Use and Preservation of the Water Resources in the Saucony Creek Watershed

A watershed is the area of land that drains into a body of water such as a river, lake, stream, or aquifer. It is separated from other watersheds by high points in the area such as hills or slopes. It includes not only the waterbody itself, but also the entire land area that drains to it, the so-called "area of contribution".

The Saucony Creek Watershed (SCW) is located in northeastern Berks County, in the middle of the "farm belt". The area is blessed with very fertile soils, a product of the underlying carbonate geology. The soils and karst features produce a high rate of groundwater recharge, which is strongly affected by activities on the surrounding landscape. The watershed is mostly agricultural, dotted with small family crop and livestock farms. The watershed also supports three community drinking water systems, i.e., Lyons Borough, Maxatawny Township, and the Borough of Kutztown.

The primary focus of this material is the complex task of how to properly manage the use and the preservation of our local water resource, the Saucony Creek Watershed. Most of this information deals with the quantity and the quality of the water supply and the need for risk assessment in terms of each proposed development covering the open farmland needed to recharge the aquifer.

1. In January 2016, I learned that New Enterprise Stone & Lime (NESL), the owners of the Kutztown Quarry, had requested a revision of its dewatering permit from PA DEP. I read the

12-9-2015 "Kutztown Quarry Pumping Evaluation" report prepared for the Kutztown Borough (Kutztown) by AI Guiseppe of Spotts, Stevens, and McCoy (SSM). This SSM report estimated that "with a 20.5 square mile contribution area, the amount of groundwater available to the Borough wells through the local aquifer is estimated at 10.4 million gallons per day (MGD)." From the time I read Mr. Guiseppe's December 2015 report on our watershed's recharge capacity and withdrawal limits, I have looked for information that would provide a more comprehensive view of how to properly management our invaluable water resource.

2. In 2017 there was another hydrological study of our watershed area prepared by SSM. This report was funded by the Willian Penn Foundation for Kutztown Borough, Berks Nature, Stowell Associates, and the Partnership for the Delaware Estuary. This report, "Saucony Creek Watershed Restoration: Groundwater Evaluation, 8-2017", also estimated that the one-in-ten year recharge rate of our groundwater basin to be 10.4 million gallons per day (MGD) or 312.0 million gallons per month (MGM). SSM again listed the watershed contribution area as 20.5 square miles. (see link below).

https://www.schuylkillwaters.org/sites/default/files/Saucony%20Creek%20Watershed%20Restoration%20Final%20Report.pdf

3. The Delaware River Basin Commission (DRBC), using a 1-in-2 year annual base flow recurrence interval, estimated the available groundwater in our local aquifer to be 14 million

gallons per day (MGD) or 420 million gallons per month (MGM). DRBC lists the watershed contribution area as 20.3 square miles. (Note: The shorter interval length used in the DRBC evaluation may be less vulnerable to the volatility of the weather and the increasing impacts of climate change.)

4. The 2017 docket, filed by SSM and approved by the DRBC, permits the Kutztown Borough to withdraw water from the local aquifer up to 62 million gallons per month (MGM). Using the 2021 data from the Kutztown's Water/Wastewater Committee minutes, Kutztown withdrew 18 to 23 million gallons per month (GPM), well within its permitted limits.

5. Prior to the PA DEP's permit revision in 2017, NESL was permitted by DEP to dewater from the local aquifer at a maximum rate of 5,000 gallons per minute (GPM) or 7.2 million gallons per day (MGD) or 216 million gallons per month (MGM). At this rate NESL could have withdrawn 69% of the available groundwater recharge during a 1-in-10 year recharge rate (as estimated by SSM) or 51% during a 1-in-2 year recharge interval (as estimated by DRBC).

6. The 2017 DEP revised permit allows NESL to dewater from the local aquifer at a maximum rate of 8,000 gallons per minute (GPM) or 11.52 million gallons per day (MGD) or 345.6 million gallons per month (MGM). This is an increase of 62% in the maximum withdrawal rate of available groundwater. (Note: The 2017 revised DEP permit also allows for an additional deepening of the mining pit floor by 75 feet, which could lower the water table and negatively impact the recharge capacity further.)

7. With NESL dewatering at the maximum permitted rate of 8,000 gallons per minute (GPM), the entire estimate by SSM of the watershed's groundwater recharge capacity is being exceeded by some 11%, i.e., 312 million gallons per month (MGM) capacity of the aquifer vs. 345.6 million gallons per month (MGM) usage by NESL. With NESL dewatering at the maximum permitted rate of 8,000 gallons per minute (GPM), the estimate by the DRBC of the watershed's groundwater recharge capacity is being used at the 82% level, i.e., 420 million gallons per month (MGM) usage by NESL.

8. At this time, the maximum permitted withdrawal of water from the local aquifer by just the Kutztown and NESL is a total of 62 MGM (Kutztown) + 345.6 MGM (NESL) or a total of 407.6 MGM. The range of estimated recharge capacity is from 312 MGM (SSM) to 420 MGM (DRBC).

9. Kutztown took a position opposing the DEP's approval of the increase in the maximum dewatering rate for NESL's quarry in 2017. The residents of Kutztown Borough and Maxatawny Township requested that DEP hold a public hearing on the matter. Testimony against the increase of permitted dewatering at the quarry was from both the residents of the area, local and State officials, and science faculty from Kutztown University. Although a formal report of the public meeting was prepared by DEP, there were no accommodations to the concerns raised against increasing NESL's permit to dewater. (Kutztown again took a position more recently opposing DEP's approval of the renewal of the NESL's NPDES permit.)

10. The calculations of the watershed's recharge capacity by SSM and by the DRBC are different. However, it appears that the DEP approved the increased dewatering limit for NESL in 2017 without consideration of either of these professional estimations of the local aquifer's recharge capacity. The dewatering allowance for NESL is currently between 82% and 111% of those two estimated recharge capacities for the local aquifer.

11. The 60% increase in the amount of dewatering permitted to NESL by DEP in 2017 is a continuing problem. NESL should not be permitted to monopolize the use of the local water supply, nor should it be allowed to endanger the safety of the water supply itself by excessive dewatering. But, until the DEP alters or rejects the NESL's current dewatering permit, the surrounding municipalities should be cautious in their water withdrawals and should not expand developments any further until a formal hydrogeological study of the watershed is completed. The impact on the aquifer of both increasing amounts of water withdrawals while at the same time decreasing the number of acres of open farmland must be professionally evaluated and limits must be set to protect the watershed!

(Note: NESL's geological study in 2015 claimed that its water source was separate from Kutztown's water supply. However, NESL's claim is not considered substantive for different reasons, particularly due to the fact that the water level records for Kutztown's wells indicate a direct link to when the quarry is pumping water from the mining pits. See examples from Kutztown's Water Department records of water levels in Wells #1 & #2 from the dates of 9-1-2008 through 12-28-2016).

12. Information in this report regarding the quality of this water supply is only mentioned in relation to the presence of the chemical pollutant, Perchloroethylene (PCE). NESL performs regular tests for pollutants, including PCEs, in water from its monitoring wells and from the discharge pipe into the Saucony Creek. It is noted that since the 60% increase in dewatering by NESL beginning in 2017, levels of PCEs are appearing more frequently and at higher levels than before in the test results from monitoring well #6a. Monitoring well #6a is the closest NESL well to the Superfund site of the toxic chemical spill of PCEs near the northwestern corner of Topton.

Kutztown and NESL have a private contract called the Water Supply Agreement (WSA), which requires regular reporting of well levels and regular testing for toxic pollutants (metals and volitive organic compounds (VOCs). There is a stipulation that when the Kutztown wells get down to a certain level or if pollutants exceed the PA Maximum Contaminant Level (PA MCL), or a separately agreed upon maximum level, the quarry must stop pumping for a set time and then the water must be retested.

The WSA agreement stipulates that the level of PCE from the discharge pipe should not rise above 50% of the PA MCL for PCE. (The PA MCL for PCE is 5.0 ug/L (micrograms per liter). (50% of the PA MCL for PCE is 2.50 ug/L). Kutztown monitors the records of the water tests done by NESL during the year in order to track the PCE levels at the different monitoring wells as well as from the discharge pipe. When the PCE levels from the discharge pipe rise above 50% of the PA MCL, then additional provisions of the WSA apply.

Looking at the water testing records from the discharge pipe from 2018-2021 posted on the Kutztown Borough website, I noticed an increase in the frequency of PCE levels from the discharge pipe which were "at or over" the 2.5 ug/L limit. In 2018, there was 1 reading out of 17 tests--at or over the limit. In 2019, there were 2 readings out of 24 tests--at or over the limit. In 2020, there were 6 readings out of 24 tests--at or over the limit. I also noticed an increase in higher PCE levels recorded over the years from 2018-2021. This change in pattern could be an indication of the Topton Plume being pulled into our aquifer at a faster pace as a result of the 2017 revised DEP dewatering permit for the quarry in 2017. (Note: The PCE levels at the discharge pipe were "None detected" (ND) for the end of 2016 and range from ND to 3.00 ug/L for the first half of 2017—from NESL Quarterly Water Monitoring Reports.)

Reviewing different required water test reports of the monitoring wells around the Kutztown Quarry, I noticed an irregular increase of PCE levels from monitoring well #6a. In 2018 and 2020, there was 1 reading out of 4 tests each year with a level above 5.0 ug/L (PA MCL for PCEs). In 2021, there were 3 readings out of 4 test that were above the 5.0 ug/L MCL. (Note: The PCE levels for the end of 2016 were .54 to .73 ug/ for monitoring well #6. The PCE levels for the first half of 2017 were from ND to 0.67 ug/L. for monitoring well #6—from NESL Quarterly Water Monitoring Report)

I found two maps that showed the quarry's monitoring wells. One map from Maxatawny Township was small, but included some road names. The second map was from the SSM report on the Saucony Creek Watershed in 2017. I was looking for the location of monitoring well #6a in relation to the hazardous site of PCE spill on the northwestern corner of Topton. From the two maps, I could determine that monitoring well #6a is the closest test well to the northwestern corner of Topton, the site of the toxic spill. (Note: Monitoring well #6a is located along the left side of High Rd. as you approach Hinterleiter Rd. when driving from Topton.)

The PCE levels appear to be rising in our aquifer since 2018 which coincides with the significant increase in GPM being pumped from the aquifer as permitted by NESL's 2017 revised dewatering permit. The PCE levels changed in how often the higher levels are recorded and in how high the recorded levels are on tests from both the discharge pipe and from the monitoring well #6a. This observation and concern about the rising levels of PCE in monitoring well #6a have been formally communicated to PA DEP by the Borough. The DEP responded by requiring NESL to increase its testing frequency to monthly rather than quarterly. No further action by DEP has been taken.

13. From my readings I learned that an aquifer can be "stressed" by overpumping. Such stress over time can lead to the lowering of the water table, the formation of sinkholes, the underground water channels being diminished, diverted, or collapsing, and the aquifer itself "drying up". Once an aquifer has dried up or has become contaminated, there is no real way to undo the damage. Even with an enormous amount of money, it isn't possible to recreate the groundwater basin with its recharging water channels or to completely remove contaminates from the groundwater.

I contacted a DRBC Project Review Manager (8-9-21) and asked what percentage of water should be held in reserve to protect an aquifer from drying out. He responded that the

percentages weren't the same for each watershed due to different conditions. However, he provided the following estimate of how much water should be left (reserved) in the aquifer to protect it from drying out. "In the DRBC designated Southeast Pennsylvania groundwater protected area regulations, DRBC has determined that If net annual groundwater withdrawals exceed 75 percent of the 1-year-in-25 average annual baseflow rate for a subbasin, such a subbasin shall be deemed "potentially stressed." "Net" annual groundwater withdrawals include total groundwater withdrawals less total water returned to the groundwater system of the same subbasin.")

14. The problem with what I see as NESL's excessive rate of dewatering existed before Duke Realty's Logistics Valley Park (Long Lane and Rt. 222), a proposed development for a very large trucking hub in Maxatawny Township in 2020. Kutztown decided that if it provided Duke with the amount of water Duke requested, the current situation of overuse of the water supply could get worse. Duke decided to drill its own on-site water wells and asked to be permitted to withdraw 99,000 gallons per day (GPD) or 2.97 million gallons per month (MGM).

(Note: This request for 99,000 GPD was later reduced to a lesser amount of GPD, but Duke's development plans included a service design to distribute water off-site in the future.)

The problem remains that it is not yet known whether the Duke on-site wells will draw water from the same water source as Kutztown, NESL, Maxatawny, and Lyons <u>or</u> will the Duke on-site wells draw water from a different water source outside the Saucony Creek Watershed. A proper hydrogeological analysis needs to be completed to provide a science-based determination. It is also not yet known whether the Duke on-site wells will increase the rate of PCEs from the Topton Plume being pulled further into the watershed's groundwater.

(Note: Available digital maps of the Saucony Creek Watershed are not very detailed. But it looks as if most of the Duke property falls outside the wellhead boundary (Protection Zone III) except for a small portion on the western edge. Please remember that the boundaries of a surface watershed and groundwater recharge area can, but do not always, coincide.)

15. With the proposed development of Duke's trucking hub in Maxatawny Township, the 300 acres of open farmland will be covered with buildings, parking lots, and pavement. Most of the rain falling on those "developed" farmland acres will now become stormwater runoff. The usual amount of rain and snow from these same acres of farmland will no longer filter down through the ground to replenish/recharge the supply of groundwater. By reducing the amount of water that would filter down through the ground, the amount of water available in the underground reserves would also be reduced! What happens on the surface of the land effects the water in the ground!

(Note: The Saucony Creek Watershed is divided into three portions. The Kutztown/Maxatawny/ Lyons area lies within the "mid-basin" portion of the watershed. 66% of the "mid-basin" is used for agriculture, i.e., most of which is open farmland.)

16. Groundwater levels are determined by three interdependent factors: (1) how much water we use (take); (2) the amount of rain and snow each year; and (3) how much of that rain and snow

percolates through the ground to refill/recharge the underground water reservoirs. Groundwater depletion is primarily caused by overpumping and/or loss of "the area of contribution".

17. It is critical that the decisions for water resource management in the Saucony Creek Watershed area are based on scientific data and professional expertise rather than upon the expectation of making a lot of money by selling water or by approving developments that will take away open farmland. And it is critical that this scientific data be prepared by an experienced scientist (Geologist, Hydrologist or Hydrogeologist) from an independent firm, i.e., not a staff member of an engineering company used by, or paid by, a party with a vested interest. And finally, it is critical that the scientific analysis on the status of the watershed (e. g., the amount of open farmland land available, the amount of farmland to be lost/covered, the estimate of remaining capacity in the aquifer for additional sustained withdrawals, the levels of pollution in the water, etc.) be available for analysis by the municipal officials and residents prior to consideration of any preliminary plan or condition use for a proposed development which is to be located on open farmland.

In Conclusion:

All people and communities depend on clean water. The supply of clean water depends on the normal function of the natural environment and on the actions of members in the municipalities who share the governance responsibilities. All of us who live and work within the Saucony Creek Watershed rely on the same water source, the local aquifer. For the last few years, there has been a real concern about what will happen to our water supply, both in the present and for the future, with so many companies wanting water and, at the same time, wanting to build on the open farmland of the Saucony Creek Watershed.

Mismanagement and lack of information of natural resources is a widespread problem in our country. Water scarcity and water pollution are becoming serious financial burdens and real public safety concerns for municipalities. We, in the SCW, must never take our supply of clean water for granted. We must respect nature's rules and limits. We must make a risk assessment of all our decisions. A water supply, once depleted or contaminated, can't be fixed!

With limited growth available in Kutztown Borough and Lyons Borough, the open farmland in Maxatawny Township has become a target for all types of developers. The officials and residents of Maxatawny Township now carry the responsibility to protect the watershed's ability to recharge our groundwater supply sufficiently to maintain the viability of the aquifer. There will be many temptations to agree to these proposed developments, from an increasing tax base to offers to pay for township infrastructure projects. And there will be teams of lawyers from powerful companies overwhelming our rural governance boards with demands and threats.

I am sending you this summary of information that I have collected over the past seven years. I included information on the estimated capacity and usage amounts of the aquifer, the increased presence of PCEs in one of NESL's monitoring wells, the complete dependence of our underground water supply on open farmland, and the need for science-based analysis to support the proper management of the water supply.

I still oppose the revised DEP permit for NESL, because I find it to be excessive pumping from the aquifer's capacity. However, the development of warehouse and trucking hubs on open farmland is a much bigger problem. The warehouse developers need to use water and at

the same time their development will reduce the recharge capacity of the underground reservoir. The threat to the groundwater source of our water supply, via the loss of open farmland, is very real! I hope that you will use this information to protect our source of clean drinking water.

Sincerely, Lisa Ladd-Kidder, Resident of Kutztown Borough (Revb. 8-30-2023)