Watershed Agricultural Council

Watershed Agricultural Program

2018 Annual Report and 2019 Workload

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Cover Photos: Ryan Naatz, Heather Magnan
Report Photos: WAP Staff

PRIMARY FUNDING SOURCES

NYC Environmental Protection

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

USDA Farm Service Agency

Funding Secure For Future Water Quality & Economic Viability Efforts

The Watershed Agricultural Program (WAP) had another great year of implementing BMPs that addressed multiple resource concerns on participant farms. The conservation planners revised 87 Whole Farm Plans focusing on the Identified Resource Concerns (IRCs) incorporation process.

A significant change in the renewed Filtration Avoidance Determination (FAD) is the inclusion of a Best Management Practice (BMP) metric that will target BMPs on our backlog list waiting to be implemented. Based on this metric WAC has entered into a 6 year contract with the New York City Department of Environmental Protection (DEP), which will begin April 1, 2019, to accelerate the implementation of BMPs with over $4 million in annual funding.

In 2018, the WAP implemented 326 BMPs on all active farms at a total cost approaching $3.4 million. These figures include 299 BMPs on West of Hudson farms (~$3.1 million) and 27 BMPs on East of Hudson farms (~$0.3 million).

The Precision Feed Management (PFM) Program is a science based program that develops feed management plans to deal with the large quantity of feed nutrients managed annually on participant farms. 2018 was the third year of the program, staff were actively planning and monitoring a total of 46 farms (44 of which have Feed Management Plans,) and an additional 149 Benchmarks were completed. Staff will continue the ranking and selection of additional farms (up to 60), which is the maximum level for the program. The Nutrient Management Credit (NMC) Program currently has 132 participants. Through the support of DEP funding this program will allow all those that meet the eligibility criteria to participate.

The Program partners with local County Soil and Water Conservation Districts (SWCD) and the USDA Natural Resources Conservation Service (NRCS) who provide technical design and implementation of the BMPs. Farm participants actively followed 262 Whole Farm Plans and 234 Nutrient Management Plans (NMPs) in the Catskill/Delaware Watersheds. Funding provided by DEP, the USDA and other sources helped the Program realize its goals. The WAP continues to partner with Cornell Cooperative Extension (CCE) to provide educational programs to area farmers. In 2018, 719 farmers and farm advisors attended 21 educational programs with 50% of Watershed farmers attending at least one event.

In 2019 the Conservation Reserve Enhancement Program (CREP) and the Catskill Streams Buffer Initiative (CSBI) pilot program will plant buffers on four properties. Combining these two programs offer landowners with historic farmland (or marginal pastureland) the benefit of both CREP and CSBI programs.

The Watershed Agricultural Council (WAC) continues to plan for a new office facility on Route 10, Hamden to allow consolidation of all West-of-Hudson staff. The goal is to grow and maintain agriculture and forest businesses for the next generations as they have been the lifeblood of this region. Having one service center where we can accommodate the needs of farmers and forest owners is one of our top priorities.

Larry Hulle, Watershed Agricultural Council
Larry Underwood, Delaware County Soil & Water Conservation District
Dale Dewing, Cornell Cooperative Extension
Dennis DeWeese, USDA Natural Resources Conservation Service

Watershed Agricultural Program
2018 Planning Goals and Accomplishments

Catskill/Delaware Farms		Croton Watershed	
Goal	Accomplishment	Goal	Accomplishment
Annual Status Reviews			
289	320	68	73
New Whole Farm Plans			
As identified	0	As identified	1

Photo: Josh Dick

2018 Implementation Accomplishments – Funding

BMP - Funding Sources	Catskill/Delaware	Croton Watershed	Total
Watershed Agricultural Program			
- Other BMPs	$ 2,028,841	$ 288,216	$ 2,317,057
- RCPP	$ 618,241		
- WIRC	$ 17,166		
- CREP (WAP)	$ 118,745	$ -	$ 118,745
Total Watershed Agricultural Program Funding	**$ 2,782,993**	**$ 288,216**	**$ 3,071,209**
Other Funding Sources			
- CP-30 (FSA)		$ -	$ -
- CREP (FSA)	$ 62,661	$ -	$ 62,661
- CSBI	$ 1,800		
- DCSWCD	$ 297,194	$ -	$ 297,194
- RCPP (Anticipated Reimbursement - $543,290)	$ -	$ -	$ -
- Landowner	$ -	$ 9,233	$ 9,233
- AWEP	$ -	$ -	$ -
- NRCS	$ -	$ -	$ -
Total Other Funding Sources	**$ 361,655**	**$ 9,233**	**$ 370,888**
Total Funding*	**$ 3,144,648**	**$ 297,449**	**$ 3,442,097**
*** Includes In Progress Payments**			

2018 Implementation Accomplishments – Number of BMPs

NRCS/WAC BMP Code	Best Management Practices	Catskill/Delaware Large Farms	Croton Watershed	Total
108	Precision Feed Management	29		29
313	Waste Storage Facility	3		3
314	Brush Management	4		4
317	Composting Facility		1	1
340	Cover Crop	17	1	18
362	Diversion *	2	1	3
367	Roofs and Covers*	1		1
382	Fencing *	42		42
391	Riparian Forest Buffer	16		16
412	Grassed Waterway*		1	1
512	Forage and Biomass Planting - Lime	1		1
516	Pipeline*	14	1	15
528	Prescribed Grazing	6		6
533	Pumping Plant	4		4
558	Roof Runoff Management System*	1	2	3
560	Access Road Improvement*	3	3	6
561	Heavy Use Area Protection *	4	2	6
574	Spring Development *	10		10
575	Animal Trails and Walkway *	6		6
578	Stream Crossing*	1		1
580	Streambank Protection	2		2
587	Structure for Water Control*	1	3	4
590	Nutrient Management Plan	70	6	76
612	Tree & Shrub Planting	7		7
612	Weed Control & Herbicide Spray	13		13
614	Watering Facility*	11	1	12
620	Underground Outlet*	3	1	4
634	Waste Transfer System*	2		2
635	Vegetated Treatment Area*	1	2	3
642	Well	2		2
3010	Roofed Barnyard*	10		10
3050	Waste Storage Facility*	1		1
3110	Calf Greenhouse*	1		1
3130	Barn Renovation - Side Curtain	1		1
3178	Manure Transportation Credit	1		1
3230	Agitation Pump	1		1
3410	Manure Spreader	2		2
3420	Bucket Loader*	1		1
3430	Manure Truck	1		1
3440	Manure Scraping Systems & Barn Cleaner Chutes	1		1
4100	Wash Water Infiltration*		2	2
5001	Utility Pole	1		1
5004	Fencing - Temporary	2		2
Total		**299**	**27**	**326**
	* Includes a modification, emergency repair, repair or repair and replacement BMP.			

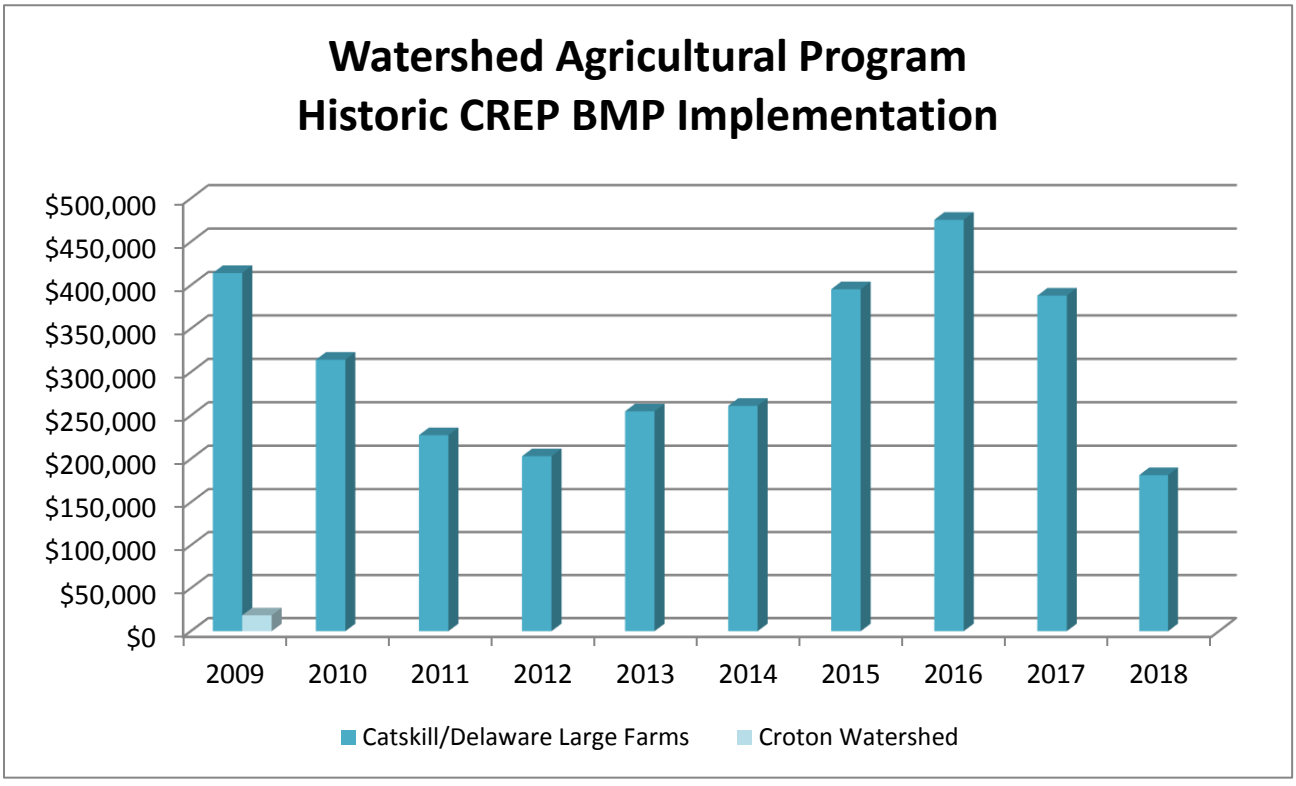
USDA Conservation Reserve Enhancement Program (CREP)
2018 Accomplishments

The USDA CREP Program within the NYC Watershed Agricultural Program utilizes the talents found within the multi-agency team assigned to work in the Watershed to promote, design and establish both Riparian Forest Buffers and Vegetative Buffers along watercourses. This year marked the 18th full year of the NYC Watershed Conservation Reserve Enhancement Program (CREP) Memorandum of Agreement between New York City, New York State and the United States Department of Agriculture (USDA). In 2018, 17 Riparian Forest Buffer contracts (7 new and 10 renewals) enrolled an additional 126 acres, bringing the total number of enrolled acres to 1,810.

2018 Total Implementation Expenditures

Total Rental Payments (USDA)	$170,025
Sign-Up Incentive Payment (SIP-FSA)	$3,829
Practice Incentive Payment (PIP-FSA)	$142,206
*BMP Cost (FSA)	$148,875
*BMP Cost (WAP)	$236,000

*Based on Federal Fiscal Year Numbers 10/01/17 – 9/30/18



Program	99-2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Catskill/Delaware	$5,435,053	$414,167	$314,330	$227,423	$203,211	$254,952	$261,197	$395,490	$475,423	$388,194	$181,405	$8,550,845
Croton Watershed	$ 17,968	$ 18,547	$0	$0	$0	$0	$0	$0	$0	$0	$0	$ 36,515

Nutrient Management Program 2018 Accomplishments

In 2018, the Nutrient Management Team completed 70 Nutrient Management Plans that consisted of 46 large farms and 24 small farms.

Nutrient Management Plan Percent Analysis

	Large Farms 159		Small Farms 75		Combined 234	
	Number	% of Total	Number	% of Total	Number	% of Total
Current	146	91.8%	70	93.3%	216	92.3%
1 year out of date	9	5.7%	5	7.0%	14	6.0%
2 years out of date	3	2.0%	0	0%	3	1.3%
3 years out of date	1	1.0%	0	0%	1	0.4%
>3 years out of date	0	0%	0	0%	0	0%
Needs NMP	0	0%	0	0%	0	0%
Total	159	100%	75	100%	234	100%

Nutrient Management Credit (NM Credit)

Photo: Heather Magnan

The NM Credit Program was offered to 135 participating farms, 132 chose to participate. Seven farms did not submit records (no animals, no records kept, or no longer a WAP participant).

The 2018 Credit year allowed for the addition of any eligible farms. Three NMC farms left the program due to no animals or sale of the farm. Eight new farms were selected from the prioritized general list of NM Credit eligible farms.

For the 2019 Nutrient Management Credit Program year, we will offer NMC to at least 135 participating farms.

Precision Feed Management

2018 represented the third full year of implementation of Precision Feed Management (PFM) through the Watershed Agricultural Program. Presently, 46 farms are participating in the PFM Program, including two beef farms.

Photo: Paul Cerosaletti

2018 included initiation of the third wave of PFM on farms prioritized at the outset of the PFM program for PFM implementation. This implementation included initiation of feed management planning using the NRCS 592 feed management standard and WAP Quality Management Assistance (QMA) processes, as well as routine dietary monitoring using NYS PFM Benchmarking tools and technical assistance to farmers and their feed industry advisors in discreet QMA events. The PFM team efforts in Year 3 also included QMA planning and technical assistance, and PFM Benchmarking for all Year 1 and 2 farms. PFM planning and monitoring on the next phase of farms that are enrolled will begin in 2019.

The PFM program continued its tradition of innovation, by entering into an agreement with AgModels LLC to develop the NYS Benchmarking tools into an integrated web-based database, which will allow aggregation of PFM data, monitoring, and reporting into a single program interface. The first phase of this software development will be implemented in 2019.

Another innovative effort of both the PFM and NM teams was the development of the Pilot Cropland Liming BMP that will be implemented on PFM farms over the next 3 years to develop a process to improve soil pH through the WAP in an effort to improve nutrient utilization efficiency. Fifteen PFM farms entered into contracts with Mercy Hill Farms, LLC to have lime delivered to their farms for up to 30 acres of cropland.

The PFM program continues to have a high level of farmer engagement, working with farms throughout the year to address management challenges and conduct monitoring.

PFM Program 2018 Engagement Statistics as of 12/31/2018

	2018
Total Farm PFM QMA Events	371
Total PFM Benchmarks completed	149
Total PFM QMA Annual Implementation Plans	43
Total Feed Management Plans completed	14
Total PFM Farm Planner contacts	989

The PFM program has brought an extremely large source of nutrients on the participating farms under scrutiny and management. These nutrient pools are detailed in the table below.

PFM Program 2018 Nutrient Management Scope

Total number of lactating cows under feed nutrient monitoring	2,714
Phosphorus	
Total pool of feed phosphorus managed per year, program, kgs	83,211
Total pool of manure phosphorus excretions managed per year, program, kgs	60,427
Nitrogen	
Total pool of feed nitrogen managed per year, program, kgs.	536,910
Total pool of manure nitrogen excretions managed per year, program, kgs.	399,215

Photo: Paul Cerosaletti

Herds engaged in the PFM program can be summarized into one of four categories, based on phosphorus feeding level. These categories are:

1. Persistently within PFM Guidelines of 110% or less of animal requirement;
2. Began year over P guidelines, but was brought within guideline within the year, or implemented a reduction in P feeding level (even if still feeding over requirement);
3. Began the year within guideline, but exceeded P guideline by year end;
4. Persistently over ration P intake guideline of 110% of animal requirement.

In 2018, Scenarios 2 and 3 showed the greatest change in nutrient (phosphorus, P and nitrogen, N) intake and excretion. Scenario 2 represents the active efforts of PFM program to help participating farms improve phosphorus feeding management and reduce overfeeding. Scenario 3 represents the reality of feeding dairy cattle – that it is highly variable based on animal production levels and feed composition – and therefore can move from within guideline to out of guideline at any time throughout the year. There continue to be a substantial number of herds that are overfeeding phosphorus, and the strategies to address this are not always simple. These are primary reasons why the PFM program conducts regular diet monitoring and needs to remain actively engaged with farms over time.

Management of the diets of Scenario 2 herds through the PFM program resulting in a 32% decrease in manure P exertions, and 16% decrease in manure N excretions, which across number of cows in this scenario resulted in 2,905 and 9,219 kg less manure P and N excretions in total respectively. These decreases in manure nutrient excretions in Scenario 2 herds were offset by increases in manure P and N excretions in Scenario 3 herds (those that went over guideline during the year). Still, these increases in excretions were less than the Scenario 2 reductions, and resulted in a **net decrease in manure P and N excretions** of 1,602 and 6,613 kgs respectively (see table on following page).

Across all herds in 2018 profitability declined as a result largely of decreases in milk production per cow. The declines in milk production resulted from a decline in forage quality in the 2018 forages, a result of weather conditions experienced in 2018.

Photos: Paul Cerosaletti

PFM Program 2018 Nutrient Management Impact

Impact Metric	Scenario 2 Came w/in P Guideline or had P reduction	Scenario 3 Went Over P Guideline during year
Program demographics		
# of herds	7	6
% of herds	18%	15%
# of cows	346	255
% of cows	14%	11%
Phosphorus		
% of Benchmarks over Guideline	71%	51%
Change in manure P excretion Beginning to End, g/c/d	-23	+14
Percent increase/decrease	-31.5%	+28.0%
Annual P Excretion change, per group, kg	-2,905	+1,303
Nitrogen		
% of Benchmarks over Guideline	57%	35%
Change in manure N excretion beginning to end, g/c/d	-73	+28
Percent increase/decrease	-15.9%	+7.4%
Annual N Excretion change, per group, kg	-9,219	+2,606
Forage and Grain Feeding		
Change in % Forage Feeding level, beginning to end	-0.5	-1.8
Change in purchased grain feeding level, beginning to end, lbs/c/d	-1.2	-0.1
Average lbs purchased grain Dry Matter fed/cow/d	15.4	15.7
Economic Impact		
Change in milk production, beginning to end, lbs /cow /d	-3.7	-4.5
Change in Milk Income over purchased feed cost, beginning to end fixed milk price[2], $/cow/d	-$0.97	-$0.30
Change in Milk Income over purchased feed cost, beginning to end, actual milk price[2], $/cow/d	-$0.27	-$0.17

Farmer Education Program

In 2018, The Watershed Agricultural Program Farmer Education efforts reached 700 farmers and farm advisors with 21 education events through our contract with Cornell Cooperative Extension of Delaware County. These events include large conferences, like the Catskill Regional Agriculture Conference, small hands-on on-farm training, farm tours and traditional classroom workshops. The program uses the strength of our experienced staff to leverage local and statewide resources to address the critical needs of the region's farmers and their advisors.

Date	Event	Watershed Farmers	Other Farmers	Students	Agri-Service	Agency	Other	Total
1/11	Catskill Regional Agriculture Conference	61	29	0	12	57	0	159
2/1	Understanding Your Heifer's Growth and Performance	25	8	0	2	8	0	43
2/9	2018 Stocker School Webinars	1	6	0	0	0	0	7
2/15	PFM Producer Meeting	33	0	0	0	7	0	40
2/21	Sheep and Goat International Night	8	2	0	0	0	0	10
3/12	Organic Dairy Discussion Group	6	1	0	0	0	0	7
3/20	New York Beef Producers Meeting	14	12	0	1	0	0	27
3/20	Winter Crop School	15	15	0	2	12	0	44
3/27	Nutrient Management Credit Workshop - Delhi	51	0	0	0	12	0	63
3/28	Nutrient Management Credit Workshop - Hobart	59	0	0	0	11	0	70
3/29	Nutrient Management Credit Workshop - Walton	31	0	0	0	17	0	48
4/14	Necropsy Workshop	4	8	6	0	0	2	20
4/17	All Things Wool Workshop-	4	2	0	0	0	3	9
5/4	Nutrient Credit Workshop - Hamden	9	0	0	0	8	0	17
7/11	Beef Stocker Pasture Walk - Nelsons	1	44	0	0	4	0	49
9/13	Corn Dry Down Day - Franklin	14	5	0	1	0	0	20
9/21	Cultivating Success	12	5			3		20
9/25	Corn Dry Down Day - Bloomville	19	1	0	1	0	0	21
9/27	Soil Health Pasture Walk	11	1	0	0	10	5	27
11/9	From Fleece to Fabric: Fiber Studio Tour	4	1	0	0	2	2	9
12/19	2018 Fall Beef Meeting	11	13	0	3	0	0	27
Total Attendance (year to date)		393	153	6	22	151	12	737
Number of Events		21						
Number and percent of participating Watershed Farms attending at least one event*:					140		**50%**	
Number of non-participating Watershed Farms attending at least one event:							32	

Farmers	546
Advisors	173
Total	**719**

*Based on 290 active large and small farms WHO (Dec 2018)

Photo: Dale Dewing

Economic Viability: Enhancing the Profitability of Working Landscapes


Muddy River Hops

One of the benefits of the Economic Viability Program is its ability to explore innovative methods for enhancing the profitability of the working landscapes of agriculture and forestry throughout the region. This program has the ability to move quickly to meet the needs of our farmers, adapt to evolving trends in the agricultural community, and act as a source of support for our growing participant base. Because of this, 2018 has seen one of our largest strategic directional shifts to date.

We not only support the Pure Catskills buy local campaign, but for the first time this year we developed and implemented a competitive micro-grants reimbursement pilot program for any farmer, logger, forester, forest landowner or Pure Catskills member with property inside the New York City Watershed. We also partnered with the Center for Agricultural Development & Entrepreneurship (CADE) to financially support the development of professional business plans for watershed farm or forestry businesses in order to better position these businesses for improved economic profitability and sustainability.


Blue Sky Farm Winery

The purpose of our shift this year is simple. We want to continue to strengthen and foster economic vitality in the Catskills Region by encouraging the implementation of activities that can enhance the economic viability of individual farm and forest businesses. The first round of grants were open from September 1–September 30, 2018. We are pleased to report that we had 14 applications and approved $34,940 for reimbursement activities that include training (continuing education) and marketing (branding, advertising, communications related to the marketing services). A second round of grants was released to address the milk market access concerns of our Watershed farmers from October 1- October 31, 2018. We are happy to report that two applications were approved totaling $10,000. This is just the start of what our role is, not only internally at the Watershed Agricultural Council (WAC), but externally in what will be crucial for diversification, expansion, advancement in technology and much more for our participants into the near future.


Westwind Orchard

This year marks 25 years of the WAC. Continued growth and success of the Economic Viability Program will continue to push us, this region and our participants into the next 25 years.

Photos: Thompson Photography

2018 Watershed Agricultural Program – Farm Tours

On May 1, 2018, the Watershed Agricultural Program (WAP) held its Annual Ag Tour to view Best Management Practices (BMPs) recently implemented on participating farms. 98 attendees from the WAC Council of Directors, Agricultural Program Committee Members, NYC Department of Environmental Protection, Environmental Protection Agency, Department of Health, United States Department of Agriculture, Cornell Cooperative Extension, Soil & Water Conservation District, Natural Resource Conservation Service, Farm Service Agency, WAP staff, and participants.

We visited four farms: Posthaven Farm (Andy Post), Pineyvale Farm (David & Carolyn Post, and Allan & Carolee McClure), Night Pasture Horse Farm (Karin & James Householder), and the farm of Ray & Tom Buel. A lunch stop was made at Northern Catskills Occupational Center where presentations on "Farms in Transition" were given by David Haight, NYS Director for American Farmland Trust and Jennifer Grossman, Founder and President of FarmCo NY.

Post Haven Farm – Andy Post

Night Pasture Horse Farm
Karin & James Householder

Pineyvale Farm – Dave Post

Buel Farm – Ray & Tom Buel

Photos: Kristan Morley and Ben Hendee

2018 Watershed Agricultural Program – EV/AG Tour

In celebration of its 25 year anniversary, in June the Watershed Agricultural Council hosted a tour of three Delaware County farms for local, state and NYC officials. The group toured Lucky Dog Organic Farm in Hamden, NY, Byebrook Farm and Del-Rose Farm both in Bloomville.

The tour focused on the future as well as the current regional economic challenges associated with agriculture. The Tour emphasized the critical need of assisting farms that may be in transition now and in the future. NYC officials were encouraged to play a greater role in assisting with programs focused on transition and marketing products from the Catskill Region to the City, coining the phrase, "We are your Watershed, We are your Foodshed." Lunch was served by "The Farmer's Wife," Barbara Hanselman. Special Guests were Gale A. Brewer, the 27th Manhattan Borough President, and DEP Commissioner Vincent Sapienza.

Byebrook Farm - Paul & Gwen Deysenroth

Photo by Dan Deysenroth

Photo: Kristan Morley

Vincent Sapienza, DEP Commissioner, Richard Giles, Gale Brewer, Manhattan Borough President

Lunch catered by "Farmers Wife"

Lucky Dog Farm – Richard Giles

Del-Rose Farm – Ernie & Barbara Hanselman

Photos by Ben Hendee

Phoenix Farm – Streambank Stabilization Projects

Construction began in September of 2018 and concluded in October of 2018.

Pre-Construction Photographs – Site 1

Laura Phoenix, owner of the Phoenix Farm located in the Town of Hamden, re-enrolled in the USDA Conservation Reserve Enhancement Program (CREP). Prior to re-enrollment, however, two separate reaches of East Brook totaling approximately 1,800 LF required stabilization. Previous site investigations revealed vertical, bare streambanks devoid of vegetation and prone to erosion. CREP streamside buffers that had been established during earlier CREP enrollments were non-existent due to continued hydraulic erosion and the down-valley lateral migration of East Brook. Additionally, rock cross vanes have failed, leading to fish passage issues and streambed/streambank instability.

View toward failing cross vane.

View downstream toward repaired cross vane.

Post-Construction Photographs – Site 1

East Brook is a major tributary of the West Branch of the Delaware River, which flows into the Cannonsville Reservoir and provides unfiltered drinking water to New York City. Thus, the re-enrollment of Ms. Phoenix's farm within CREP is significant; exclusion of her farm animals from sensitive environmental areas along and within East Brook will aid in the health and stability of East Brook along her property, while protecting a critical drinking water source for millions of City residents.

Barton and Loguidice, D.P.C. (B&L) was selected as the engineering design consultant for both Sites 1 and 2 at the Phoenix Farm. B&L was tasked with preparing designs and construction plans that addressed both the instability of East Brook's streambanks and the failing cross vanes. The intent behind the streambank stabilization design was two-fold: follow natural stream channel design practices and promote long-term streambed/streambank stability, while maintaining as much pasture-land as feasible for the farm owner. Primary design components included: stable riffle/pool sequences, floodplain benches, floodplain roughening, toe-rock bank stabilization, rock cross vanes, root wads, vegetated soil lifts, tree planting, and live willow stakes.

Phoenix Farm – Streambank Stabilization – Site #2 Pre-Construction Photographs

View toward eroding right bank.

View downstream toward eroding right bank.

Phoenix Farm – Streambank Stabilization – Site #2 Post-Construction Photographs

View upstream toward stabilized right/left banks.

View downstream toward stabilized right bank and rock cross vane.

Photos: Graydon Dutcher

DARLING DROP INLET FINAL PROJECT REPORT

"DAR-VIEW" farm is located on Fall Clove Road outside the village of Andes. The Darling family have been participants in the Watershed Agricultural Program since 1995.

Pre-Existing Feed Lane before repair.

In 2010 a roofed barnyard was constructed to feed the dairy herd and contain the runoff of contaminants from the barnyard. As part of the barnyard a crushed stone heavy use area and concrete feed lane were constructed on the uphill side of the structure. Drainage was put in place, which consisted of the installation of a drop inlet and piping to move the runoff down the hill to a safe outlet area.

Pre-Existing Feed lane before repair.

Over time more runoff developed off the hill behind the barnyard and the roofs of the other structures around the site. The excess water became very difficult to manage and difficult to use the feed lane for feeding the herd.

In 2017, the Planning/Engineering Team re-evaluated the situation and determined this was a complex problem with numerous aggravating factors that needed to be addressed in order to put a more permanent solution in place.

The first item addressed the clean water that was running off the farm lane and an access road to an upland field. Non-woven geotextile was placed over the sub-base and nine inches of 2 inch minus crushed stone was placed over the lane and properly compacted. This was then followed by three inches of one inch minus crushed stone and compacted. The excess runoff was then diverted to existing ditches. Two rubber water deflectors were strategically placed to catch most of the water from that source.

Additional Concrete apron with poured in-place concrete slot drain, and new road being installed.

The existing drip inlet was abandoned in place and a 96 foot poured in-place concrete slot drain was installed with steel grates over it. The steel grates can be easily removed to maintain and clean the drain system. Additional concrete was also installed in order to build a durable transition between the existing feeding lane and the compacted gravel that adjoined it on the uphill side. The additional concrete added to the area allows the Darling family to feed, and clean as well as maintain the feed area with much less time and effort. This additional drainage takes the water from the roof of the covered barnyard and directs it to a downhill binnacle.

Photos: Dan Flaherty

Joseph Eisele Farm - HUAP Repair

The Joe Eisele Farm in Andes had a concrete HUAP installed in 2005. Since then Joe has been experiencing some issues with water and manure management on his HUAP. To address these issues, a variety of runoff control structures were planned and implemented. These structures include: repair and extension of an existing diversion, installation of new roof gutters, replacement of failed culvert pipes, repair of existing animal trails and repair of existing spreader pipe.

These BMPs improved the quality of the water leaving the farmstead. The runoff control structures were implemented to keep the clean water clean, and the new HUAP system and VTA repair were completed to treat polluted water. Joe is very pleased with the improvements made to his farm, and looks forward to using this new covered manure storage.

Before: Concrete heavy use area protection. The existing HUAP provided no covered area to stack manure, leaving it exposed to precipitation and causing a mess for the farmer and a water quality concern for the watershed.

Before: Existing diversion was undersized and additional water control structures were needed for the amount of water entering the diversion.

After: Additional water control structures were installed to divert water into the repaired diversion. These new practices along with the repaired diversion keeps water from entering the repaired animal trails and HUAP.

AFTER: A new 28' x 67' covered manure storage was installed to provide the farmer an area to periodically store manure. Keeping the stored manure protected from the elements will reduce the amount of polluted water entering the existing VTA and will ultimately reduce the nutrients and sediment reaching a water course.

Photos: Dave Adams and Dan Vredenburgh

Gladstone Farm – Covered Barnyard

Gladstone Farms in Andes, have historically fed their beef herd (50 brood cows; ~150 head total) out on pasture during the winter months. This resulted in denuded, muddy conditions where manure laden runoff could reach the Tremper Kill. The solution to this resource concern was to provide the farm with a covered feeding area and manure storage.

The initial planning called for one large structure, however when the project was prioritized for implementation, re-evaluation of the operation was needed. The final plan included 2 buildings to allow for 4 different groups of cattle to be fed. Along with the covered feed pads, alternate water, fence, and an access road were installed. The feed pads and storage will allow the farm to collect a majority of the animals manure and then spread it at the best times of the year according to their nutrient management plan.

Before: Outdoor Feeding Area

Before: Runoff from feeding area

Photos: Dave Adams and Dan Vredenburgh

After: Feed building/manure storage for 45 weaned calf, 25 steers and 4 bulls

After: Feed building/manure storage for 50 cows and 37 heifers

WIRC Team Highlights

The Watershed Investigation Repair Crew had a very successful first full calendar year of reporting accomplishments. Tim Hebbard, WIRC Specialist led the charge with investigating 57 Repair Request Investigations that included:

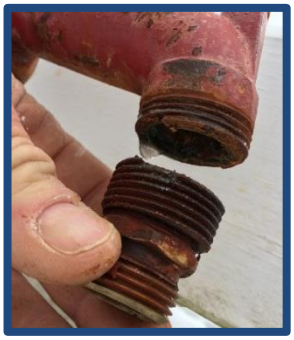
13 on-site repairs, 6 temporary repairs, 5 landowner assisted repairs, 23 completed WIRC Team repair projects, 6 repair requests referred to workload for WAC Procurement process, 4 repair request investigations with project on-hold. The WIRC Team also made 5 deliveries/transportation of WAC rental equipment-calf hutches; pumps; etc. to area farms.

Participants' comments:

- Quickness of response/expedited process
- Personalized development of project repair
- Individualized communication
- Satisfaction in assisting in repair
- Perceived cost savings
- Quality and appearance of completed project
- Professionalism and attention to detail of WIRC Team
- Emphasis on safety

Example Projects:

Raymond & Rosemary Stewart
NYC-DEC-034-10ER1 Waste Storage Facility-ER Shade Cloth Installation
Engineer Cost Estimate= $6,231.00 WIRC Invoice= $2,126.00



Denny Smith
NYC-DEC-SF206-10ER1 Watering Facility-FF Hydrant Broken
Engineer Cost Estimate= $1,790.00 WIRC Invoice= $637.00

Photos: Tim Hebbard

East of Hudson-Hemlock Hill

Hemlock Hill Farm in Cortlandt, NY is a livestock farm that has been owned and operated by 3 generations of the DeMaria family. The farm specializes in farm-raised beef, lamb, pork, goats, poultry and organically-grown vegetables. Hemlock Hill also has an on-farm USDA slaughter facility, a retail store and a thriving CSA.

The East of Hudson Program has implemented twenty five BMPs at Hemlock Hill to support agricultural operations and protect water quality in the New York City watershed including a solar powered watering system and a Coverall compost facility. In 2007, EOH implemented a Heavy Use Area Protection (HUAP) which serves as a winter barnyard and young stock feeding area. A Vegetated Treatment Area (VTA) which used vegetation to reduce nutrient and pathogen levels in runoff from the HUAP was also constructed. EOH closely monitors the nutrient levels in VTAs through regular soil sampling and found increasingly high phosphorus levels in the test results. In order to reduce nutrient loading in the VTA, a modification to the existing BMPs was needed to address this issue. A 39' x 83' pole barn and roof for the HUAP barnyard was designed and implemented to exclude rainwater and eliminate the need for a VTA. The pole barn was constructed utilizing 10"x10" posts on top of concrete footers, 2"x10" headers and trusses spanning the width of the structure. 5" K-type gutters collect clean stormwater from the roof and conveys it safely to an existing pond.

Hemlock Hill has exceeded its Cost Guideline and a Cost-Share Waiver was granted by the EOH Committee and the DEP to allow full funding for the project from the Watershed Agricultural Council. The modifications to the existing BMPs will improve Hemlock Hill's daily operations and will protect water quality in the Hunters Brook and the New Croton Reservoir.

Photos: Andy Cheung

East of Hudson – River Run Farm

River Run Farm is a 30 acre horse farm and equestrian center located on the East Branch River in Brewster, NY. The farm boards 24 horses and offers riding lessons, horse training and sales to the Westchester and Putnam riding community. The farm also hosts five equestrian competitions each year, attracting riders competing at the local, regional and national level.

The farm generates a significant amount of waste water from the wash stalls-an issue unique to horse farms. The equestrian activities at River Run and the farm's proximity to the East Branch River created a challenge in dealing with waste water from the indoor and outdoor wash stalls. To address this pollutant concern while meeting the farm's specific site and soil requirements, the East of Hudson team designed and implemented a wastewater infiltration system to treat the greywater generated from washing the horses.

The wastewater infiltration system consists of an underground septic tank with baffles to allow for separation of solids from liquid waste. The liquid is then transferred to a series of infiltration chambers which allows the wastewater to percolate into the gravel and soil below allowing for treatment similar to a traditional septic system. The wastewater infiltration system at this facility includes modification of the existing outdoor wash stall by retro-fitting an additional catch basin for additional sediment removal. Both the outdoor and indoor wash stalls flows into the new septic tank prior to entering the infiltration chambers.

Photos: Andy Cheung

2019 Planning Goals

Catskill/Delaware Farms	Croton Watershed
Goal	Goal
Annual Status Reviews	
289	68
New Whole Farm Plans	
As identified	As identified

2019 Projected Design & Implementation Workload

BMP - Funding Sources	Catskill/Delaware Farms	Croton Watershed	Total
Watershed Agricultural Program			
- Non-CREP BMPs	$ 1,970,230	$ 350,000	$ 2,320,230
- CREP (WAP)*	$ 430,802		$ 430,802
- Grazing	$ 150,200		$ 150,200
- WAP Stream Buffers*	$ 515,600		$ 515,600
- Repair, Repair & Replacement & Modificatio	$ 1,599,290		$ 1,599,290
- Agonomic BMPs***	$ 282,877		$ 282,877
- RCPP	$ -		$ -
Total Watershed Agricultural Program Funding	$ 4,948,999	$ 350,000	$ 5,298,999
Other Funding Sources			
- CREP (FSA)	$ 46,182		$ 46,182
- GRP	$ -		$ -
- AWEP			$ -
- DCSWCD			$ -
- EQIP			$ -
- Landowner		$ 27,000	$ 27,000
- RCPP	$ -		$ -
Total Other Funding Sources	$ 46,182	$ 27,000	$ 73,182
Total Projected Workload**	**$ 4,995,181**	**$ 377,000**	**$ 5,372,181**
* Includes companion BMPs for Catskill/Delaware.			
** Does not included $100,000 for emergency repairs for Catskill/Delaware.			
*** Does not include unknown cover crop and lime pilot BMPs.			

2019 Projected Design & Implementation Workload – Number of BMPs

NRCS/WAC BMP Code	Best Management Practices	Catskill/Delaware Large Farms	Croton Watershed	Total
280	Stream and Shoreline Protection	1		1
313	Waste Storage Facility *	3		3
317	Compost Facility		2	2
340	Cover Crop	38		38
342	Critical Area Planting	1		1
362	Diversion*	1	1	2
367	Roof - Existing HUAP*	2		2
382	Fencing*	34	4	38
391	Riparian Forest Buffer	23		23
412	Grassed Waterway	1		1
468	Lined Waterway*	1		1
500	Obstruction Removal	3		3
512	Forage and Biomass Planting - Lime	20		20
512	Forage and Biomass Planting	3	1	4
516	Pipeline	14	3	17
528	Prescribed Grazing	11		11
528	Prescribed Grazing - Lime	3		3
533	Pumping Plant	3		3
558	Roof Runoff Management System*	2	2	4
560	Access Road Improvement*	7	5	12
561	Heavy Use Area Protection*	3	4	7
574	Spring Development*	19		19
575	Animal Trails and Walkway*	8	1	9
578	Stream Crossing	7		7
587	Structure for Water Control	3	3	6
590	Nutrient Management Plan		6	6
612	Tree & Shrub Planting	7		7
612	Weed Control & Herbicide Spray	18		18
612	Natural Regeneration	2		2
614	Watering Facility*	11	2	13
620	Underground Outlet	1	2	3
634	Waste Transfer System*	2		2
635	Wastewater Treatment Strip		2	2
642	Well	3		3
656	Constructed Wetland		1	1
3010	Roofed Barnyard*	4		4
3050	Manure Storage - Covered - Gravel	3		3
3100	Calf Housing - Timber Structures	2		2
3110	Solar Calf Housing*	3		3
3230	Agitation Pump	1		1
3430	Manure Truck	3		3
3720	Hay Saver Feeder	1		1
4100	Washwater Infilitration System		1	1
5001	Utility Pole Relocation	1		1
5004	Fencing - Semi-Permanent	1		1
Total		**274**	**40**	**314**
	* Includes a modification, emergency repair, repair or repair and replacement BMP.			

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