

Template 1. Phase 3 Watershed Implementation Plan (WIP) Planning and Progress Template

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available *Further evaluation required.				Resources Needed *Further evaluation required.			
							Technical	Source	Financial	Source	Technical	Suggested Source	Financial	Suggested Source
Priority Initiative 1: Reporting and Tracking														
1.1	Initiate additional water quality monitoring sites that promote long-term trend evaluation at key locations in Adams County	<p>Additional sites as needed to evaluate Adams County progress as well as progress for specific land uses or projects in the county</p> <p>Additional monitoring capabilities needed at monitoring station at East Berlin and Bridgeport Stations to analyze nitrogen and phosphorus</p> <p>Increase technical capacity to be able to evaluate loading trends</p> <p>Work w/ state so citizen stream monitoring data can be utilized</p> <p>It is important to monitor implementation progress in terms of water quality, not just using the model</p>	WAAC, USGS, DEP, USGS, Conservation District	Adams County	2025	Additional funding and coordination with USGS	*		Cost savings may be realized if existing stations can be upgraded where possible		<p>Year 1 equipment cost/setting up East Berlin & Bridgeport to collect N & P</p> <p>Annual costs maintaining equipment, developing regression models, calibration, displaying on the web</p>	<p>USGS</p> <p>USGS</p>	<p>\$190,000</p> <p>\$75,000/yr per site East Berlin & Bridgeport</p>	<p>USGS, DEP</p> <p>USGS, DEP</p>
1.2	Improve data collection on urban non-structural practices	Chapter 102 provide more credit for non-structural practices.	ACOPD, Conservation District, DEP, developers, municipalities	Adams County	Ongoing	<p>Long-term compliance.</p> <p>Maintaining accurate BMP inventory.</p>	*		*		*		*	

1.3	Implement a documentation program for commercial and homeowner nutrient applications in developed lands	Required Urban Nutrient management plans	DEP, SCC, Landscape Industry	Statewide	2020	Commercial and home use of nutrients should be evaluated in the CAST model, more data are needed on current application levels.	*		*		*		*	
1.4	Establish baseline of current practices for comparison with future implementation	Develop/implement a process for capturing current agricultural best management practices that are unreported Create a systematic process and database for inventorying stormwater management practices and facilities in MS4 and non-MS4 municipalities	DEP	Adams County and Statewide	Ongoing	Verification of BMP's is time intensive. Identify the types of unreported, currently installed BMPs that would provide significant credit if verified. Focus on verifying those BMPs. Privacy concern	*		*		*Staffing	DEP and Local	*	State/federal funding

Priority Initiative 2: Achieve Pollutant Reductions

2.1	Establish a set of BMPs that will achieve desired pollutant reductions in an efficient and cost effective manner	BMP Implementation	ACOPD, Conservation District, NRCS, Municipalities, DEP, EPA, Stakeholders	Adams County	2025	There are considerable resource limitations to implement BMPs as described throughout this template.	Resources available for implementation of existing programs		Resources available for implementation of existing programs		Substantial staffing and technical resources will be needed to fully implement the proposed BMPs	State and federal sources	Substantial staffing and technical resources will be needed to fully implement the proposed BMPs	State and federal sources
2.2	Identify key areas for installation of BMPs with greatest net effect on nutrients	Complete GIS analysis to identify priority areas. Support legislation as necessary to achieve reductions that make the most economic sense.	ACOPD, Conservation District, DEP, WAAC, ICPRB, SRBC	Adams County	2025	This information is needed to prioritize key areas. Landowner buy-in.	GIS expertise	County, ICPRB, and SRBC staff	Resources available for ongoing GIS analyses		Technical resources needed to complete GIS analysis	State and federal sources	Funding needed for staff time and/or funding for external organization to conduct analysis	State/ federal funding sources

2.3	Evaluate technologies to enhance BMP's	Identify additional technology or improvements to practices to enhance nutrient reductions	DEP, Penn State, NRCS, Conservation District	Adams County, Statewide	2020/Ongoing	Utilize technology to process livestock manure for improved management and greater storage capacity, i.e., small capacity digesters. Farm operator buy-in as well as funding remains a challenge.	*		*		*		*	State and Federal Funding
2.4	Conduct pilot studies to identify and/or confirm efficiency of practices.	Investigate opportunities to improve efficiency of BMP's	DEP, Penn State, NRCS, Conservation District	Adams Count, Statewide	2020/Ongoing	Financial and technical resources will be needed but will not be able to be specified until pilots are introduced Landowner participation will be crucial	*		*		*		*	
2.5	Provide support for necessary legislation and regulatory changes.	Support legislation and regulatory and policy changes that will allow the utilization of proven technology and ensure financial support to maintain operations that address specific pollutants, i.e. poultry manure, etc. Provide a framework for urban nutrient management that will establish requirements for the application of fertilizer for commercial operations (including golf courses) and homeowners.	DEP and PA legislature	Statewide, Adams County	2019/Ongoing	Support legislation and regulatory and policy changes that will provide the ability to utilize proven technology to reduce pollutant levels. Specifically, support Senate Bill 799 establishing the PA Clean Water Procurement Program committing funding to the purchase of long-term nutrient reduction credits. Support SB 792 establishing requirements for urban nutrient management including planning for commercial operations (including golf courses)	*		*		*		*	

						and homeowners regarding the application of fertilizer.								
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Agricultural Sector

2.6	General Challenges with BMP implementation		Conservation District, NRCS, DEP, Army Corps, PDA, SCC, PAFB, FWS, PGC, NPS, landowners, Municipalities	Statewide	2019	<p>Reduce administrative burdens of permits and current funding to better utilize our current resources: Simplify Chapter 105 permitting and create block grants for BMPs fixing existing resource concerns.</p> <p>Allow for MS4's to install BMPs outside of their MS4 area (municipal cost savings but more load reduced). (1.5x rate?)</p> <p>Additional funding for technicians and BMPs needed to additionally increase current outputs</p> <p>Allow flexible funding options to meet landowner's needs</p> <p>Confidentiality of agricultural operators/producers</p> <p>Verification of BMPs: annual/periodic bmps and verification beyond installation would be difficult, time consuming, and require additional support.</p>							2 FTE Ag Techs	\$150,000/yr	State/federal grant funding sources
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						Identify mechanism and party to verify BMPs.									
						Getting proper credit for current BMPs if there is value.									
						Include Orchard representation on State Ag Workgroup.									
						Need ability to implement BMPs on Nation Park Service property.									
2.7	Soil Health	<p><i>High Residual Till - 55,000 acres annually</i></p> <p><i>Conservation Till - 13,000 acres annually</i></p> <p><i>Cover Crop - 30,000 acres annually</i></p> <p><i>Cover Crop w/Fall Nutrients – 10,000 acres annually</i></p> <p><i>Prescribed Grazing – 3,500 total acres</i></p> <p><i>Soil Conservation/Water Quality Plans – 101,000 acres annually</i></p> <p><i>Manure Incorporation – 10,000 acres annually</i></p>	Conservation District, NRCS, RC&D, DEP, PDA, SCC, Plan Writers, landowners and operators	Adams County	2025	<p>Need dedicated source of funding for Cover Crops.</p> <p>Mechanism/staff to verifying plans and annual practices.</p> <p>Weather and soils severely impact feasibility of implementation.</p> <p>Determine where and how vertical tillage can be used in a farmer’s conservation plan and for incorporating manure.</p>					<p>verification of practices</p> <p>Verification of plans</p>	<p>DEP, PDA, SCC</p> <p>DEP, PDA, SCC</p>	<p>\$1,600,000/yr for cover crops (\$40/acre) (verification cost not included)</p> <p>\$1,010,000 Ag E&S plans (\$500 plan/50 acres) (verification of plans not included)</p>	<p>DEP, PDA, SCC</p> <p>DEP, PDA, SCC</p>	
2.8	Nutrient Management	<p><i>Nutrient Management Core N&P - 104,000 N&P acres annually</i></p> <p><i>Nutrient Management Rate N&P – 10,000 N&P acres annually</i></p> <p><i>Nutrient Management Time N&P -10,000 N&P acres annually</i></p>	Conservation District, NRCS, SCC, private agricultural contractors, local farmers	Adams County	2025	<p>Mechanism/staff to verifying annual and current practices.</p> <p>Weather and soils severely impact feasibility of implementation.</p>	Conservation District staff can educate about these recommended actions during routine conversations					<p>verification of practices</p> <p>1 FTE</p>	<p>PDA, DEP, SCC</p> <p>PDA, DEP, SCC</p>	<p>\$1,040,000 Ag Manure & Fertilizer plans (\$500 plan/50 acres)</p> <p>\$100,000/yr</p>	<p>PDA, DEP, SCC</p> <p>PDA, DEP, SCC</p>

						<p>Three applications over the growing season rather than one impacted by weather</p> <p>Equipment to reduce overlap of fertilizer on fields \$30K/per spreader (not practical)</p> <p>Currently no template plans for inorganic fertilizer plans.</p> <p>Yields vary based on soils and weather.</p> <p>Establishing soil specific, realistic yield goals requires considerable one-on-one interaction</p> <p>Several years of results are needed for review and development of a variable rate technology program.</p>	with farmers/landowners				Adams Co Agronomist	PDA, DEP, SCC		
2.9	Riparian	<p><i>Stream Restoration – 10,000 new linear feet</i></p> <p><i>Grass Buffers w/Exclusion Fencing – 200 new acres</i></p> <p><i>Forest Buffer w/Exclusion Fencing – 100 new acres</i></p> <p><i>Grass Buffers – 1,000 new acres</i></p> <p><i>Forest Buffers – 500 new acres</i></p> <p><i>Wetland Restoration – 25 new acres</i></p>	Conservation District, USDA, DEP, Army Corps, DCNR, contractors, local farmers, nonprofits, PFBC, CBF, PACD, nonprofits	Adams County	2025	<p>Chapter 105 permitting a major hurdle for drainage and stream restoration projects.</p> <p>Prioritize grass waterways on areas of active field erosion to capture soil and nutrients and not based GIS database.</p> <p>Prioritize forest buffers on 3rd order streams on agricultural lands and 1st/2nd order in abandoned ag land.</p>				Third party maintenance of buffers	DCNR	<p>\$2,400,000 Forest buffer planting (\$4,000/acre)</p> <p>\$7,150,000 Grassed buffers in eroding fields</p>	<p>DEP, DCNR</p> <p>USDA, DEP, PDA, DCNR, nonprofits</p> <p>USDA, DEP, PDA, nonprofits</p>	

						<p>Buffers are a labor intensive management practice.</p> <p>Incentive program needed to compensate for long-term loss of crops.</p> <p>Remove buffered lands from tax parcels The ability to fix failing buffers is needed (e.g. stream movement over time undermines buffers and they cannot be fixed without permits and expense).</p> <p>Need more research on value of saturated buffers.</p>						<p>(\$6,500/acre)</p> <p>\$937,500 fencing associated w/ buffers (\$3,125/acre)</p> <p>\$880,000 stream restoration (\$88/ linear ft)</p> <p>\$156,250 wetland restoration (\$6,250/acre)</p> <p>\$4,000/0.5 acre of saturated buffers</p>	<p>USDA, DEP, PDA, nonprofits</p> <p>USDA, DEP, PDA, nonprofits</p> <p>USDA, DEP, PDA, nonprofits</p> <p>USDA, DEP, PDA, nonprofits</p>
2.10	Other Ag BMPs	<p><i>Land Retirement – 1,500 new acres</i></p> <p><i>Forest Harvesting Practices – 100%</i></p> <p><i>Waste Storage Facilities – 4,000 new Animal Units</i></p> <p><i>Barnyard Runoff Controls – 15 new acres</i></p>	Conservation District, NRCS, contractors, industry, local farmers, DCNR	Adams County	2025	<p>Focus on small to mid-sized animal operations needing: well-placed fencing, dedicated sacrifice areas, and/or manure storage.</p> <p>Expand manure storage capacity for dairy operations to six months of storage: expand infrastructure, covering and/or digesters.</p> <p>Evaluate exporting or the reintroduction of existing technology</p>						<p>\$5,000,000 new waste storage (\$1,250/AU)</p> <p>\$1,875,000 Barnyard runoff controls (\$125,000/acre)</p> <p>Proposed cost for reduction of</p>	<p>USDA, PDA, DEP</p> <p>USDA, PDA, DEP</p> <p>State/federal funding</p>

						(utilize local energy and nutrient reduction facility) to address local poultry manure management Land retirement would be implemented when converted to solar farm Options for extending manure storages may be outside normal funding priorities Satellite storage facilities for manure may not be used for multiple purposes.							N - \$8-10/lb (1.1 M lb annual reduction = appx \$10M)	
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Urban Sector

2.11	Seek creative solutions to focus on the problem (pollution), not the geography (MS4 and urban areas)	Redefine MS4 area to allow mitigating efforts to occur outside of the urbanized areas	DEP, ACO PD, municipalities	Adams County	Ongoing	Policy or legislative change required.	*		*		*		*	
2.12	Create a documentation program for urban nutrient management	Support current proposed fertilizer legislation for nutrient applications in urban environments.	DEP, Landscaping Industry	Statewide	2020	Legislation required.	*		*		*		*	
2.13	Install riparian buffers on public lands	Implement riparian buffers on public lands. Try to coordinate <i>-100' buffers on public parcels greater than 10 acres (96 acres of riparian buffer)</i> <i>-50' buffers on public parcels less than 10 acres (14 acres of riparian buffer)</i>	ACOPD, Conservation District, WAAC, NRCS, landowners	Adams County	2025	Landowner cooperation and funding required for successful implementation. Security issues may be a constraint of planting trees on private properties. Forest buffer credit challenges – 20 years until tree maturity. Financial resources.							\$500,000	State/federal funding

2.14	Create additional natural areas	Create forest buffers, meadowlands, and other natural areas that are not considered a nuisance	ACOPD, Conservation District, NRCS, municipalities	Adams County	2025	Coordination with municipalities will be needed to comply with ordinances and other planning tools.	*		*		*		*	
2.15	Establish more Shade Tree Commissions	Establish additional Commissions <i>50 acres tree planting.</i>	ACOPD, Municipalities, community members	Adams County	2025	Funding is required to develop and implement these programs.	*		*		*		*	
2.16	Implement other urban initiatives	<i>Full implementation of the municipal PRP plans: Retrofit runoff reductions for 145 treated acres. 3,750 linear feet of urban stream restoration. 16 acres forest buffer. Install 2.5 acres of permeable pavement. Street sweep 109.43 miles.</i> <i>Dry detention ponds to treat 100 acres. 50 acres treated by rain gardens and 25 acres treated by bioswales.</i>	ACOPD, Municipalities, community members	Adams County, municipalities	2025		Current resources being utilized	Local municipalities						
2.17	Promote creations of additional sewage management districts at the municipal level	Proper on-site septic system management	ACOPD, COG, Local municipalities	Adams County, municipalities	Ongoing		Current Staffing							
2.18	Evaluate formation of a Countywide Stormwater Authority	This effort could potentially establish an implementation and funding mechanism	Adams County	Adams County	Ongoing	Educating and garnering support of municipalities may be challenging. Additional financial resources would be required to initiate this effort.	*		*		*		*	
Priority Initiative 3: Research, Education, and Training														
3.1	Develop a strategy to communicate parallel goals of the WIP3 and local goals such as	Nutrient Management Workshop or similar forum	Conservation District, ACOPD, Penn State	Adams County	Ongoing	Financial resources, participant interest.	Annual No-till forum							State/Federal grant funding

	water quality, public and environmental health, economic development, and others	Annual No-till Forum Adams County State of the Waters forum	Extension, WAAC, Municipalities, School Districts, Local farmers				Adams County State of the Waters forum Penn State Extension Training						
3.2	20-acre pilot studies of agricultural BMPs to assess impacts to profitability	Analysis of the effects of BMP installation	Conservation District, landowners, NRCS	Adams County	2025	Landowner willingness to participate.	Current staff expertise	Penn State			Laboratory Analysis, etc.	DEP, Penn State Extension	State/Federal grant funding
3.3	Conduct education of commercial landscape industry/golf course owners/homeowners regarding nutrient management	Nutrient reduction outside of agriculture	ACOPD including Conservation District, WAAC, Penn State, DEP	Adams County	Ongoing	Legislation/regulation required.					Nutrient Technician (1 FTE)	Penn State, DEP	State/Federal Funding