

# **The Rocky Hill Water Situation**

## **The History of the Rocky Hill Municipal Water Treatment Facility (RHWF)**

In the 1980s, Rocky Hill had a massive TCE (Trichloroethylene) water contamination crisis that closed down the Municipal well and put Rocky Hill on the *Federal Superfund List*.

The TCE contamination applied to the whole area, including neighboring Montgomery. Similar problems were found across much of New Jersey.

The TCE contamination crisis had been building up for many years. TCE was a VOC (volatile organic compound) used as a commercial and household (and even septic tank) degreaser and was being disposed of routinely and legally down the drains. Due to the extent of the contamination issue, Rocky Hill was declared a Superfund Site. It is still under a long remedial EPA action today as a Superfund site.

The Rocky Hill community at the time - 40 years ago - had to determine whether sinking a new well could magically solve the VOC water contamination problem. Sinking a new well was rejected as a costly and non-feasible idea for a variety of reasons.

The TCE contamination was persistent and of high level and indications were that remedial costs could be extremely high.

Some commercial proposals involved the use of tons of activated charcoal in tanks that would need to be replaced on a regular basis and with significant additional maintenance and service fees.

This motivated ideas about selling off the water system and moving over to Elizabethtown Water supply that it was thought (exactly like today) might then solve all the problems. Elizabethtown Water has now merged and integrated with American Water Company.

The Rocky Hill water source is from an aquifer in the so-called Passaic Formation consisting of sandstone, shale, and fine grain siltstone. The water is of high quality, and is excellent drinking water (that today is totally free of VOC contamination down to levels of non-detectability (ND) and it has been that way for 37 years since the RHWF came online.)

The Elizabethtown water source is derived from canal and river surface water, blended with water from some well sources. It supplied regions of Montgomery Township and also served the Princeton area.

The Rocky Hill residents were not impressed with the quality of the Elizabethtown water, referring to it as “fish tank water”, due to the perceived presence of dissolved organic matter. What clinched the issue however was the realization that the Elizabethtown water *had to be purchased forever*, representing not only a financial capital outflow from Borough residents but also *a depletion of Borough capital resources*.

The offer to dismantle and remove the Rocky Hill water tower at no cost also did not improve the situation. The Elizabethtown water supply did not need a water tower because it used pumping stations to generate and maintain system pressure. The Rocky Hill citizenry realized then, as is the case now, that once the Water Facility is sold off, it is a situation of no return.

Following extensive discussion and community engagement, a feasibility and engineering analysis driven by engaged civic action led to the conclusion and decision to build a treatment facility for the existing Rocky Hill Well.

Efforts were then focused on creating The Rocky Hill Municipal Water Treatment Facility. The RHWF was designed and built to address the VOC contamination issues, using aeration. The RHWF was completed, *accepted and certified in 1983 by the New Jersey Department of Environmental Protection (NJDEP)*. The RHWF has been operational *ever since*.

As part of the ongoing EPA oversight, the RHWF is routinely and extensively tested by NJDEP and there are *no VOC contamination issues in the water supply* - down to ND (non-detectable) levels.

The aquifer region and neighboring areas are still under a Federal EPA remission program routine, administered by NJDEP.

In 1986 NJDEP placed a restriction *on all future well drilling for water supply wells in the area*. *They are not permitted*.

As part of federal oversight, there are ongoing 5-year Review Reports issued by the US EPA, Region 2, New York, which relate to the Rocky Hill Municipal Well (RHMW) and Montgomery Township Housing Development (MTHD).

The design of the water treatment facility was, and remains, very energy efficient. It operates automatically without any need for operator control. In the latest system report the only reported issue was that an inter-stage pump had tripped out in a thunderstorm and had to be reset. In terms of the volume of water pumped and the low system operating costs, the water on a per-gallon basis could be considered essentially free. Rocky Hill then charges Borough residents a commercial rate for water, and this is then a major source of Borough revenue other than from the real estate taxation of residents.

Added to this is the rental income from the cell phone service providers using the Rocky Hill water tower as the location for their antenna systems.

If this revenue stream were to be lost to the Borough, it would be necessary to permanently generate significant extra tax revenue from residents, which would not be well received. Rocky Hill is a very small Borough with a total population of only around 680. It cannot easily sustain a high annual revenue loss (\$220,000).

Simply, Rocky Hill water is some of the most tested and certified in the state. It is also some of the best water in the state thanks to the RHWF. The RHWF is one of the best decisions Rocky Hill made and it remains one of the best assets we have, providing both clean water and significant revenue.

### **The PFAS problem**

There have been growing concerns over recent years about PFAS chemicals in groundwater and therefore in potable water supplies. PFAS refers to per (or poly) fluoroalkyl substances. When the molecule is fully fluorinated it is a perfluoro alkyl. A polyfluoro alkyl PFAS is not fully fluorinated.

These chemicals are a legacy of the miracle of modern science - organic polymer chemistry - and are often referred to as the "*forever chemicals*" due to the strength of the carbon-fluorine bond. They are per and poly fluorinated hydrocarbons, and while there are many perfluorinated PFAS compounds, there are thousands of poly fluoroalkyls that have been synthesized, and widely used commercially.

A separate relative of the family is the well known Teflon (PTFE - polytetrafluoroethylene) used in non-stick cookware and in many different industrial applications utilizing its resistance to acids and chemical solvents and its low friction properties.

Unlike Teflon however, the PFAS chemical family is quite water-soluble and has been identified in many Municipal water supplies that are generally close to military bases or airports or fire fighting training facilities. That is because PFAS chemicals were and still are used extensively in the production of fire-fighting-foams used in combating fuel (such as jet fuel) fires. Their surfactant properties also make them valuable in the waterproofing of fabrics, carpets, and leather goods, and other materials. They are water-soluble, have no significant vapor pressure, and therefore cannot be successfully removed from water by using aeration methods.

As a result of their widespread production and use since the early 1950s, it was inevitable that PFAS chemicals would turn up in soil and water (and human blood samples) all over the world.

They are forever chemicals and are therefore not biodegradable. They are very difficult to destroy in high temperature incinerators (they are very effective fire suppressants).

After their detection in the environment, the expected toxicology studies soon showed PFASs are toxic to human health and are to differing degrees implicated in developmental defects, cancer, immunosuppression, and other numerous serious medical problems.

So, the Pandora's Box of PFAS chemicals has actually been open for over 60 years, although the general public has only recently become aware of the full extent of PFAS dangers and health concerns, and of food contamination.

The PFAS family of chemicals is characterized by the number of carbon-fluorine bonds in the molecule. Thus there are tetra (4), penta (5), hexa (6), hepta (7) octa (8) and higher molecular chains. **PFOA**, which is frequently cited, refers to per-fluoro-octanoic-acid and is a long chain molecule (C8) having 8 carbon-fluorine bonds.

There is a C9 member of the family that is considered one of the worst PFAS contaminants from a toxicology point of view.

It is called per fluoro nonanoic acid, **PFNA**.

The PFAS family also includes sulfonates, via sulfonic acid, so there is also **PFOS**, (per-fluorooctanesulfonic-acid) which generally is found together with **PFOA**.

Because of the widespread use and detection of **PFOA** and **PFOS** and **PFNA**, and the increasingly serious health concerns related to these chemicals, the EPA initiated a PFOA Stewardship Program calling for a voluntary phase-out of such chemicals by major US producers (8 participating companies) after the year 2000.

This was only a partial phase-out agreement relating to long-chain PFAS chemicals, and short-chain length chemicals were still developed and produced extensively. This has led to a new round of concerns about these new "Gen X" chemicals. The shorter chain PFAS molecules, under conditions of PFAS water and soil contamination, have been found to bioconcentrate into edible crops such as fruit and vegetables, therefore entering the food chain. This critical topic is mentioned in more detail later.

Under the Safe Drinking Water Act the EPA is required to list known contaminants requiring regulation, and between the years 2013 and 2015 the EPA sampled approximately 5000 public water systems across the USA.

In 2016 the EPA issued a non-binding **Lifetime Health Advisory** of 70 ppt (parts per trillion) for individual or combined PFOA and PFOS in drinking water. This 70 ppt value was quite widely adopted nationally and became a working limit, although it *is only advisory*.

The EPA in its Feb 2019: **Per and Polyfluoroalkyl Substances (PFAS) Action Plan** admitted that many important challenges existed. They can be point listed as follows:

- ❑ There are concerns about the cost burden and affordability (of remediation).
- ❑ There is no hazardous substance listing for these chemicals and no CERCLA
- ❑ (**Comprehensive Environmental Response and Liability Act** ) applied to them.- i.e. no Superfund classification.
- ❑ There is a lack of enforceable numeric standards.
- ❑ There is a lack of sampling methodology for multi-media systems (i.e. using carbon, plus ion exchange, plus reverse osmosis, etc).
- ❑ There is confusion about actual health values from different authorities.
- ❑ There are information gaps on how to safely handle PFAS waste byproducts.

This is all very relevant to understanding the overall PFAS situation and how it relates to Rocky Hill. For most PFASs there is very limited or zero toxicology information.

The EPA, which is mandated to protect the public health, realized PFAS contamination is an increasingly serious problem and that working limits need to be significantly lower than the 70 ppt advisory. They were stuck with the problems listed above and have no legal enforcement authority and therefore needed to turn it all over to the States as State law can be used for regulatory enforcement through the State DEP agencies.

The new PFAS limits proposed by New Jersey are in general conformity with the decisions taken by the other States. In the New Jersey case, the NJDEP has established Maximum Contamination Level (MCL) values for three (3) chemicals; **PFNA** 13 ppt, **PFOA** 14 ppt, and **PFOS** 13 ppt. These are lifetime consumption contaminant levels. All water systems are required to begin monitoring for them in the first quarter of 2021, and private well-owners are required to test for them starting Dec 1<sup>st</sup>, 2021.

All of the States, especially industrial States with large cities, have reported serious problems with PFAS contamination in drinking water. One of the worst in this regard is the State of Michigan, having one situation in particular involving massive PFAS contamination in the Great Lakes, Grand Rapids area that caused national attention. It involved Wolverine (Hushpuppy shoes) and 3M (Scotchgard), and the groundwater contamination level in a nearby residential well was extremely high at *27,000 ppt* for **PFOS** and **PFOA**.

For a link to a detailed Detroit PBS TV investigatory report on this situation, enter into Google search bar **The Forever Chemicals - The Full Show | Great Lakes Now**

Just to put things in perspective; for the Rocky Hill Water Facility, the latest testing results have indicated trace **PFOA** levels around *12ppt*, **PFOS** levels at *16ppt*, and

**PFNA** levels less than *2ppt* (non-detectable). This will be discussed in more detail later.

The State of Michigan then made an extensive study of PFAS contamination and associated health effects and assigned a recommended **Lowest Health Based Value** as follows;

**PFNA** 6ppt . **PFOA** 8ppt. **PFOS** 16 ppt. **PFHxS** 51ppt - followed by **PFBS** 420ppt, **Gen-X** 370ppt , and **PFHxA** 400,000 ppt.

These data are from the report: Health-Based Drinking Water Value Recommendations for PFAS in Michigan.

The worst ones are the first ones listed, requiring the lowest contamination limits. The surprise here is PFHxA (Perfluorohexanoic acid) when compared with its twin PFHxS. It turns out that PFHxA is not carcinogenic nor genotoxic. This is supported by the French Agency (ANSES) studies.

A main point of interest is that New Jersey has flagged the same first three PFAS long-chain chemicals although not with the same emphasis as the Michigan analysis. *New Jersey* lists them all at the same level around 13ppt for lifetime exposure.

The ppt designation means **parts per trillion**.

To get a real appreciation of this, **0.000000000001** is 1 trillionth, and these quoted MCL contamination limits are talking about levels of a few trillionths.

It is a normal reaction to question how these levels are actually measured, and what is the accuracy (variance) in such measurements.

The measurements have to be coordinated using a standard testing protocol and using certified testing facilities. The EPA devised the accepted testing method EPA 537 in 2006, updated in 2018 to the presently used method 537.1. The update from EPA 537 was technically unchanged, so the testing procedure is now well established since 2006. The method is called LC/MS/MS.

Dealing with liquid samples, LC/MS/MS involves Liquid Chromatography followed by two cascaded stages of Mass Spectroscopy. Using so-called “soft ionization techniques” molecules can be ionized in the liquid phase and then coupled to mass spectroscopy.

This is state-of-the-art instrumentation and which has been further developed for the automatic batch sampling and the quantitating of 18 PFAS chemicals in drinking water.

Of course, all analytical methods need reference standards and, in this case, they need to be in the ppt (nanograms per Liter) range. To construct a 1000ppt reference sample this would be 1 microgram / L. This would involve a difficult weighing measurement (millionth of a gram) so it could perhaps alternatively become 100 micrograms per 100L (or even 1 milligram per 1000 L) to then produce a 1000ppt reference stock solution. A sample of this reference solution could then be diluted down (for example) to create a 50ppt reference standard. It is easier to

deal with liquid volumes and dilutions than microgram weighing of solids, which can involve errors. It can easily be seen however that errors can be introduced in the construction of reference standards.

In the LC/MS/MS analysis the calibration curve is essentially being extrapolated down from the reference standard sample into the zero region, since low-level ppt results are trace results close to zero. So, any reference sample errors could lead to differing analytical results from different testing laboratories.

Standard references might become available in the near future through NIST (National Institute of Standards and Technology) to help to resolve this issue.

This important question of observed differences in results from different testing labs is presented and discussed in some detail in the case of Madison Wisconsin Water Utility, which has 23 wells in their system. They had trace level PFAS contamination in all but 3wells, and some with similar trace levels to Rocky Hill. They were naturally concerned about different results from different testing labs.

[https://www.cityofmadison.com/water/documents/PFAS\\_2019\\_Report.pdf](https://www.cityofmadison.com/water/documents/PFAS_2019_Report.pdf)

### **PFAS contamination in foods**

Last year, in late May 2019, the USFDA presented a paper at a conference in Helsinki in which they reported surprisingly high levels of PFASs in certain foods – including chocolate cake (attributed to greaseproof paper, not the chocolate) at 17,640 ppt. This has resulted in some recent voluntary phase-outs of certain short-chain PFASs used in food packaging.

Also, of great concern, **PFOS** was measured at *134 ppt in hamburger meat and 865ppt in tilapia* – this information was initially reported (leaked) by AP (Associated Press).

<https://www.mlive.com/news/2019/06/fda-finds-pfas-at-high-levels-in-its-first-tests-of-food-report-says.html>

There are now frequent news reports of alarming food chain contamination by PFAS chemicals.

### **PFAS testing**

The PFAS testing data for the Rocky Hill Municipal Water Facility (RHWF) are obtained from the NJDEP Water Watch database.

There has only been testing for PFAS since April 2019, and only for 3 major long-chain PFAS contaminants **PFNA, PFOS, and PFOA**.

**PFNA.** There have been six tests with 3 different test labs. All registered less than 2 ppt (essentially ND – not detectable).

**PFOS.** Three tests from Aug 2019 to January 2020 at 18, 17, and 15ppt and with two test result outliers from two other test labs at 19.2 and 25.4 ppt. The three tests average 16.6 +/- 1.24 ppt. and miss the new MCL of 13 ppt.

**PFOA.** Five tests from April 2019 to April 2020, with 4 tests between 12 and 13.4ppt, and with an outlier April 14 2019 at 17.4ppt from another test lab. The test results meet the new MCL of 14 ppt.

In summary, the Rocky Hill Water Facility already meets the new NJDEP MCL requirements for **PFNA** and **PFOA** contaminations and misses the **PFOS** compliance by less than 3 ppt.

Mathematically it can be argued that 3 trillionths are essentially zero and that all measured numbers have to have a variance due to statistical and also systematic errors, and that quoted spot numbers should have an associated variance.

The goal here with the new MCL requirements is supposedly to reduce PFAS contamination in Municipal water down to trace levels (essentially zero). The fixed MCL numbers down in this trace level world are essentially arbitrary.

For example, in the case of Michigan – a State with a considerable number of PFAS problems and a State which has spent a lot of time and effort in formulating **Lowest Health Based Value** limits, the **PFOS** contamination limit is set at 16ppt – which Rocky Hill would meet. Of course, Rocky Hill is not in Michigan, but that would be an unsatisfactory response. The point is that these specific MCL numbers at these trace levels are arbitrary. They are based entirely on imprecise toxicology and are estimates that are made for lifetime contaminant exposure.

In fact, this is a concern expressed in the 2019 **EPA PFAS Action Plan** mentioned earlier– namely ... “confusion about actual health values from different authorities”.

Another reality check on all of this is the realization that while possibly quibbling over trace level spot numbers it is possible to be consuming 134ppt to 865ppt **PFOS** in a hamburger or a chicken or fish sandwich.

The possible situation with NJDEP is probably not about a few negligible trace level numbers so much as adding more PFAS chemicals to the testing list.

At present, there is only consideration of the C8 and C9 long-chain molecules **PFOS**, **PFOA**, and **PFNA**, but there are many shorter chain PFAS chemicals that are of concern, and EPA 537.1 can handle 18 PFAS chemicals.

It is inevitable that short-chain length PFAS chemicals will be added to the list. These are the ones that tend to accumulate in fruit and vegetables in the food supply. It is quite likely that these Gen-X chemicals are also at negligible trace levels in the Rocky Hill water, but testing for them should be actively encouraged if only to get a better picture of the overall PFAS loading in the aquifer.



## **PFAS Action Plan**

There is actually a sympathetic case to be made about the lack of practicality and reality behind a lot of the new administrative actions and requirements concerning PFAS contamination in drinking water in the various States.

This has all been readily admitted by the EPA in its **Feb 2019 PFAS Action Plan**, which has been presented earlier. At the top of the list of their concerns is ... “cost burden and affordability”.

The new NJDEP regulations are in the form of an *unfunded mandate*. There will most certainly be no State or other funding towards any of this enforcement. As a result of the Covid-19 epidemic and economic recession, all States are running massive deficits and are essentially broke – New Jersey included.

Many communities in New Jersey with Municipal Water systems having high PFAS contamination because of past industrial PFAS pollution are naturally concerned about how they can practically and also financially handle the new PFAS water contamination level requirements. These concerns apply also to many other States across the rest of the country.

Similar concerns apply to the many thousands of individual well owners.

Their concerns include the ongoing financial cost of the required certified regular testing. PFAS testing is expensive. The nature of the actual enforcement of testing in such situations poses a further difficult set of issues.

***Fortunately, none of this represents the Rocky Hill situation.***

It will be seen that from the preliminary test results (presented above) for the Rocky Hill Municipal Well the new PFAS contamination level requirements of NJDEP are already met for **PFNA** and **PFOA** and with **PFOS** measurements just a little high by less than 3 parts per trillion.

**There is no PFAS crisis and no existential threat to Rocky Hill from PFAS.**

PFAS testing will continue through 2020 and during 2021, it has only just begun.

In reality, the only way to mitigate the very serious and growing contamination of the food chain by PFAS chemicals is to eliminate them entirely from groundwater. Although not officially stated, that is probably why there is now basically a uniform agreement between all States on mandating new trace level ppt limits (essentially zero) on PFAS contamination levels in Municipal water supplies, and even for private well systems, in an attempt to capture and remove these chemicals.

The Rocky Hill PFAS action plan would then be to simply continue normally with PFAS testing by NJDEP through 2020 and into 2021 which will give a much more

realistic picture of the PFAS trace levels in the Rocky Hill Well, as well as the statistical spread in the test results.

There could then be later discussions with NJDEP over any possible PFOS borderline issues and in getting a better idea of the NJDEP long term PFAS (and other) goals and plans, so there are no surprises and changes that are suddenly introduced later.

Efforts should additionally be made to get some NJDEP short duration testing included for C6 and C7 PFAS chemicals within the EPA 537.1 protocol and also for C4 PFBS (perfluorobutane sulfonate) which was itemized in the earlier mentioned Michigan study. PFBS has been replacing PFOS in general use, but unfortunately has a higher water solubility and is becoming increasingly problematic.

This would give information on the wider PFAS loading in the Rocky Hill well.

There is a good chance they (shorter chain length PFAS chemicals) will also be at negligible trace levels but they should be measured if at all possible because they might need to be included in any future design plans for incorporating a GAC adsorption module into the Water Facility process to eliminate PFAS entirely from Rocky Hill water if required to do so.

The road salt stored near the Rocky Hill well house should also be PFAS tested and removed (see below).

### **Other Contaminations**

On the same theme of groundwater contamination, there will be increasing efforts by New Jersey (and other States) to reduce and control the effects of surface run-off contaminating the streams and rivers used in water supplies and entering the water table. On the top of the list is the use of many hundreds (if not thousands) of tons of rock-salt/road salt that are spread over the roads each year, and which end up in groundwater.

Although creating serious and known ecological problems, road salt would normally seem to be unrelated to the present PFAS contamination issue were it not for the recent alarming reports from Holland described in the following link:  
[nltimes.nl](http://nltimes.nl) Dangerous winter roads likely as road salt too poisonous for use: salt supplier ..... paste this into Google search.

This news report describes that high levels of PFAS contaminants have been found in road salt to the extent that the use of road salt in Holland has been forbidden until the situation is better understood and hopefully remedied.

There is no reported similar PFAS testing of road salt in the USA, although it is used very extensively. The origin sites of the road salt mining are often unknown.

There are a few tons of road salt dumped right near the front door of the Rocky Hill Well House, and it has been there since 2015.

Complaints about this have been ignored mainly on the grounds that it is located in Montgomery Township, not Rocky Hill.

Actually, there is a Montgomery Township ordinance that prohibits the location of hazardous materials in proximity to Municipal water facilities.

It was cited in the Montgomery Township denial of a permit application for the construction of a Wawa multi-pump gasoline service station directly across the road (Rte 518) from the Rocky Hill Water Facility.

Rock salt/ road salt is considered a hazardous material for groundwater contamination.

Hopefully in this case there is no actual PFAS problem, but the road salt pile should be PFAS tested and should be removed and stored in a more remote location with properly approved containment.

It is possible that the NJDEP would handle such PFAS testing as part of their ongoing remedial program since it should be presented to them as a site-related issue.

### **Water Revenue Accounting**

To establish that the Municipal Water Facility generates significant revenue for the Borough and is not a “loser”, and “running on strings” and needing year after year subsidy, as has been claimed, it is necessary to get information on the actual water billing revenue.

The Borough Council budget is legally required to be open source and is made available online. However, after searching the budget there does not appear to be any line item revenue listed for water billing.

There is a line item for rental income from the cell providers using the water tower, but there is no revenue line item for income derived from the residents’ payments of water bills. There should be. It is a genuine revenue item just like income from resident taxation, or other sources.

The water bill income seems to be co-mingled with the sewer charges and sewer costs and fees to the Sewage Plant and buried in a utility budget and possibly offset by “infrastructure” expenses.

Apparently this accounting mess has been going on for years, nobody caring very much about it. It suggests that there is no proper accounting and reporting for water bill revenues.

It is essential that the water bill revenues must be separated from the sewer system finances.

It is necessary for us to generate some realistic dollar value for the water billing revenues paid to the Borough in some clear and verifiable manner.

One direct method of getting the water revenue is to simply use the total number of gallons of water that were metered by residents and then use the Rocky Hill billing

rate or the average authorized “going rate” for water charges in Somerset County New Jersey - which should be the same thing.

Some residents, family of 2, who fortunately know their water bills, have stated and confirmed they typically use around 9000 gallons per quarter billing cycle. The Rocky Hill population was recorded as 682 in the 2010 census, and in an extensive data presentation on Rocky Hill, it is stated that the average household is based on 2.4 persons (compared to the national average 2.7 person household). Ref: <http://www.city-data.com/city/Rocky-Hill-New-Jersey.html>  
This indicates a community of 284 households.

The use of 9000 gallons by two persons per quarter is 3000 gallons per month, 100 gallons per day, 50 gallons per person per day.  
This fits directly on a curve denoting economic usage. Water use cost data are normally presented for 50, 100, and 150 gallons per day per person.  
Ref: [www.circleofblue.org/waterpricing/?gclid=](http://www.circleofblue.org/waterpricing/?gclid=)  
The cost depends directly on the number of people. The average use for a 2.4 person household at the same level of 50 gallons per person per day would then be 10,800 gallons per quarter.

The water billing rate can be obtained from the document 2013 Water Charges for Commercial Industrial and Public Authority Service of the Somerset County Planning Board [[www.co.somerset.nj.us](http://www.co.somerset.nj.us)] giving the proposed new rate of \$6.977 per 1000 gallons. This is in agreement with the cost cited in Rocky Hill [ecode360.com](http://ecode360.com) when allowing for the apparent factor of 10 error in the stated Rocky Hill cost – (which is too low as stated).

So the Rocky Hill water billing charge is 0.7 cents per gallon.  
All the evidence indicates that water costs generally are expected to significantly increase. American Water is at 1 cent per gallon with planned increases. PFAS remediation with GAC adsorption will certainly increase the cost for all water supplies using surface water sources having naturally occurring dissolved organic matter content, due to the low-level PFAS requirements and PFAS breakthrough.

For an average Rocky Hill household (2.4 persons) using 10800 gallons per quarter, at 0.7 cents per gallon, the water bill is then \$ 75.60 per quarter, \$302.40 per year. For 284 such households, this is then \$ 85,880 per year water bill payments to the Borough. Added to this is \$52000 for yearly cell phone water tower rental payments. The total water revenue to the Borough is then \$ 137,880 per year on this basis.

*This is an obvious underestimate.*

Many users do not fit the economical 50 gallons per person per day template. Also, there are other users of the water that receive and pay water bills, (restaurants and small businesses) in addition to the Borough residents.

This last item alone can easily push the user base from 284 units of 2.4 persons to above 300. This would then immediately increase water billing revenue to more

than \$90,720 with total water system revenue more than \$142,720 --- we can realistically round this to \$150,000.

So it is undeniable that *the Water Facility generates an important revenue stream for the Borough*, as always claimed. It is therefore not remotely possible that it is “running on strings” and is a “loser” and has not made any money in years and always needs to be subsidized.

This is totally absurd, and how it could ever have been accepted and believed by Borough Council members is both shocking and alarming.

As a matter of fact, this is only half the story. We found that In Council meeting agendas the number of gallons pumped by the Rocky Hill Water Facility are actually listed among the monthly reports. They are:

For July 2020: 2,387,000    June: 2,250,000    April: 2,130,000  
Feb: 1,943,000, and for January 2020: 2,077,000 gallons.

Assuming there are no system water leaks or hydrant use, this water goes to customer billing. There is a naturally expected summer increase (swimming pools etc) but an average steady level seems to be slightly over 2 million gallons a month. This now gives another direct method of determining water billing revenue.

With 2,000,000 gallons per month at \$7 per 1000 gallons, the water billing revenue is \$14000 per month - \$168,000 per year.

This significantly exceeds the previous estimate (\$90,720) which however was based on a standard economical consumption pattern of 50 gallons per person per day for all households, and therefore this higher number is not an unexpected result. What it clearly shows is that the water billing revenue in reality is a **very** important and a **very** significant revenue stream for the Borough. With the addition of the cell-phone water tower rental payments, the total water revenue for the Borough is now indicated to be around \$220,000 per year on this basis.

This is a clear reason why the real water billing revenue must be separately itemized and accounted for as a direct line item in the budget.

### **Rocky Hill Infrastructure Needs**

In the Montgomery News article of May 2020 on the Rocky Hill PFAS situation there was mention of “aged water infrastructure” in the Borough. This needs to be addressed, as it could give the incorrect impression that the system is falling apart.

The Rocky Hill well house has pipework that is date stamped 1936, reminding that the original structure dates from the period of the FDR works program during the 1930's era depression.

There are many exact replicas of the field-stone well house building in New Jersey, and nationwide in rural areas.

The water pipes are cast iron. This is a perfect material because it forms a thin surface oxidation layer (rust) that then inhibits further oxidation. So cast iron does not rust out like steel. This is very important.

Many major cities in the world have used cast iron water pipes for hundreds of years. The only problem with cast iron is that it is brittle.

Therefore, cast iron water pipes need to be bedded correctly to prevent residual stresses and shielded to protect them from being damaged by the compression pounding of heavy commercial trucks and traffic.

They need intelligent installation. The use of cast iron water pipes does not in any way suggest or imply an “aged water infrastructure” that is subject to failure. They are heavy, and in repair work are often today routinely replaced by composite material pipes with rubber gasket seals between sections which are cheaper, not necessarily better.

There are now apparently as many as 7 broken inoperative fire hydrants in the Borough. How is it possible to have 7 hydrants all of a sudden “broken beyond repair”? Who knows? Yet what we do know is that if hydrant parts are broken for some reason, like for everything else, there are replacement parts available.

Typically, fire hydrants cost around \$5000-\$6000 where most of the cost is in labor charges for removal and installation. The hydrants themselves cost around \$1500. They are iron castings. There is a whole industry around such things as Municipal fire hydrants. They are made by the thousands in foundries in Tennessee (Mueller Co) and are used everywhere across the country, and with replacement parts and repair kits available.

Logically, the 7 fire hydrants cannot all suddenly be “beyond repair”.

Was any advice ever sought from the RHF D on the possibility of repairing them with ordered parts? That would represent a pragmatic approach and possibly a practical solution to the problem – and at a much lower cost.

Instead, the council issued *a \$50,000 appropriation* for replacing the broken hydrants. Using the Borough checkbook is not the same thing as problem- solving, especially when there may be insufficient free revenues at the time to actually support it. That is perhaps why a lot of these “problems” keep getting put off and never get addressed, and why they just keep piling up and maintenance is neglected.

It has always been necessary for Rocky Hill to rely entirely on the hard work and dedication of volunteers and support groups.

This is simply because Rocky Hill does not have the tax base and financial resources to pay salaries and benefits, and never will. It is the only way for the Community as a whole to independently survive and flourish. The Borough Council also needs to respond to this reality. There is no easy access to revenue.

The budget has now been increased incrementally by 3.5% and with the corresponding increase in the taxation.

The RHFD should be requested to carefully examine the hydrants, with a view to them being repaired with replacement parts (unless of course for some reason they are all totally smashed – which would then be another different story). There is a lot of expertise in the Rocky Hill Fire Department that could be resourced to help solve this particular hydrant problem.

The next major and important infrastructure project is to finally stop the massive sewer line infiltration by storm drain water (that is being piped to the canal and river). The sewer service fees to Montgomery Township are listed at \$175,000 which is unbelievable. This has to be corrected urgently.

The point(s) of infiltration may have already been located in damaged sewer manholes. Sewer manholes close to the water table or in proximity to river flooding zones can pose a serious flood leakage problem, needing scrutiny and special attention.

Like fire hydrants, sewer manholes, and manhole covers, are foundry castings. There is a huge industry for water system hardware, with standard manhole castings and replacement parts. The RHFD and Montgomery Township Sewage Plant personnel with relevant knowledge should be asked for help in identifying and measuring damaged parts. Castings often have stamped markings. This is not meant to define repair, merely to provide a useful specific knowledge base on which to proceed if contractor services are then needed.

### **The Rocky Hill Budget**

The Borough budget is just over \$1Million - for everything.

The RHWF and cell-phone water tower fees combined (\$150,000) are therefore a significant portion of the budget. (New RHWF pumping data indicate \$220,000).

The Borough Council badly needs to get the fiscal situation under control and the accounting procedures related to water billing need to be corrected.

The infrastructure problems need to be seriously addressed during 2020 and into 2021 in a pragmatic and practical manner.

It is apparent to many in the Borough that the Borough Council has been contentious and polarized in many sessions. There is nothing wrong with this in principle so long as everyone is optimally trying as best as possible to row the boat in the same direction for the benefit of the Community.

In the case of the present PFAS crisis, there are reportedly differing opinions leading however to widely different action modalities that are not in the best long-term interest of Rocky Hill or its citizens. These relate to an active investigation of sinking a new well in the Rocky Hill aquifer (not permitted), selling the Municipal Water Facility (very bad idea), and denying the validity of the new NJDEP regulatory mandate for PFAS contamination limits (unlikely to get very far).

Hopefully these opinions will soon resolve themselves.

We obviously need this Borough Council to seriously think pragmatically on a lot of issues, and especially because of fiscal constraints. This has always been necessary. Without question, it is hard work being a Council member. It is frequently necessary to be dealing directly and seriously with boring nitty-gritty issues and very uninteresting things like fixing fire hydrants and sewer manholes. However these can be real and important matters, requiring real attention.

### **Concluding Remarks**

This communication has been compiled by a group of Rocky Hill “concerned citizens” – not related to the Citizen groups.

We are concerned about the recent PFAS contamination question and alarmed by the apparent Borough Council responses and the outline of events and the situation as described in the May 2020 edition of Montgomery News.

The present Rocky Hill Municipal Water Facility is a Municipal asset and belongs to the Community, who funded its construction.

This call to action is not intended to hang anybody out to dry. It is intended as a call-to-action to Rocky Hill residents *to come together to take active interest and action NOW* in what is happening in regard to this matter and the current Borough Council activities and deliberations.

This collective work has involved a number of participating Rocky Hill residents. It attempts to present a detailed explanation of the overall PFAS contamination situation and to clearly demonstrate that selling the RHWF is NOT in the best interest of the Rocky Hill community. The RHWF is a significant revenue-generator. It meets the new NJDEP trace levels for PFAS and provides us with some of the best drinking water in the State, and has been doing so for 37 years!

Rocky Hill is a very small community (one of the smallest Boroughs in New Jersey). We survive and thrive because of the strong base of dedicated citizen volunteers that work to keep the community going in all the departments and Boards and organizational groups. It has always been that way, probably since 1783 (before actual Borough incorporation) when George Washington gave the farewell address *in Rocky Hill* to the troops at the ending of the War of Independence. It is still the reason today why Rocky Hill is such a wonderful place to live: *We look after each other and come together when we need to do what’s right for us all.*

That is also why, in perceived crisis situations, the Borough Council should not “go it alone” without carefully considering all the consequences and the possible future impacts on the Rocky Hill community.