water quality in a stream changes as the streamflow changes, so it is pretty important to measure the streamflow. How good are our measurements? During the May 24 and 25 period, the discharge (Q) for the Quittapahilla Creek at the USGS gaging station at Palmyra-Bellegrove Road fluctuated slightly around 44 cubic feet per second (cfs). We can use that number to estimate the discharge at other locations in the Quittapahilla Creek Watershed. We simply set up a ratio as follows:

$$\underline{Q \text{ at station A (Quittie at P-B Road)}} = \underline{\text{Drainage area at station A (Quittie at P-B Road)}}$$

Q at station B (our sampling location) Drainage area at station B (our sampling location)

We know the drainage area at both stations A and B and we know the discharge at Palmyra-Bellegrove Road from the USGS web site. The only unknown is the discharge at station B. Solving for discharge at station B results in the following information:

Monitoring location	Drainage area at monitoring location (mi ²)	Discharge at USGS gage station (cfs)	Calculated discharge based on drainage area (cfs)	Measured discharge May 24 or 25, 2023 (cfs)
Quittie at P-B Road	74.2	44	--	77.9
Quittie at Garfield St.	32.1	--	19.04	Lost data sheet
Snitz Creek	12.4	--	7.35	4.7
Beck Creek	7.9	--	4.68	2.7
Bachman Run	7.3	--	4.32	2.7
Killinger Creek	10.8	--	6.40	1.8

These data are puzzling. For four of the five stations, our measured discharge is much less than the calculated discharge. But, for the Quittapahilla Creek at Palmyra-Bellegrove Road, our measured discharge is much greater than the actual discharge at the USGS gauging station. It seems that our velocity meter is turning too slowly when it is in slow-moving water. This is plausible because there is a magnetic contact that causes the “click” in the headset. This magnetic contact could be slowing the revolutions of the velocity meter cups for slow moving water. This would explain our low discharge readings for the four tributary streams. But, why would we get the much larger volume of flow at the Palmyra-Bellegrove Road location than the actual USGS discharge???

Another puzzle is Killinger Creek. We measured a very low flow (1.8 cfs). Not far downstream from our monitoring location on Killinger Creek is the Pennsy Supply Quarry (Millard Quarry). The limestone at this location is underground. In order to recover the limestone from this site, the quarry digs a deep hole. Near continuous pumping of groundwater is required to keep the quarry dry enough for the company to mine the limestone. This pumping creates a cone of depression in the groundwater table (figure 1). Because of this, Killinger Creek goes dry in the vicinity of the quarry. My guess is that the cone of depression reaches upstream as far as Killinger Road (where our monitoring site is located) and therefore, much of the water in Killinger Creek is flowing underground at this location. Our monitoring site is about a mile upstream from the quarry.

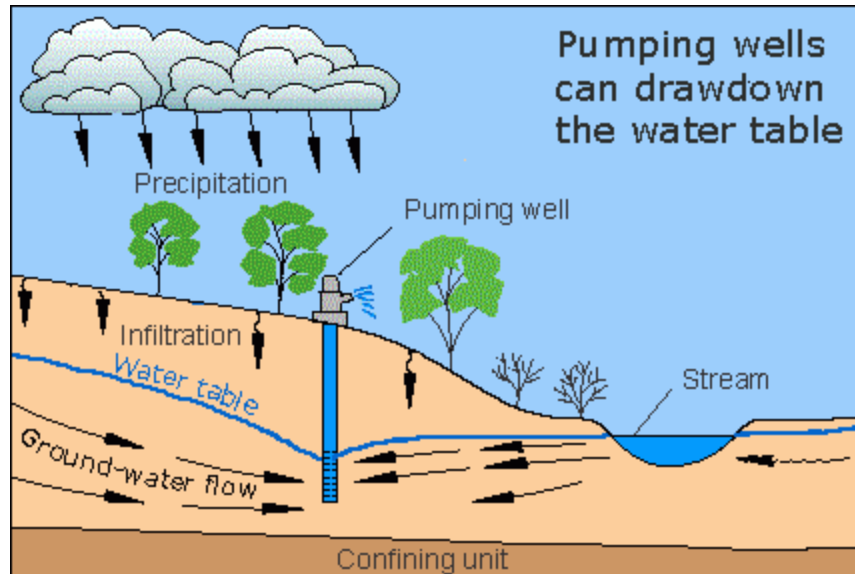


Figure 1.-- Illustration showing cone of depression in the groundwater table around a well that is being pumped. You can see that continuous pumping or large water withdrawals could actually impact the flow of water in a nearby stream. (Credit: USGS)

The bottom line is that we need to improve our streamflow measuring program. Here is a suggestion. Let's conduct some tests to evaluate the performance of our velocity meters. Here are some ideas:

1. Conduct three streamflow measurements at the Palmyra-Bellegrave Road. Use a different one of our three velocity meters for each measurement. Compare these results with each other and with the actual flow as measured by the USGS stream gaging station at this location.
2. In December of 2021, Steve Vegoe and I did a comparison of our three velocity meters. We placed each of our three meters in the exact same location and counted clicks for 60 seconds. The results were encouraging. All three meters returned very similar (within 5%) velocity readings. So, let's do this again, but this time, do the test in a location where there is fast velocity and then do it again in a location where there is slow velocity.
3. Let's actually determine the location where the Killinger Creek goes dry. We will need to walk the stream to see the point where water is no longer flowing. The idea is to see how close to our monitoring location (K1) the stream goes dry. This will give us a better idea as to whether the cone of depression may be extending all the way to Station K1. (Side note: If we really wanted to define the cone of depression, we would drill a number of wells and measure the depth to water in each well.)

I will be in touch with our volunteer group to set a time to conduct these tests.
So, I am very pleased with our water-quality sampling efforts. I am not so pleased with our streamflow measurements. We will work on getting better.