



**TOBYHANNA CREEK TUNKHANNOCK CREEK  
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**Water Quality of the Tobyhanna  
and the  
Delaware River Basin**

March 23 2015

Recently, there has been a number of newspaper articles about water quality in Pennsylvania. The search for natural gas is driving some of this interest and there is a grassroots movement to ensure high standards in the Poconos.

***Why all the fuss about water quality?***

By the middle of the last century, water quality on the East Coast hit a low point. The water quality of the Delaware River had deteriorated to where fish could not survive and shortages were common. The Elizabeth River in New Jersey was so polluted it caught fire and burned for three days.

But fortunately for all of us, this was the time of the environmental movement. There was a consolidated effort to make the environment a critical part of the American culture. In 1961, the Delaware River Basin Commission was created to attack the pollution in the river. In the early 70s the EPA and DEP are were formed, and a local movement defeated the Tocks island project.

Because of all this effort, the Delaware River recovered.

**Fast Facts about the Delaware River:**

- Main stem river is 330 miles long.
- 15+ million people (about 5% of the U.S. population) rely on the waters of the Delaware River Basin.
- Drains 13,539 mi<sup>2</sup> or 0.4% of the continental U.S. land area.
- Delaware River forms an interstate boundary over its entire length.

With the increase of population on the East Coast, droughts and floods have become a much greater and more serious issue. Millions of people in New York City, New Jersey and

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NYC Cannonsville Reservoir

December 20, 2001 at 6.5% of capacity

Everybody knows the need for clean water but the issues facing the Delaware River basin are much more complex.

When was the last drought:

- 2010 drought for two months.
- 2001 through 2002 – Drought Emergency.
- 1981/1982 and 1985 – Basin Wide Droughts.
- 1961 □ 1967 - worst drought in recent times.

When was the last flood: (flood stage is 20 feet above normal)

- 2011, the river at Trenton crested at 23 feet above normal.
- 2006, 25 feet above.
- 2005, 25 feet above.
- 2004, 23 feet above.

These floods did tremendous damage on the Delaware.

With the increase of population on the East Coast, droughts and floods have become a much greater and more serious issue. Millions of people in New York City, New Jersey and Philadelphia drink the water from the Delaware. It is estimated by the time our water from Tobyhanna reaches the Atlantic, it has been consumed 8 times.

### A day in the life of the Delaware River Basin:

Demand for water for energy is increasing. It takes about 2 gallons of water to create 1 kilowatt hour of electricity, and all that water has to come from the Delaware.

Water withdrawal in the Basin = 8.7 billion gallons a day. That is an incredible amount of water.

For example: ·753,000,000 gallons per day is going to New York City.

92,000,000 gallons per day is going to general use New Jersey.

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And we have not even talked about Philadelphia yet.

### Trends are worrisome.

Population and energy demands are pushing environmental issues in the wrong direction. Demands for housing and recreation are stressing the systems that maintain the aquatic life that purify the water. Construction on near creeks and streams has a negative impact on the riparian buffers and on which are the basis of the bio system (the bugs) that keeps the water clean.

The delicate balance that support the bio system starts in the high quality streams in the Poconos. The water quality in our streams affects the aquatic life and the lives of every living organism downstream. Efforts to keep the water clean at the beginning of the water column in in the headwater streams of the Poconos show huge payoffs at the end. For example, requiring companies to correctly operate sewage treatment plants, controlling contractors to prevent muddy runoff, and monitoring streams for pollution all help keep the water clean. It is much easier to keep water clean then to clean it once it is contaminated. **So to answer the original question:**



Tunkhannock Creek

environmental protection groups of Pennsylvania, New York, New Jersey, and Delaware.

### Why all the fuss about water quality?

We enjoy some of the best water in America. The Poconos can be proud of the quality of the drinking water as well as the fishing, canoeing, and other water sports. **But without all the fuss, the water quality will certainly get worse.**

Many groups work to maintain the high quality of water we have now:

Delaware River Basin Commission, Monroe County Conservation District, Tobyhanna Creek Tunkhannock Creek Watershed Association, North Pocono Citizens Alert Regarding the Environment, Aquashicola/Pohopoco Watershed Conservancy, Brodhead Watershed Association and the envi-

**And the effort continues.**

## Proper Disposal of Pharmacological Products

As concerned citizens we have become aware of pollutants and how they enter our environment. We take care to reduce our carbon footprint whenever we can; by driving more fuel efficient vehicles, recycling items, even riding public transportation and walking when we can. But for those of us in rural areas, where we rely

on onsite septic systems such as sand mound or drain fields, one pollutant that is often overlooked is pharmaceuticals.

Pharmaceuticals (this also includes over the counter medications) are introduced into our waste water in two major ways. The first is through disposal of unused medications when we flush them down the drain and secondly unabsorbed medications that are passed by normal bodily functions. The major factor that makes these medications work so well is that they are not readily broken down by our bodies and this leads to the question as to how well they break down in onsite septic systems.

Large cities that have tested for pharmaceuticals in the waste waters they are treating and have found low levels (these have been in the parts per billion). The technology for testing such low levels is still improving, but testing is not a common practice at public waste water treatment plants. And EPA does not have any requirements or acceptable levels of pharmaceuticals in drinking water.

What are our reasons for concern?

1. Risks are uncertain. Because levels are so low there are no identified human health risks. However, no studies could be found on how low levels would affect the very young, elderly, or ill.
2. New drugs are constantly being developed each year, so testing would always be difficult and lagging.
3. For wastewater treatment plants, unless designed to do so, do not specifically remove these contaminants.
4. Also, no studies could be found in regard to the effect of pharmaceuticals to onsite septic systems or residential wells.

However, there is an easy solution to this problem and that is the proper disposal of our unused medications. Take advantage of the drug take back program or household hazardous collection programs or contact your local pharmacy. The Pocono Mountain Regional Police advertises their collection program, so take part.

## **MISSION STATEMENT**

The purposes of the Tobyhanna Creek/Tunkhannock Creek Watershed Association shall be to promote and preserve the water quality and the environment of the Tobyhanna Creek and Tunkhannock Creek Watershed including surrounding areas of special concern and improve the water quality of the associated creeks and tributaries, promote the natural bounties thereof, provide educational materials on the benefits of and methods to achieve protection and preservation of the natural integrity of the watershed, educate the general public and interested parties in the value of stress controls and land activities, promote and coordinate the conservation of natural resources of the watershed, and protect and preserve terrestrial and aquatic life in the watershed.



## BOOK REVIEW

### Water: A Natural History by Alice Outwater

This book is an ideal spring read. As the snow melts and the rain falls, we are mindful of water more now than during any other season of the year. At 186 pages, the book is a quick read and sheds some light on the history of man's use of the land in relation to water.

In "Water: A Natural History" the author provides a historical tour of land development in our country since the arrival of the pilgrims up to today. Along the way, the author highlights the particular animal species which have provided ecosystem benefits over the years. Either due to the greed for what these animals had to offer (eg. beaver and buffalo) or dislike of the troubles the animals caused (prairie dogs), people have greatly reduced the populations of these animals over time. This, in turn, has decreased the function of these ecosystems and has altered the movement of water over

and through the ground.

The book begins in Europe with the onset of the fur trade. After settling in the New World in the early 1600s, the Pilgrims discovered a plentiful beaver population which soon replaced the depleted population back in Europe for use as fur. The settlers traded goods with the Native American tribes in exchange for beaver pelts, which were then shipped to Europe to be worn by the wealthy. With the extirpation of the beaver from many areas of the country over time came the decline of wetlands, which provide homes for wildlife, aid in pollutant removal, and reduce downstream flooding. It wasn't until about 30 years ago that the federal government began to realize the benefits of wetlands with the passing of the Clean Water Act.

The Native Americans had subscribed to a slash and burn method of agriculture for many years. This meant that they would set fire to tracts of forestland around their villages in order to clear land for crops. This burning provided numerous benefits. It would produce ash, thus quickening the recycling of nutrients to the soil. It also restarted the succession of plants which provide smaller fruiting shrubs for wildlife and game. And, it created a forest/field edge, which increased the biodiversity of these areas. The colonists had a different reason to use forests. Large-scale logging took place across the country to provide fuel, furniture, railroad lumber, etc. A few key people observed the changes in the landscape and wrote about them (Emerson, Thoreau, and Muir) or advocated for the establishment of National Parks and National Forests (Muir and T. Roosevelt). The protected lands began reverting back to forest, but not to the forests of old. Those tracks of untouched, old-growth forest are few and far between. The author compares the loss of forestland to that a removal of a kidney to our streams. Most of the state of Pennsylvania had once been used as farmland and has since reverted back to forestland. Note: to see what an old growth forest of 200+ year-old hemlocks and white pines look like, I suggest visiting Cook Forest State Park. Those trees are jaw droppers! To think that all of our forests once had a similar appearance and function is amazing.

The book goes on to describe the water cycle, forested vs. non-forested streams, the removal of logs from streams by municipalities for "safety" purposes, and the importance of logs from headwater streams all the way down to the ocean. A chapter devoted to the grasslands supplies intriguing information on the benefits of prairie dog towns and water buffalo wallows to the infiltration of water into the surface of the ground in the plains. The fall of the buffalo and the prairie dog by European Americans resulted in a change in the recharge of Ogallala Aquifer, which was later discovered.

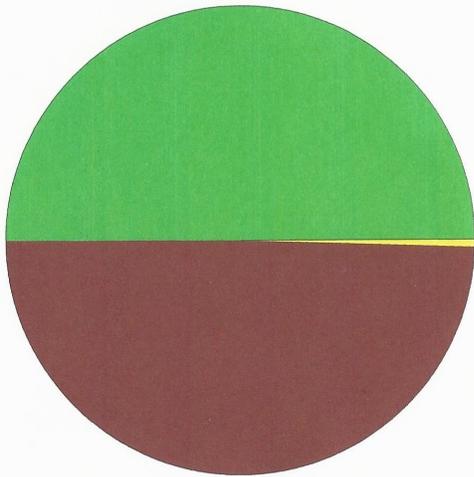
With broad-scale agriculture came a great need for water. Water rights were loose, and owners of farmland adjacent to creeks could dam up their creek to irrigate their crops with no regard for downstream users. Unlike buffalo, which briefly visit creeks or puddles to get a drink, cattle prefer to spend time in creeks. This destroys stream banks and creates a muddy mess of the water. Moving into the 1900s, the construction of dams for various purposes (irrigation, drinking water, energy production) greatly altered the flow and temperature of our streams and rivers, inhibited fish migration, and "spawned" the idea of fish hatcheries to replace the loss of wild species of fishes.

Years ago, the US Army Corps of Engineers conducted the damming, dredging, and channelization of waterways and the draining of wetlands for agriculture and water transport all in the name of progress. Today, that same agency works to protect wetlands. The author goes on to describe the way wastewater used to be handled and how the construction of sewer systems grew over time. These systems initially drained directly into waterways without treatment. Combine that with industrial waste, and you have a massive human health problem which no one could ignore. Around 1962, when Rachel Carson wrote *Silent Spring*, the movement to clean up our waters began. In 1972, the Federal Water Pollution Control Act (Clean Water Act) was passed with the goal of improving water quality by a 1985 deadline.

Younger generations have not experienced the pollution of our waterways that occurred just decades ago. And, older generations have observed improvement in water quality over the years. In both cases this can result in a hard sell to encourage individuals take even small steps to conserve water and protect water quality. We should be making every attempt to make good decisions because pollution problems do exist whether or not we see them or smell them.

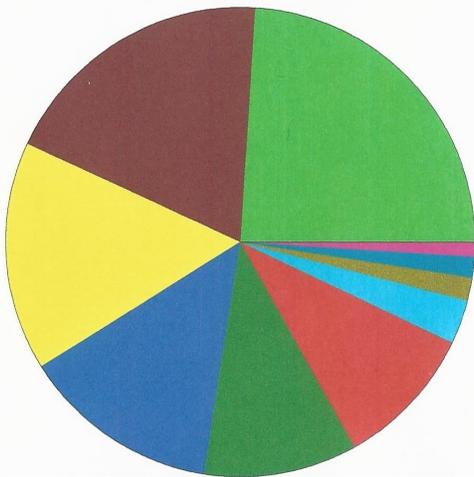
### Proper Disposal of Pharmacological Products

Income Summary  
January through December 2014



4030 · Contributions Income	\$1,000.00
4000 · Member Dues	990.00
4999 · Interest Income	5.57
<b>Total</b>	<b>\$1,995.57</b>

Expense Summary  
January through December 2014



6670 · Program Expense	\$1,205.83
6130 · Sec'y/Bkcp Expense	960.00
6770 · Supplies	793.38
6180 · Insurance	687.00
6290 · Rent	528.50
6260 · Printing and Reproduction	494.37
6250 · Postage and Delivery	157.02
6340 · Telephone	81.01
6810 · Web Site	22.40
6140 · Contributions	71.88
<b>Total</b>	<b>\$5,001.39</b>

**ANNUAL MEETING,**  
**AUGUST 18, 2014**

It was reported that Allen Rodriguez has resigned from the Board after many years of service in order to spend some time with his grandchildren. It was also reported that Robert Eddy, a long time member of the Board, has passed away.

Nominations for Directors to the Board were opened. Brad Graham and Geoff Rogalsky were each elected to a three year term.

Paul Snyder, an advocate of the TC/TC Watershed for many years, was presented with a Certificate of Appreciation for his past services both as a Board Member and for his initiating and heading the Stream Monitoring Program prior to retiring from the Board.

Jason Smith of Hanover Engineering gave a presentation on Trout Habitat Restoration in the Pocono Area. Following the presentation, Jason held a question and answer session.

TC/TC promotional "Diffusers" were presented to all those present. These "Diffusers" will be available at our table set up at some of the upcoming events.

**Rethinking  
TCTCWA's  
Water Quality Monitoring Program**

The heart and soul of a Watershed Association's mission is protection of water quality. The TCTCWA's existing program, called "Stream Watch," has been in place since 1993 with the support of dedicated volunteers. At the time it was conceived, the existing program was scoped to address a limited array of threats to water quality, reflecting the watershed's relatively low degree of historical ecological damage and moderate level of development pressure that existed at that time. High costs of consumer-available sampling equipment and third-party laboratory analyses were also an issue. Accordingly the program relied heavily on subjective sensory examination of water quality (e.g., appearance, odor) and limited quantitative analysis (e.g., water chemistry, vitality/diversity of aquatic life), supplemented by tracking compliance of permitted wastewater dischargers and results of broad County-sponsored sampling programs.

Your Board of Directors feels that the degree of threat to water quality within the watershed has increased to the point that it is time to consider expanding and/or intensifying this program. Development pressure has increased over the years, recreational use of the waters has intensified, and the science base documenting previously unknown contaminants in drinking water has increased. The best outcome to the effort of rethinking this program will require the input of the watershed's stakeholders who depend on the quality of the water, and particularly from people already involved or interested in becoming involved in implementing the program.

Issues to be considered include:

- \* Who do we want to influence with the data we gather? The focus could range from general education/awareness of the general public to impacting behaviors they may be able to manage better, to providing documented sound policy advice for local governments.
- \* What level of sampling complexity can we confidently sustain? Options in this area include expanding chemical testing in the field, collecting samples for off-site testing, initiating biological sampling (e.g. macroinvertebrates),
- \* Where do we want to focus our efforts? Our interest could center on tracking the status of a fixed set of key locations, selectively focus on locations of concern (e.g., known dischargers), or some combination of the two.
- \* How do we judge the effectiveness of the program so that we can adjust as we go along? We'll need to establish the means of keeping up-to-date on water quality issues within the watershed as they evolve, coordinate our program with the efforts of other stakeholders (e.g., municipalities, fishing clubs, private recreational areas), and set measurable goals with which to determine whether our efforts are meaningful.

Your Board is appealing for your input. Make us aware of your concerns and issues.

And let us know if you want to become actively involved.

**Changes to the Stream Monitoring Protocols for 2015**

In 2014, the TC/TCWA will implement new monitoring protocols and are requesting additional volunteer Stream Watch Monitors to assist with the effort. For many years, our Stream Watchers have recorded pH, water and air temperature, depth, flow, color, odor, clarity, and weather conditions at twenty or more stream sites on a monthly basis. To view the data, visit [www.tctcwa.org](http://www.tctcwa.org), and find the link under the Stream Watch tab. This year, the TC/TCWA Board of Directors is looking to adjust the stream monitoring protocols to include: expanded chemical testing, collecting samples for off-site testing and initiating biological sampling as noted in the article above.

**Water is our most precious commodity! Please get involved!**



Please consider renewing your  
subscription.  
We need your help and support.

ADDRESS SERVICE REQUESTED

POCONO LAKE PA 18347-0796

P O BOX 796

TC\TC WANTS

**MAY IS  
WATERSHED AWARENESS MONTH**

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## MARK YOUR CALENDARS FOR UPCOMING EVENTS

**Wednesday, May 27th - Tobyhanna Township's - Dinner in the Park.**

**Friday, June 12th, - Tobyhanna Township's - Movie in the Park.**

**Saturday, June 13th, 10:00 AM until Noon - TC/TC Annual Road Cleanup Route 423 - Rain Date**

Bags, vests & gloves will be provided. Meet at the first parking on the left past Timber Trails on Route 423.

**Saturday, July 11th, Noon to Dusk - Tobyhanna Township Day at Blanche D. Price Park, Pocono Pines, PA.**

**Tuesday, August 4th - Nation Night Out.**

**Monday, August 17th at 7:00 PM - TC/TCWA Annual Meeting - Place to be announced.**

**Friday, September 11th - Music in the Park.**

**Saturday, October 3th - Fall Festival.**

Philadelphia drink the water from the Delaware. It is estimated by the time our water from Tobyhanna reaches the Atlantic, it has been consumed 8 times.

### **A day in the life of the Delaware River Basin:**

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- Longest, undammed U.S. river east of the Mississippi (dams are located on tributaries, not the main stem Delaware)

## **VOLUNTEERS NEEDED - NO EXPERIENCE NECESSARY**

The TC/TCWA needs your help as a volunteer. There is no experience necessary. Please contact us to become an important part of our organization by volunteering a little of your time. Volunteering is a fun, rewarding experience. Your help is always needed and appreciated. There are many part time volunteering opportunities available. We would also like your thoughts, ideas, and suggestions. Contact us or drop by and visit us at one of our monthly Board meetings which take place on the third Monday of every month 7:00 PM at the Nature Conservancy building in Long Pond.

Please get involved in your watershed. Just ask us how!

## **BOARD MEMBERS NEEDED**

This is an **urgent** call for new Board Members and members in general. We need to replace some existing Board Members due to their moving away and being involved in other projects. Please join us in serving on your esteemed Board of Directors. It is a very nice experience and we meet only once a month at the Nature Conservancy building in Long Pond.

We would also like to boost our membership. Tell a friend or family member to please help support our efforts by becoming a member of the TC/TCWA. You will find a membership insert within this Newsletter. We need you! Please contact us immediately if you are interested in serving on our Board of Directors.