



Spring Creek Watershed Association Meeting

January 17th, 2017

7:30 AM to 9:30 AM

Patton Township Municipal Building
100 Patton Plaza, State College PA 16803

Meeting Minutes

1. 7:30 AM to 7:40 AM: Welcome & Introductions

Attendees: Lexie Orr, Bill Sharp, Judi Sittler, Rob Cooper, Bob Vierck, Bob Eberhart, Barbara Fisher, Todd Giddings, Ann Donovan, Jim Gazza, Bob Carline, Cory Miller, Dave Smith, Dave Yoxtheimer

2. 7:40 AM to 8:30 AM: Monthly Educational Topic: Dave Yoxtheimer: "The Geology and Water Resources of the Spring Creek Watershed"

Carbonate and dolomite bedrock → karst geology

About the Project

- The WRMP began in 1998 as an outgrowth of SCWA
- 23 locations monitor baseflow quality, 16 monitor quantity, and 18 monitor temperature
- Mostly funded by local municipalities and water and wastewater authorities
- The WRMP provides baseline data that helps us interpret changes

Geologic Time

- 500 MYA: PA was near the equator, covered by shallow sea → carbonate deposition
- 420 MYA: microcontinent joins and form mountains → siliciclastic deposition (shales and sandstones laid on top of carbonates)
- 260 MYA : collision with northern Africa → Appalachian Mountains
- Valleys – carbonate, Hillslopes – Shale, Ridges – Sandstone
 - Slightly acidic water runs down the slopes ($\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{carbonic acid}$) wears away at limestone
 - 50% of aquifer recharge is a result of mountain runoff

Groundwater Recharge Mechanisms in Spring Creek

- Direct infiltration from precipitation
- Concentrated stormwater runoff from valley into sinkholes
- Concentrated surface water runoff from uplands into sinkholes
- Diffuse surface runoff from uplands
- Streamflow losses
- Leakage from underground pipes

Slab Cabin Run

- Sinks into Sinkhole and pops back up in a series of springs



Carbonate Bedrock and Groundwater Flow

- Fractures and bedding planes allow groundwater to flow
- Want to drill well that intersects a zone of fracture concentration
- If tied into surface water flow, you may end up with surface water characteristics that are not ideal for drinking water

Karst Geology

- Soluble carbonate bedrock dissolves over time → caves, sinkholes, enlarged fractures, conduits

Water Budget

- 1/3 precipitation eventually reached aquifer
- 86% of Spring Creek's baseflow is groundwater
- Big Spring – 14.5 million gallons / day
- Most of our drinking water comes from groundwater
 - Daily groundwater pumping: ~16 million gallons per day (~10% of streamflow)
- Birmingham Thrust Fault Outcrop (formed when Africa and N America collided) – from Bellefonte to Birmingham – funnels water from Scotia Gamelands and allows it to flow to the surface at the Big Spring
- Groundwater basin extends 29 sq miles past surface water basin

Correlating WRMP Data to Geology

- Karst geology → rapid groundwater flow
- Two USGS Groundwater Wells (in Scotia (CE 118) and behind Todd's Office (CE 686))
 - CE 118 data shows smoother water depth level compared to data from CE 686
 - CE 118 is in Nittany Dolomite, which is more shallow soil with fractures that allow surface flow into groundwater much quicker
 - CE 686 is deep well-drained soils, so surface water takes much longer to reach groundwater

Discharge Data

- Low vs. High flow Event yields
- Basin Yield = given flow on day / area of watershed
 - Spring Creek at Milesburg: $(230 \text{ cu ft/s} / 175 \text{ mi}^2) = 590 \text{ gallons}$
 - Large variation within sub basins - Lower Logan Branch exhibits on average 1.83 -3.4 cfs/mi, while the Lower Thompson Run can exceed 9 cfs/mi

Water Temperature

- Biological and chemical water factors → aquatic health
- Controls: proximity to streams, streamside veg, human activities
- Logan Branch – steady temperature; Buffalo Run – reflects more of air T (less groundwater flow)

Karst Concerns

- Groundwater can be impacted in a relatively short amount of time



Questions on Presentation

- Barbara Fisher: Can we benefit from the USGS study that was done years ago?
 - Dave: The USGS Study's aim was to create a conceptual model of the Spring Creek Watershed. They had intended to create a coupled surface and groundwater model; however, this was very complicated and the model never quite lined up quantitatively.
 - Todd: While it was not widely publicized, the USGS did complete the model. Dennis Brissler was invited to present the model. Dennis does have a video of the model that shows the impact of contours and changes in aboveground inputs... available on website. Last year, it was presented at the Groundwater Conference.
- Judi Sittler: Hanson Quarry digging deeper near Spring Creek: Public Hearing Friday Jan. 27th Mt Nittany Middle School. Could Spring Creek just disappear?
 - Dave: If they go deep enough they will have to start de-watering. They would have to reroute whatever streamflow they took back into the stream.
 - Todd: Fish Hatchery used the de-watering pumps to help feed the fish with cold water. To do this they made a very deep holding pond and pump frequently to maintain temperature then let the water splash out pipe to aerate it before it gets to the fist. Turns out the Hanson Quarry has very similar geologic structure as the Bell Mine, which is a good thing. Steeper bedding isolates it from going deep under the stream. A quarry will do everything they can to minimize de-watering.
 - Bob V: They've spent a huge amount of money researching this (4-5 years)
 - Cory: Quarry operators have to maintain a hydrologic balance. Water suppliers do not. What is more concerning is increasing the number of people drinking water upstream and putting that back down stream.

3. 8:30 – 8:45 AM: Association Business

a. Atlas Progress Report

Bob Vierck: Lexie presented revised version of website that will be demonstrated tomorrow at the commission meeting with the hopes of taking the website live. There is one new article on Wetlands by Rob Brooks. Progress seems to moving more quickly.

Barb: We need more articles! We only have nine, and we had originally been interested in 52 articles. We need that scientific base.

Lexie: DEP EE Grant was submitted.

Bill Sharp: Bill S, Bob C, Bob V and Lexie have formed a website committee to work on changes.



b. Watershed Management Plan

Lexie: DCNR C2P2 Grant as a possible source of funding.

Todd: How do we keep watershed management plan on the Agenda of the SCWC? Former DEP secretary David Hess, made a presentation on watershed management plans. "You can't manage what you don't measure." Puts WRMP data in a central position. Maybe the idea of a watershed management plan is unpopular because they view it as mandatory not voluntary. However, everything in State Plan is voluntary to adopt.

Judi: Where does MS4 fit in?

Cory: If the watershed plan is written well, it should help MS4. It should also help a lots of separate "boxes" talk to one another.

Barb: We are all in agreement that our watershed is very vulnerable. We need to plan public forums where all stake holders are involved.

Todd: State Water Resources Act 220 outlines what needs to go into a Watershed Management Plan. Spring Creek became top candidate (critical water planning area) in the upper Susquehanna basin because of the population stress and not being downstream of anywhere.

Judi: TU chapter got NFWF funding because it is orange/red on the map, which means it is a high risk area due to urban impact.

Bill S: The primary function of the commission is to develop that plan. I'm liaison between commission and officials.

Bob V: What kind of company or consultant do we need?

Cory: We have all of the expertise we need. What we need are water authorities, sewer authorities, municipalities, really big water users, and environmental groups. Where is our water, where does it go? How do we manage it? DEP regulations allow us to suck out as much water as we want and can put it back wherever. Big Spring Texas (karst geology) relied on groundwater like us. The town kept growing but the climate changed a little, and they ran out of water. People didn't care until it impacted them, not the stream. If we keep doing what we are doing, we could end up the same.

Judi: In terms of presentations, what got TU involved in SCWA, is that you asked us to come and make a presentation to the group? How bout we get the townships to come make presentations?

Todd: Ferguson Township is undergoing its first review of sourcewater protection ordinance. This could be an example of how other municipalities can protect the



SPRING CREEK WATERSHED ASSOCIATION

A grassroots stakeholder initiative

watershed. In a month or two, Ferguson township officials should be ready to come here and talk about this.

Bill: We will have them in mid-year... Next meeting is February 21st, what can we do in the meantime to start moving on the watershed management plan?

Cory: If it's a sustainable plan, we don't need outside funding. UAJA has the funding.

Todd: If we get funding from outside of ourselves, people will feel like the funding source will be telling us what to do.

Cory: Municipalities need to buy in. UAJA could write a watershed plan, but if it doesn't have buy in from everyone else it won't be effective. If we say we'll fund the whole thing just show up and do the work, would that help?

Rob: Everyone has full-time jobs. That's part of the problem.

Dave Smith: I'd argue that its part of our jobs.

Cory: I think you can. Take big players. You need to allocate some time to talk about it and review it at meetings.

Bob V: The problem with not hiring a consultant or getting a grant is that there is no one focus. If you don't do that, we'll continue to fumble through.

Cory: We should write a plan, even if we don't get the grant.

Todd: DEP hired a consultant but when you get down to what really counts, a consultant's work will be too generic.

Rob Cooper: What is the purpose of the watershed plan? I had the understanding that while this watershed is complex and unique, the data shows that baseflow has not changed. The water authorities of PSU have reduced its consumption. SRBC map that shows state college as red is not accurate data. A pollution prevention plan could be important, but I'm just not sure it's a water quantity problem.

Cory: How can we keep growing and not increase how much we take out of the quifer? Right now we are making the assumption that it will always be there.

Bill: If we get commitment from UAJA and the water authority than we can move forward. Denny has been beginning to voice that he wants to see a watershed management plan phase two. Let's make it our assignment to think this thing through in a more organized fashion and see if we can get permission from the SCWC.



4. Approval of Minutes

- a. Bob Vierck moved to accept the minutes from the November 15th meeting. Bob Eberhart seconded the motion. The minutes were unanimously approved.

5. Partner Updates

- a. ClearWater (Lexie Orr) - Centred Outdoors project was funded to ClearWater Conservancy through the Centre Inspires grant. There will be weekly outings all summer long at nine locations in Centre County. Doctors will also be writing prescriptions for patients to get outside.
- b. Trout Unlimited (Judi Sittler): TU's second annual Family Fishing Picnic will be June 11 at Tussey Pond. Last year, approximately 300 families attended. Activities will include, enviroscape, macro ID, fishing lessons and a picnic.
- c. Barbara Fisher: Chesapeake Conservancy just released a 1x1m LiDAR dataset for Clinton and Centre County that provides very accurate data for both stream flow patterns and gaps in riparian buffers.
- d. Todd Giddings: Ferguson Township is drafting a sourcewater protection overlay ordinance.

6. Next Meeting: February 21st, 2017

- a. Judi moved to adjourn the meeting. Bob Vierck seconded the motion. The meeting was adjourned at 9:36AM.