May 2016

Overview of this Study

The Nature Conservancy and University of Delaware, Water Resources Agency sponsored this study of the Pennsylvania portion of the Brandywine-Christina watershed to understand how the public thinks about water quality, and to help inform public outreach in support of a proposed new fund for water restoration in the watershed. Tentatively called the "Healthy Water Fund," this mechanism would gather resources to enable water restoration. This study sought to understand the baseline level of support for such a proposal, as well as specific priorities that the public would have for water restoration, and the language and imperatives that would resonate with them in describing it.

This work was conducted in two phases:

1. A representative population survey was conducted by telephone among 300 randomly-selected residents of the watershed in May 2016.
2. Two focus groups, one each conducted among suburban residents and agricultural producers in the watershed, were held on the evening of May 12, 2016.

A more detailed methodology statement is found at the end of this narrative. At various points in this summary, comparisons will be made to a prior similar study conducted across the State of Delaware for the Delaware Nature Society (DNS) in December 2014. Occasionally, comparisons will also be made to similar work conducted in the Chesapeake Bay watershed.

The full report follows.

Summary of the Research Findings

This opinion research project has identified a public in the Pennsylvania portion of the Brandywine-Christina watershed with some concerns about water quality. Specifically, many people are not drinking their tap water at home or are filtering it. Locally-caught seafood is suspect in the minds of most residents. The possible presence of toxins brought on by industrial pollution is a palpable concern of many residents. Development pressures continue to burden the waterways, many residents believe. Despite it all, though, nearly nine residents in ten believe that the problem of water pollution can be fixed.

All of this translates into support for a mechanism like a Healthy Water Fund to bring focus and new resources within the watershed to the problem of water pollution. In concept, a majority of residents support such a Fund, and would be willing to pay a "reasonable" amount to support it.

There are many important caveats to their support. They strongly prefer that the Fund not be administered by a government agency. They would look for an independent entity without a profit motive to administer it. Accountability must be built in. Revenues must be collected broadly across the population, but residents and agriculturalists strongly prefer that contributions to the Fund be voluntary. Naturally, there is a rub there which will need to be discussed with the public.

Both suburban residents and agricultural producers involved in the research made clear that they are most likely to become supportive and engaged if the Fund would benefit them and their families directly. They are impatient to see results, wanting to see them soon. Again, conversation with the public will be needed to create a realistic set of expectations for the immediacy of impact from such a Fund.

Finally, and importantly, a near-majority of residents believe they make no contribution at all to water pollution. Many others believe they contribute only "a little bit." To ensure widespread support for a Healthy Water Fund and its work, the public must begin to believe that they contribute meaningfully to the problem.

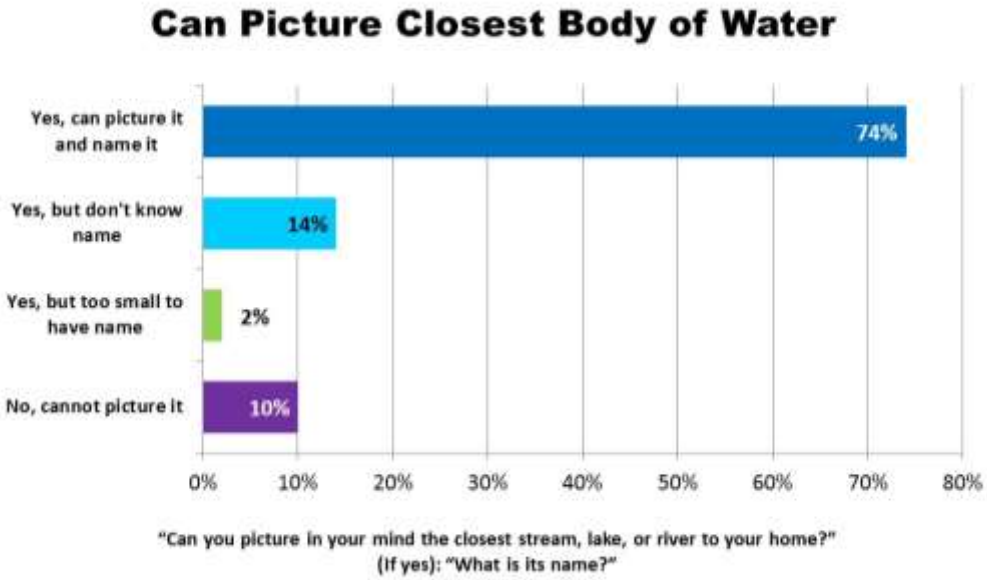
The following report provides detailed findings from this survey and focus group research.

May 2016

Detailed Findings

Connection with the Water: Ability to Picture the Most Local Water

As one measure of how connected residents of the watershed feel to their local waters, the survey asked if they could "picture in your mind the closest stream, creek, or river to your home." Three-quarters (74%) of survey participants said they could both picture the water and name it. Another 14% said they could picture it but did not know the name, while 2% said the closest water was too small to have a name.



"Can you picture in your mind the closest stream, lake, or river to your home?"
(If yes): "What is its name?"

These numbers are similar to those collected statewide in Delaware on the 2014 DNS survey. There, 68% of residents could both picture and name a waterway that they considered closest, and 18% said they could picture the water but did not know its name. Fourteen percent in Delaware could not picture their closest water at all.

One resident out of ten (10%) in the Brandywine-Christina watershed said they could not picture the closest stream, lake, or river to their home. That percentage is much higher among people of color in the watershed, with 20% of African-Americans, 32% of Asians, and 45% of Hispanics saying they could not picture the water closest to them.

There is also evidence in the survey that one's connection to local water is related to their underlying sense of environmentalism. While 87% of people who consider themselves above-average or strong environmentalists can both picture and name their closest water, the number drops to only 55% of those who consider themselves below-average or not at all environmentally-minded.

These are the waterways that were named by survey participants.

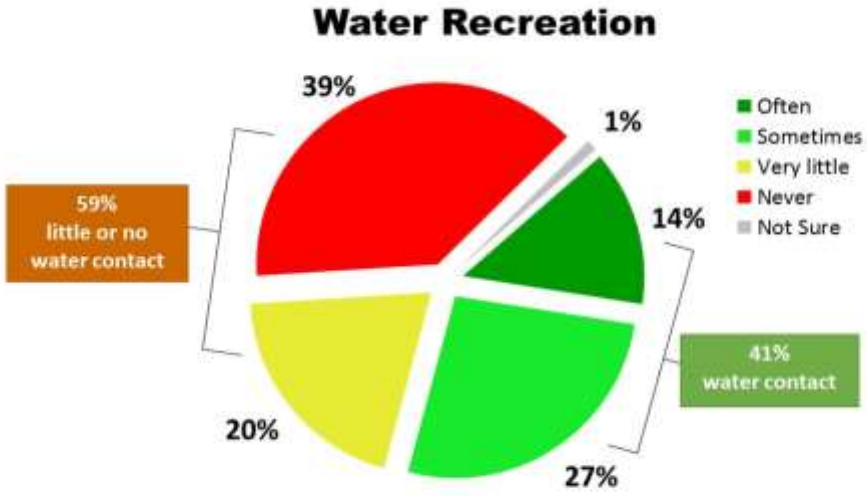
Closest Waterways Named by Residents

Brandywine Creek/ River	68%
White Clay Creek	4%
Marsh Creek	3%
Delaware River	3%
Red Clay Creek	2%
Chester Creek	2%
Single-mention streams/ creeks	17%

"Can you picture in your mind the closest stream, lake, or river to your home?"
(If yes): "What is its name?"

Personal Contact with the Water

Approximately four residents in ten (41%) said they often (14%) or sometimes (27%) swim, fish, or boat in the rivers or streams near where they live. Of the remainder, 20% said they swim, fish, or boat "very little," while 39% "never" do, and 1% were not sure.

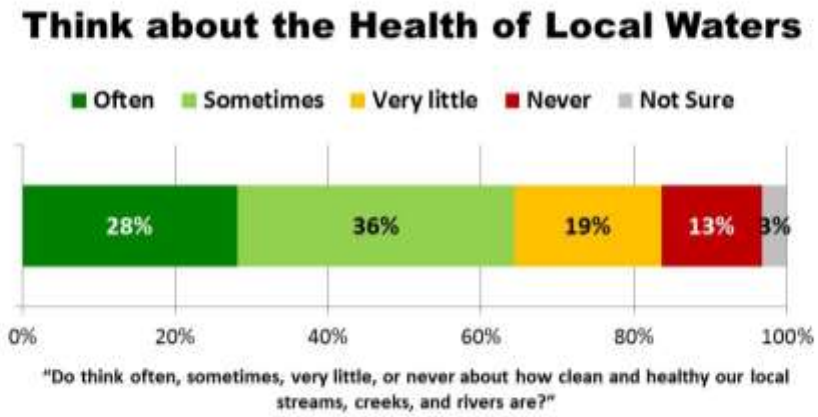


"Do you or others in your family swim, fish, or boat in the rivers or streams near where you live often, sometimes, very little, or never?"

This water contact, however, has almost no influence on attitudes about water quality, one's own impact on the water, or willingness to support a Healthy Water Fund. As measured in the survey, people who are often or sometimes in the water are only marginally more likely to see local waters as impaired, though they have much more confidence in the safety of the seafood that comes out of the water. In all other ways, their views are nearly identical to their neighbors who have little or no water contact. Therefore, there is no evidence in this research that people with water contact are a natural consistency who can be mobilized to support the Fund.

How Much Watershed Residents Think about Clean and Healthy Water

As another indication of residents' level of engagement and concern for the water, the survey asked how often residents *think about* "how clean and healthy our local streams, creeks, and rivers are." Nearly two-thirds of residents (64%) said they think "often" (28%) or "sometimes" (36%) about water health. One-third of the public (32%), however, thinks very little (19%) or never (13%) about how clean and healthy local waters are. This question provides one indication of how much of the public can be readily engaged on water quality issues.

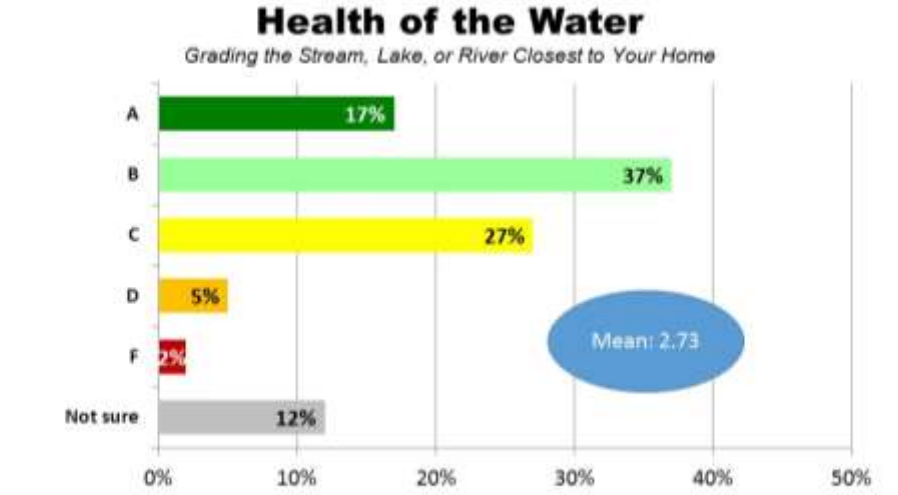


While 28% of residents overall think "often" about the health of local waters, that number jumps to 65% of those who rate themselves a "5" on the scale of environmentalism (the highest score), in other words calling themselves a "strong environmentalist." Residents over age 50 are also more likely to think about it, with 39% of those aged 50 to 64, and 34% of people over age 65 thinking often about how clean and healthy local waters are.

Grading the Local Waters

Survey participants were asked to offer their perceptions of the condition of local waters by using the classic A to F scale known from school. They were asked to grade the waters on this scale, with "A" meaning "extremely clean and healthy," and "F" meaning "extremely polluted and unhealthy." Grades ranged up and down the scale, averaging B-Minus.

A majority of residents (54%) graded their closest water an "A" (17%) or "B" (37%). Another 27% scored their water a "C," while 5% gave the water closest to them a "D," and 2% gave it a failing grade. Converted to a mean using the traditional 4.0 scale where A=4 and F=0, these water quality grades averaged 2.73 (B-Minus).

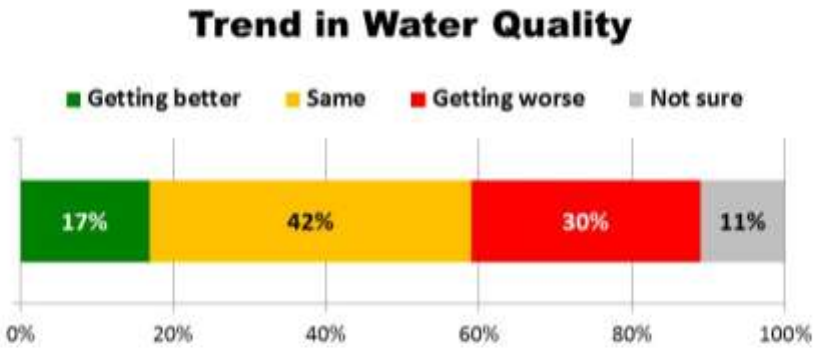


"Students are often given the grades of A, B, C, D, or Fail. If I were to ask you to grade the health of the stream, lake, or river closest to your home on that A to F scale where 'A' means it is extremely clean and healthy, and 'F' means it is extremely polluted and unhealthy, what grade would you give it?"
For mean calculation, A=4, B=3, C=2, D=1, F=0.

Compared to nearby areas, residents of the Brandywine-Christina watershed expressed a somewhat more positive assessment of their local waters. On the statewide Delaware survey conducted for DNS, residents graded their local waterways 2.17 on average (C-Plus). In a recent survey spanning the Chesapeake Bay watershed conducted by OpinionWorks (January 2016), residents' average score was just 2.06 (C). Brandywine-Christina watershed residents feel more positive about their most local waterways than do residents of those other nearby areas.

Perceived Trend in Water Quality

Comparing the condition of local waters today to "a few years ago," nearly twice as many Brandywine-Christina watershed residents see the health of local waters getting worse (30%) as those who see it getting better (17%). Many residents (42%), though, see no change in water quality compared to a few years ago, and another 11% said they are not sure.



"Do you think the health of local waters is generally getting better, getting worse, (or) staying about the same compared to a few years ago?"

Note that there is a strong relationship with age on this question. As illustrated in the table below, by a ratio of five to one residents under age 35 see the water as getting worse. Meanwhile, residents over age 50 see the water getting better by a ratio of about 1.5 to one.

Trend in Water Quality by Age Group

	Getting Better	Staying about the Same	Getting Worse	Not sure
Age 18-34	8%	38%	**39%**	14%
35-49	13%	40%	**39%**	8%
50-64	**29%**	43%	20%	9%
65 or older	**23%**	47%	16%	14%

There was a very strong sense in the agricultural focus group that not just water quality, but agricultural practices have improved dramatically over the last several decades. Farmers spoke of a variety of practices, especially cover crops, no till farming, and buffers, that they believe have made the ag community much better stewards of nearby waters.

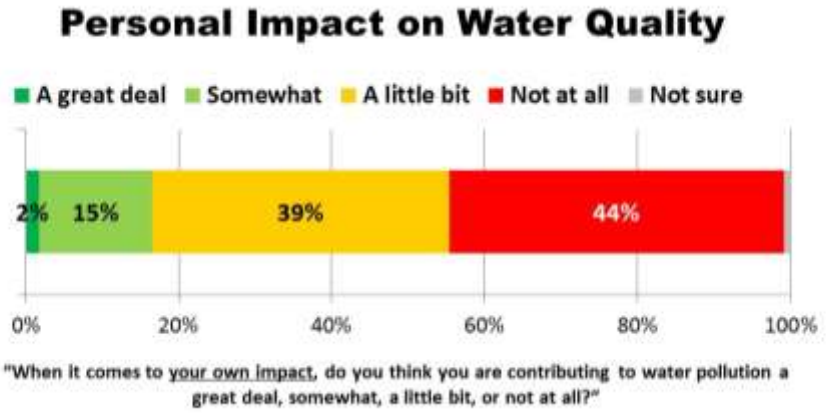
"The cover crop we put on last year had such good growth to it, we weren't getting any erosion out of the fields and stuff. We're at the beginning of, we have two beginning starts of the White Clay (Creek) on our farm." – Agricultural Focus Group Participant

The agricultural focus group participants also talked a great deal about State-mandated conservation plans, and the role those plans have made in encouraging better management of stormwater runoff. If these participants are any indication, the conservation plans have also made them highly aware of their responsibilities and conversant with best practices in water stewardship.

"I know mushrooms were a big pollutant years ago and now they are not, partly because of working with these conservation plans where all the water stays within the property and (is) handled, as opposed to in a big storm runoff. I know we've made improvements as an industry and I think other industries are doing the same." – Agricultural Focus Group Participant

Impressions of One's Own Impact

Residents tend to minimize *their own* impact on the water, with only 17% saying they contribute at least "somewhat" to water pollution. Almost four residents in ten (39%) said they contribute only "a little bit" to water pollution.



That leaves nearly half (44%) of watershed residents who feel they contribute to water pollution "not at all." This striking finding points up a need to educate the public about the average individual's impact. Without the belief that they are contributing to water pollution personally, individuals' engagement with water restoration will rely on their willingness to be philanthropic, or their sense of duty to clean up a mess that someone else has created – neither of which is a successful formula for widespread engagement.

This finding is not unique to the Brandywine-Christina watershed. In the recent Chesapeake Bay survey, 38% said they did not contribute to water pollution at all, and 35% said they contribute only a little bit.

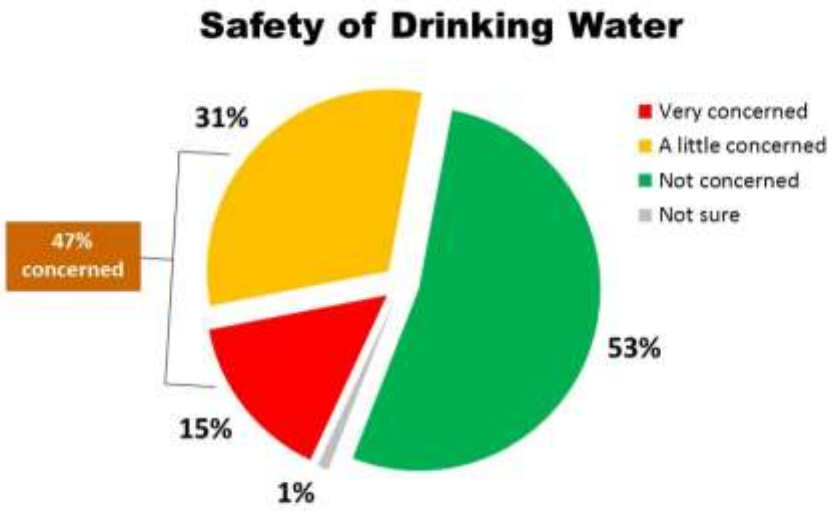
When asked in the focus groups who *is* to blame, both agricultural and suburban residents were most apt to blame two major culprits: legacy industrial pollution, and population growth that produces development, sprawl, and infrastructure problems such as sewer overflows. While farmers were very ready to blame suburban residents for water pollution because "they have to have the greenest lawn," agricultural focus group participants were also willing to accept their own share of responsibility for "pollution (resulting from) runoff from farmers." Simply, a farmer summed up individual responsibility this way:

> *"If you own a property, you've got runoff running off of that property. We should all take our part in making sure that water is as clean as it can be running off." – Agricultural Focus Group Participant*

Concerns about the Safety of Drinking Water

Concern for water quality is often driven by worries about the health and safety of tap water or local seafood. In the Pennsylvania portion of the Brandywine-Christina watershed, residents have significant concerns on both counts.

Nearly half of residents (47%) expressed some concerns about the safety of their drinking water at home. Fifteen percent of residents said they were "very concerned" about their drinking water, while another 31% said they were "only a little concerned" about the water that comes out of their tap.



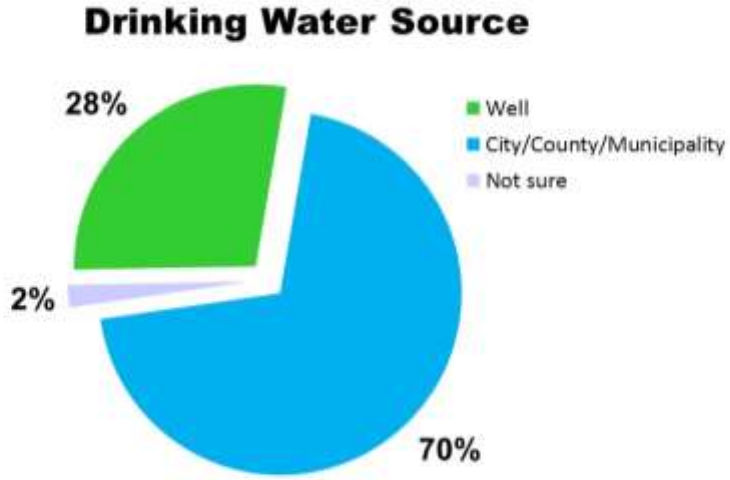
"Are you ever concerned about whether your own tap water at home is safe to drink?"
(If yes): "Would you say you are very concerned or only a little concerned?"
Note: Numbers will not always appear to add correctly due to rounding.

Naturally, the severe drinking water crisis in Flint, Michigan, which was so prominently in the news around the time of this research, was in the forefront of many people's minds. One focus group participant summed up the view of so many others, suggesting that such events could just as easily happen locally as they could in Flint:

> *"Unfortunately, some of these things don't pop up for 20 to 25 years. Flint, Michigan was a good example and that happened pretty quickly, but who knows what the effect of water and drinking water will be on our children or children's children because it just hasn't surfaced yet. We don't know enough."*
> *– Suburban Focus Group Participant*

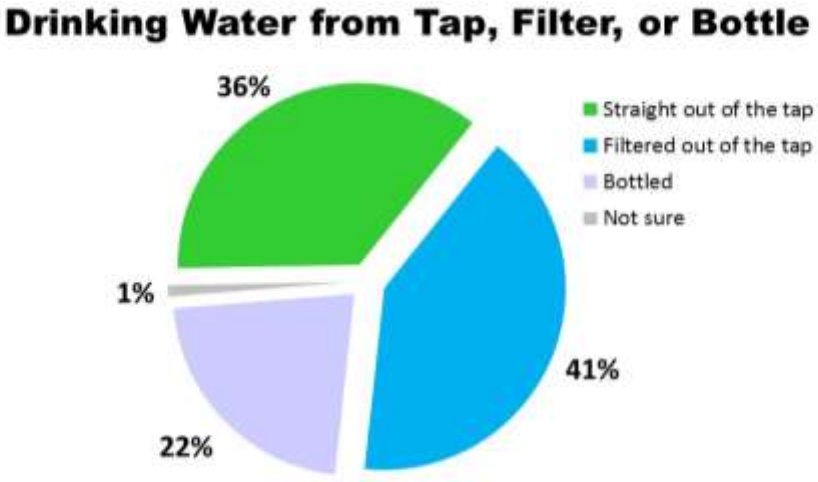
As measured by the DNS survey in late 2014, concern was much higher throughout the State of Delaware. In that survey, nearly four out of ten Delaware residents (38%) said they were *"very concerned"* about whether their own tap water at home was safe to drink, and another 29% were "a little concerned," for a total of 67% who were concerned in Delaware, compared to 47% in the Pennsylvania portion of the Brandywine-Christina.

Note that there is almost equal concern among residents that have public water (15% very concerned, 47% total concerned) and those who have a private well (14% very concerned, 46% total concerned). According to the survey, 70% of the watershed's residents receive their drinking water from a public source, and 28% from their own well, with 2% unsure.



"At home, do you get your drinking water from a private well, or does it come from your local city, county, or municipality?"

Only about one-third of residents (36%) are drinking the water at home straight out of the tap. Forty-one percent are filtering their tap water, and 22% are drinking bottled water.

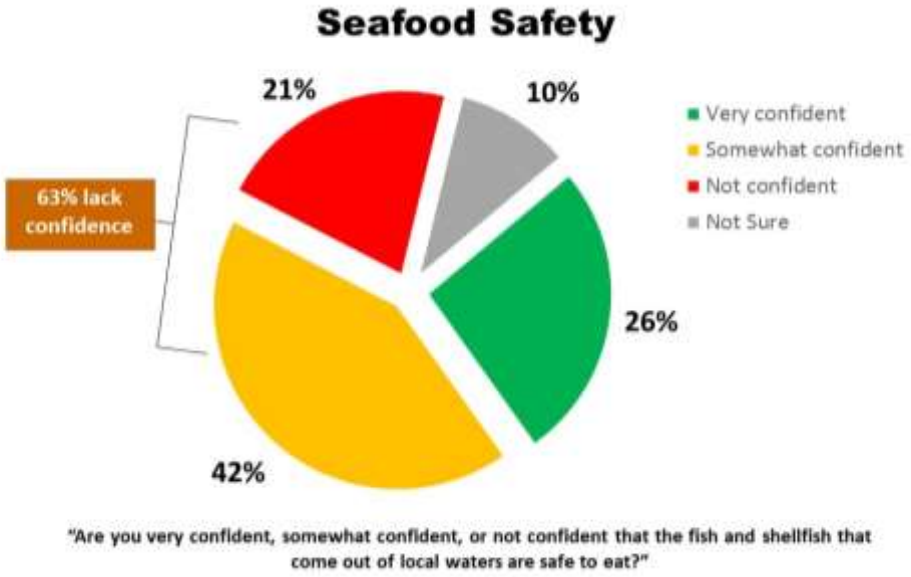


"Do you usually drink the water at home straight out of the tap, drink filtered water out of your tap, or drink bottled water?" (If more than one): "Which do you do most often?"

Though their level of concern about the safety of the water is the same, 55% of residents with well water drink it straight out of the tap, compared to only 29% of those on public water. Regardless of the source, 26% of people with concerns about the safety of their drinking water drink it straight from the tap, compared to 46% of those with no concerns.

Confidence in Locally Caught Seafood

When it comes to locally-caught fish and shellfish, 21% of watershed residents are "not confident" that seafood coming out of local waters is safe to eat. Another 42% are only "somewhat confident," indicating that nearly two-thirds (63%) of residents lack confidence in the safety of local seafood. Only about one-quarter of residents (26%) are "very confident" that local fish and shellfish are safe to eat.

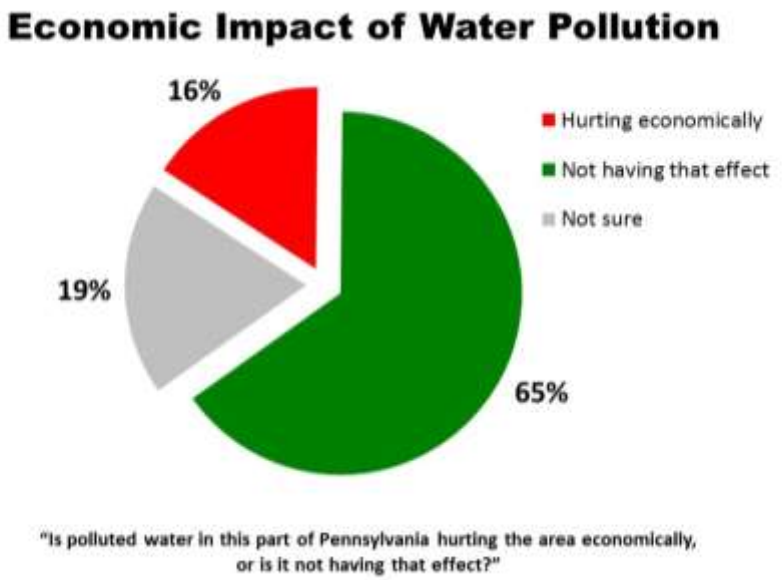


"Are you very confident, somewhat confident, or not confident that the fish and shellfish that come out of local waters are safe to eat?"

Numbers were slightly more negative in Delaware, where 31% in the DNS survey said they were not confident about the safety of local fish and crabs. Forty-four percent said they were somewhat confident, and fewer than one in five (18%) said they were very confident that local fish and crabs were safe.

Economic Impact of Water Pollution

Beyond drinking water and seafood concerns, there is little concern that polluted water is hurting the area economically. Only one-sixth (16%) of watershed residents said polluted water is having an economic effect, while 65% asserted that it is not having that effect and 19% were not sure.

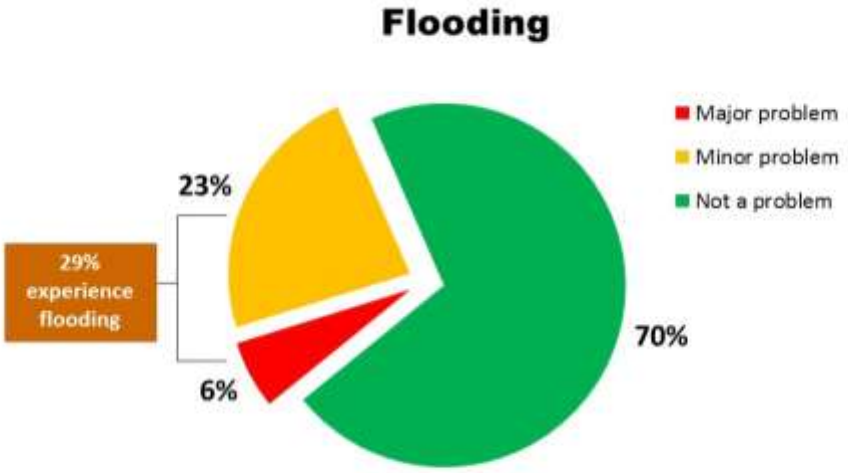


"Is polluted water in this part of Pennsylvania hurting the area economically, or is it not having that effect?"

This concern for an economic impact is much lower than that measured in Delaware, where over one-third of residents (37%) said they believed that polluted water hurts the state economically. Forty-two percent said polluted water was not having an economic effect, while 20% were not sure.

Local Flooding Impact

As one additional contextual issue, flooding in the immediate area where people live is a major concern of only 6% of residents, and a minor concern of another 23%, totaling 29% of residents who have a problem with localized flooding.

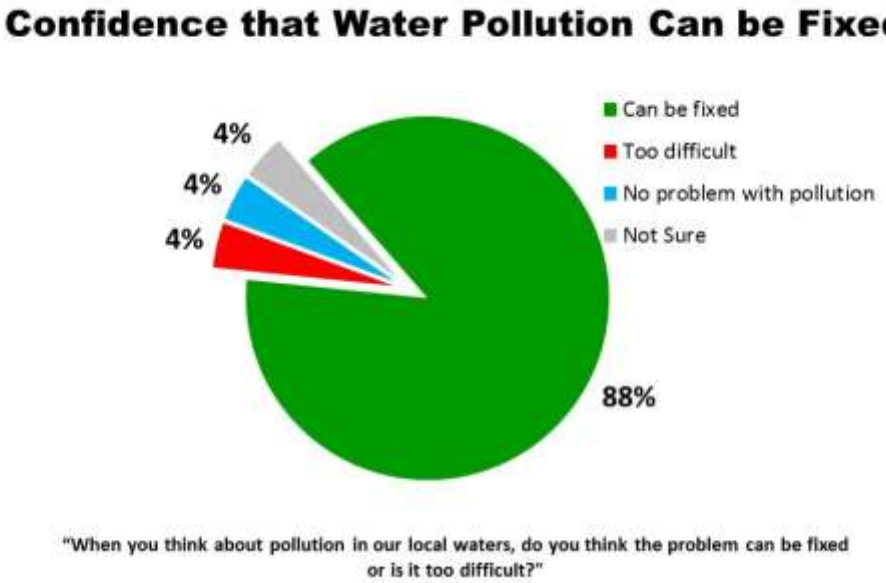


"Is flooding a problem in the immediate area where you live? (If yes): Would you call flooding a major or only a minor problem?"

Flooding concerns were even lower in Delaware, where 7% called local flooding a major problem and 15% called it a minor problem, for a total of 22%.

Confidence that Water Pollution Can Be Fixed

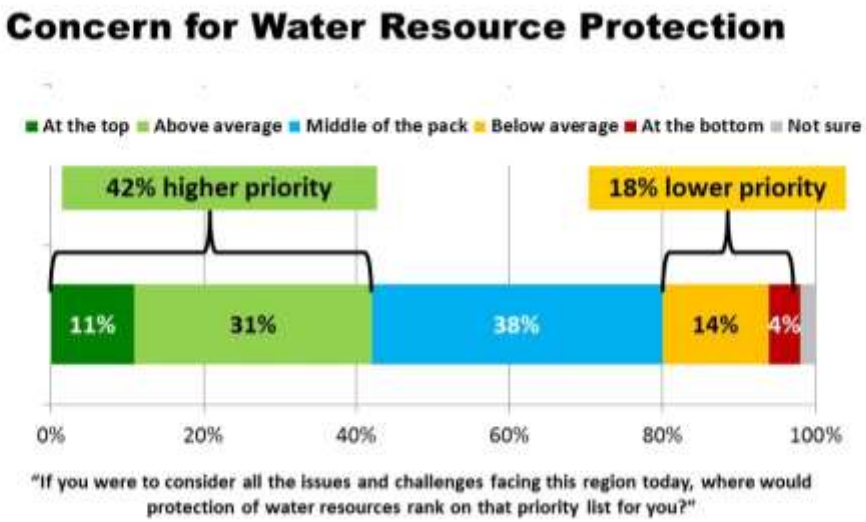
A belief that water pollution can be fixed and waters restored to health is key to engaging the public in water quality initiatives – whether personal stewardship or willingness to pay for restoration through a special fund. In the Pennsylvania portion of the Brandywine-Christina watershed, the news is very encouraging. An overwhelming 88% of residents believe that pollution in local waters can be fixed. Only 4% said the problem is too difficult to fix. Four percent insisted there is not a water quality problem, and the rest were not sure.



This compares favorably to the 82% across the State of Delaware who believe water pollution there can be fixed, as measured in the DNS survey. Across the full Chesapeake Bay watershed the comparable number is 91% who believe water pollution can be fixed, as measured in January 2016.

Personal Level of Concern for Water Resource Protection

Residents of this watershed have a strong underlying concern for protection of water resources. As a personal priority, considering "all the issues and challenges facing this region today," 42% of residents called water protection an above-average priority (31%), or "at the top" (11%) of their list of priorities. This is more than twice as many as the 18% who place it "below average" (14%) or "at the bottom" (4%) of their list of priorities. Many others (38%) place protection of water resources "in the middle of the pack" of their concerns.



This is slightly higher than the level of concern for water protection expressed by Delaware residents in the DNS survey. There, 36% placed protection of water resources as a higher priority than others, 43% put it in the middle of the pack, and 19% called water protection a lower priority.

In the Brandywine-Christina watershed, the level of concern is elevated among these subgroups:

- Sixty percent of people who are "very concerned" about the safety of their drinking water at home place water resource protection at the top or as an above average priority, compared to 42% of the general population.
- Fifty-five percent of those who consider localized flooding a "major problem."
- Fifty-two percent of those who are "not confident" about the safety of the local seafood supply.
- Fifty-four percent of those who think they have at least "somewhat" of an impact on water pollution personally.

The agricultural landowner focus group discussion was infused with a strong sense of trusteeship of the land – holding the land in trust for future generations and having a responsibility to leave it at least as healthy as they found it. For the focus group participants, this translated into an awareness and desire to treat the land well, and the water that flows through it.

"Lot of people don't realize I'm just a caretaker on this farm till the next generation takes over. I want to leave it better than when I found it. My son's going to be the fifth generation on the same piece of ground."

"…I want to have the best possible water for the next generation and the next generation when I pass everything on. I don't want it to be where we may not be able to drink the water or something."
– Agricultural Focus Group Participants

Many suburban residents in the watershed, as reflected in the focus group discussions, are well-intentioned and see their contribution to water quality through the lens of individual civic engagement and stewardship. They described their role as "vote," "recycle," "compost," "reducing waste in general." They tend to see the role of local non-profit organizations as advocacy, placing pressure on local elected officials to recognize water quality as a priority.

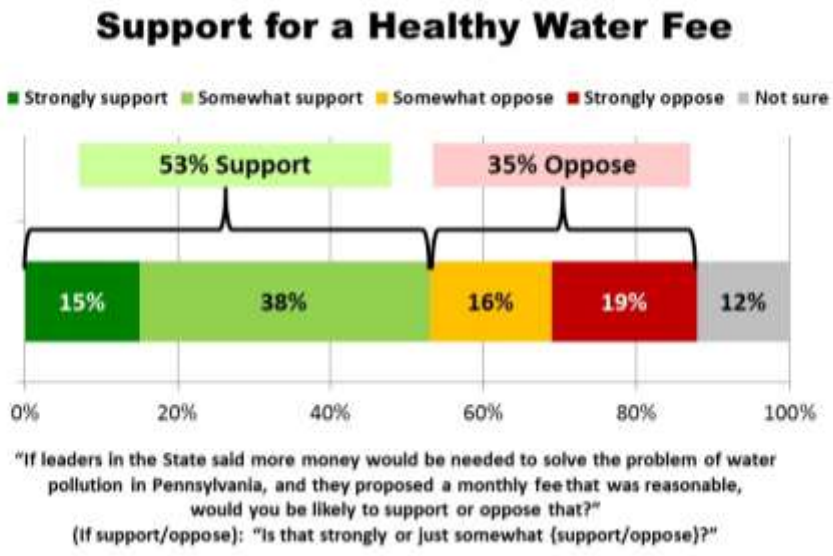
But in terms of their own potential to volunteer locally, the suburban residents came up empty trying to think of specific local groups that work on water quality. Clearly, where that awareness is lacking, even well-intentioned people will not become volunteers. Notably, the agricultural focus group participants were much more knowledgeable about the organizations that are working on watershed restoration and protection locally, and seemed to have a ready awareness of how to plug in and volunteer, or find the expert help when they need that.

> *"The Chester County Conservation District, for example, will come to your farm and help you write a conservation plan which will minimize soil loss and keep the water running off your property as clean as possible. They actively do that now, and they do a good job." – Agricultural Focus Group Participant*

Support for the Concept of a Healthy Water Fee

Part of the mission of this project was to explore the willingness of the public to pay, broadly speaking, for water restoration efforts in this watershed. While the research did not examine specific revenue-raising mechanisms or amounts, it did examine overall willingness to pay, and under what circumstances.

As a basic measure, the survey tested residents' level of support "if leaders in the State said more money would be needed to solve the problem of water pollution in Pennsylvania, and they proposed a monthly fee that was reasonable." Under this theoretical construct, a majority of residents would support such a monthly fee. Fifty-three percent would support it, with 15% doing so *strongly*. Thirty-five percent would oppose such a fee, with 19% doing so *strongly*. Twelve percent were unsure. As a baseline, this question identifies an 18% margin of support for the concept of a fee to reduce water pollution.



Significant observations can be made about the propensity of population subgroups to support the concept of a fee, as summarized in the table on the following page:

- One's own sense of environmental sensitivity is a very strong predictor of support, with those rating themselves high on the scale supporting a reasonable monthly clean water fee by about 40 points. "Average" environmentalists ("3" on the 5-point scale) exhibit a much lower level of support (+9%), while people who are low on the environmental scale ("2" or "1") oppose it by 10 percentage points.

- In partisan terms, Democrats are predisposed to support this concept by 44 percentage points, while Independent and third-party voters narrowly support it (+8%), and Republicans narrowly oppose it (– 5%).
- Women (+22%) and men (+14%) express similar support levels, with women slightly more favorably inclined.
- Whites support the proposal by 16 points, and Hispanics participating in the survey by an impressive 58 percentage points. Meanwhile, African-Americans and Asian residents are modestly predisposed *against* this idea; note that many Asians are undecided about this idea.
- The youngest age group in the survey, those under age 35, have the highest support levels for this concept (+34%). The next quartile (age 35 to 49, +3%) has the lowest margin of support. Support returns to higher levels over age 50 (50 to 64, +20%; 65 or older, +15%).
- Level of education, which is often a predictor of attitudes about public policy issues, has absolutely no bearing on support for this proposal. The margin of support falls within the range from +17% to +23% across all education levels.
- Agriculture, which was strongly opposed to Delaware's clean water fee, expressed support in the Pennsylvania portion of the Brandywine-Christina watershed by a margin of 12 percentage points. Residents with no family ties to agriculture exhibited only slightly stronger support (+19%).
- The issue is a toss-up among residents on well water (+2%), while those on public water are strongly supportive (+24%).
- While residents who acknowledged that they contribute to water pollution at least "a little bit" support a water pollution fee by margins ranging from 26% to 28%, those who feel they impact water pollution "not at all" support a fee by a much smaller 6% margin.

(See table, next page.)

Support for Healthy Water Fee by Subgroup

Subgroup	Support	Opposed	Margin
All Residents	**53%**	**35%**	**+ 18%**
Strong environmentalists (“5”)	62%	24%	+ 38%
Above average (“4”)	66%	20%	+ 46%
Average (“3”)	50%	41%	+ 9%
Low (“2” or “1”)	36%	46%	– 10%
Democrats	64%	20%	+ 44%
Republicans	43%	48%	– 5%
Unaffiliated Voters/Third Parties	48%	40%	+ 8%
Women	55%	33%	+ 22%
Men	51%	37%	+ 14%
Whites	52%	36%	+ 16%
African-Americans	39%	44%	– 5%
Asians	16%	37%	– 21%
Hispanics	72%	14%	+58%
Less than 35	63%	29%	+ 34%
35 – 49	43%	40%	+ 3%
50 – 64	56%	36%	+ 20%
65 or older	51%	36%	+ 15%
High school diploma or less	56%	33%	+ 23%
Some college	53%	35%	+ 18%
College graduate	52%	35%	+ 17%
Graduate work	52%	35%	+ 17%
Family involved in agriculture	55%	43%	+ 12%
No agricultural tie	53%	34%	+ 19%
Well water	45%	43%	+ 2%
Public water	56%	32%	+ 24%
Own behavior impacts water “a great deal” or “somewhat”	51%	25%	+26%
Impacts the water “a little”	60%	32%	+ 28%
Impacts the water “not at all”	47%	41%	+ 6%

Of course, many people would feel better if contributions to such a fund were voluntary. People do not like new taxes, and this local watershed is no different than others in that regard. This is not to say that residents would react negatively to a compulsory fund, as the support numbers indicate, but only that they would *prefer* for the fund to be voluntary – and they like to think that they would probably be among the contributors.

> *“I think the option should be given to you on your monthly bill or your quarterly bill. I think we pay quarterly. Would you care to pay ten dollars towards a water purification fund or something? Behind it there was an explanation of what it went to, some type of sources and uses statement which spelled out what it was for. Check a box, add ten dollars to your bill, yes/ no.” – Suburban Focus Group Participant*

The prospect of a new compulsory tax or fee made some focus group participants “nervous.” Agriculturalists pointed out that there are already many revenue streams through federal and state

agencies such as NRCS and others, and that part of the battle is just ensuring that the local area gets its fair share of existing revenues.

Focus group participants were also clear that they would be much more comfortable with a fund that was administered by an independent not-for-profit organization, not the government.

"I would feel more comfortable with the not-for-profit with a specific grant that also had reporting responsibilities…not government-run." – Suburban Focus Group Participant

The suburban residents did not have a specific non-profit that they admired or would find particularly credible to administer the fund. But the agricultural focus group repeatedly cited the Stroud Water Research Center in Avondale, Pennsylvania, as the organization with the expertise and credibility to impartially administer the fund. The respect for this organization is very high. If not them, another entity of similar perceived independence and impartiality should be identified to administer a future Healthy Water Fund, participants thought. The Brandywine Conservancy was mentioned as a possible alternative.

In addition to independent administration, and despite a hope that the fund would be voluntary, in the end focus group participants said they would feel better about the fund if everyone paid into it.

"Everybody should pay into the fund…because everyone uses the water supply." – Suburban Focus Group Participant

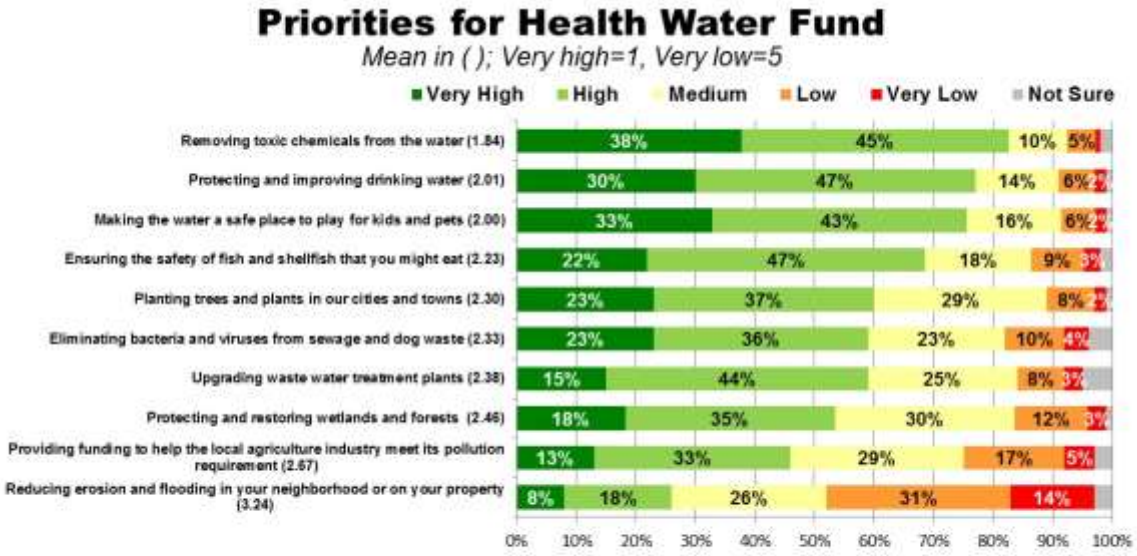
Residents' Highest Priorities for a Healthy Water Fund

The research tested ten possible areas of focus for funding from a prospective Healthy Water Fund. The tested priorities were:

- Upgrading waste water treatment plants
- Protecting and improving drinking water
- Removing toxic chemicals from the water
- Providing funding to help the local agricultural industry meet its pollution requirements
- Reducing erosion and flooding in your neighborhood or on your property
- Protecting and restoring wetlands and forests to help absorb stormwater
- Planting trees and plants in our cities and towns
- Eliminating bacteria and viruses from sewage and dog waste
- Ensuring the safety of fish and shellfish that you might eat
- Making the water a safe place to play for kids and pets

Each priority was rated by survey participants on a five-point scale, indicating their opinion of how important it is as "a priority that needs to be addressed." The scale was "very high," "high," "medium," "low," and "very low." The illustration below indicates how each of these priorities scored, ranked from highest to lowest. Also included is a mean, computed with "very high" equal to 5 and "very low" equal to 1.

The highest-scoring priority is "removing toxic chemicals from the water," which was rated a "very high" or "high" priority by 83% of the survey participants.



"I would like to read you some of the specific ways this fee would be used. Regardless of whether you think a fee itself is a good idea, please tell me if each specific area I mention is a priority that needs to be addressed somehow. Use the scale very high, high, medium, low, or very low priority."
For mean calculation, Very High=1, High=2, Medium=3, Low=4, Very Low=5.

Focus group discussion revealed a profound concern among residents about the possibility of toxins in the water. They understood there to be direct links to their health, and expressed the importance viscerally of addressing toxins.

"I mean that sounds like it should be a focus. One of the most dangerous things that could affect everyone. It affects the people. It affects the infrastructure delivering it to the people. That would be one of the highest things to do first with the money I guess." – Suburban Focus Group Participant

"I mean the toxic chemicals kill the environment. Kill the fish, the birds. It gets in the drinking water. It hurts your kids. It does everything. Everything else is okay. We can deal with (everything else)." – Suburban Focus Group Participant

Not only do toxins frighten residents, given their highly potent health impacts, but their presence also created a sense of urgency to act. In focus group discussion, it was evident that the prospect of "toxins" in the water was highly motivating. One participant, in fact, spelled out the idea that toxic discharges, or poisonous legacy pollution, can create a sense of "crisis" that might be needed to motivate many average people to support an initiative like water restoration through a Healthy Water Fund.

"I think, again, if it was identified as being an emergency and something was directly related to the water being in poor quality, then additional resources might be focused on it." – Suburban Focus Group Participant

Rounding out the top tier of priorities were these

- Protecting and improving drinking water (78% very high or high priority),
- Making the water a safe place to play for kids and pets (76%), and
- Ensuring the safety of fish and shellfish you might eat (68%).

Note that these all relate to the most personal impacts of poor water quality – those that would affect one's own, or the family's, health and safety. Somewhat less important to residents are those related to planting greenery, upgrading infrastructure, and the like. Though important in their own right, they do

not achieve top-level importance for residents because their impact is at least one step removed from the individual and his or her family. Please note that this line of discussion is not a policy recommendation for how a future Healthy Water Fund should prioritize its spending, but only a recommendation for what aspects of the Fund to emphasize with the public in order to secure their engagement and support.

One other priority bears a special mention. "Providing funding to help the local agriculture industry meet its pollution requirements" is only slightly more important to agricultural families, with 49% rating it a very high or high priority, compared to 45% of non-agricultural residents. In a practical sense, however, it is appreciated by farm operators, as pointed out by this focus group participant:

"That is a key to helping things happen. Landowners generally want to do the best job they can to minimize pollutant runoff on their land, and having someone invest along with them is great…It costs a lot of money to do the improvements we're talking about, and having cost share funding's very important."
– Agricultural Focus Group Participant

In the end, the knowledgeable farm participants said they would like the independent experts at the Stroud Water Research Center to decide what the top priorities for the Fund should be.

"They're running their studies. They've been in that industry.
"…so they know. "
"They should be able to know."
"Yeah, they would be well-equipped."
"They know how to prioritize the most."
– Agricultural Focus Group Participants

Administration of the Fund

Both suburban residents and agriculturalists in the focus groups exhibited a very strong willingness to spend money from such a fund where it is needed, even if that is upstream and well outside of their own township's boundaries. They expressed an intuitive understanding that money spent carefully upstream could avoid much bigger problems downstream. They were ready to unshackle administrators of such a fund to spend the money where it will have the most impact, as long as they, personally, would eventually see some benefit. Succinctly summing up this point of view, a suburban resident said,

"Yeah, (it's okay if some of the funds go to other parts of the region) because it's going to affect you eventually. Water flows downstream." – Suburban Focus Group Participant

An agricultural participant summed up an unrealistic level of impatience to see results, however:

"I would like to know how long it's going to take for me to feel the benefit either way. Do you see what I'm saying?…If you're getting cleaner, if you're getting public water and we're cleaning up the streams, you should feel it right away because they're going to have to use less chemicals to clean that water… (I would like to see it) in a month." – Agricultural Focus Group Participant

In communicating with the public, part of the challenge will be to create a sense of patience, that investments now will take some time before they are directly felt by watershed residents.

In a related theme, the agricultural focus group participants stressed the positive role of a fund as a preventative. The concept of spending a little money now to prevent a much bigger problem later was very appealing to participants.

"I'd rather do it in the beginning. That's why I was willing to give a little money because I don't want to do it later. I don't want to have to say, 'Okay, it's a mess now, and we need ten million dollars to clean it up.'"
– Agricultural Focus Group Participant

Language

As a guide to help structure conversation with the public, several words and phrases were tested to understand the associations they call to mind. It is always important to choose words that encourage and engage public conversation, rather than placing unanticipated barriers in front of that conversation. This exercise helps pinpoint the words that engage the public most readily.

- "Polluted" vs. "contaminated" vs. "toxic" represented a hierarchy to focus group participants. Polluted is the least serious, and toxic is the most severe of the three. Like toxic, focus group participants said contaminated means "poisoned," whereas polluted simply means "dirty" or "compromised." For some, "toxic" is extreme and may not be able to be fixed. Using a word like contaminated, they said, creates urgency, while providing a sense that the water can be repaired.

"'Contaminated' is a better word… Everything's a little 'polluted' already, right? So contaminated is…that's Flint. So if you go to these guys and you go, 'We're going to raise your taxes because the water is contaminated,' then we'll probably push something like that through."
– Suburban Focus Group Participant

- "Fund" is more positive than "tax" or "fee," both of which sound compulsory. "Fund" also conveyed the idea that "it would have specialized oversight," which is a strong positive to chronically skeptical taxpayers.

"'Fund' means we're gathering a lot of money, and we're hoping you will help us. It gives us hope."
– Agricultural Focus Group Participant

- All three terms, "clean water," "healthy water," and "water quality" tested positively and had their advocates. There was no consensus on which term was more compelling. Though it was not heard here, it is typical that "clean" conveys the idea that the water is clear and fresh. But "clean" does not preclude the possibility that something has been added to the water to make it that way. "Healthy," on the other hand, normally conveys a sense that the water is in a more natural state, healthy for both humans and aquatic life.
- "Runoff" is more likely to contain contaminants than is "stormwater," participants said.

"Runoff left the property. Stormwater is just water that comes from a storm."
– Agricultural Focus Group Participant

- "Excess fertilizer" is a much more understandable term for most people, focus group participants agreed, compared to "nutrients," which will be thought to be a good thing.

Conclusions

The concept of a Healthy Water Fund enjoys support from a majority of the public. Residents have many water quality concerns, but continue to believe that water pollution problems can be fixed.

Both residents and agricultural producers put important caveats on their support for a Healthy Water Fund. Advocates will need to address the public's desire to have the fund independently administered and accept contributions voluntarily. The public will also need to be counseled to have patience, not expecting to see water quality improvements quickly.

Through it all, reminding the public that the impacts of contamination in local waters are *personal* will be the best way to build support. Gradually persuading the public that everyone is contributing to contamination of the waters will spread ownership and ultimately build support.

This research provides guidance for public outreach to support the concept of a Healthy Water Fund, based on the perceptions and attitudes of key audiences. Thank you for the opportunity to undertake this important work to help bring about cleaner, healthier waters in the Brandywine-Christina watershed.

OpinionWorks LLC
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How This Research Was Conducted

Watershed Survey

For this survey, OpinionWorks interviewed 300 randomly-selected adult residents of the Pennsylvania portion of the Brandywine-Christina watershed in May 2016. The interviews were conducted by telephone and administered by trained and supervised live interviewers who are skilled in opinion research best practices.

This survey has a potential sampling error of no more than ± 5.6% at a 95% confidence level, meaning that at least 95% of the time the survey results would differ by no more than that margin if every adult resident of the study area had been interviewed.

Interviewees were drawn randomly from commercially-available databases of area residents and matched with landline and wireless telephone numbers. Zip code boundaries were used as a practical way to come close to the actual watershed boundaries. The sample was balanced geographically and demographically during interviewing. Weights were applied to bring the survey sample into compliance with the demographic breakdown of the watershed's population.

Focus Groups

The qualitative research method of focus groups allows deep exploration, reaching the emotional level where people form views and make many decisions. This technique is helpful for providing context and helping to answer "why" questions. Through this method, a small number of people gather around a table with a professional facilitator who is knowledgeable and skilled at affirming and including everyone's viewpoint. Participants are, as much as possible, grouped with others of similar background and outlook to provide a positive, reinforcing energy to the discussion.

In this case, one focus group was held among each of these two audience segments on the evening of May 12 at the New Garden Township Building:

- Suburban residents
- Agricultural producers

A total of 13 people participated, having been screened to be civically aware as measured by voting and/or paying attention to local news and information. Self-described "strong environmentalists" were screened out of the discussion because it was anticipated they would have a predisposition to favor the Healthy Water Fund and would not reflect the mainstream of opinion in the watershed. Participants were compensated to attend the focus groups and offer their honest thoughts and opinions.