

# ANNUAL REPORT 2016



*Some of the fourteen members of the July 14th Boat Brigade from New Paltz to Rosendale.*

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Neil Bettez, Science Working Group



A Program of the New York State Department of Environmental Conservation

**Hudson River  
Estuary Program**

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*The crew of the Alliance's Happy Heron in the Regatta Parade.  
New Paltz, May 1st. (l-r) Craig Chapman, Archie Morris, Arthur  
Cemelli, and Rich Picone.*

## INTRODUCTION

The Wallkill River Watershed Alliance was founded just eighteen months ago, making 2016 has been the first full year for the Alliance. This first Annual Report to the membership and Board of Directors highlights the most important developments within the Alliance over the past year.

It's worth noting from the start that the Alliance would not be where it is today without the support of many individuals and institutions. Our fiscal sponsor Riverkeeper has devoted numerous resources to supporting our work, especially the advice and technical assistance of Dan Shapley and Jen Epstein. Equally important are the resources and staff time given by the Hudson River Estuary Program. Thanks to the HREP staff, including Laura Heady, and especially Emily Vail, who has gone above and beyond on numerous occasions to assist the Alliance and

consistently demonstrated her concern with our success. Funding for this report, in fact, was provided by the Hudson River Estuary Program.

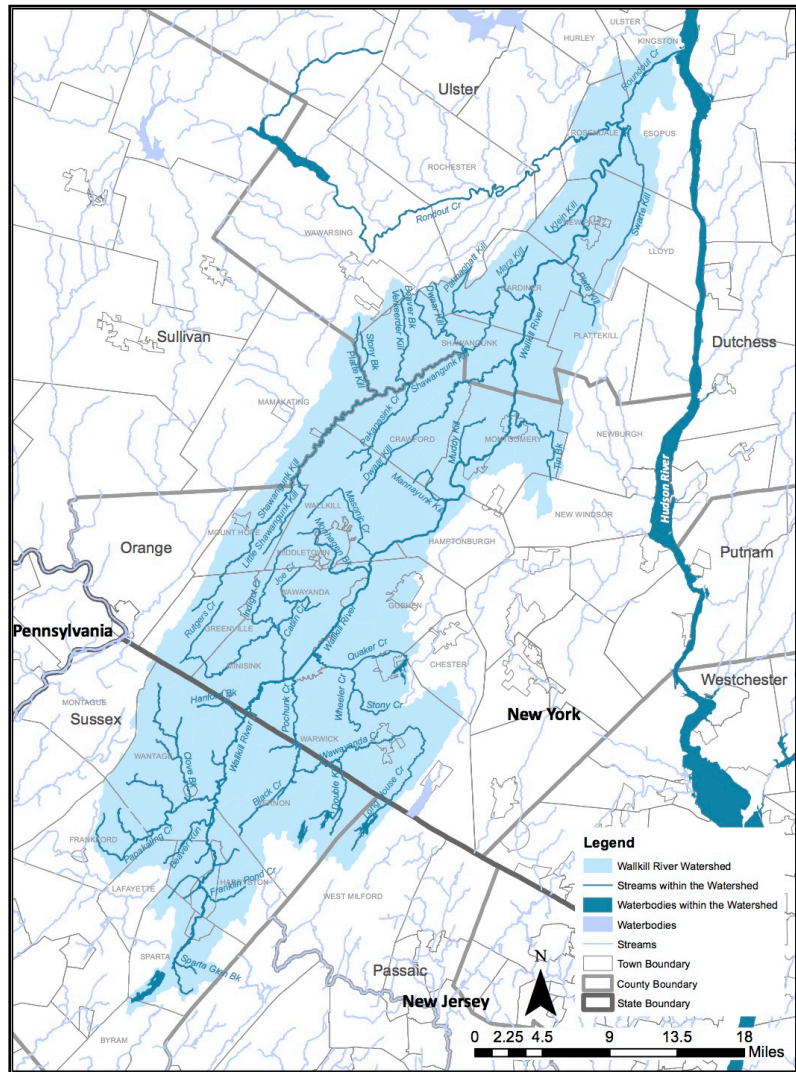
The Hudson River Watershed Alliance has been an important partner, in particular Executive Director Maureen Cunningham and Board President Simon Gruber. Our Boat Brigades would not be nearly as effective without Craig Chapman's 'New Paltz Kayaking Tours', who donated free kayaks and transportation to anyone who came to a Brigade. In addition, both the Benjamin Center at SUNY New Paltz and the Orange County Planning Department/Orange County Water Authority have been generous with their support, in particular Orange County Planning Director Dave Church. And at various times the Village of New Paltz, Town of New Paltz, Ulster County, SUNY Rockland, and SUNY Ulster have all rendered much appreciated assistance.

As we end 2016, we are in the midst of a process to narrow our focus and prioritize concrete actions to take over the next two years (discussed more below). One of the main organizing principles to come out of this process is categorizing our work into three main priorities:

- **Water Quality.** A Wallkill that is swimmable, with pollution levels below acceptable limits and no harmful algal blooms.
- **Public Access and Engagement.** Fostering a public individually and personally invested in the well being of the river and its' watershed, as well as involved in its restoration.
- **Capacity Building.** Increasing the time, funding, and people dedicated to restoring the watershed, for both the Alliance and our allied organizations, agencies, and governments.

This report is organized into three sections, one for each Priority, though not all that developed neatly fits into one of these three categories. It will help us conceptualize our work moving forward if we see our accomplishments within the same framework.

The Alliance is organized into four Working Groups (Boat Brigades, Outreach, Policy, and Science) which come together once a month at a General Meeting to share information and coordinate action. The Alliance as a whole is governed by an elected Board of Directors, including an Executive Director who oversees the day-to-day coordination of the Alliance.



*The Wallkill River watershed. Almost 800 square miles across two states, five counties, and 43 local governments.. Map designed by Laura Heady of the Hudson River Estuary Program.*

The accomplishments described below are largely due to the hard work of our Working Groups and their respective Chairs.

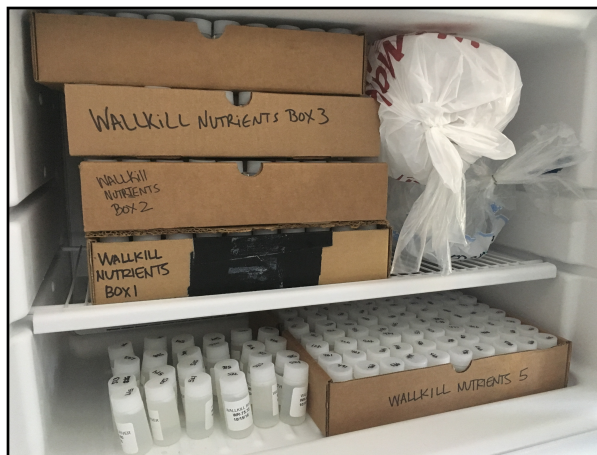


## WATER QUALITY

*A Wallkill that is swimmable, with pollution levels below acceptable limits and no harmful algal blooms.*

There are several well-documented water quality issues in the Wallkill and its' tributaries. Some of these include arsenic, DDT and other pesticides, pathogens, excess nutrients, erosion/sediment, a series of harmful algae blooms and the effects of climate change on rainfall/drought and temperature.

The Science Working Group, Chaired by Neil Bettez, PhD, has been working this year on prioritizing and framing research questions, while beginning the work of additional testing of the Wallkill for nutrient pollution. The sampling and testing for nutrient pollution was made possible by a grant secured by Riverkeeper (see "Capacity Building" below), and several Science Working Group members participate in Riverkeeper's long-standing Wallkill monitoring program for fecal contamination.



*Over 250 Wallkill River samples collected this year stored in Riverkeeper's freezer - on their way to the Cary Institute for Ecosystems Studies for analysis.*

## GIS

The Science Working Group secured a GIS intern from the SUNY New Paltz Geography Department. James O'Hara collected all the relevant data files from various agencies and organized them into a watershed-scale context. Land use cover, for example, can now be examined either watershed-wide, or at the sub watershed scale. Collecting and organizing this data is a first step towards being able to answer questions at the watershed scale.

## Testing for Nutrient Pollution in Tributaries

Thanks to a Hudson River Estuary Program grant secured by Riverkeeper, the Science Working Group put in place a testing regime for nutrient pollution. Every Monday in August, samples were taken at the mouths of all the major subwatersheds to analyze for nitrogen (ammonium nitrate) and phosphorus (phosphate). Impacting the results is the fact that over the course of five weeks of sampling there were different hydrological conditions, ranging from drought to storm surges.

The results of those samples - along with GIS land use characterization for each subwatershed - will help formulate questions about how the different land uses within the various subwatersheds affects nutrient concentration. Are there relationships between land use cover and nutrient concentrations? How does precipitation affect nutrient concentration across subwatersheds with different land use characteristics? What insight do we gain as to what drives our Harmful Algae Blooms (our nutrient samples were taken just prior and during the 2016 HAB)?

The samples are currently being analyzed at the Cary Institute for Ecosystem Studies' Analytical Laboratory in Millbrook, New York. We are awaiting results.

In total, 262 samples were taken of the Wallkill this year, including Riverkeeper's fecal contamination testing and the Science Working Group's nutrient pollution testing.<sup>1</sup>

## Harmful Algae Bloom

Beginning in August, a large harmful algae bloom (HAB) developed in the Wallkill. Ultimately lasting more than two months and covering a 30 mile stretch of the river from Montgomery north to Rifton, one sample was tested as having 88 times the safe toxin levels established by the DEC. Working with Riverkeeper, the Alliance repeatedly sampled at various locations, as well as visually monitored the bloom as it evolved. Neil Bettez, Archie Morris, and Jason West sampled three times a week for more than a month, supplementing the sampling done by Riverkeeper and providing the capacity for a more fine-grained picture of nutrient levels once the samples are analyzed by the Science Working Group this winter. Samples were analyzed by Dr. Jillian Decker and Dr. John Gotto of the Alliance, and sent via Riverkeeper to the SUNY College of Environmental Science and Forestry for toxin analysis<sup>2</sup>.

As the HAB drew to a close, the Alliance assisted Emily Vail of the Hudson River Estuary Program to organize a public event at SUNY New Paltz entitled, "Why Did the River Turn Green? Harmful Algal Blooms in the Wallkill River." The event drew an overflow crowd of more than 65 people, as well as streamed live on Facebook where it was watched by more than a dozen others.

See Appendix A for a timeline of the 2016 Harmful Algal Bloom.



*A view of this year's Harmful Algae Bloom from the construction site of the Carmine Liberta Bridge in New Paltz.*

## WAVE Trainings

<sup>1</sup> The subwatersheds tested for nutrient pollution were, from south to north:

- The Papakating Creek watershed in Frankford, Lafayette, and Wantage, NJ. Includes the West Branch of the Papakating Creek, and Clove Brook.
- The Rutgers Creek watershed in Greenville, Minisink, Wawayanda, and Wallkill, NY. Includes Indigot Creek, Joe Creek, and Catlin Creek.
- The Pochuck Creek watershed in Vernon, and West Milford, NJ, and Warwick, NY. Includes Black Creek, Double Kill, Long House Creek, and Wawayanda Creek.
- The Quaker Creek watershed in Warwick, Goshen, and Chester, NY. Includes Stony Creek, and Wheeler Creek.
- The Monhagen Brook watershed in Middletown and Wallkill, NY.
- The Masonic Creek watershed in Wallkill, NY.
- The Tin Brook watershed in New Windsor and Montgomery, NY.
- The Dwaarkill watershed in Wallkill, Crawford, and Shawangunk, NY.
- The Shawangunk Kill in Greenville, Mount Hope, Mamakating, Wallkill, Crawford, Shawangunk, and Gardiner, NY. Includes the Little Shawangunk Kill, Platte Kill (and Stony Brook), Verdeer Kill, Pakanasink Creek, Beaver Brook (including a minor Dwaar Kill), Palmaghatt Kill, and Mara Kill.
- The Mara Kill watershed in Gardiner, NY.
- The Platte Kill watershed in Plattekill, Gardiner, and New Paltz, NY.
- The Kleine Kill watershed in New Paltz.
- The Swarte Kill watershed in New Paltz, Lloyd, and Esopus, NY.

<sup>2</sup> See Appendix A: HAB Timeline and Sampling Results

Martha Cheo of the Outreach Working Group, led a series of WAVE (Water Assessments by Volunteer Evaluators) trainings in the Wallkill watershed. WAVE citizen scientists collect benthic macro invertebrates (like crayfish, or mayflies) and - based on the assemblages of invertebrates found - judgements can be made about the health of the streams tested. Above is a chart showing the WAVE results from the Wallkill River watershed this year. More detailed information can be found in Appendix A: Detailed WAVE (Water Assessment by Volunteer Evaluators) Sampling.

Wallkill River Watershed Alliance WAVE Sampling Results 2016

Note: These results have been verified by DEC staff

River/stream	Site	Town	Date	# Most Wanted	# Least Wanted	Assessment
Swartekill	Upstream of Hardenburgh Rd.	Esopus	7/12/16	7	2	No Known Impact
Dwaarkill	Upstream of Bruynswick-New Prospect Rd.	Shawangunk	7/27/16	7	1	No Known Impact
Verkeerderkill	Upstream of Pirog Rd.	Mamakating	7/27/16	9	1	No Known Impact
Shawangunk Kill	Downstream of Albany Post Rd.	Gardiner	8/11/16	6	4	No Known Impact
Wallkill River	Off Farmers Tpke., across from Gaging Station	Gardiner	8/11/16	4	5	Possibly Impaired
Tin Brook	Next to Tin Brook Apartments, off Rte. 52	Walden	9/6/16	2	3	No Conclusion
Mill Brook	Millbrook Preserve, straight down from the end of N. Manheim	New Paltz	9/20/16	3	4	Possibly Impaired

DEC Guidelines:

6 or more Most Wanted => "No Known Impact"

4 or more Least Wanted => "Possibly Impaired," flagged for further investigation

## PUBLIC ACCESS AND ENGAGEMENT

*A public individually and personally invested in the well being of the river and its' watershed, as well as involved in its restoration.*

One of the most effective methods of transforming local residents into Wallkill enthusiasts and water protectors is to foster personal, repeated experiences in and near the river. The more someone has a personal relationship to the water, the more invested they are into protecting what we have and restoring what we've lost.

Public access is related to public engagement, as it's clear the more access points there are to the river and its tributaries, the more opportunities there are for the public to engage. Promoting existing access points and encouraging the development of others is a key facet of public engagement, yet distinct enough to need its own emphasis.

Over the course of 2016, the Alliance's most powerful engine of public engagement has been our Boat Brigades, as well as our Outreach Working Group.

### Boat Brigades

The Boat Brigades began 2016 with their (now annual) winter speaker series at the Gardiner Library. The two lectures drew dozens of attendees:

- A talk by Stuart Findlay of the Cary Institute of Ecosystem Studies, "Observing the Hudson River Ecosystem: Issues, Incidents and Lessons", January 9th 4-6 pm, Gardiner Library
- A talk by John Gebhards of the Quassaick Creek Watershed Alliance on the characteristics of an effective watershed alliance.

The spring was spent planning for the year's paddles, as well as conceiving, designing and building the Alliance's entry into the New Paltz Regatta. The "Happy Heron", piloted by Archie Morris, Arthur Cemelli, Craig Chapman, and Rich Picone, won the Regatta in the "Most Creative" category.

In the months after the Regatta, the Boat Brigades launched a series of public expeditions on the river. With the addition of Archie Morris of Walden to the Brigades team this year, there was a renewed focus on including paddles in Orange County. The Boat Brigade Reports for the year are attached to this report as Appendix A. Special thanks go to our partner (and Alliance founding member) Craig Chapman, whose "New Paltz Kayaking Tours" graciously donated free use of kayaks and transportation to Boat Brigades in the New Paltz area. In 2016, the Boat Brigades brought more than XX people out on the river.

- June 11th, from Rosendale to Esopus, with 7 participants
- July 14th, New Paltz to Rosendale, with 14 participants
- August 6th, from Montgomery to Middletown
- September 10th, in New Paltz (cancelled due to ongoing Harmful Algal Bloom)



*The Boat Brigade's "Happy Heron" wins Most Creative at a drizzly 2016 Wallkill Regatta, New Paltz, May 1st,*

### Tabling and Online Outreach



While the weather was poor (drizzling lightly all day), the Outreach Working Group was at the Regatta as well. Amy Kletter, Martha Cheo, Jason West, and Emily Vail (of the Hudson River Estuary Program) spoke with passersby about the river and the Alliance. Martha had a collection of macro invertebrates on hand that were, as always, popular with young children, giving the rest of us time to talk with their parents. Over the course of the year, the Outreach Working Group tabled at the:

- The Earth Day Fair at the Dutch Reformed Church in New Paltz on April 16th.
- The Wallkill Regatta in downtown New Paltz and Sojourner Truth Park on May 1st.
- Thruway Sporting Goods' Great Outdoor Sports Expo at James Olley Park in Walden on May 21st.
- The 9th Annual Earth and Water Festival at Thomas Bull Memorial Park in Montgomery on June 4th,
- The Hudson River Watershed Alliance Annual Conference at the Henry A. Wallace Center in Hyde Park on November 2nd.

Between tabling and online promotion, 43 people formally joined the Alliance in 2016, we gained an additional municipal member, adding the Village of New Paltz to the Town of New Paltz and Ulster County. nearly a hundred people signed our mailing lists, and we currently have 182 members on our main emailing list.



*Martha Cheo of the Outreach Working Group explains macro invertebrates and river ecology to a future water protector. 9th Annual Earth and Water Festival, Montgomery, May 21st 2016.*

### **Educational Program**

After teacher Jazmine Langlitz contacted the Alliance, Martha Cheo of the Outreach Working Group met with students at the Montgomery Montessori School. She did a "Watershed Address" activity, in which students used maps to write and draw directions that would tell a fish in the Atlantic Ocean how to find their house (or the nearest stream to their house). They were also showed a slide show about the HAB, including info about Cyanobacteria, what causes excess nutrient loading in the river, and ways that nutrient loading can be reduced.

### **Website, Videos, and Online Presence**

Website updates and Facebook posts were created as needed. The Alliance has 745 'likes' on our Facebook page, and while we have 'reached' between 1,000 and 2,000 people on several occasions, Facebook does not appear to provide tools to compare data over the course of a whole year.

Several videos were made in 2016 by or about the Alliance and the Wallkill:

- Early in the year, USIA Video produced an excellent 6 minute documentary about the Wallkill River and the Alliance. It can be found at <https://vimeo.com/188853155>
- In May, the Outreach Working Group - specifically Fran Wishnick, Ken Wishnick, Rich Picone, and Laura Heady - released a video about the Kleine Kill in New Paltz (<https://vimeo.com/158825085>).
- In September, the New Paltz public access television show "Slice of New Paltz" produced a half hour long series of interviews about the Harmful Algae Bloom, which can be found at <https://vimeo.com/184158315>

## CAPACITY BUILDING

*Increasing the time, funding, and people dedicated to restoring the watershed,  
for both the Alliance and our allied organizations, agencies, and governments.*

Capacity building is very a broad category - much broader than the other two Priorities. Given how many things can be done to increase time, funding, and resources, the capacity building actions taken by the Alliance this past year can seem to be a catch-all. Instead, it is simply the broadest set of actions available to us, as anything from creating a website to organizing sub-watershed alliances to applying for grant funding can increase the Alliance's capacity to organize and effect change.

### Governance

In 2016, the Alliance continued to be led by the Board elected in 2015 (new elections are to be held in early 2017). The 2016 Board members were:

- Jason West, New Paltz, Executive Director
- Dan Shapley, Rhinebeck, Secretary-Treasurer
- Neil Bettez, New Paltz
- Arthur Cemelli, Shawangunk
- Jillian Decker, Chester
- Rich Picone, New Paltz
- Mike Sturm, Crawford

The Alliance was originally envisioned as being made of up a collection of chapters, and operated until early 2016 with a Southern Ulster Chapter, and a Northern Orange Chapter. In the spring of 2016, the idea of chapters was discarded, with the whole Alliance instead alternating meetings between Montgomery and New Paltz.

The Working Group structure underwent several changes, with the Geospatial Working Group dissolved, and a Policy Working Group created. Both the Policy Working Group and Outreach Working Group have waxed and waned over the year, each being re-formed at least once.

### Finances

The Alliance raised little money directly, largely from our three municipal members donating \$1,000.00 each. For a detailed breakdown of Alliance income and expenses, see Appendix B: 2016 Alliance Budget.

The majority of Alliance funding was expended on our behalf by Riverkeeper, via Hudson River Estuary Program grants.



*Some of the attendees at 2015's second  
Future of the Wallkill event in Montgomery.  
The third conference's name was changed, to  
the 3rd Annual Wallkill River Summit,  
tentatively planned for April 2017.*

### Grants

#### **2015 Hudson River Estuary Program Local Stewardship Planning Grant**

On April 11th, we learned that Riverkeeper had been awarded a \$50,000 Hudson River Estuary Program "Local Stewardship Planning Grant" to, in part, fund work with the Wallkill River Watershed Alliance. Called "Piloting Second Generation Water Quality Community Science in the Hudson River Watershed", the grant

provided funds to hire a part-time coordinator for the Alliance as well as funding for additional river sampling, specifically to test subwatersheds for nutrient pollution (see “Water Quality” above).

#### **Science-Based Action Plan**

The development of a Science-Based Action Plan was also funded by the 2015 HREP Local Stewardship Planning Grant as one of the coordinator’s duties. A process of gathering advice and feedback from the Alliance membership and leaders has been proceeding.

The first step in the process was a series of discussions between the Executive Director and each Working Group Chair to draft a list of short, medium, and long term goals. Those lists were then refined by discussions within each Working Group.

An ad hoc subcommittee of members interested in advising the process was convened, consisting of Emily Vail of the Hudson River Estuary Program, Board members Dan Shapley, Jillian Decker, Mike Sturm and Arthur Cemelli, New Paltz Village Planner David Gilmour, Outreach Working Group member Fran Wishnick, and Orange County Planning Director Dave Church.

This subcommittee met in the fall of 2016, in a long discussion facilitated by Emily Vail of the Hudson River Estuary Program and Maureen Cunningham, Executive Director of the Hudson River Watershed Alliance. Over the course of several hours, the group undertook a SWOT (Strengths, Weaknesses, Opportunities, Threats) assessment for Alliance, as well as discussing what our overall goals and priorities were for the organization. One result of that meeting was the categorization of our work into three broad Priorities: Water Quality, Public Access/Engagement, and Capacity Building.



*Receiving the 2016 WaveMaker Award for Watershed Group by the Hudson River Watershed Alliance. From left to right, John Gotto of the Science Working Group, Advisor Marty Irwin, HRWA Director Maureen Cunningham, Alliance Director Jason West, and HRWA President Simon Gruber*

A master list of recommended actions to take on behalf of the Wallkill was created, and each recommendation was sorted into one of the three Priorities earlier identified. All recommendations from the following sources were compiled in the master list: the Wallkill River Watershed Conservation and Management Plan, the goals identified by Working Groups, the goals identified by the subcommittee, and the recommendations gathered at the first Future of the Wallkill event. The end result was three discrete lists of recommended actions, one for each Priority.

Each of the three lists of recommendations are now being discussed by Working Group leadership, as well as the membership, in order to narrow down the universe of possible actions to what, given our priorities and resources, we can accomplish in the next two years. Once a set of three final lists has been discussed, they will be sent to the Board of Directors for review and approval. Once approved, quarterly work plans will be developed for each approved action.

#### **2016 Hudson River Estuary Program Local Stewardship Planning Grant**

Riverkeeper also secured a Hudson River Estuary Program Local Stewardship Planning Grant in 2016. This grant benefits the Wallkill by funding the Alliance coordinator position for another six months, as well as funds further sampling of the Wallkill. This includes testing for pathogens, as well as developing protocols for monitoring algae and nutrients.

#### **2016 Hudson River Estuary Program Climate Smart Communities Grant**

The Orange County Planning Department won a Climate Smart Communities grant to, in part, plan climate adaptation at the watershed level. This includes some funding for the Alliance to assist with outreach work related to the grant.

**2016 WaveMaker Award**

In the fall of 2016, the Wallkill River Watershed Alliance won the Hudson River Watershed Alliance's 2016 WaveMaker Award for watershed group.



## NON-ALLIANCE WALLKILL PROJECTS

- Every five years, the DEC undertakes a Rotating Integrated Basin Study (RIBS) In December, the Alliance Board learned that DEC is interested in an **Enhanced Monitoring Study of the Wallkill**. The proposed \$800,000 two-year study would be conducted by DEC, and would leverage significant federal investments by the U.S. Geologic Survey. The goal of the study is to identify the main sources of two important categories of pollution in the Wallkill - pathogens and nutrients. Pathogens are associated with sewage or other fecal contamination and pose health risk to people who swim, boat and fish in the river. Nutrients are thought likely to be an important driver of the Harmful Algal Blooms the Wallkill River has experienced in recent years, and most notably in 2016, when as many as 30 miles of the river was affected, for more than two months. Both pollutants are impairing the river's use for recreation, and this thorough study will help to provide a roadmap for most efficiently reducing pollution by addressing the most important sources. This thorough documentation of the projects that will improve water quality will also prioritize those projects for other categories of funding, making our communities more competitive for many categories of grants and loans. It is unknown at this point if the Governor and Legislature will fund the study.
- The Orange County Planning Department began the process of creating a **Monhagen Brook Watershed Plan**. The Monhagen Brook flows through Wallkill and Middletown.
- The Village of New Paltz received a Hudson River Estuary Program grant to **restore and upgrade a culvert** under the Rail Trail at Water Street. This will benefit the un-named stream which daylight in Peace Park and enters the Wallkill at the culvert in question.
- The Village of Walden received funding this year for a **riverfront boardwalk**, thanks to the efforts of Senator Bill Larkin in securing a \$150,000 grant for the project.
- As always, **Riverkeeper's testing for enterococcus** (an indicator of fecal contamination) was the main water quality effort on the river, as it has been since its inception. Involving testing at 30 sites the entire length of the watershed by a team of citizen scientists, Riverkeeper's results can be found at <http://www.riverkeeper.org/water-quality/citizen-data/wallkill-river-watershed/>
- Siena College received a Hudson River Estuary Program grant. According to DEC's announcement, Siena "will **develop collaborative research priorities and an action plan to help watershed communities make science-based management decisions for river tributaries**. The project will create a research network with other colleges to study the Kromma Kill and Patroon Creek watersheds in Albany County, Saw Kill and Wallkill River watersheds in Dutchess and Ulster counties, and Pocantico and Saw Mill River watersheds in Westchester County."
- Mohonk Preserve also received a Hudson River Estuary Program grant. According to DEC's announcement, Mohonk, "will create a **conservation plan for the Kleine Kill and Coxing Kill** watersheds on the Shawangunk Ridge. The plan will evaluate water quality, identify vulnerable species, assess invasive threats, determine the need for riparian buffers, assess the impact of current agricultural practices, and inform the siting of future trails and/or educational kiosks."

## APPENDIX A

### Harmful Algal Bloom Timeline and Sampling Results

#### August 26, 2015

A large algae bloom was observed on the Wallkill River in New Paltz, covering approximately two miles downstream of Sojourner Truth Park. Samples analyzed by a SUNY Rockland biologist working with Wallkill River Watershed Alliance identified potentially harmful algae genera. Based on a visual assessment, the New York State Department of Environmental Conservation's Harmful Algal Bloom program listed the bloom as "suspicious."

#### June 2016

Wallkill River Watershed Alliance and Riverkeeper begin monthly monitoring of the Wallkill River for nutrients and algae, working with a grant from the NYS Environmental Protection Fund, via the DEC's Hudson River Estuary Program.

#### August 15, 2016

Algae was observed in the Rifton area. Samples analyzed by SUNY Rockland and SUNY Ulster biologists working with the Wallkill River Watershed Alliance confirmed the presence of the genus *Microcystis*, a potentially harmful cyanobacteria also known as blue-green algae.

#### August 24, 2016

An algae bloom affecting a stretch of the river from New Paltz to Rifton was first observed. Analysis by SUNY Rockland and SUNY Ulster biologists confirmed the presence of *Microcystis*.

#### August 25, 2016

After confirmation of observations, and consultation with Department of Environmental Conservation's Harmful Algal Bloom program, Wallkill River Watershed Alliance and Riverkeeper warned the public to avoid contact with the Wallkill where algae are visible. DEC lists Wallkill River and Sturgeon Pool Harmful Algal Bloom as "suspicious." Central Hudson's recreation beach on Sturgeon Pool is closed on advice of Ulster County Department of Health.

#### August 31, 2016

DEC lists Rondout Creek harmful algal bloom as "suspicious" based on photographs submitted by Riverkeeper at DEC fishing access site on Creek Locks Road, downstream of Wallkill River confluence.

#### September 1, 2016

SUNY ESF, part of DEC's Harmful Algal Bloom monitoring program, completes first analysis of three samples (gathered at Sojourner Truth Park in New Paltz and at Rifton) submitted by Riverkeeper and Wallkill River Watershed Alliance, confirming high blue-green chlorophyll-A levels in excess of DEC thresholds, and dense *Microcystis* in all three samples. DEC lists Wallkill River Harmful Algal Bloom as "confirmed."

#### September 7, 2016

Department of Environmental Conservation communicates results of same three samples, analyzed by SUNY ESF for levels of microcystin, a toxin produced by some strains of *Microcystis* species. The two samples taken at Sojourner Truth Park in New Paltz exhibited levels of microcystin, a toxin, above the DEC "high toxin" threshold of 20 µg/l, with levels of 517 µg/l from a sample taken on August 26 and 269 µg/l from a sample taken on August 29. The Rifton sample showed detectable levels at 3 µg/l, below the DEC threshold.

#### September 9, 2016

Based on results of toxin analysis, Department of Environmental Conservation lists Wallkill River Harmful Algal Bloom as "confirmed with high toxins." (See: <http://www.dec.ny.gov/chemical/83310.html>)

**September 10th-October 11th, 2016**

Monitoring of the HAB continues through September and into October, with SUNY ESF and Alliance scientists John Gotto and Jillian Decker examining the results.

**late October/early November, 2016**

The bloom finally dissipates as temperatures begin to drop.

Site Name	Date	Sent to John/Jillian?	Have nutrients?	Have Entero?	Sent to DEC?	Latitude	Longitude	Chlorophyll (ug/L)	Taxa	Microcystin (ug/L)
New Paltz- Sojourner Truth boat launch	8/26/16	Y	N	N	16-WAL-B01	41.74369	-74.09359	3,122	Dense Microcystis	517
New Paltz- Sojourner Truth boat launch	8/29/16	Y	Y	Y	16-WAL-B02	41.74369	-74.09359	1,525	Dense Microcystis	269
Esopus- Cow Hough Rd	8/29/16	Y	Y	Y	16-WAL-B03	41.821704	-74.046457	46	Dense Microcystis, Sphaerocystis, Anabaena	3
Walden- River Road	9/12/16	Y	N	N	16-WAL-B04	41.549515	-74.202289	22,919	Dense Microcystis	1,723
New Paltz- Sojourner Truth boat launch	9/12/16	Y	N	N	16-WAL-B05	41.74369	-74.09359	353	Microcystis, Trace Aphanizomenon	60
Esopus- Cow Hough Rd	9/12/16	Y	N	N	16-WAL-B06	41.821704	-74.046457	7	Microcystis, Debris, Sphaerocystis, Trace Euglena	Non detect
Eddyville- Creek Locks Road fishing access	9/19/16	Y	N	N	16-RON-B01	41.885055	-74.029968	809	Microcystis, Nostoc, Aphanizomenon	6.4
Shawangunk- Orange/ Ulster Line fishing access	9/19/16	Y	N	N	16-WAL-B07	41.595594	-74.184161	522	Dense Microcystis	126
New Paltz- Sojourner Truth boat launch	9/19/16	Y	N	N	16-WAL-B08	41.74369	-74.09359	21	Microcystis, Planktothrix	undetectable
Eddyville- Creek Locks Road fishing access	9/26/16	N	N	N	16-RON-B02	41.885055	-74.029968	1,726	Microcystis, Aphanizomenon, Anabaena, Diatoms	19
Shawangunk- Orange/ Ulster Line fishing access	9/26/16	N	N	N	16-WAL-B09	41.595594	-74.184161	5	Microcystis, Diatoms, Dinoflagellates	2
New Paltz- Sojourner Truth boat launch	9/26/16	Y	N	N	16-WAL-B10	41.74369	-74.09359	100	Dense Microcystis, Oscillatoria, Trace Oedogonium	10
Eddyville- Creek Locks Road fishing access	10/3/16	N	N	N	16-RON-B03	41.885055	-74.029968	47	Planktothrix, Microcystis	Non detect
Shawangunk- Popp Memorial Park boat launch	10/3/16	N	N	N	16-WAL-B11	41.601601	-74.182825	3	Diatoms, Dinoflagellates, Microcystis	Non detect
New Paltz- Sojourner Truth boat launch	10/3/16	Y	N	N	16-WAL-B12	41.74369	-74.09359	1146	Dense Microcystis, Trace Diatoms	496
Rifton- below covered bridge	10/11/16	N	N	N	16-WAL-B13	41.826389	74.046944	1858	Dense Microcystis, Planktothrix	166

Site Name	Date	Sent to John/Jillian?	Have nutrients?	Have Enteroc?	Sent to DEC?	Latitude	Longitude	Chlorophyll (ug/L)	Taxa	Microcystin (ug/L)
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DEC HAB threshold = 25-30 ug/l; DEC Confirmed with High Toxins Bloom threshold = 20 1/4g/l (shoreline sample)



## APPENDIX B

### Detailed WAVE (Water Evaluation by Volunteer Evaluators) Results

#### *Dwaarkill*

Location:  
Coordinates: 41.64835,-74.2641  
Collection Date: Wed Jul 27 2016 00:00:00 GMT-0400 (EDT)  
Participants: Martha Cheo, Mike Sturm

Macroinvertebrate Sample:  
Macroinvertebrates you identified on your datasheet:  
Macroinvertebrates I identified in your sample:

Assessment Results:  
WAVE Assessment Result: No Known Impact (7 Most wanted; -1 Least wanted)  
The NYS DEC will only consider the WAVE assessment and the visual data (including the User Perception Data and Habitat Assessment Data given below) to guide reporting and professional sampling. That being said, less robust analyses could be valuable for local purposes. With that in mind, I have also calculated the Izaak Walton League Assessment for your sample data for local purposes only:

User Perception Data:  
Primary Contact: b  
Secondary Contact: a  
Current Weather: sun  
Weather past 24h: sun  
Water Clarity: 1  
Phytoplankton: 0  
Periphyton: 0  
Macrophytes: 0  
Odor: 0  
Trash: 2  
Discharge Pipes: 4  
Primary Deterrents: trash, discharge pipes  
Other: bank erosion

Habitat Assessment Data:  
Epifaunal substrate / available cover: a  
Embeddedness: b  
Velocity/Depth combinations: b  
Sediment Deposition: b  
Channel Flow Status: b  
Channel Alteration: a

Frequency of Riffles: b  
Bank Stability (Left): b, (Right): b  
Bank Vegetation Protection (Left): b, (Right): b  
Riparian Vegetation Zone Width (Left): a, (Right): c

#### *Verdeerkill*

Location:  
Coordinates: 41.60363,-74.32727  
Collection Date: Wed Jul 27 2016 00:00:00 GMT-0400 (EDT)  
Participants: Martha Cheo, Mike Sturm

Macroinvertebrate Sample:  
Macroinvertebrates you identified on your datasheet:  
Macroinvertebrates I identified in your sample:

Assessment Results:  
WAVE Assessment Result: No Known Impact (9 Most wanted; -1 Least wanted)  
The NYS DEC will only consider the WAVE assessment and the visual data (including the User Perception Data and Habitat Assessment Data given below) to guide reporting and professional sampling. That being said, less robust analyses could be valuable for local purposes. With that in mind, I have also calculated the Izaak Walton League Assessment for your sample data for local purposes only:

User Perception Data:  
Primary Contact: a  
Secondary Contact: a  
Current Weather: sun  
Weather past 24h: sun  
Water Clarity: 0  
Phytoplankton: 0  
Periphyton: 0  
Macrophytes: 0  
Odor: 3  
Trash: 0  
Discharge Pipes: 0  
Primary Deterrents: odor, discharge pipes  
Other: dead animal

Habitat Assessment Data:

Epifaunal substrate / available cover: a  
Embeddedness: b  
Velocity/Depth combinations: a  
Sediment Deposition: b  
Channel Flow Status: b  
Channel Alteration: a  
Frequency of Riffles: a  
Bank Stability (Left): a, (Right): a  
Bank Vegetation Protection (Left): a, (Right): a  
Riparian Vegetation Zone Width (Left): a, (Right): a

Habitat Assessment Data:  
Epifaunal substrate / available cover: a  
Embeddedness: a  
Velocity/Depth combinations: a  
Sediment Deposition: a  
Channel Flow Status: b  
Channel Alteration: a  
Frequency of Riffles: a  
Bank Stability (Left): a, (Right): a  
Bank Vegetation Protection (Left): a, (Right): a  
Riparian Vegetation Zone Width (Left): b, (Right): b

### ***Shawangunk Kill***

Stream: Shawangunk Kill

Location:

Coordinates: 41.68745,-74.17321

Collection Date: Thu Aug 11 2016 00:00:00

GMT-0400 (EDT)

Participants: Martha Cheo, Kathleen Wiacek, Bill Link, Eric Samelson

Macroinvertebrate Sample:

Macroinvertebrates you identified on your datasheet:  
Macroinvertebrates I identified in your sample:

Assessment Results:

WAVE Assessment Result: No Known Impact (6 Most wanted; -4 Least wanted)

The NYS DEC will only consider the WAVE assessment and the visual data (including the User Perception Data and Habitat Assessment Data given below) to guide reporting and professional sampling. That being said, less robust analyses could be valuable for local purposes. With that in mind, I have also calculated the Izaak Walton League Assessment for your sample data for local purposes only:

User Perception Data:

Primary Contact: b

Secondary Contact: b

Current Weather: sun

Weather past 24h: sun

Water Clarity: 1

Phytoplankton: 0

Periphyton: 3

Macrophytes: 0

Odor: 0

Trash: 1

Discharge Pipes: 1

Primary Deterrents: periphyton, macrophytes,

Other: silt, turbidity, and bubbles upstream

### ***Millbrook***

Stream: Millbrook Stream (Trib 13)

Location:

Coordinates: 41.754232,-74.072992

Collection Date: Tue Sep 20 2016 00:00:00 GMT-0400 (EDT)

Participants: Martha Cheo, Julie Seyfort-Lillis, Fenlan Bohan

Macroinvertebrate Sample:

Macroinvertebrates you identified on your datasheet:  
Macroinvertebrates I identified in your sample:

Assessment Results:

WAVE Assessment Result: Possibly Impaired (3 Most wanted; -4 Least wanted)

The NYS DEC will only consider the WAVE assessment and the visual data (including the User Perception Data and Habitat Assessment Data given below) to guide reporting and professional sampling. That being said, less robust analyses could be valuable for local purposes. With that in mind, I have also calculated the Izaak Walton League Assessment for your sample data for local purposes only:

User Perception Data:

Primary Contact: d

Secondary Contact: b

Current Weather:

Weather past 24h:

Water Clarity: 2

Phytoplankton: 1

Periphyton: 1

Macrophytes: 1

Odor: 3

Trash: 1

Discharge Pipes: 5

Primary Deterrents: odor, discharge pipes  
Other: low flow

Habitat Assessment Data:  
Epifaunal substrate / available cover: a  
Embeddedness: b  
Velocity/Depth combinations: b  
Sediment Deposition: b  
Channel Flow Status: c  
Channel Alteration: b  
Frequency of Riffles: c  
Bank Stability (Left): a, (Right): a  
Bank Vegetation Protection (Left): a, (Right): a  
Riparian Vegetation Zone Width (Left): a, (Right): a

### ***Wallkill River***

Stream: Wallkill River  
Location:  
Coordinates: 41.68635,-74.16482  
Collection Date: Thu Aug 11 2016 00:00:00  
GMT-0400 (EDT)  
Participants: Martha Cheo, Bill Link, Kathleen  
Wiacek, Eric Savelson

Macroinvertebrate Sample:  
Macroinvertebrates you identified on your datasheet:  
Macroinvertebrates I identified in your sample:

Assessment Results:  
WAVE Assessment Result: Possibly Impaired (4 Most  
wanted; -5 Least wanted)  
The NYS DEC will only consider the WAVE  
assessment and the visual data (including the User

Perception Data and Habitat Assessment Data given  
below) to guide reporting and professional sampling.  
That being said, less robust analyses could be valuable  
for local purposes. With that in mind, I have also  
calculated the Izaak Walton League Assessment for  
your sample data for local purposes only:

User Perception Data:  
Primary Contact: d  
Secondary Contact: b  
Current Weather:  
Weather past 24h:  
Water Clarity: 1  
Phytoplankton: 1  
Periphyton: 7  
Macrophytes: 6  
Odor: 1  
Trash: 0  
Discharge Pipes: 0  
Primary Deterrents: periphyton, macrophytes,  
Other: DOT, elevated bacteria

Habitat Assessment Data:  
Epifaunal substrate / available cover: a  
Embeddedness: b  
Velocity/Depth combinations: a  
Sediment Deposition: b  
Channel Flow Status: b  
Channel Alteration: a  
Frequency of Riffles: a  
Bank Stability (Left): a, (Right): a  
Bank Vegetation Protection (Left): a, (Right): a  
Riparian Vegetation Zone Width (Left): c, (Right): c

## APPENDIX C

### Budget 2016 (revised)

#### I. REVENUES

BUDGET LINE	DESCRIPTION	AMOUNT
<b>A. Membership Dues</b>		
a. Municipal Dues	@ \$1,000.00 each	\$ 2,000.00
b. Individual Dues	@ various levels of giving	\$ 500.00
<b>B. Grants</b>	HREP grant, via Riverkeeper	\$ 20,000.00
<b>C. Wallkill River Summit</b>	\$10.00/person @ 100 people	\$ 1,000.00
<i>Revenue Total</i>		<b>\$ 23,500.00</b>

#### II. EXPENDITURES

BUDGET LINE	DESCRIPTION	AMOUNT
<b>A. General Expenses</b>		
1. Board of Directors		\$ 0.00
2.. Grantwriting		\$ 0.00
3. Miscellaneous Printing		\$ 50.00
4. Web maintenance		\$ 50.00
5. Coordinator	two days/week, 50 weeks @ \$200/day	\$ 20,000.00
6. Wallkill River Summit	\$10.00/person @ 100 people	\$ 1,000.00
<i>General Expenses Subtotal</i>		<b>\$ 21,100.00</b>
<b>B. Working Group Expenses</b>		
1. Boat Brigades Working Group		
a. rowboat	for collecting garbage	\$ 700.00
b. New Paltz Regatta 2017	entrance fees + construction materials	\$ 400.00
c. waterproof phone cases	for photographing on river; 5@ ~\$20	\$ 100.00
2.. Outreach Working Group		
a. Printing (prices as per PDQ Printing, New Paltz)		
i. Brochures	1000 full color, two sided trifold	\$ 300.00
ii. Banners	two color 4'x6' (\$69.00 each)	\$ 75.00
iii. Miscellaneous		\$ 100.00
3. Policy Working Group		
a. Printing	miscellaneous printing costs	\$ 50.00
4. Science Working Group		
a. Supplies		\$ 100.00



*Working Groups Subtotal*      \$    1,825.00

*General Expenses Subtotal*      \$   21,100.00

*Working Groups Subtotal*      \$    1,825.00

***Expenditures Total***      **\$ 22,925.00**

### III. TOTALS

<b>BUDGET LINE</b>	<b>DESCRIPTION</b>	<b>AMOUNT</b>
I. REVENUES		\$ 23,500.00
II. EXPENDITURES		\$ 22,925.00
	Revenues Less Expenditures	\$    575.00

**APPENDIX D**

**Boat Brigade Reports**