



Schuylkill Blueprint for a Better Bay (SB3)

Planning Together to Restore & Preserve Schuylkill County's Natural Resources

September 30, 2021

TABLE OF CONTENTS

I. INTRODUCTION AND BACKGROUND

Plan Purpose
Plan Highlights
Key Findings
Opportunities for Success
Challenges to Implementation

II. INITIATIVES

Summary
Programmatic/Policy Recommendations
Priority Initiatives Detail
 Catchment Targeting
 Agriculture
 Streams and Natural Resources
 Municipal
 Data Management

III. REPORTING AND SUPPORT DOCUMENTS

Proposed BMPs for Implementation
Initiatives Tracking Document(s) (PADEP Planning Template)
Programmatic Recommendations Document (PADEP Programmatic Template)

IV. APPENDIX

Organizational Chart
ESPOMA Project Information
Watersheds Map
Catchment Management Database

INTRODUCTION AND BACKGROUND

Plan Purpose

The Pennsylvania Department of Environmental Protection (PADEP) developed the third phase of their Chesapeake Bay Watershed Implementation Plan (Ph. III WIP) in 2018. The plan requires implementation of local water quality improvements by 2025 to meet statewide pollution reduction goals. PADEP's Ph. III WIP is based on a collaborative and bottom-up clean water planning approach between the state and each county in the Chesapeake Bay drainage area. This approach gives each county flexibility to create a plan that meets local needs and is unique to the jurisdiction.

Plan Highlights

The Schuylkill Blueprint for a Better Bay (SB3) is a summary of approaches, initiatives, and considerations for existing and proposed water quality improvements in the Chesapeake Bay drainage areas of the county. The portions of the Nescopeck Creek, Catawissa Creek, Mahanoy Creek, Mahantango Creek, Wiconisco Creek, and Swatara Creek watersheds in Schuylkill County comprise the Chesapeake Bay drainage areas contemplated by the SB3. Combined, these areas represent approximately 50% of the land area in the county. A map of the combined watersheds is included in the appendix.

The SB3 in conjunction with state efforts aims to ultimately reduce nearly 1.024 million pounds of nitrogen and 42,000 pounds of phosphorus annually to local streams and water resources through BMPs implemented by 2025. Current efforts and opportunities have identified approaches that will result in approximately 426,000 pounds of Nitrogen reductions (~42% of the target) and 43,000 pounds of Phosphorus reductions (~103% of the target) annually. The immediate activities of the SB3 are intended to identify and flush out approaches and opportunities that would increase the total amount of proposed reductions. The BMP implementation scenario will be revisited and modified in 2023.

The SB3 is a dynamic and adaptive plan summarizing approaches and tracking implementation efforts for local water quality improvements. The plan is aspirational but realistic. As noted in the title of this document, the SB3 is a blueprint to ascertain what BMPs may not have been captured yet (to report) and to increase opportunities for further BMP implementation based on conservation needs. The plan will be updated every other year and reports will be provided annually to both local stakeholders and PADEP through 2025 summarizing progress towards identified long-term goals or adjustments to overall approaches. Key goals and objectives of the SB3 are:

- Balance theoretical reductions with real-world conservation needs and improvements.
- Action Teams focused on the agricultural sector, municipal sector, data management, streams and natural resources, and catchment prioritization to guide and monitor implementation efforts.

- Reconcile and report uncaptured and/or under-reported BMPs across all sectors against proposed BMP implementation rates.
- Prioritization and implementation steps driven by assessments of individual catchments (Catchment Management Database and Targeting) and one-on-one engagements.
- Overall approach governed by providing assistance for individuals and entities that recognize and desire conservation needs in lieu of expanding compliance-driven programs.
- Initiate implementation steps in late 2021 and early 2022 to provide sufficient time and ability to capture data and information to update the BMP implementation scenario in 2023.

Key Findings

Success of the SB3 implementation process will be dependent upon a combination of funding, regulatory flexibility, innovative techniques, and political will coming together. Key actions and considerations that led development and proposed focus areas for successful implementation include:

- It is necessary to complement existing programs and plans in lieu of competing or recreating the wheel.
- BMP implementation goals are a preliminary mix of underreported BMPs to be captured and long-term possible BMP implementation rates that will need to be reconciled at two-year intervals.
- Success is highly predicated on financial and funding assistance.
- A methodical data capture and opportunities identification exercise (Catchment Targeting Initiative) is necessary to balance BMP reconciliation and conservation needs identification efforts.
- Stream restoration and AMD improvements are important areas of focus for the local communities.
- A set of detailed “game plans” that have been identified for specific actions under Priority Initiatives require additional discussions and deliberate tasks that will be necessary for reducing barriers to implementation. The game plans are intended to provide more details behind the who, what, when, how, etc. Game plans are required for:
 - Catchment Assessments and Prioritization processes (Action 1.1)
 - Ag-related education content and platforms, and potential education grant application for implementation assistance (Action 2.1)
 - Potential “buffer bonus” game plan (Action 3.1)
 - Localized municipal training program/platform (Action 4.1)
 - Septic systems tracking (Action 4.4)
 - GIS-based tracking database/warehouse (Action 5.1)
 - Long-term monitoring plan (Action 5.4)

Opportunities for Success

SB3 development included the identification of appropriate collaborations, priority areas, and funding needs specific to Schuylkill County that would improve implementation success while providing extended benefits to the community. Opportunities and considerations that will improve success of implementation include:

- Engaging and partnering with groups currently established or working in the county (watershed associations, BerksNature/Kittatinny Coalition, and so on).
- One-on-one engagements with farmers in the agricultural community and with individual municipalities is absolutely critical for long-term success.
- Long-term funding for “boots-on-the-ground” engagements/assessments and BMP implementation.
- Ensuring initial prioritization efforts align with goals and objectives of previous and existing plans or efforts.
- Capturing underreported BMPs while simultaneously realizing implementation of new BMPs
- Partnering with neighboring counties to align and complement efforts.
- Support and reduction of hurdles for implementation of the ESPOMA Project is a tremendous opportunity not only for the county but the region for processing excess manure.
- Multiple agency buy-in to approaches (NRCS, Dept. of Ag., etc.)
- Organize and launch Action Teams during last quarter of 2021 to detail game plans and coordinate efforts.

Challenges

Several opportunities for success and overall SB3 implementation will inherently encounter challenges. How these challenges unfold will determine the level of successful implementation by 2025. Primary hurdles and challenges anticipated or known include:

- Funding for BMP implementation and limited resources in general.
 - Additional experienced technical staff and engineers for BMP designs are needed
- Extended agencies (e.g. NRCS) buy-in to processes
- Long-term verification processes
- Capacity and conflicting requirements for data management, data entry, and related considerations
- Landowner hesitancy and buy-in, especially with land use BMPs that would remove land from production such as riparian buffers.
- Tight timeline for significant BMP implementation
- Capturing underreported BMPs previously implemented
- Programmatic hurdles, timelines, or conflicting requirements
- Misconstruing conservation assistance with compliance enforcement
- Limited locations for implementation of stream restoration approaches and AMD mitigation measures
- Reduced ability for participation amongst existing watershed groups

INITIATIVES

Summary

The SB3 includes actions and goals to guide the county's clean water efforts for the next several years. These are included in the Planning and Progress Templates and the State Programmatic Recommendations. For ease of review, the Priority Initiatives and Action Items they include are summarized below.

Priority Initiative 1: Catchment Targeting Initiative

- Action 1.1 Catchment Assessments and Prioritization
- Action 1.2 Conservation Opportunities
 - Farmland Conservation – 9,000 acres
 - Forest Conservation – 4,500 acres
 - Wetland Conservation – 40 acres

Priority Initiative 2: Agriculture (Ag)

- Action 2.1 General ag-focused education and outreach
- Action 2.2 Catchment Targeting Initiative (for ag areas)
- Action 2.3 BMP Reporting Reconciliation
- Action 2.4 Focused Ag BMP Implementation
 - Soil Conservation and WQ Plans – 33,000 total acres
 - Nutrient Management Core Nitrogen – 22,000 total acres
 - Nutrient Management Core Phosphorus – 10,200 total acres
 - Barnyard Runoff Controls/Loafing Lot Management – 20 new acres
 - Prescribed Grazing – 1,100 total acres
 - Pasture Alternative Watering – 744 total acres
 - Animal Waste Management Systems – 17,000 new animal units
 - Dairy Precision Feeding – 1,800 animal units
 - Mortality Composting – 4 systems
- Action 2.5 Soil Health BMP Implementation
 - High Residue Tillage – 15,100 total acres/year
 - Conservation Tillage – 14,000 total acres/year
 - Traditional Cover Crops – 6,000 total acres/year
 - Cover Crops with Fall Nutrients – 9,700 total acres/year
 - Commodity Cover Crops – 500 total acres/year
- Action 2.6 Expanded Nutrient Management
 - Nutrient Management Placement Nitrogen – 5,000 acres
 - Nutrient Management Timing Nitrogen – 5,000 acres
 - Nutrient Management Rate Nitrogen – 5,000 acres
 - Nutrient Management Placement Phosphorus – 5,000 acres
 - Nutrient Management Timing Phosphorus – 5,000 acres
 - Nutrient Management Rate Phosphorus – 5,000 acres

- Action 2.7 Manure Transport and Technologies
 - Manure Transport out of Schuylkill County – 3,942 total dry tons/year
 - Manure Treatment Technologies in Area – 100 dry tons/year

Priority Initiative 3: Streams and Natural Resources (SaNR)

- Action 3.1 Stream/Buffer Opportunities and Targeting GIS Layer
- Action 3.2 Ag Riparian Zone
 - Forest buffers – 280 new acres
 - Narrow forest buffers – 420 new acres
 - Forest buffers with exclusion fencing – 40 new acres
 - Narrow forest buffers with exclusion fencing – 60 new acres
 - Grass Buffers – 110 new acres
 - Narrow Grass Buffers – 190 new acres
 - Grass Buffers with exclusion fencing – 20 new acres
 - Narrow grass buffers with exclusion fencing – 30 new acres
- Action 3.3 Urban/Developed Areas Riparian Zone
 - Urban forest buffers – 20 new acres
- Action 3.4 Abandoned Mine Reclamation
 - Abandoned Mine Reclamation – 150 acres
- Action 3.5 Focused Stream Corridor BMP Implementation
 - Urban stream restoration – 14,000 new linear feet
 - Non-urban stream restoration – 8,000 new linear feet
 - Wetland restoration – 60 new acres
 - Wetland creation – 30 new acres
- Action 3.6 Dirt & Gravel Road and LV Road Improvements with WQ Components
 - Dirt & Gravel Road Program (Driving Surf. + Roadbed) – 5,000 new linear feet

Priority Initiative 4: Municipal

- Action 4.1 General Education and Assistance
 - Advanced IDD&E Control – 75 acres treated
- Action 4.2 Stormwater BMP Implementation
 - Runoff Reduction Performance Standards – 600 new acres treated
 - Stormwater Treatment Performance Standards – 100 new acres treated
 - Infiltration Practices – 25 new acres treated
 - Bioretention – 25 new acres treated
 - Bioswale – 50 new acres treated
 - Vegetated Open Channels – 25 new acres treated
 - Impervious Disconnection – 0.4 new acres treated
- Action 4.3 Urban Landscape
 - Conservation Landscaping – 100 total acres
 - Urban Tree Canopy – 2 new acres
 - Urban Forest Planting – 10 new acres
 - Urban Nutrient Management – 1,600 acres
- Action 4.4 Septic Systems

- Septic Denitrification – 800 systems
- Septic Connections – 20 systems
- Septic System Pumping – 4,000 systems
- Action 4.5 Catchment Targeting Initiative (for stormwater and municipal considerations)
- Action 4.6 BMP Reporting Reconciliation
- Action 4.7 Existing Plans Alignment

Priority Initiative 5: Data Management

- Action 5.1 Centralized data platform/warehouse
- Action 5.2 Reporting QA/QC
- Action 5.3 Catchment Targeting Initiative and BMP Reconciliation
- Action 5.4 Long-term monitoring

Programmatic/Policy Recommendations

Schuylkill County stakeholders identified a set of initial actions necessary to reduce policy and programmatic hurdles for implementation of certain BMPs or supporting activities identified in the SB3 (see Programmatic/Policy Recommendations template in the Reporting and Support Documents section for more information):

- Item 1.1 Expand cover crops definition
 - Create a cover crops classification that allows the application of fall nutrients and is harvested in the spring
- Item 1.2 Use FSA data as part of the reconciliation and verification of transect survey data for cover crops
- Item 1.3 Cover crop incentive program
 - Dedicated fund that counties (or farmers) can apply to or tap into when adopting cover crops
- Item 1.4 Rules for transfer of information from NRCS generated SC plans into local PK platform based upon NRCS buy-in.
- Item 1.5 Mushroom composting definition
 - Create a separate definition (or a sub-category of existing manure composting definitions) specific to mushroom composting.
- Item 1.6 Act 167 Plan funding
- Item 1.7 BMP reconciliation parameters
 - Establish a list of the minimum parameters and attributes that should be noted when underreported Ch. 102/land development BMPs are captured.
 - Establish a reporting mechanism(s) for captured Ch. 102/land development BMPs.
- Item 1.8 Accelerated permitting for SB3 identified projects of regional importance
 - Provide arena and processes for accelerating permitting requirements for priority projects.
- Item 1.9 Data management funding program

- Dedicated fund or additional SB3 funding for data management related hardware and software needs
- Item 1.10 Buffers sub-categories
 - Creation or establishment of additional set of codes for buffers outside the riparian corridor that can be incorporated into SC plans

Priority Initiatives Detail

The SB3 Priority Initiatives are centered around a set of considerations, focus areas, and actions intended to directly and indirectly support the implementation of BMPs across the Chesapeake Bay drainage areas of the county. The plan includes a Catchment Management Database (CMD). The CMD is the foundational platform to prioritize catchment targeting efforts and capture findings.

Development of the SB3 was guided by a Steering Committee with administrative support from the Management Team. An organizational chart was developed reflecting relationships between the Steering Committee, Management Team, stakeholders, proposed Action Teams, and others.

PRIORITY INITIATIVE 1: Catchment Targeting Initiative

- Description
 - A technically driven effort was identified to balance BMP reconciliation activities and the identification of conservation needs and BMP implementation opportunities. This team will guide the step-by-step activities and findings for prioritization of BMP implementation efforts on a catchment-to-catchment basis.
 - The process will include three primary steps: 1) desktop analysis that also involves cross-referencing existing plans to establish a preliminary understanding of an individual catchment (including identification of potential uncaptured BMPs and opportunities for exploration), 2) “Boots-on-the-ground” field verifications and initial outreach activities to establish a game plan for catchment, and 3) one-on-one engagements and organizational activities to capture under-reported BMPs and prioritize new BMPs for implementation.
 - The Catchment Management Database (CMD) includes and outlines the preliminary rankings of catchment groups based on the USGS SPARROW mass loading and incremental loading data. A three-tiered hierarchy was established to grade groups and is a red-yellow-green light system (red is poor, yellow is fair/vulnerable, green is optimal).
 - See Planning Template for Priority Initiative 1 in the Reporting and Support Documents section for more information and details

- Focus Areas
 - All 87 catchment groups with the Catchment Targeting Initiative prioritizing areas of engagement and focus.
 - Catchment groups will be analyzed in a “worst-to-first” fashion. Catchments currently graded or identified as red will be analyzed first.
- Actions and Proposed BMPs
 - Action 1.1 Catchment Assessments and Prioritization
 - Desktop analyses followed by “boots-on-the-ground” verifications and engagements with local stakeholders to capture under-reported BMPs and identify new opportunities.
 - Action 1.2 Conservation Opportunities
 - Farmland Conservation – 9,000 acres
 - *Land use change that simulates rate of farmland conservation based on participation in state programs and land trust activities.*
 - Forest Conservation – 4,500 acres
 - *Land use change that simulates rate of forest conservation based on participation in state programs and land trust activities.*
 - Wetland Conservation – 40 acres
 - *Conserves wetlands based on participation in state programs and land trust activities.*
- Implementation Considerations
 - Challenges
 - Minimal agricultural preservation funds
 - Capacity and conflicting requirements for data management, data entry, and related considerations
 - Tight timeline for significant BMP implementation
 - Resources for effective one-on-one engagements
 - Landowner buy-in or hesitancy during outreach and engagement activities
 - Resources for timely and successful Catchment Targeting Initiative efforts
 - Current resources and funding would require a timeframe from 2022-2036 to complete the analyses of all catchments.
 - Additional funding of \$304,500 would result in completion of all catchment analyses by 2024.
 - Opportunities for Success
 - Ensuring initial prioritization efforts align with goals and objectives of previous and existing plans (e.g. Comp Plan).
 - Capturing underreported BMPs while simultaneously realizing implementation of new BMPs
 - Partnering with neighboring counties to align and complement efforts via regional grant applications
 - Long-term funding for “boots-on-the-ground” engagements/assessments and BMP implementation.

- Cross team coordination
- Identification of land conservation opportunities during catchment analyses (forest, farmland, and wetland) and engagement of extended partners for potential easements or similar tools.

PRIORITY INITIATIVE 2: Agriculture

- Description
 - Agriculture is the dominant land use outside of forested and natural areas in Schuylkill County in the Chesapeake Bay drainage areas. Between agricultural land uses and developed land uses, agriculture covers approximately 60% of these land uses. Agriculture is an important component to the economic engine of the region. A primary objective of the actions of this initiative is to separate compliance from stewardship; and to focus on promoting stewardship within the farming community.
 - See Planning Template for Priority Initiative 2 in the Reporting and Support Documents section for more information and details
- Focus Areas
 - All watersheds include agricultural land uses
 - The Catchment Targeting Initiative will help prioritize areas of engagement and focus.
 - Opportunities that arise outside of the catchment targeting processes will be engaged.
- Actions and Proposed BMPs
 - Action 2.1 General ag-focused education and outreach
 - Piggy-back existing media platforms and outreach methods to augment one-on-one and in-the-field engagements
 - Action 2.2 Catchment Targeting Initiative (for ag areas)
 - Initiate on-the-ground efforts for ag-related considerations based on prioritization results of the Catchment Targeting Initiative efforts
 - Action 2.3 BMP Reporting Reconciliation
 - Assist with reconciliation of ag-related BMPs that may be uncaptured and/or underreported
 - Action 2.4 Focused Ag BMP Implementation
 - Soil Conservation and WQ Plans – 33,000 total acres
 - *Plans are a combination of agronomic, management and engineered practices that protect and improve soil productivity and water quality, and to prevent deterioration of natural resources on all or part of a farm. Plans must meet technical standards.*
 - Nutrient Management Core Nitrogen – 22,000 total acres
 - *Applications of nitrogen are made in accordance with certain elements as applicable (e.g. land-grant university)*

- recommendations, spreader calibration, manure analysis, etc.) and technical standards*
- Nutrient Management Core Phosphorus – 10,200 total acres
 - *Applications of phosphorus are made in accordance with certain elements as applicable (e.g. land-grant university recommendations, spreader calibration, manure analysis, etc.) and technical standards*
 - Barnyard Runoff Controls/Loafing Lot Management – 20 new acres
 - *This includes practices such as roof runoff control, stabilization of heavy use areas, diversion of clean water from entering the barnyard and control of runoff from barnyard areas.*
 - Prescribed Grazing – 1,100 total acres
 - *This practice utilizes a range of pasture management and grazing techniques to improve the quality and quantity of the forages grown on pastures and reduce the impact of animal travel lanes, animal concentration areas or other degraded areas.*
 - Pasture Alternative Watering – 500 total acres
 - *Providing a clean, convenient water source in pastures separate from surface waters.*
 - Animal Waste Management Systems – 17,000 new animal units
 - *Any structure designed for collection, transfer and storage of manures and associated wastes generated from the confined portion of animal operations and complies with NRCS 313 (Waste Storage Facility) or NRCS 359 (Waste Treatment Lagoon) practice standards.*
 - Dairy Precision Feeding – 1,800 animal units
 - *Dairy Precision Feeding reduces the quantity of phosphorus and nitrogen fed to livestock by formulating diets within 110% of Nutritional Research Council recommended level in order to minimize the excretion of nutrients without negatively affecting milk production.*
 - Mortality Composting – 4 systems
 - *A physical structure and process for disposing of any type of dead animals. Composted material is land applied using nutrient management plan recommendations.*
 - Action 2.5 Soil Health BMP Implementation
 - High Residue Tillage – 15,100 total acres/year
 - *A conservation tillage routine that involves the planting, growing and harvesting of crops with minimal disturbance to the soil in an effort to maintain at least 60 percent crop residue coverage immediately after planting each crop.*

- Additional funding to support added personnel for Practice Keeper management.
- Catchment-based RFPs for Soil Conservation Plan generation

PRIORITY INITIATIVE 3: Streams and Natural Resources

- Description
 - Forested and natural areas represent roughly 70% of the land uses within Schuylkill County. Protection, restoration, and improvements of streams and areas affected by Abandoned Mine Drainage were identified early on in the SB3 development process as a primary focus. This team will focus on BMP implementation in these areas.
 - Existing CAST data and information (based on 2019 progress data) was utilized to ascertain maximum acres or land available for BMP implementation (especially for riparian buffers-based on stream miles/feet identified in the bay drainage areas of the county).
 - It was assumed a certain portion (~50%) of stream miles are already buffered and a certain portion of remaining areas can be buffered.
 - It is understood that forest and grass buffers are not exclusive to the riparian corridor.
 - See Planning Template for Priority Initiative 3 in the Reporting and Support Documents section for more information and details
- Focus Areas
 - All areas with the Catchment Targeting Initiative helping prioritize areas of engagement and focus.
 - Opportunities that arise outside of the catchment targeting processes will be engaged.
- Actions and Proposed BMPs
 - Action 3.1 Stream/Buffer Opportunities and Targeting GIS Layer
 - House assessed information at County GIS reflecting identified opportunities for BMP implementation
 - Action 3.2 Ag Riparian Zone
 - Forest buffers – 280 new acres
 - *Linear wooded areas on or adjacent to crop and hay land uses that help filter nutrients, sediments and other pollutants from runoff as well as remove nutrients from groundwater. The recommended buffer width is 100 feet, with a 35 feet minimum width required.*
 - Narrow forest buffers – 420 new acres
 - *Linear wooded areas on or adjacent to crop and hay land uses that help filter nutrients, sediments and other pollutants from runoff as well as remove nutrients from groundwater that are a minimum of 10 feet wide and a maximum of 35 feet wide.*
 - Forest buffers with exclusion fencing – 40 new acres

groundwater. The recommended buffer width is 100 feet, with a 35 feet minimum width required.

- Action 3.4 Abandoned Mine Reclamation
 - Abandoned Mine Reclamation – 150 acres
 - *Abandoned mine reclamation stabilizes the soil on lands mined for coal or affected by mining, such as wastebanks, coal processing, or other coal mining processes.*
- Action 3.5 Focused Stream Corridor BMP Implementation
 - Urban stream restoration – 14,000 new linear feet
 - *Refers to any Natural Channel Design (NCD), Regenerative Stream Channel (RSC), Legacy Sediment Removal (LSR), or other restoration project in an urban/suburban environment that meets the qualifying conditions for credits, including environmental limitations and stream functional improvements.*
 - Non-urban stream restoration – 8,000 new linear feet
 - *Refers to any Natural Channel Design (NCD), Regenerative Stream Channel (RSC), Legacy Sediment Removal (LSR), or other restoration project in non-urban/suburban environments that meets the qualifying conditions for credits, including environmental limitations and stream functional improvements.*
 - Wetland restoration – 60 new acres
 - *The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former wetland.*
 - Wetland creation – 30 new acres
 - *Establish or create wetlands in a floodplain or other areas by manipulation of the physical, chemical, or biological characteristics to develop a wetland where one did not previously exist.*
- Action 3.6 Dirt & Gravel Road and Low Volume (LV) Road Improvements with Water Quality (WQ) Components
 - Dirt & Gravel Road Program (Driving Surf. + Roadbed) – 5,000 new linear feet
 - *Reduce the amount of sediment runoff from dirt and gravel roads through the use of driving surface aggregates (DSA) such as durable and erosion resistant road surface and raising road elevation to restore natural drainage patterns.*
- Implementation Considerations
 - Challenges
 - Funding for BMP implementation and limited resources in general
 - Long-term verification processes
 - Landowner resistance, buy-in, and commitments (especially with land use BMPs such as riparian buffers)

- Tight timeline for significant BMP implementation
- Capturing underreported BMPs previously implemented
- Programmatic hurdles, timelines, or conflicting requirements
- Long lead times for development and implementation of AMD approaches
- Dormant or nearly dormant watershed groups
- Opportunities for Success
 - Engaging and partnering with groups currently established or working in the county (watershed associations, BerksNature/Kittatinny Coalition, and so on).
 - Long-term funding for “boots-on-the-ground” engagements/assessments and BMP implementation.
 - Ensuring initial prioritization efforts align with goals and objectives of previous and existing plans or efforts.
 - Capturing underreported BMPs while simultaneously realizing implementation of new BMPs
 - Partnering with neighboring counties to align and complement efforts.
 - Building upon previously successful stream corridor restoration efforts.
 - Buffer implementation incentive program

PRIORITY INITIATIVE 4: Municipal

- Description
 - While forested/natural and agriculture land uses comprise roughly 89% of the land uses within the Chesapeake Bay drainage areas of Schuylkill County, there are pockets of developed areas (commercial, residential, etc.) that cannot be ignored. Additionally, this team will serve as point for engagements with local municipalities during implementation and Catchment Targeting efforts.
 - High level analyses revealed the urban/suburban sector includes a high number of under-reported and/or uncaptured BMPs.
 - See Planning Template for Priority Initiative 4 in the Reporting and Support Documents section for more information and details
- Focus Areas
 - All areas with the Catchment Targeting Initiative helping prioritize areas of engagement and focus.
 - Opportunities that arise outside of the catchment targeting processes will be engaged.
 - Initial analyses revealed approximately 16,000 septic systems are located in the bay drainage areas of the county.
- Actions and Proposed BMPs
 - Action 4.1 General Education
 - Advanced IDD&E Control – 75 acres treated

- Current plans identified include the County Comprehensive Plan, Hazard Mitigation Plan, and Open Space and Greenway Plan as components of the Catchment Targeting Initiative analyses.
- Implementation Considerations
 - Challenges
 - Funding for BMP implementation and limited resources in general.
 - Long-term verification processes
 - Municipal and landowner resistance, buy-in, and commitments (especially with land use BMPs such as riparian buffers)
 - Tight timeline for significant BMP implementation
 - Capturing underreported BMPs previously implemented
 - Programmatic hurdles, timelines, or conflicting requirements
 - Apathy
 - Opportunities for Success
 - Engaging and partnering with groups currently established or working in the county (watershed associations, BerksNature/Kittatinny Coalition, and so on).
 - One-on-one engagements with individual municipalities are absolutely critical for long-term success.
 - Long-term funding for “boots-on-the-ground” engagements/assessments and BMP implementation.
 - Ensuring initial prioritization efforts align with goals and objectives of previous and existing plans or efforts.
 - Capturing underreported BMPs while simultaneously realizing implementation of new BMPs.
 - Fertilizer legislation adoption
 - Development and implementation of Watershed Action Plans (WAPs) outlining more comprehensive and thorough paths for water quality improvements providing extended regional benefits to local communities.

PRIORITY INITIATIVE 5: Data Management

- Description
 - Tracking and capture of relevant information, data, etc. is critical to ensure long-term verification processes are conducted in a timely manner and BMP reductions across sectors are appropriately credited to the county.
 - See Planning Template for Priority Initiative 5 in the Reporting and Support Documents section for more information and details
- Actions
 - Action 5.1 Centralized data platform/warehouse

- The master Catchment Management Database (CMD) and information/data captured as a result of the Catchment Targeting Initiative will be housed at County GIS.
 - Action 5.2 Reporting QA/QC
 - Established flowchart for BMP capture and reporting
 - Action 5.3 Catchment Targeting Initiative and BMP Reconciliation
 - Ensure captured data and information from Catchment Targeting efforts are displayed appropriately.
 - Action 5.4 Long-term monitoring
 - Development of long-term monitoring strategies to measure progress and assist with future decision points.
- Implementation Considerations
 - Challenges
 - Funding for GIS related hardware and software that will result in more efficient data capture and entry.
 - Conflicting requirements for data management, data entry, and related considerations.
 - Minimal to no monitoring data for a baseline
 - Opportunities for Success
 - Leveraging existing County GIS resources, knowledge, and capabilities to appropriately capture and display data and information.
 - Acquiring functional (but retired) monitoring equipment to build baseline monitoring program

REPORTING AND SUPPORT DOCUMENTS

Reporting and support documents included in the SB3 are:

- Proposed BMPs for Implementation (“BMP Implementation Scenario”)
 - Outlines specific BMPs and total quantities proposed for implementation and delineated between the agricultural and non-agricultural (developed/other) sectors
- Initiatives Tracking Document(s) (PADEP Planning and Progress Template)
 - Summarizes Priority Initiatives in a tracking spreadsheet
 - Tracking documents include:
 - Catchment Targeting
 - Agriculture
 - Streams and Natural Resources
 - Municipal
 - Data Management
- Programmatic Recommendations Document (PADEP Programmatic Template)
 - Summarizes programmatic and/or policy change recommendations that would reduce challenges or hurdles for successful SB3 implementation

**Schuylkill County Agriculture Best Management Practices (BMPs)
Proposed CAP Implementation Rates**

Best Management Practice	Amount	Units of Measure	Percent of Total Available Acres
Agriculture Compliance			
Soil Conservation and Water Quality Plans	33,000	Total Acres	~99%
Nutrient Management Core N	22,000	Total Acres	~60%
Nutrient Management Core P	10,200	Total Acres	25%
Barnyard Runoff Control	20	New Acres	~67%
Soil Health			
Tillage Management-High Residue	15,100	Acres/Year	50%
Tillage Management-Conservation	14,000	Acres/Year	~43%
Cover Crop Traditional	6,000	Acres/Year	N/A
Cover Crop Traditional with Fall Nutrients	9,700	Acres/Year	N/A
Cover Crop Commodity	500	Acres/Year	N/A
Pasture Alternative Watering	744	Total Acres	~19%
Prescribed Grazing	1,100	Total Acres	~37%
Expanded Nutrient Management			
Nutrient Management N Rate	5,000	Acres	~11%
Nutrient Management P Rate	5,000	Acres	~11%
Nutrient Management N Placement	5,000	Acres	~11%
Nutrient Management P Placement	5,000	Acres	~11%
Nutrient Management N Timing	5,000	Acres	~11%
Nutrient Management P Timing	5,000	Acres	~11%
Manure Storage Facilities			
Manure Storage Facilities	17,000	New AU's	94%
Dairy Precision Feeding			
Dairy Cow Precision Feed Management	1,800	Dairy Cow AU's	71%
Integrated System for Elimination of Excess			
Manure Transport out of Schuylkill County	3,942	Dry Tons/Year	N/A
Manure Treatment Technology in County	100	Dry Tons/Year	N/A
Mortality Composters	4	Systems	N/A
Agriculture Riparian Zone			
Forest Buffer	280	New Acres	N/A
Forest Buffer-Narrow	420	New Acres	N/A
Forest Buffer-Streamside with Exclusion Fencing	40	New Acres	N/A
Forest Buffer-Narrow with Exclusion Fencing	60	New Acres	N/A
Grass Buffer	110	New Acres	N/A
Grass Buffer-Narrow	190	New Acres	N/A
Grass Buffer-Streamside with Exclusion Fencing	20	New Acres	N/A
Grass Buffer-Narrow with Exclusion Fencing	30	New Acres	N/A

The agriculture BMP implementation rates provided above are based on a combination of state recommendations identified in the Chesapeake Bay Phase 3 Watershed Implementation Plan (WIP), engagements with local agencies and stakeholders, and the Schuylkill County Steering Committee.

Schuylkill County Stormwater Best Management Practices (BMPs) Proposed CAP Implementation Rates

Best Management Practice	Amount	Units of Measure	Percent of Total Available Acres
Urban/Developed Areas Riparian Zone			
MS4 Riparian Forest Buffers	2	New Acres	N/A
Non-MS4 Forest Buffers	18	New Acres	N/A
Woods and Pollinator Habitat			
Conservation Landscaping	100	New Acres	N/A
Urban Forest Planting	10	New Acres	N/A
Urban Tree Canopy			
MS4 Urban Tree Canopy	2	New Acres	N/A
Forest, Farm, and Natural Areas Conservation			
Farmland Conservation	9,000	Total Acres	N/A
Forest Conservation	4,500	Total Acres	N/A
Wetland Conservation	40	Total Acres	N/A
Stream and Wetland Restoration			
Urban Stream Restoration	14,000	New Linear Feet	N/A
Non-urban Stream Restoration	8,000	New Linear Feet	N/A
Wetland Restoration	60	New Acres	N/A
Wetland Creation	30	New Acres	N/A
Control Measures for Illicit Discharges			
Advanced Grey Infrastructure IDD&E Control	75	Acres Treated	<1%
Stormwater Control Measures			
Stormwater Performance Stds - RR	600	New Acres Treated	~2%
Stormwater Performance Stds - ST	100	New Acres Treated	<1%
Infiltration Practices	25	New Acres Treated	<1%
Bioretention/raingardens	25	New Acres Treated	<1%
Bioswales	50	New Acres Treated	<1%
Vegetated Open Channels	25	New Acres Treated	<1%
Industrial Stormwater			
Impervious Surface Reduction	0.40	Total Acres	N/A
Fertilizer Legislation			
Urban Nutrient Management	1,600	Total Acres	8%
Septic Systems			
Conventional Septic Denitrification	800	Systems	~5%
Septic System Connections	20	Systems	N/A
Septic System Pumping	4,000	Systems	~25%
Dirt & Gravel Road Program			
Driving Surface + Raising the Roadbed	5,000	New Linear Feet	N/A
Abandoned Mine Reclamation			
Abandoned Mine Reclamation	150	Acres	N/A

The stormwater BMP implementation rates provided above are based on the state recommendations identified in the Chesapeake Bay Phase 3 Watershed Implementation Plan (WIP), engagements with local agencies and stakeholders, and the Schuylkill County Steering Committee.

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

Green - action has been completed or is moving forward as planned **Yellow** - action has encountered minor obstacles **Red** - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments	
							Technical	Source	Financial	Source	Technical	Suggested Source		Financial
Priority Initiative 1: Catchment Targeting Initiative														
1.1	Catchment Assessments and Prioritization	TBD for each individual catchment group <i>Game plan by end of 2021</i>	Schuylkill County Conservation District (SCCD), watershed groups, local municipalities, County, NRCS, Kittatinny Coalition/BerksNature, Eastern PA Abandoned Mine Coalition (AMC)	All areas (all catchments to be assessed) Catchment Management Database (CMD) determines order of assessments (“worst-to-first” order)	(Funding Assisted timeline): 87 total catchments 2021: 10, 2022: 30, 2023: 30, 2024: remaining (assuming funding stream) (No additional funding timeline): 87 total catchments, ~6/year (2022-2036, with 1-2 catchments late 2021)	Use the CMD as preliminary prioritization to assess individual catchments and outline conditions, needs, opportunities, etc. Overlay Comp Plan, Hazard Mitigation Plan, and Open Space and Greenway Plan during initial analyses “Boots-on-the-ground” funding and capacity for engagements, assessments, etc. (with existing funding, analysis of all catchments would continue through 2029) Coordinate with other action teams for agricultural, stream, buffer, and urban conservation opportunities and needs Include identification of infrastructure and replacements inventory in game plan (including red-yellow-green ranking system)	Catchment Management Database (CMD) County GIS Local engineers/consultants Master Watershed Stewards		NFWF INSRG program		Final Game Plan for analyses steps by fall 2021	Management Team (MT) and Catchment Targeting Action Team (CT AT)	\$304,500 (\$3,500/catchment) for accelerated analyses (without funding assistance for full analyses, projected timeframe for completion would be ~2036 utilizing existing resources and with limited findings) GIS hardware and software (See P.I. 5 Data Management for more info)	TBD (PADEP, EPA, Private funding are possibilities)

1.2	Identify Conservation Opportunities during catchment assessments	Farmland Conservation – 9,000 total acres	Ag Preserve. Board, BerksNature, local watershed groups, SCCD, Master Watershed Stewards	Follows Action 1.1		Sustained funding streams need to be established	Ag Preserve Board, BerksNature, Kittatinny Coalition		Nature Conserv., County						
		Forest Conservation – 4,500 total acres				Private forests carbon credits program may provide alternative funding stream for forest conservation									
		Wetland Conservation – 40 total acres				Identification of potential targets will occur during catchments assessments									

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

Each county-based local area will use this template to identify:

1. Inputs – These are both existing and needed resources, public and private, to implement the identified priority initiative. These include both technical and financial resources, such as personnel, supplies, equipment and funding.
2. Process – what is each partner able to do where and by when. These are the action items listed under each priority initiative.
3. Outputs and outcomes – both short and long-term. These are the priority initiatives identified by each county. The performance targets are the intermediate indicators that will measure progress.
4. Implementation challenges – any potential issues or roadblocks to implementation that could impede outputs and outcomes.

Asterisk: Place an asterisk next to the action number(s) for action items that appear in both the County Planning and Progress Template and the Programmatic Recommendations Template.

For each Priority Initiative or Program Element: Use the fields, as defined below, to identify the inputs and the process that will be followed to achieve each priority initiative. This is the “who, what, where, when and how” of the plan:

Description = What. This may include programs that address prevention, education, or as specific as planned BMP installations that will address the Priority Initiative. A programmatic or policy effort will require some ability to quantify the anticipated benefits which will allow calculation of the associated nutrient reductions.

Performance Target = How. This is an extension of the Description above. The Performance Target details the unique BMPs that will result from implementation of the Priority Initiative and serves as a benchmark to track progress in addressing the Priority Initiative. Performance Targets may be spread across multiple Responsible Parties, Geographies, and Timelines based on the specifics of the Initiative.

Responsible Party(ies) = Who. This is/are the key partner(s) who will implement the action items through outreach, assistance or funding, and who will be responsible for delivering the identified programs or practices.

Geographic Location = Where. This field identifies the geographic range of the planned implementation. This could extend to the entire county or down to a small watershed, based on the scale of the Priority Initiative, range of the Responsible Party, or planned funding/resources. *NOTE: Resource limitations alone should not limit potential implementation as additional funding may become available in the future.*

Expected Timeline = When. Provide the expected completion date for the planned activity. This should be a reasonable expectation, based on knowledge and experience, that will aid in tracking progress toward addressing the Priority Initiative.

Resources Available: Technical & Funding = This field will note technical and financial resources secured/available to implement the program (Description). This is the total of the resources identified in the County Resources Inventory Template below allocated to the priority initiative as a whole; or, if available, to each action.

Resources Needed: Technical & Funding = This field will note technical and financial resources needed/outstanding to implement the program (Description). This is the total of the additional resources projected and identified as needed in the County Resources Inventory Template below allocated to the priority initiative as a whole; or, if possible, to each action.

Potential Implementation Challenges/Issues = This field will note challenges and issues that may delay program implementation (Description).

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

Green - action has been completed or is moving forward as planned Yellow - action has encountered minor obstacles Red - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments	
							Technical	Source	Financial	Source	Technical	Suggested Source		Financial
Priority Initiative 2: Agriculture														
2.1	General ag-focused education and outreach supporting overall efforts	No specific target, success will be measured by implementation rates of BMPs across the ag sector <i>Long-term metrics will be identified in game plan (late 2021)</i>	Schuylkill County Conservation District (SCCD), Ag Technical Service Providers (TSPs), Penn State Extension, NRCS, watershed groups	All areas with emphasis provided towards prioritized catchments	On-going, with game plan in late 2021	Piggy-back existing media platforms with outreach and messaging content (game plan should identify content development tasks)	SCCD, Penn State Extension, TSPs, NRCS, Ag Preserve Board, BerksNature, County, VISION		Environmental Education (EE) Grant for any supporting materials and/or equipment	DEP	Final Game Plan for potential EE grant application and content develop. tasks			
2.2	Catchment Targeting Initiative (tied to P.I. 1 Catchment Targeting Initiative Action 1.1 for ag-specific details)	Metrics inherently tied to other action items (needs will be established on a catchment-to-catchment basis), see P.I. 1 for more info	Ag Action Team (AT), Data Management (DM) AT, Catchment Targeting (CT) AT, Municipal AT, (Streams and Natural Resources (SaNR) AT, watershed groups, local municipalities, County, SCCD, Center for Watershed Protection (CWP), NRCS	Prioritized catchments (TBD)	Late 2021 launch with inherent tie to P.I. 1	Partner with Catchment Targeting AT during catchment prioritization efforts to identify individual catchment needs, BMP probabilities, etc. Coordinate with CWP and Berks County for Upper Little Swatara 319 Plan development Ag AT to focus on ag-related/farmer conservation needs and opportunities in prioritized or analyzed catchment groups	SCCD, County				Increased TSP presence for Soil Conserv. plans and ag BMP engineering		Funding for SC Plan development by individual catchments after analysis and inventory of needs (potentially organize plan development bid packages by each catchment), intent is to draw more TSPs into the mix; \$TBD for each catchment	

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

Green - action has been completed or is moving forward as planned **Yellow** - action has encountered minor obstacles **Red** - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available				Resources Needed				Review Checklist Comments
							Technical	Source	Financial	Source	Technical	Suggested Source	Financial	Suggested Source	

2.3	BMP Reporting Reconciliation (tied to P.I. 5 Data Management Action 5.3 for ag specific details)		Ag AT, Data Management AT, Catchment Targeting AT	All areas (reconciliation to occur in conjunction with catchment-to-catchment assessments)	Launch late 2021 and on-going with catchment targeting	Partner with Data Management AT for reconciliation of BMP reporting numbers (primarily through catchment targeting) Current perception/ organization of BMP targets is a mix of uncaptured/ underreported BMPs and SC plans; and additional BMP implementation. Reconciliation in conjunction with catchment targeting will provide a pathway to delineate (and capture) underreported BMPs/ SC Plans and needs for additional BMPs.	SCCD, TSPs, NRCS, Ag. Preserv. Board Practice Keeper (PK)								
-----	--	--	---	--	--	---	--	--	--	--	--	--	--	--	--

2.4	Focused Ag BMP implementation	Soil Conservation and WQ Plans – 33,000 total acres Nutrient Management Core N – 22,000 total acres Nutrient Management Core P – 10,200 total acres Barnyard Runoff Control – 10 new acres	SCCD, NRCS, TSPs	All areas with emphasis provided towards prioritized catchments	On-going with efforts prioritized through catchment targeting (Action 2.2)	Promote broad slate of BMP types across ag industry and based on individual farm conservation needs based on initial implementation scenario Future scenario adjustments based on rates of implementation realized and progress under BMP reconciliation efforts	Farm survey, Penn State Extension, NRCS, TSPs, SCCD, Ag Preserve Board		REAP, CEG, EQIP, RCPP, MEBF, State reimb. Program, PennVEST, PL566	Various	Practice Keeper (PK) entry/ mngmnt at SCCD Increased TSPs presence NRCS data (BMPs details) Experienced technical staff	\$55,000/yr (Practice Keeper (PK)) management - individual dedicated to PK and plan entry) Capital Costs (SC Plans development only-8,000 acres): ~\$200,000 Capital Costs (all other	TBD but options include DEP, Dept. of Ag., USDA, and EPA (various existing programs may need to be augmented with other sources)	
-----	-------------------------------	---	------------------	---	--	---	--	--	--	---------	--	---	--	--

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

Green - action has been completed or is moving forward as planned **Yellow** - action has encountered minor obstacles **Red** - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments
							Technical	Source	Financial	Source	Technical	Suggested Source	

		<p><i>Loafing Lot Management – 10 new acres</i></p> <p><i>Prescribed Grazing – 1,100 total acres</i></p> <p><i>Pasture Alt. Watering – 744 total acres</i></p> <p><i>Manure Storage Facilities – 17,000 new AUs</i></p> <p><i>Precision Feeding – 1,800 Dairy Cow AUs</i></p> <p><i>Mortality Composter – 4 systems</i></p>				<p>Assume increased realized and/or capture of unreported acres through catchment targeting and BMP reconc.</p> <p>Farmer resistance to buy-in (including farmers indicating they do not want assistance as they are unsure if they will still be in business in 2-3 years)</p> <p>Backlog of plans needed (including entry into PK); increase of TSPs presence would be ideal. Current plans development rate is roughly 2,000-2,500 acres/yr based on existing resources.</p> <p>High level review revealed roughly 25,000 acres with a SC Plan in past 10 years. Primary effort will be tied to PK entry of plans. Financial needs cost for plan development reflects 8,000 acres.</p> <p>Rules for transfer of info in NRCS platform to PK based on NRCS buy-in*</p>						<p>BMPs): ~\$27.5 million</p> <p>Catchment bidding platform for SC plan(s) development (see Action 2.2)</p>	
--	--	---	--	--	--	---	--	--	--	--	--	---	--

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

Green - action has been completed or is moving forward as planned **Yellow** - action has encountered minor obstacles **Red** - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available				Resources Needed			Review Checklist Comments
							Technical	Source	Financial	Source	Technical	Suggested Source	Financial	

2.5	Soil Health BMP Implementation	<p><i>Tillage Mgmt High Residue – 15,100 acres/yr</i></p> <p><i>Tillage Mgmt Conservation – 14,000 acres/yr</i></p> <p><i>Cover Crop Traditional – 6,000 acres/yr</i></p> <p><i>Cover Crop with Fall Nutrients – 9,700 acres/yr</i></p> <p><i>Cover Crop Commodity – 500 acres/yr</i></p>	SCCD, TSPs, NRCS	All areas with emphasis provided towards prioritized catchments	On-going with intent to build upon acres in a cumulative manner through catchment assessments (Action 2.2)	<p>Future scenario adjustments based on rates of implementation realized and progress under BMP reconciliation efforts</p> <p>Assume increase on implementation through catchment targeting</p> <p>Limited definition of cover crops and what counts as a reduction*</p> <p>Potential gap between FSA reporting and CAST reported data*</p> <p>Lock down and potentially expand transect survey process</p> <p>Cover crop incentive program would be ideal and would reduce barriers to initial implementation*</p>	SCCD, Penn State Extension, NRCS, TSPs		REAP, CEG, EQIP, RCPP, MEBF, PennVEST, PL566	Various	Increased TSPs presence		Capital Cost: ~\$1.0 million	Cover crop implement. Fund (incentive program)	DEP	
-----	--------------------------------	---	------------------	---	--	--	--	--	--	---------	-------------------------	--	------------------------------	--	-----	--

2.6	Expanded Nutrient Management	<p><i>NM N Rate – 5,000 acres</i></p> <p><i>NM N Placement – 5,000 acres</i></p> <p><i>NM N Timing – 5,000 acres</i></p>	NRCS, SCCD, TSPs	All areas with emphasis provided towards prioritized catchments	Coincides with Catchment Targeting Initiative (Action 2.2)	Aim to increase level of organization and understanding of developed, implemented, and back-logged SC plans prior to tackling expanded nutrient	SCCD, Penn State Extension, NRCS, TSPs		REAP, CEG, EQIP, RCPP, MEBF, PennVEST			Capital Cost: ~\$260,000				
-----	------------------------------	--	------------------	---	--	---	--	--	---------------------------------------	--	--	--------------------------	--	--	--	--

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

Green - action has been completed or is moving forward as planned **Yellow** - action has encountered minor obstacles **Red** - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments	
							Technical	Source	Financial	Source	Technical	Suggested Source		Financial
		<i>NM P Rate – 5,000 acres</i> <i>NM P Placement – 5,000 acres</i> <i>NM P Timing – 5,000 acres</i>				management planning and approaches Approach and engage commercial vendors for messaging								
2.7	Manure Transport and Technologies	<i>Manure Transport out of Schuylkill County – 3,942 total DT/yr</i> <i>Manure Treatment Technologies in Area – 100 DT/yr</i> <i>ESPOMA facility fully operational</i>	Farmers, haulers, SCCD, TSPs, ESPOMA	On-going	Prior to 2025	Act 38 reporting ESPOMA facility in Frailey Twp (assume manure within Schuylkill County also transferred to facility) Mushroom composting may be an additional potential alternative for reductions*	TSPs, NRCS, SCCD, DEP, EPA					Capital Cost (transport only): ~\$35,000		

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

Each county-based local area will use this template to identify:

1. Inputs – These are both existing and needed resources, public and private, to implement the identified priority initiative. These include both technical and financial resources, such as personnel, supplies, equipment and funding.
2. Process – what is each partner able to do where and by when. These are the action items listed under each priority initiative.
3. Outputs and outcomes – both short and long-term. These are the priority initiatives identified by each county. The performance targets are the intermediate indicators that will measure progress.
4. Implementation challenges – any potential issues or roadblocks to implementation that could impede outputs and outcomes.

Asterisk: Place an asterisk next to the action number(s) for action items that appear in both the County Planning and Progress Template and the Programmatic Recommendations Template.

For each Priority Initiative or Program Element: Use the fields, as defined below, to identify the inputs and the process that will be followed to achieve each priority initiative. This is the “who, what, where, when and how” of the plan:

Description = What. This may include programs that address prevention, education, or as specific as planned BMP installations that will address the Priority Initiative. A programmatic or policy effort will require some ability to quantify the anticipated benefits which will allow calculation of the associated nutrient reductions.

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

Green - action has been completed or is moving forward as planned Yellow - action has encountered minor obstacles Red - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources <u>Available</u>			Resources <u>Needed</u>			Review Checklist Comments	
							Technical	Source	Financial	Source	Technical	Suggested Source		Financial

Performance Target = How. This is an extension of the Description above. The Performance Target details the unique BMPs that will result from implementation of the Priority Initiative and serves as a benchmark to track progress in addressing the Priority Initiative. Performance Targets may be spread across multiple Responsible Parties, Geographies, and Timelines based on the specifics of the Initiative.

Responsible Party(ies) = Who. This is/are the key partner(s) who will implement the action items through outreach, assistance or funding, and who will be responsible for delivering the identified programs or practices.

Geographic Location = Where. This field identifies the geographic range of the planned implementation. This could extend to the entire county or down to a small watershed, based on the scale of the Priority Initiative, range of the Responsible Party, or planned funding/resources. *NOTE: Resource limitations alone should not limit potential implementation as additional funding may become available in the future.*

Expected Timeline = When. Provide the expected completion date for the planned activity. This should be a reasonable expectation, based on knowledge and experience, that will aid in tracking progress toward addressing the Priority Initiative.

Resources Available: Technical & Funding = This field will note technical and financial resources secured/available to implement the program (Description). This is the total of the resources identified in the County Resources Inventory Template below allocated to the priority initiative as a whole; or, if available, to each action.

Resources Needed: Technical & Funding = This field will note technical and financial resources needed/outstanding to implement the program (Description). This is the total of the additional resources projected and identified as needed in the County Resources Inventory Template below allocated to the priority initiative as a whole; or, if possible, to each action.

Potential Implementation Challenges/Issues = This field will note challenges and issues that may delay program implementation (Description).

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

Green - action has been completed or is moving forward as planned Yellow - action has encountered minor obstacles Red - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments	
							Technical	Source	Financial	Source	Technical	Suggested Source		Financial
Priority Initiative 3: Streams and Natural Resources														
3.1	Stream/Buffer Opportunities and Targeting GIS Layer (tied to P.I. 1 Catchment Targeting Initiative)	<i>Game plan for "buffer bonus" program by spring 2022</i>	Data Management (DM) Action Team (AT), Catchment Targeting (CT) AT, Ag AT, Municipal AT, County	All areas with emphasis provided towards prioritized catchments	On-going with layer definitions outlined mid-2022	County GIS layer(s) for targeting direction and results needs developed Assume BMP reconciliation can be achieved through targeting tool Field verification required through Catchment Targeting Initiative as efforts progress through individual catchments Potential "buffer bonus" program to complement other ag funding streams for implementation	County GIS, BerksNature, Stroud, Alliance for the Ches. Bay (ACB), Ches. Bay Foundation (CBF), Technical Service Providers (TSPs), Schuylkill County Conservation District (SCCD)		NFWF, Growing Greener (GG)		Final game plan for potential "buffer bonus" (or similar program in 2022)		\$15,000-\$25,000 (also depends on extent of platform-build (or expand) platforms and personnel) for additional licenses, hardware, etc.) (See P.I. 5 Data Management for more info)	TBD but options include DEP or other state agency
3.2	Ag Riparian Zone	<i>Forest Buffer – 280 new acres</i> <i>Forest Buffer Narrow – 420 new acres</i> <i>Forest Buffer with exclusion fencing – 40 new acres</i> <i>Forest Buffer Narrow with exclusion fencing – 60 new acres</i> <i>Grass Buffer – 110 new acres</i>	SCCD, Ag Technical Service Providers (TSPs), NRCS, watershed groups, Alliance for Chesapeake Bay (ACB), Chesapeake Bay Found. (CBF), Stroud, municipalities, farmers, County	All areas with emphasis provided towards prioritized catchments (as catchments analyzed)	On-going with inherent tie to Action 3.1	Farmer resistance or buy-in Proposed implementation numbers need reconciled as general perception is proposed BMP rates are more than available or capable Simple reference sheet outlining who, what, where, etc. for types of buffers and locations for implementation would be ideal to	SCCD, NRCS, TSPs, Stroud, ACB, CBF, watershed groups		NFWF, GG, DCNR, CREP, Keystone, TreeVitalize, PACD, RCPP, EQIP, MEBF, Chesapeake Bay Trust (CBT) grants		Volunteers and/or contractors for implement.		Capital Cost: ~\$4.6 million	

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

Green - action has been completed or is moving forward as planned **Yellow** - action has encountered minor obstacles **Red** - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments
							Technical	Source	Financial	Source	Technical	Suggested Source	

		<p><i>Grass Buffer Narrow – 190 new acres</i></p> <p><i>Grass Buffer with exclusion fencing – 20 new acres</i></p> <p><i>Grass Buffer Narrow with exclusion fencing – 30 new acres</i></p>				<p>assist with targeting efforts and landowner engagements*</p> <p>Coordinate with Ag AT for education (Action 2.1)</p>									
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

3.3	Urban/ Developed Areas Riparian Zone	<p><i>MS4 Riparian Forest Buffers – 2 new acres</i></p> <p><i>Non-MS4 Forest Buffers – 18 new acres</i></p>	Local municipalities, watershed groups, Stroud, ACB, SCCD, County	All areas with emphasis provided towards prioritized catchments (as catchments analyzed) Individual municipal engagements for promotion of buffers	On-going with inherent tie to Action 3.1	<p>Landowner resistance or buy-in</p> <p>Tie buffer improvements where stream restoration improvements are pursued and where appropriate</p> <p>One-on-one municipal engagements will increase opportunities</p>	SCCD, local municipalities, Stroud, ACB, local engineers/ consultants		NFWF, GG, DCNR, Keystone, TreeVitalize, CBT				Capital Cost: ~\$81,000		
------------	--------------------------------------	---	---	---	--	--	---	--	---	--	--	--	-------------------------	--	--

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

Green - action has been completed or is moving forward as planned **Yellow** - action has encountered minor obstacles **Red** - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments
							Technical	Source	Financial	Source	Technical	Suggested Source	

3.4	Abandoned Mine Reclamation (AMR)	Abandoned Mine Reclamation – 150 acres	Eastern PA Abandoned Mine Coalition (AMC), SCCD, local watershed groups, local municipalities	All mixed open use areas (inventory through catchment targeting)	Ongoing	Provide or acquire complimentary funding to existing initiatives Community or land re-development in conjunction with AMR	Eastern PA AMC, DEP, App. Region Reforestation Initiative (ARRI)-thru Office of Surf. Mining		AMLF, GG), AMLER				Capital Cost: ~\$2.8 million		
3.5	Focused Stream Corridor BMP implementation	Urban Stream Restoration – 14,000 new LF Non-urban Stream Restoration – 8,000 new LF Wetland Creation – 30 new acres Wetland Restoration – 60 new acres	Local municipalities, watershed groups, SCCD, County, National Trout Unlimited (TU)	All areas with emphasis provided towards prioritized catchments (as catchments analyzed)	On-going with inherent tie to Action 3.1	Direct tie to Catchment Targeting Initiative (P.I. 1) Threats to infrastructure should include a more comprehensive restoration strategy considering the entire floodplain (Hazard Mitigation Plan) BMP implementation should ensure multiple regional benefits and reduced implementation barriers would increase receptiveness*	SCCD, Trout Unlimited (TU), watershed groups, local engineers/consultants, County		NFWF, GG, CBT, PennVEST, TU National, private				Capital Cost: ~\$9.9 million		

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

Green - action has been completed or is moving forward as planned **Yellow** - action has encountered minor obstacles **Red** - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments
							Technical	Source	Financial	Source	Technical	Suggested Source	

3.6	Dirt & Gravel and LV Road improvements with WQ components	<i>Driving Surface + Raising the Roadbed – 5,000 new linear feet</i>	SCCD, County, local municipalities	All areas with emphasis provided towards prioritized catchments (as catchments analyzed)	On-going with possible annual inventory outlined 1 st qtr of each year	Existing popular program (“don’t fix what isn’t broken”)	SCCD, local municipalities		Low Volume (LV) Roads program (continued funding)				Capital Cost: ~\$75,000		
-----	---	--	------------------------------------	--	---	--	----------------------------	--	---	--	--	--	-------------------------	--	--

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

Each county-based local area will use this template to identify:

1. Inputs – These are both existing and needed resources, public and private, to implement the identified priority initiative. These include both technical and financial resources, such as personnel, supplies, equipment and funding.
2. Process – what is each partner able to do where and by when. These are the action items listed under each priority initiative.
3. Outputs and outcomes – both short and long-term. These are the priority initiatives identified by each county. The performance targets are the intermediate indicators that will measure progress.
4. Implementation challenges – any potential issues or roadblocks to implementation that could impede outputs and outcomes.

Asterisk: Place an asterisk next to the action number(s) for action items that appear in both the County Planning and Progress Template and the Programmatic Recommendations Template.

For each Priority Initiative or Program Element: Use the fields, as defined below, to identify the inputs and the process that will be followed to achieve each priority initiative. This is the “who, what, where, when and how” of the plan:

Description = What. This may include programs that address prevention, education, or as specific as planned BMP installations that will address the Priority Initiative. A programmatic or policy effort will require some ability to quantify the anticipated benefits which will allow calculation of the associated nutrient reductions.

Performance Target = How. This is an extension of the Description above. The Performance Target details the unique BMPs that will result from implementation of the Priority Initiative and serves as a benchmark to track progress in addressing the Priority Initiative. Performance Targets may be spread across multiple Responsible Parties, Geographies, and Timelines based on the specifics of the Initiative.

Responsible Party(ies) = Who. This is/are the key partner(s) who will implement the action items through outreach, assistance or funding, and who will be responsible for delivering the identified programs or practices.

Geographic Location = Where. This field identifies the geographic range of the planned implementation. This could extend to the entire county or down to a small watershed, based on the scale of the Priority Initiative, range of the Responsible Party, or planned funding/resources. *NOTE: Resource limitations alone should not limit potential implementation as additional funding may become available in the future.*

Expected Timeline = When. Provide the expected completion date for the planned activity. This should be a reasonable expectation, based on knowledge and experience, that will aid in tracking progress toward addressing the Priority Initiative.

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

Green - action has been completed or is moving forward as planned **Yellow** - action has encountered minor obstacles **Red** - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments	
							Technical	Source	Financial	Source	Technical	Suggested Source		Financial

Resources Available: Technical & Funding = This field will note technical and financial resources secured/available to implement the program (Description). This is the total of the resources identified in the County Resources Inventory Template below allocated to the priority initiative as a whole; or, if available, to each action.

Resources Needed: Technical & Funding = This field will note technical and financial resources needed/outstanding to implement the program (Description). This is the total of the additional resources projected and identified as needed in the County Resources Inventory Template below allocated to the priority initiative as a whole; or, if possible, to each action.

Potential Implementation Challenges/Issues = This field will note challenges and issues that may delay program implementation (Description).

This page is intentionally left blank.

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

Green - action has been completed or is moving forward as planned **Yellow** - action has encountered minor obstacles **Red** - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments	
							Technical	Source	Financial	Source	Technical	Suggested Source		Financial
Priority Initiative 4: Municipal														
4.1	Provide general education and assistance to individual municipalities for MS4 Permit compliance and regional opps.	<p><i>Advanced IDD&E Control – 75 acres treated</i></p> <p><i>Local training program game plan (spring 2022)</i></p>	County, local municipalities, SCCD, Emergency Management (EMA) Coord.	All areas and MS4s	Ongoing with engagements occurring in conjunction with Catchment Targeting Initiative and actions (Action 4.5)	<p>Identify needs and assistance channels for compliant MS4 programs (specifically MCM #3 and education/outreach channels)</p> <p>Piggy-back existing media platforms (e.g. County website) with information and tools; update informational tools with SB3 elements</p> <p>Local demo projects demonstrating examples for all munis to “follow” that includes multiple benefits including Hazard Mitigation Plans (HMPs) and regional projects (booklet and story map approach)- generate primarily in-house, additional resources TBD</p> <p>On-line/in person trainings (Academy) developed by EMA and County for munis. Potentially build off CWA for a localized platform</p> <p>Explore possibility to develop Watershed Action Plans (WAPs) to communicate</p>	<p>DEP, local engineers/ consultants, EPA, County</p> <p>Clean Water Academy (CWA)</p> <p>Constant Contact for material distribution</p>		Environ. Education (EE) Grant	DEP	Final game plan for localized training academy in spring 2022		<p>TBD based on local training platform needs; current assumption is an approximate need of \$25,000 to launch</p> <p>\$15,000/ watershed if WAP approach pursued</p>	

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

Green - action has been completed or is moving forward as planned Yellow - action has encountered minor obstacles Red - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments	
							Technical	Source	Financial	Source	Technical	Suggested Source		Financial
						visually proposed opps. With municipalities and local stakeholders								
4.2	Stormwater BMP Implementation	<i>Rate Reduction SWP Standards – 600 new acres treated</i> <i>Treatment SWP Standards – 100 new acres treated</i> <i>Infiltration Practices – 25 new acres treated</i> <i>Bioretention – 25 new acres treated</i> <i>Bioswale – 50 new acres treated</i> <i>Vegetated Open Channels – 25 new acres treated</i> <i>Impervious Surface Reduction – 0.4 acres</i>	Local municipalities, developers, SCCD, County	All areas with emphasis provided towards prioritized catchments	Ongoing (timing tied to catchment analyses; Action 4.5)	Significant uncaptured and/or underreported BMPs are assumed in this category and difficult to project. Assume significant progress achieved through BMP reporting reconciliation occurs for revisions to BMP implementation scenario in 2023 to better reflect rates. BMPs providing “flooding relief” are prioritized	Local engineers/ designers, DEP Inspection requirements in place		Developers, local municipal., Growing Greener (GG), NFWF, PennVEST, Chesapeake Bay Trust (CBT) grants, DCNR		Hardware/software for BMP capture (ESRI phone-based info capture platform)- see P.I. 5 Data Manage.		Capital Cost: ~\$TBD (after reconciliation and BMP rates revisions); current assumptions provide an overall range of anywhere from \$14 million to \$20 million	

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

Green - action has been completed or is moving forward as planned **Yellow** - action has encountered minor obstacles **Red** - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments	
							Technical	Source	Financial	Source	Technical	Suggested Source		Financial
4.3	Water quality components in the Urban Landscape	<p><i>Conservation Landscaping – 100 new acres</i></p> <p><i>Urban Forest Planting – 10 new acres</i></p> <p><i>MS4 Tree Canopy – 2 new acres</i></p> <p><i>Urban Nutrient Management – 1,600 acres</i></p>	SCCD, County, local municipalities, local watershed groups	All areas with emphasis provided towards prioritized catchments	Ongoing with inherent tie to Action 4.5	<p>Urban nutrient management is tied to fertilizer legislation at the state level*</p> <p>Demo projects would be ideal to show alternatives to “Conventional” approaches (carve out SB3 funds to implement)</p>	Alliance for the Chesapeake Bay (ACB), Chesapeake Bay Found. (CBF), DCNR, Master Watershed Stewards, Master Gardeners		DCNR, Keystone, NFWF, Growing Greener (GG), Chesapeake Bay Trust (CBT), local municipal.			Capital Cost: ~\$28,000		
4.4	Septic Systems	<p><i>Conventional Septic Denitrification – 800 systems</i></p> <p><i>Septic System Pumping – 4,000 systems</i></p> <p><i>Septic Connections – 20 systems</i></p> <p><i>Tracking game plan by late 2021</i></p>	Local municipalities, County, pumping entities	All areas outside public sewerage areas	On-going with game plan late 2021	<p>Initial analysis reveals approximately 16,000 septic systems</p> <p>Build inventory in conjunction with catchment targeting inventory</p> <p>Assume portion of systems are operating per BMP definition(s) and to be captured as part of the reconciliation process</p>	County, local municipalities, local engineers, SEOs			Game plan for tracking (late 2021)	537 plan updates	Possibly for tracking platform (TBD after game plan develop.)		

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

Green - action has been completed or is moving forward as planned Yellow - action has encountered minor obstacles Red - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments	
							Technical	Source	Financial	Source	Technical	Suggested Source		Financial
4.5	Catchment Targeting Initiative (tied to P.I. 1 Catchment Targeting Initiative Action 1.1 for municipal-specific details)	See P.I. 1 for more info	All Action Teams (Ag AT, Data Mgmt AT, Catchment Targeting AT, Muni AT, Stream and Natural Resources AT), SCCD, watershed groups, local municipalities, BerskNature, Eastern PA AMC	Prioritized Catchments (TBD)	Late 2021 Launch, long-term timelines tied to P.I. 1	Partner with Catchment Targeting AT during catchment prioritization efforts to identify individual catchment needs, BMP probabilities, BMP reconciliation, etc.	County GIS, Practice Keeper (PK) Catchment Management Database (CMD)						See P.I. 1 for more information	
4.6	BMP Reporting Reconciliation (tied to P.I. 5 Data Management Action 5.3 for municipal-specific details)		All Action teams (Ag AT, Muni AT, Data Mgmt AT, Catchment Targeting AT, Streams and Natural Resources AT, local municipalities)	All areas (Catchment targeting analyses will result in 2 data tables: 1) conservation needs/opps., and 2) existing BMPs for reconciliation	Launch late 2021 (in conjunction with Action 4.5)	Partner with Data Management AT for reconciliation of BMP reporting numbers (primarily through catchment targeting) All performance targets assume significant level of uncaptured BMPs in numbers. Separate database may need to be considered for capturing all Ch. 102/land development BMPs already in place*	County GIS, PK				Reference table or outline of Ch. 102/land develop. BMPs data to be captured	DEP		

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

Green - action has been completed or is moving forward as planned Yellow - action has encountered minor obstacles Red - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments		
							Technical	Source	Financial	Source	Technical	Suggested Source		Financial	Suggested Source
4.7	Existing Plans Alignment		Local municipalities, County, local watershed groups	All areas	Ongoing with inherent tie to Action 4.5	Ensure efforts do not conflict and/or align with other efforts Existing plans for reference during alignment exercises for BMP implementation include the Comprehensive Plan, Open Space and Greenway Plan, and the Hazard Mitigation Plan at a minimum. Developed Act 167 Plan(s) for all watersheds would provide ideal consolidated existing plans overlay platform* Add applicable SB3 elements to upcoming Comp Plan update	Comp Plan, Hazard Mitigation Plan, Open Space and Greenway Plan Local engineers/consultants, County				Countywide Act 167 Plan		Countywide Act 167 plan develop.: \$150,000	DEP	

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

Each county-based local area will use this template to identify:

1. Inputs – These are both existing and needed resources, public and private, to implement the identified priority initiative. These include both technical and financial resources, such as personnel, supplies, equipment and funding.
2. Process – what is each partner able to do where and by when. These are the action items listed under each priority initiative.
3. Outputs and outcomes – both short and long-term. These are the priority initiatives identified by each county. The performance targets are the intermediate indicators that will measure progress.
4. Implementation challenges – any potential issues or roadblocks to implementation that could impede outputs and outcomes.

Asterisk: Place an asterisk next to the action number(s) for action items that appear in both the County Planning and Progress Template and the Programmatic Recommendations Template.

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

Green - action has been completed or is moving forward as planned **Yellow** - action has encountered minor obstacles **Red** - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments	
							Technical	Source	Financial	Technical	Suggested Source	Financial		Suggested Source

For each Priority Initiative or Program Element: Use the fields, as defined below, to identify the inputs and the process that will be followed to achieve each priority initiative. This is the “who, what, where, when and how” of the plan:

Description = What. This may include programs that address prevention, education, or as specific as planned BMP installations that will address the Priority Initiative. A programmatic or policy effort will require some ability to quantify the anticipated benefits which will allow calculation of the associated nutrient reductions.

Performance Target = How. This is an extension of the Description above. The Performance Target details the unique BMPs that will result from implementation of the Priority Initiative and serves as a benchmark to track progress in addressing the Priority Initiative. Performance Targets may be spread across multiple Responsible Parties, Geographies, and Timelines based on the specifics of the Initiative.

Responsible Party(ies) = Who. This is/are the key partner(s) who will implement the action items through outreach, assistance or funding, and who will be responsible for delivering the identified programs or practices.

Geographic Location = Where. This field identifies the geographic range of the planned implementation. This could extend to the entire county or down to a small watershed, based on the scale of the Priority Initiative, range of the Responsible Party, or planned funding/resources. *NOTE: Resource limitations alone should not limit potential implementation as additional funding may become available in the future.*

Expected Timeline = When. Provide the expected completion date for the planned activity. This should be a reasonable expectation, based on knowledge and experience, that will aid in tracking progress toward addressing the Priority Initiative.

Resources Available: Technical & Funding = This field will note technical and financial resources secured/available to implement the program (Description). This is the total of the resources identified in the County Resources Inventory Template below allocated to the priority initiative as a whole; or, if available, to each action.

Resources Needed: Technical & Funding = This field will note technical and financial resources needed/outstanding to implement the program (Description). This is the total of the additional resources projected and identified as needed in the County Resources Inventory Template below allocated to the priority initiative as a whole; or, if possible, to each action.

Potential Implementation Challenges/Issues = This field will note challenges and issues that may delay program implementation (Description).

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

Green - action has been completed or is moving forward as planned Yellow - action has encountered minor obstacles Red - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available			Resources Needed			Review Checklist Comments	
							Technical	Source	Financial	Source	Technical	Suggested Source		Financial
Priority Initiative 5: Data Management														
5.1	Centralized data platform/warehouse	<i>Tracking platform game plan by late 2021</i>	County, Schuylkill County Conservation District (SCCD)	All areas (catchments)	Ongoing; game plan by late 2021; long-term targets inherently tied to P.I. 1	House the master Catchment Management Database (CMD) and related attributes and inventory at County GIS Final game plan for Catchment Targeting Initiative will dictate layers and attributes table Additional hardware and software will need to be considered in conjunction with any additional personnel needs* Consider interns for data entry tasks	County GIS				GIS info capture hardware Game plan for warehouse/database platform		Funding for IT hardware/software for more complete and interactive platform-\$10,000	
5.2	Reporting QA/QC	<i>Flowchart-early 2022</i>	SCCD, NRCS, County, local municipalities, local watershed groups, DEP	All areas	Ongoing, but follows game plans required catchment assessments and related	Develop and monitor flowchart representing different BMP/data reporting processes to help ensure all new BMPs, captured BMPs, etc. are reported through the right mechanisms	Practice Keeper (PK), FieldDoc, County GIS							

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

Green - action has been completed or is moving forward as planned **Yellow** - action has encountered minor obstacles **Red** - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available				Resources Needed				Review Checklist Comments
							Technical	Source	Financial	Source	Technical	Suggested Source	Financial	Suggested Source	
5.3	Catchment Targeting Initiative and BMP Reconciliation	See P.I. 1 for more info	SCCD, County, NRCS, local municipalities, local watershed groups, DEP, Eastern PA Abandoned Mine Coalition (AMC)	All areas (catchments)	Ongoing; tied to platform development	Ensure centralized platform appropriately captures and displays individual catchment needs, captured unreported BMPs, etc. and aligns with reporting processes Identify other parameters, information, data, etc. appropriate for capture and display in centralized platform	County GIS								
5.4	Long-term monitoring plan	Game plan late 2022	SCCD, SRBC, DEP, County			Ability to measure progress and improvements for future decision points is critical for long-term success and buy-in	DEP, SCCD, EPA				Game plan for long-term monitoring options and needs	Monitoring equipment	"old" SRBC equipment/stations refurbished		

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

Each county-based local area will use this template to identify:

1. Inputs – These are both existing and needed resources, public and private, to implement the identified priority initiative. These include both technical and financial resources, such as personnel, supplies, equipment and funding.
2. Process – what is each partner able to do where and by when. These are the action items listed under each priority initiative.
3. Outputs and outcomes – both short and long-term. These are the priority initiatives identified by each county. The performance targets are the intermediate indicators that will measure progress.
4. Implementation challenges – any potential issues or roadblocks to implementation that could impede outputs and outcomes.

Asterisk: Place an asterisk next to the action number(s) for action items that appear in both the County Planning and Progress Template and the Programmatic Recommendations Template.

For each Priority Initiative or Program Element: Use the fields, as defined below, to identify the inputs and the process that will be followed to achieve each priority initiative. This is the “who, what, where, when and how” of the plan:

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

Green - action has been completed or is moving forward as planned **Yellow** - action has encountered minor obstacles **Red** - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available				Resources Needed				Review Checklist Comments
							Technical	Source	Financial	Source	Technical	Suggested Source	Financial	Suggested Source	

Description = What. This may include programs that address prevention, education, or as specific as planned BMP installations that will address the Priority Initiative. A programmatic or policy effort will require some ability to quantify the anticipated benefits which will allow calculation of the associated nutrient reductions.

Performance Target = How. This is an extension of the Description above. The Performance Target details the unique BMPs that will result from implementation of the Priority Initiative and serves as a benchmark to track progress in addressing the Priority Initiative. Performance Targets may be spread across multiple Responsible Parties, Geographies, and Timelines based on the specifics of the Initiative.

Responsible Party(ies) = Who. This is/are the key partner(s) who will implement the action items through outreach, assistance or funding, and who will be responsible for delivering the identified programs or practices.

Geographic Location = Where. This field identifies the geographic range of the planned implementation. This could extend to the entire county or down to a small watershed, based on the scale of the Priority Initiative, range of the Responsible Party, or planned funding/resources. *NOTE: Resource limitations alone should not limit potential implementation as additional funding may become available in the future.*

Expected Timeline = When. Provide the expected completion date for the planned activity. This should be a reasonable expectation, based on knowledge and experience, that will aid in tracking progress toward addressing the Priority Initiative.

Resources Available: Technical & Funding = This field will note technical and financial resources secured/available to implement the program (Description). This is the total of the resources identified in the County Resources Inventory Template below allocated to the priority initiative as a whole; or, if available, to each action.

Resources Needed: Technical & Funding = This field will note technical and financial resources needed/outstanding to implement the program (Description). This is the total of the additional resources projected and identified as needed in the County Resources Inventory Template below allocated to the priority initiative as a whole; or, if possible, to each action.

Potential Implementation Challenges/Issues = This field will note challenges and issues that may delay program implementation (Description).

This page is intentionally left blank.

Phase 3 Watershed Implementation Plan (WIP) Programmatic Recommendations Template

Action #	Description	Performance Target(s)	Expected Timeline	Potential Implementation Challenges	Potential Recommendations on Improvement	Resources Needed			
						Technical	Suggested Source	Financial	Suggested Source
Programmatic Recommendations: Schuylkill County									
1.1	Expand cover crops (CC) definition (Action 2.5)	Added scenario for cover crops	ASAP would be ideal	Traditional CC: No fall nutrients and not harvested in the spring; Traditional CC w/fall nutrients: Yes fall nutrients but not harvested in spring; Commodity CC: No fall nutrients and is harvested in the spring; Missing classification: Yes fall nutrients and harvested in the spring.	Create a cover crops classification that allows the application of fall nutrients and is harvested in the spring.	Added definition in BMP Quick Reference Guide			
1.2	Use FSA data as part of the reconciliation and verification of transect survey data for cover crops (Action 2.5)		Prior to fall 2022	Farmers are reporting cover crop data to FSA	Incorporating FSA data review as a part of the transect survey analyses should produce a more accurate implementation rate of cover crops; and may capture implementation not captured through the survey.	State-FSA engagement to determine extent and process for FSA data consideration			
1.3	Cover crop incentive program (Action 2.5)	Dedicated and separate funding mechanism	Prior to fall 2022		Create a dedicated fund to assist farmers with initial costs for implementing cover crops				
1.4	Rules for transfer of information from NRCS generated Soil Conservation Plans into local PracticeKeeper (PK) platform (Action 2.4)	Rules for ag BMPs transferred/ entered into local PK tenet	ASAP would be ideal	Clear set of guidelines established by NRCS and PADEP for what, where, how, etc. that can be/should be entered into Practice Keeper from NRCS generated Soil Conservation Plans that still ensures adherence to NRCS's privacy policies.	Establish a clear Standard Operating Procedure (SOP) or similar document for PK data entry that can be used as a guide for entries and local communications amongst various agencies (with NRCS buy-in)	NRCS-DEP			
1.5	Mushroom composting definition (Action 2.7)	Added definition for mushroom composting			Create a separate definition (or a sub-category of existing manure composting definitions) specific to mushroom composting				
1.6	Act 167 Plan funding (Action 4.7)				Re-launch dedicated funding for countywide Act 167 plans			Funding mechanism	

1.7	BMP reconciliation parameters (Action 4.6)			Through catchment-to-catchment analyses, it is anticipated that uncaptured or underreported BMPs will be captured. This is primarily associated with Ch. 102/land development BMPs. Intent is to capture these BMPs in an inventory. Understanding the parameters, attributes, etc. that need to be part of the data and information captured up-front will provide consistent processes.	1) Establish a list of the minimum parameters and attributes that should be noted when underreported Ch. 102/land development BMPs are captured. 2) Establish a reporting mechanism(s) for captured Ch. 102/land development BMPs.	DEP			
1.8	Accelerated permitting for SB3 identified projects of regional importance (Action 3.5)			Several “large-scale” projects and opportunities exist that provide benefits above and beyond significant nutrient and sediment reductions (e.g. localized flood reduction). Permit approval timeframes can be inhibiting factors between design and implementation.	Provide arena and processes for accelerating permitting requirements for priority projects.	DEP			
1.9	Data management funding program (Action 5.1)			Data and information capture requires an administrative component for organization of information (PK, GIS, etc.). In addition to personnel, IT software and hardware upgrades or acquisition will be necessary.	Dedicated funding stream for the purchase of IT-related software and hardware (licenses, GPS units, etc.) as a component of SB3 implementation.			Funding mechanism	
1.10	Buffers sub-categories (Action 3.2)	NRCS codes for buffers not exclusive to the riparian corridor		Forest and grass buffers are not exclusive to the riparian corridor (applied to crop land/hay land uses). Forest and grass buffers can be applied in areas other than the riparian corridor (e.g. field borders)	Creation or establishment of a recognized set of codes (sub-codes) or definitions for forest and grass buffer locations that can be incorporated into SC Plans.	DEP, NRCS			
1.11	Fertilizer Legislation (Action 4.3)		Prior to 2023	Urban nutrient management reductions are highly dependent on passing state legislation					

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

Each county-based local area will use this template to identify:

1. **Inputs** – The statewide and/or federal policies, regulations, initiatives, programs, funding and resources that will help your county meet its goal.
2. **Process** – What are the changes that need to occur for the county to be successful in the process? These are the action items listed under each priority recommendation.

3. **Outputs and outcomes** – Both short and long-term. These are the programmatic recommendations identified by each county. Performance targets identify your county’s needed change in order to meet your county goal.

4. **Implementation challenges** – Any potential issues or roadblocks to implementation that could impede outputs and outcomes.

Asterisk: Place an asterisk next to the action number(s) for action items that appear in both the County Planning and Progress Template and the Programmatic Recommendations Template.

For each Programmatic Recommendation: Use the fields, as defined below, to identify the inputs and the process that will be followed to achieve each priority initiative. This is the “what, when and how” of the plan:

Description = What. This may include programs that address prevention, education, or changes to the current policy and regulation. A programmatic or policy effort will allow for the completion of cation items listed in the Planning and Progress Template.

Performance Target = How. This is an extension of the Description above. The performance target details the programmatic change that will enable you to complete the action items identified in the Planning and Progress Template. This can be a further description of the challenge to implementation from the Planning and Progress Template.

Expected Timeline = When. Provide the needed completion date for the programmatic recommendation that will assist your county in meeting its goal. This should be a reasonable expectation, based on knowledge and experience, that will aid in tracking progress toward addressing the Priority Initiative.

Potential Implementation Challenges = This field will note challenges and issues that may delay program implementation (Description). Potential challenges may relate to your county Planning and Progress Template.

Potential Recommendations on Improvement = This field will note recommendations on how to change or improve the program (Description).

Resources Needed: Technical & Funding = This field will note technical and financial resources needed/outstanding to implement the program (Description).

This page is intentionally left blank.

APPENDIX

Organizational Chart

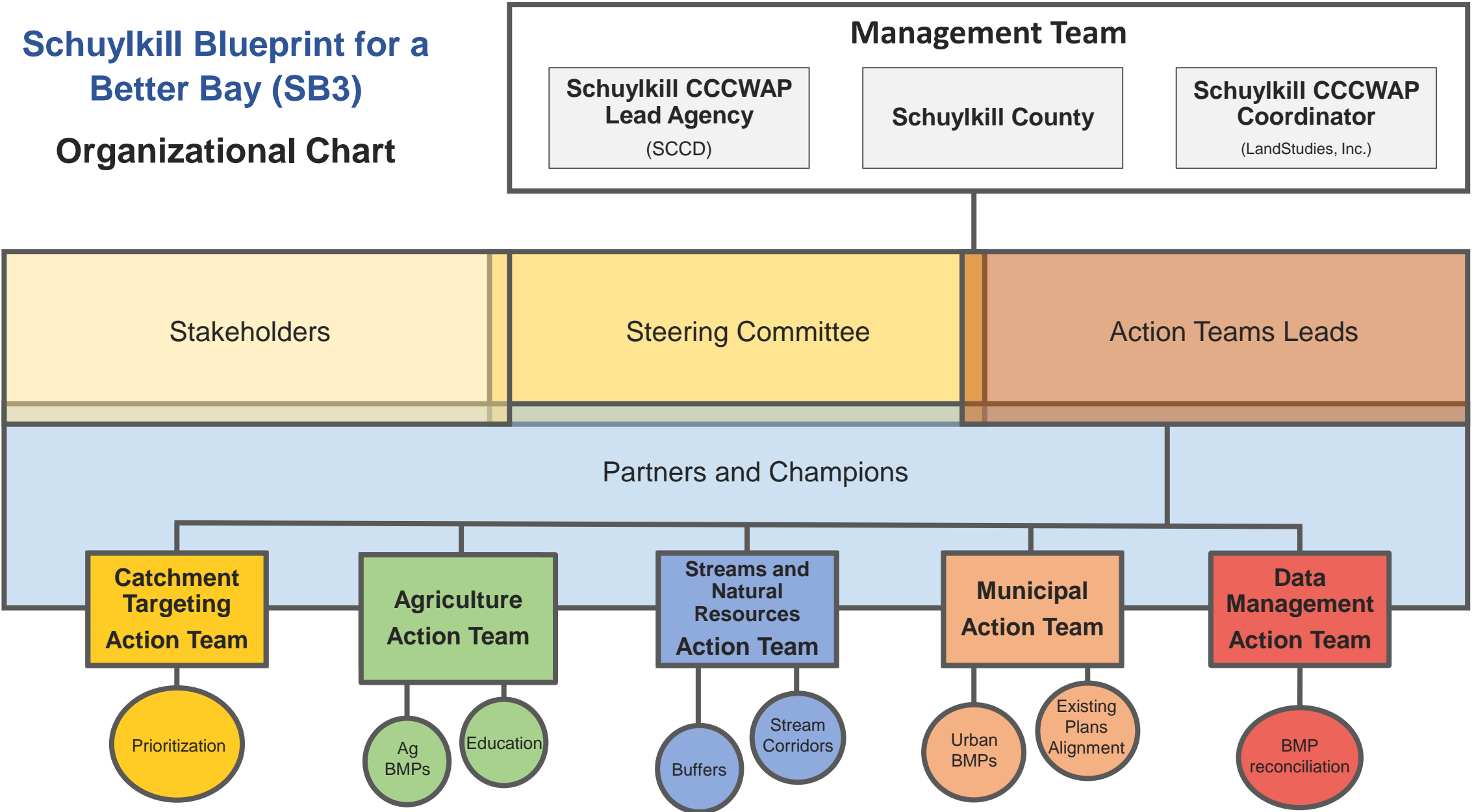
ESPOMA Project Information

Watersheds Map

Catchment Management Database (CMD)

This page is intentionally left blank.

Schuylkill Blueprint for a Better Bay (SB3) Organizational Chart



This page is intentionally left blank.



The Proposed Organic Fertilizer Facility Fact Sheet

1. Espoma, currently in its 90th year of producing Organic Fertilizers, desires to expand their Organic Fertilizer business by adding a manufacturing facility. This facility will be a state-of-the-art process for producing high quality organic fertilizer from poultry manure.
2. The facility construction budget is estimated to be \$18,000,000
3. The facility will be located in the township of Hegins, PA. Approximately 45 minutes north of Harrisburg, PA and one (1) mile east of I-81 on Hwy 25.
4. The facility will employ up to 25 skilled personnel.
5. Facility construction duration - 14 months from the time all permits are approved.
6. The facility's manufacturing equipment has the capability of processing up to 270,000 tons of poultry manure. This state-of-the-art, high-volume design was chosen to meet future market demands.
7. Espoma's first year of production will use approximately 35,000 tons of poultry manure, growing significantly every year thereafter.
8. The poultry manure will be sourced from egg producers located in York, Lancaster, Dauphin, Lebanon and Adams counties.
Nutrients exported from these counties in Espoma's first year of operation;
 - ✓ Nitrogen = 2.75 Million pounds
 - ✓ Phosphorus = 2.10 Million pounds
 - ✓ Potassium = 1.35 Million pounds
- These are conservative estimates based on tests conducted for nutrient levels in poultry manure produced from Layer hens.
9. ALL finished fertilizer products will be exported to Espoma's Millville, NJ facility for further processing and distribution throughout the US.

Hegins, PA Site Specifics

1. The Hegins, PA site was chosen for its rural/secluded location and lack of residential neighbors.

A site much closer to the manure source(s) would have made much more sense if you consider the cost associated with transporting manure to the facility. However, the areas identified to construct the Espoma facility near poultry farms in Lancaster, York, Dauphine and Lebanon counties would have been very close to residential neighbors. This facilities presence would have increased truck traffic, noise and odors in those areas, which would negatively affect the near -by neighbors' quality of life.

This site location choice will cost Espoma an estimated \$2M per year in additional freight costs.

2. The Hegins, PA site neighbors are Keystone Potato Products and Common Wealth Landfill Services, both currently create truck traffic, noise and specific to their business- process odors.

Common Wealth Landfill services receives in over 100 truckloads per day of residential and restaurant garbage from the Harrisburg and Philadelphia areas of southeastern PA.

Keystone potato products receives and ships over 25 truckloads of potato products daily.

Espoma will average 20 trucks per day. This volume of truck traffic will be insignificant compared to their neighbors.

Espoma's facility will have little impact for area truck traffic.

3. The Espoma facility will be located atop an abandoned coal mine.

Constructing the Espoma facility on this land is the best use for this type of land - adding value to the land and surrounding area.

The abandoned coal mine beneath the site is full of acid water. This water will be processed and used for producing Espoma's fertilizer products.

Environmental benefit - The Espoma facility is making use of water that is currently considered harmful to the area water quality and the surrounding environment.

4. The Espoma facility will use Landfill /Methane gas from Common Wealth Services. The Espoma process will use up to 14M cubic feet of methane/landfill gas weekly to dry and pasteurize the poultry manure into a high-quality organic fertilizer. Espoma's facility will not add to the area CO2 emissions due to the use of the landfill gas. The use of landfill gas for processing poultry manure is a much more environmentally responsible then flaring the landfill gas off to atmosphere.

Environmental benefit - Espoma will not add CO2 emissions to the area by burning fossil fuel in its process. Instead, Espoma will use the landfill gas that is currently being burned/flared off to atmosphere to produce their high-quality organic fertilizer.



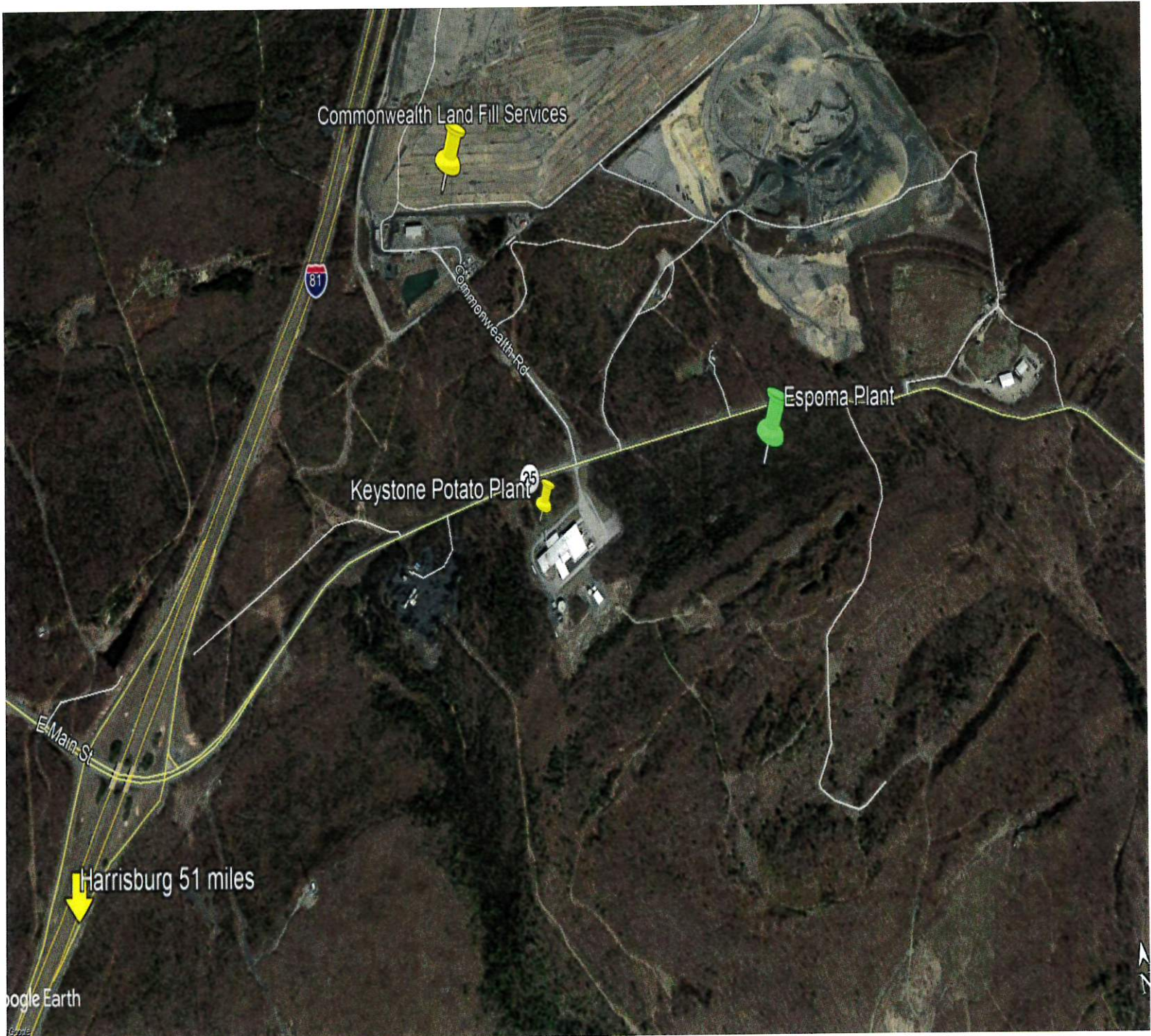
CONSTRUCTION BUDGET DETAIL

ESPOMA ORGANICS – HEGINS, PA

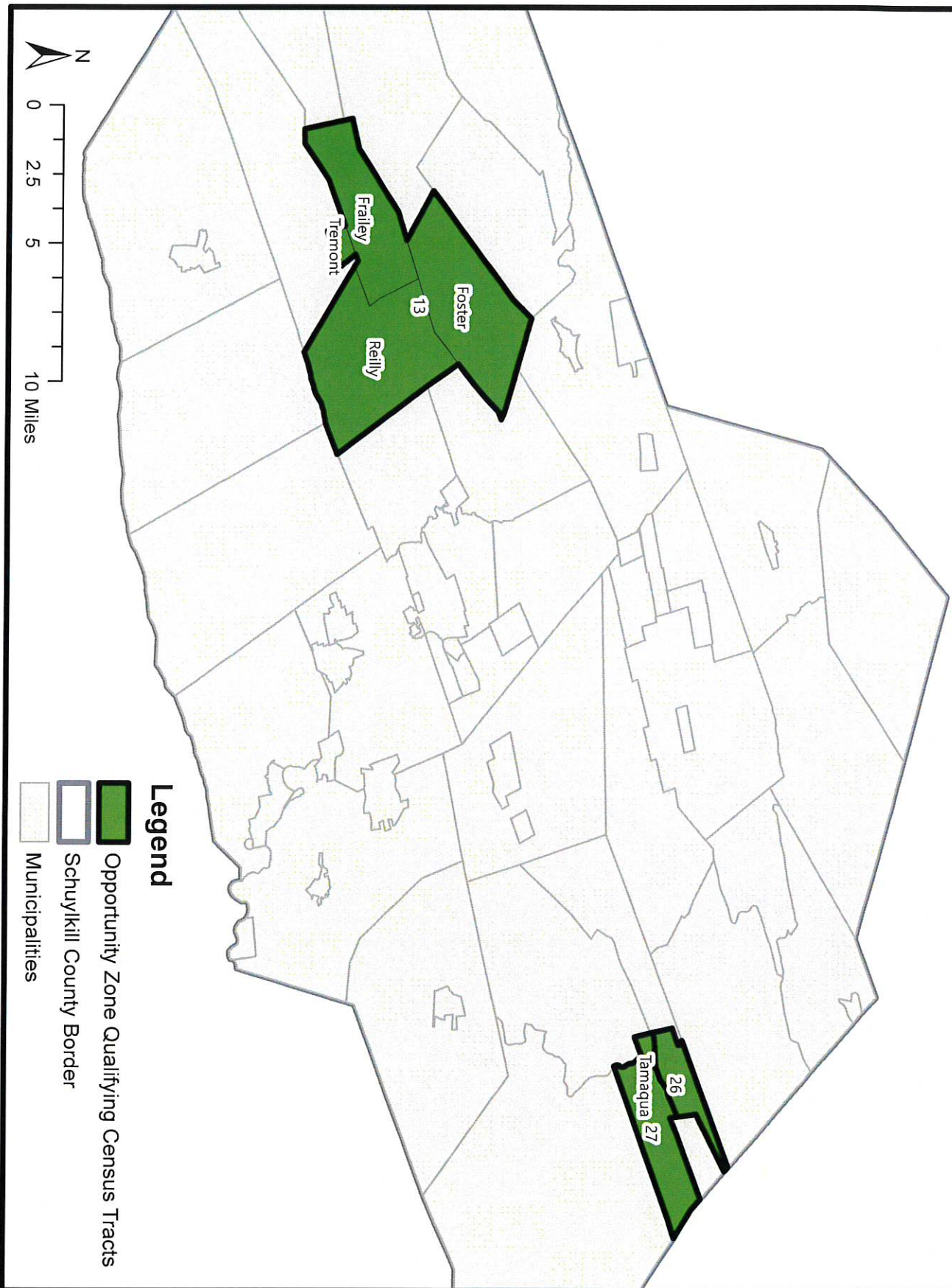
LAND PURCHASE	\$400,000.00
CIVIL WORKS/EXCAVATIONS	\$724,700.00
TRUCK TURNING LANE & ENTRANCE ROAD	\$550,000.00
PRE-ENGINEERED METAL BUILDINGS	\$1,833,430.00
BUILDING MODIFICATIONS TO COMPLY WITH STATE ODOR REGULATIONS	\$531,015.00
UTILITIES/ELECTRICAL/LANDFILL GASLINE/SEWER/WATER	\$817,000.00
LANDFILL GAS EQUIPMENT	\$420,000.00
ELECTRICAL MCC & AUTOMATION SYSTEM	\$2,472,250.00
RAW MATERIAL RECEIVING SYSTEM	\$1,377,608.00
PRE-DRYER SYSTEM – ROTARY STAINLESS	\$2,037,550.00
GRANULATION SYSTEM W/FLUID BED DRYER	\$4,374,167.00
FINISHED PRODUCT STORAGE & BULK BAGGING SYSTEM	\$1,168,780.00
CONSTRUCTION MANAGEMENT/ENGINEERING	\$1,293,500.00
GRAND TOTAL	\$18,000,000.00

Site Location

- Harrisburg, Pa is 51 miles south on I-81 from the site.
- The average distance to the manure sources is 82 miles.

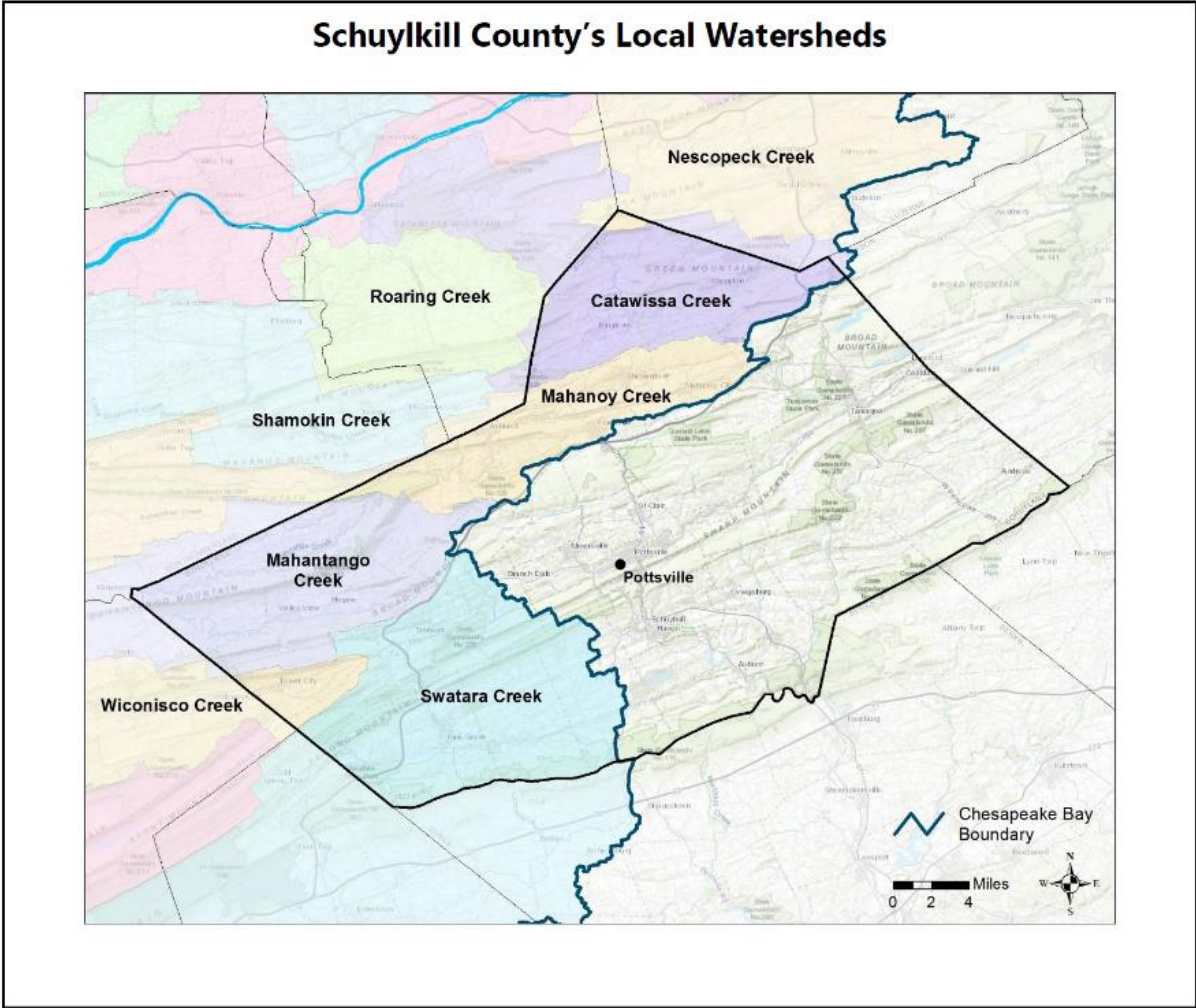


Schuylkill County Opportunity Zones



This page is intentionally left blank.

Schuylkill County Local Chesapeake Bay Watersheds Map



This page is intentionally left blank.

SCHUYLKILL COUNTY CATCHMENT MANAGEMENT DATABASE

HUC-10	HUC-12	CATCHMENT GROUPING ID	CATCHMENT GROUP NAME	STREAMS	PRIMARY LAND USE	IMPAIRED STREAMS	GEO. CLASS.	HGMR CLASS.	URBANIZED AREA	INCREMENTAL LOADING SCORING			INC LDG SUB-SCORE	MASS LOADING SCORING			MASS LDG SUB-SCORE	WQ DATA	WQ DATA ADJ FACTOR	QUALITATIVE NOTES	QUAL ADJ FACTOR	TOTAL CATCHMENT SCORE
										SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS		SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS						
Nescopeck Creek	Black Creek	070402-1	UNT Black Creek	UNT Black Creek	Forest, Agriculture	No	Shale, Sandstone	VRS	No	1.00	2.00	3.00	2.00	3.00	3.00	2.00	2.67					
Catawissa Creek	Beaver Run-Catawissa Creek 20501070804	070804-1	Catawissa Creek Lower	Catawissa Creek and UNT	Forest, Agriculture	No	Shale	VRS	No	4.5	4.50	5.00	4.67	4.00	4.00	4.00	4.00					
		070804-2	Crooked Run	Crooked Run	Forest	Yes	Shale, Sandstone	VRS	No	4.20	3.40	2.60	3.40	5.00	5.00	5.00	5.00					
		070804-3	Cranberry Run	none	Forest	Yes	Shale, Sandstone	VRS	No	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00					
Catawissa Creek	Tomicken Creek 20501070802	070802-1	Headwaters Tomicken Creek	Little Tomhicken, Tomhicken	Forest	Yes	Sandstone, Shale	VRS	portion	4.00	3.33	4.60	3.98	5.00	5.00	5.00	5.00					
		070802-2	Little Crooked Run	Little Crooked Run	Forest	No	Sandstone, Shale	VRS	No	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00					
		070802-3	Sugarloaf Creek	Sugarloaf Creek	Forest	Yes	Shale	VRS	portion	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00					
		070802-4	Lower Tomicken	Tomhicken Creek	Forest	No	Sandstone, Shale	VRS	No	4.25	4.33	5.00	4.53	5.00	5.00	5.00	5.00					
		070802-5	Middle Tomicken	Tomhicken Creek and UNT	Forest	Yes	Shale	VRS	No	3.00	3.00	4.00	3.33	4.00	4.00	4.00	4.00					
		070802-6	Raccoon Creek	UNT Tomhicken Creek	Agriculture	No	Shale	VRS	No	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00					
Catawissa Creek	Little Catawissa Creek 20501070801	070801-1	Little Catawissa Creek	Trexler Run, Little Catawissa, UNTS	Agriculture, Forest	No	Shale, Sandstone	VRS	No	4.33	4.33	4.50	4.39	4.88	5.00	5.00	4.96					
		070801-2	Stony Run	Stony Run	Forest	No	Sandstone, Shale	VRS	No	5.00	4.17	5.00	4.72	5.00	5.00	5.00	5.00					
Catawissa Creek	Messers Run-Catawissa Creek	070803-1	Spies Run	Spies Run, UNT Catawissa	Forest	No	Shale, Sandstone	VRS	portion	4.6	4.00	4.60	4.40	5.00	5.00	5.00	5.00					
		070803-2	Hunkydry Creek	None	Mining?	Yes	Sandstone	VRS	portion	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00					
		070803-3	Catawissa Creek Headwaters	Catawissa Creek, UNT	Forest	Yes	Shale	VRS	portion	3.67	4.00	5.00	4.22	3.00	5.00	5.00	4.33					
		070803-4	Catawissa Upper	Catawissa, UNT Catawissa	Forest, Agriculture	Yes	Shale	VRS	No	4.00	3.25	4.40	3.88	2.60	4.33	4.33	3.75					
		070803-5	UNT Catawissa Creek Headwaters	UNTs Catawissa Creek	Forest	No	Shale, Sandstone	VRS	No	5.00	4.00	5.00	4.67	5.00	5.00	5.00	5.00					
		070803-6	Davis Run	Davis Run, UNTs Davis Run	Forest	No	Shale, Sandstone	VRS	No	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00					
		070803-7	Rattling Run	Rattling Run, UNTs Rattling Run	Forest	No	Shale, Sandstone	VRS	No	5.00	4.33	5.00	4.78	5.00	5.00	5.00	5.00					
		070803-8	Dark Run	Dark Run, UNTs Dark Run	Agriculture	No	Shale	VRS	No	3.22	2.33	3.22	2.92	5.00	5.00	5.00	5.00					
		070803-9	Catawissa Middle	Catawissa Creek and UNTS	Agriculture	Yes	Shale	VRS	No	3.33	3.33	4.17	3.61	2.83	3.17	3.17	3.06					
Roaring Creek	Roaring Creek - Susquehanna River 20501070902	070902-1	UNT Roaring Creek	None	Forest	No	Sandstone, Siltstone	VRS	No	4.00	4.00	5.00	4.33	5.00	5.00	5.00	5.00					
HUC-10	HUC-12	CATCHMENT GROUPING ID	CATCHMENT GROUP NAME	STREAMS	PRIMARY LAND USE	IMPAIRED STREAMS	GEO. CLASS.	HGMR CLASS.	URBANIZED AREA	INCREMENTAL LOADING SCORING			INC LDG SUB-SCORE	MASS LOADING SCORING			MASS LDG SUB-SCORE	WQ DATA	WQ DATA ADJ FACTOR	QUALITATIVE NOTES	QUAL ADJ FACTOR	TOTAL CATCHMENT SCORE

Mahanoy Creek	Upper Mahanoy Creek 20503010501	010501-1	North Mahanoy Creek	North Mahanoy Creek and UNTs	Forest	Yes	Sandstone, Shale	VRS	No	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00							
		010501-2	Mahanoy Headwaters	Mahanoy Creek and North Mahanoy Creek	Forest	Yes	Sandstone	VRS	portions	4.20	3.33	4.20	3.91	5.00	5.00	5.00	5.00							
		010501-3	Mahanoy Upper	Mahanoy Creek and UNT	Mining	Yes	Sandstone	VRS	Yes	3.75	3.50	4.00	3.75	4.50	4.50	4.33	4.44							
		010501-4	Shenandoah Creek	Shenandoah Creek, Kehly Run, Lost Creek	Forest, Mining	Yes	Sandstone	VRS	portions	4.33	3.67	3.80	3.93	5.00	5.00	4.33	4.78							
		010501-5	Little Mahanoy Creek	Rattling Run, Little Mahanoy Creek	Forest	Yes	Shale, Sandstone	VRS	portions	2.75	2.50	2.75	2.67	5.00	5.00	4.25	4.75							
		010501-6	Mahanoy Ashland	Mahanoy Creek, UNT	Forest	Yes	Sandstone, Shale	VRS	portions	2.00	1.00	2.00	1.67	4.00	4.00	3.00	3.67							
		010501-7	Mahanoy Middle	Mahanoy Creek and UNT	Forest, Agriculture	Yes	Shale, Sandstone	VRS	portions	3.50	3.25	3.60	3.45	3.67	3.67	3.67	3.67							

HUC-10	HUC-12	CATCHMENT GROUPING ID	CATCHMENT GROUP NAME	STREAMS	PRIMARY LAND USE	IMPAIRED STREAMS	GEO. CLASS.	HGMR CLASS.	URBANIZED AREA	INCREMENTAL LOADING SCORING			INC LDG SUB-SCORE	MASS LOADING SCORING			MASS LDG SUB-SCORE	WQ DATA	WQ DATA ADJ FACTOR	QUALITATIVE NOTES	QUAL ADJ FACTOR	TOTAL CATCHMENT SCORE
										SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS		SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS						
Mahanoy Creek	Lower Mahanoy Creek-Susquehanna River 20503010503	010503-1	Crab Run	Crab Run and UNTs	Agriculture	Yes	Shale	VRS	No	4.5	3.67	4.50	4.22	5	5	5	5.00					
		010503-2	Mahanoy Lower	Mahanoy Creek	Forest, Agriculture	Yes	Shale, Sandstone	VRS	portions	4.00	3.88	4.50	4.13	3.33	3.33	2.50	3.05					
		010503-3	Mahanoy County Line	Mahanoy Creek	Forest	Yes	Shale, Sandstone	VRS	No	3.67	4.20	4.33	4.07	3.50	3.67	3.00	3.39					

HUC-10	HUC-12	CATCHMENT GROUPING ID	CATCHMENT GROUP NAME	STREAMS	PRIMARY LAND USE	IMPAIRED STREAMS	GEO. CLASS.	HGMR CLASS.	URBANIZED AREA	INCREMENTAL LOADING SCORING			INC LDG SUB-SCORE	MASS LOADING SCORING			MASS LDG SUB-SCORE	WQ DATA	WQ DATA ADJ FACTOR	QUALITATIVE NOTES	QUAL ADJ FACTOR	TOTAL CATCHMENT SCORE
										SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS		SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS						
Deep Creek	Hans Yost Creek-Deep Creek	0107010-1	Deep Creek Headwaters	Deep Creek	Forest	Yes	Shale, Sandstone	VRS	Yes, silver	4.00	2.50	4.50	3.67	5.00	5.00	5.00	5.00					
		0107010-2	UNT Deep Creek	UNTs Deep Creek	Forest	No	Shale, Sandstone	VRS	No	5.00	4.50	5.00	4.83	5.00	5.00	5.00	5.00					
		0107010-3	Deep Creek Upper	Deep Creek	Agriculture	No	Shale	VRS	No	4.33	3.33	4.33	4.00	5.00	5.00	5.00	5.00					
		0107010-4	Hans Yost Creek	Hans Yost Creek	Forest	Yes	Shale, Sandstone	VRS	No	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00					
		0107010-5	Deep Creek Middle	Deep Creek and UNT	Forest and Agriculture	Yes	Shale, Sandstone	VRS	No	3.29	2.43	3.29	3.00	4.14	4.14	4.14	4.14					
		0107010-6	Deep Creek Lower	Deep Creek and UNTs	Agriculture	Yes	Shale, Sandstone	VRS	No	2.00	1.00	2.00	1.67	3.00	4.00	4.00	3.67					

HUC-10	HUC-12	CATCHMENT GROUPING ID	CATCHMENT GROUP NAME	STREAMS	PRIMARY LAND USE	IMPAIRED STREAMS	GEO. CLASS.	HGMR CLASS.	URBANIZED AREA	INCREMENTAL LOADING SCORING			INC LDG SUB-SCORE	MASS LOADING SCORING			MASS LDG SUB-SCORE	WQ DATA	WQ DATA ADJ FACTOR	QUALITATIVE NOTES	QUAL ADJ FACTOR	TOTAL CATCHMENT SCORE
										SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS		SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS						
Deep Creek	Rausch Creek-Pine Creek	010702-1	Pine Creek Headwaters	Pine Creek	Forest	No	Shale, Sandstone	VRS	No	4.10	3.50	4.50	4.03	5.00	5.00	5.00	5.00					
		010702-2	Pine Creek Upper	Pine Creek and UNTs	Forest	Yes	Shale, Sandstone	VRS	No	3.10	2.10	3.29	2.83	5.00	4.00	5.00	4.67					
		010702-3	Rausch Creek	Rausch Creek, East Branch Rausch Creek, West Branch Rausch Creek	Forest	Yes	Sandstone, Shale	VRS	No	4.40	4.20	5.00	4.53	5.00	5.00	5.00	5.00					
		010702-4	Pine Creek Middle	Pine Creek and UNTs	Forest	Yes	Shale	VRS	No	3.00	3.00	4.00	3.33	4.00	4.00	4.00	4.00					

HUC-10	HUC-12	CATCHMENT GROUPING ID	CATCHMENT GROUP NAME	STREAMS	PRIMARY LAND USE	IMPAIRED STREAMS	GEO. CLASS.	HGMR CLASS.	URBANIZED AREA	INCREMENTAL LOADING SCORING			INC LDG SUB-SCORE	MASS LOADING SCORING			MASS LDG SUB-SCORE	WQ DATA	WQ DATA ADJ FACTOR	QUALITATIVE NOTES	QUAL ADJ FACTOR	TOTAL CATCHMENT SCORE
										SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS		SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS						
		010702-5	Pine Creek Lower	Pine Creek and UNTs	Agriculture	Yes	Shale, Sandstone	VRS	No	3.40	2.80	3.50	3.23	3.10	2.83	3.10	3.01					
Mahatango Creek	Upper Mahatango Creek 20503010801	010801-1	Mahatango Headwaters	Mahatango Creek and UNT	Agriculture and Forest	Yes	Sandstone and Mudstone	VRS	No	4.50	4.00	4.50	4.33	5.00	5.00	5.00	5.00					
		010801-2	Mahatango Middle	Mahatango Creek and UNTs	Agriculture	Yes	Sandstone, Mudstone and Siltstone	VRS	No	4.10	2.80	3.75	3.55	4.60	4.40	4.50	4.50					
		010801-3	Little Mahatango	Little Mahatango Creek	Agriculture	Yes	Mudstone, and Sandstone	VRS	No	4.20	2.75	4.00	3.65	4.80	4.50	4.60	4.63					
		010801-4	Mahatango Lower	Mahatango Creek and UNTs	Agriculture	Yes	Sandstone, Mudstone and Siltstone	VRS	No	4.00	3.70	4.33	4.01	3.67	3.33	3.67	3.56					
Wiconisco Creek	Upper Wiconisco Creek 20503010901	010901-1	Wiconisco Headwaters	Wiconisco Creek	Forest	Yes	Shale, Sandstone	VRS	No	4.17	3.33	4.17	3.89	5.00	5.00	5.00	5.00					
		010901-2	Wiconisco Middle	Wiconisco Creek and UNT	Forest and Agriculture	Yes	Shale, Sandstone	VRS	No	5.00	4.10	4.33	4.48	5.00	5.00	5.00	5.00					
		010901-3	UNT Wiconisco	UNT Wiconisco Creek	Agriculture and Forest	No	Shale, Sandstone	VRS	No	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00					
		010901-4	Wiconisco Tower City	Wiconisco Creek and UNT	Forest and Residential	Yes	Shale	VRS	No	3.80	3.60	3.20	3.53	4.40	4.40	4.40	4.40					
Upper Swatara Creek	Upper Little Swatara Creek	050601-1	Upper Little Swatara Headwaters	Upper Little Swatara and UNTs	Agriculture	No	Sandstone, Mudstone, Siltstone, Shale	VRS, VRC	sliver	4.50	4.14	4.50	4.38	5.00	5.00	5.00	5.00					
		050601-2	UNT Headwaters Upper Little Swatara	UNT Upper Little Swatara Creek	Agriculture	No	Sandstone, Mudstone, Siltstone, Shale	VRS, VRC	No	4.40	4.33	4.33	4.36	5.00	5.00	5.00	5.00					
		050601-3	Upper Little Swatara Upper	Upper Little Swatara and UNTs	Agriculture	No	Sandstone, Mudstone, Siltstone, Shale	VRS, VRC	sliver	4.33	4.25	4.33	4.30	5.00	5.00	5.00	5.00					
		050601-4	UNT Upper Little Swatara	UNT Upper Little Swatara Creek	Agriculture	Yes	Sandstone, Shale, Siltstone	VRS, VRC	No	4.00	3.00	4.00	3.67	5.00	5.00	5.00	5.00					
		050601-5	Upper Little Swatara Middle	Upper Little Swatara and UNTs	Agriculture	Yes	Sandstone, Mudstone, Siltstone, Shale	VRS, VRC	No	3.67	2.75	3.67	3.36	4.33	4.20	4.25	4.26					
		050601-6	Sweet Arrow Lake	Arrow Lake and UNT	Agriculture	No	Shale, Siltstone, Mudstone	VRS, VRC	No	4.00	3.00	4.00	3.67	4.00	4.00	4.00	4.00					
		050601-7	Upper Little Swatara Lower	Upper Little Swatara and UNTs	Mixed Use	No	Siltstone and Shale	VRS, VRC	No	4.33	5.00	5.00	4.78	4.00	4.00	4.00	4.00					
		050601-8	UNT Upper Little Swatara	UNT Upper Little Swatara Creek	Agriculture	No	Shale and Siltstone	VRS	No	4.00	2.00	3.00	3.00	5.00	5.00	5.00	5.00					
Upper Swatara Creek	Good Spring Creek - Upper 20503050602	050602-1	Swatara Creek Headwaters	Swatara Creek and UNT	Forest	Yes	Sandstone	VRS	No	4.6	4.50	5.00	4.70	5.00	5.00	5.00	5.00					
		050602-2	Panther Creek	Panther Creek	Forest	Yes	Sandstone	VRS	No	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00					
		050602-3	Swatara Creek Upper	Swatara Creek and UNT	Forest	Yes	Sandstone	VRS	No	4.00	4.00	3.00	3.67	5.00	5.00	5.00	5.00					
		050602-4	Coal Run	Coal Run	Forest	Yes	Sandstone	VRS	No	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00					
		050602-5	Middle Creek	Middle Creek and UNT	Forest	Yes	Sandstone	VRS	No	4.00	4.00	5.00	4.33	5.00	5.00	5.00	5.00					
		050602-6	Gebhard Run	Gebhard Run	Forest	No	Sandstone	VRS	No	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00					
		050602-7	Good Spring Creek	Good Spring Creek, Poplar Creek	Forest	Yes	Sandstone	VRS	No	3.10	3.10	4.10	3.43	5.00	5.00	5.00	5.00					
		050602-8	Good Spring Creek Lower	Good Spring Creek	Forest	Yes	Sandstone	VRS	No	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00					

		050602-9	Swatara Creek Middle	Swatara Creek	Forest	Yes	Sandstone, Shale	VRS	No	4.00	4.25	5.00	4.42	4.00	4.67	4.00	4.22					
		050602-10	Black Creek	Black Creek	Forest	No	Shale, Sandstone	VRS	No	4.50	4.00	5.00	4.50	5.00	5.00	5.00	5.00					
		050602-11	Lower Rausch Creek	Lower Rausch Creek	Forest	No	Sandstone, Shale	VRS	No	4.00	3.00	4.00	3.67	5.00	5.00	5.00	5.00					
		050602-12	Lorberry Creek	Lorberry Creek, Stump's Run	Forest	Yes	Sandstone, Shale	VRS	No	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00					
		050602-13	Swatara Creek Lower	Swatara Creek and UNTs	Agricultural, residential, Forest	Yes	Sandstone, Mudstone, Siltstone, Shale	VRS	No	3.75	3.40	4.25	3.80	4.25	4.25	4.25	4.25					

HUC-10	HUC-12	CATCHMENT GROUPING ID	CATCHMENT GROUP NAME	STREAMS	PRIMARY LAND USE	IMPAIRED STREAMS	GEO. CLASS.	HGMR CLASS.	URBANIZED AREA	INCREMENTAL LOADING SCORING			INC LDG SUB-SCORE	MASS LOADING SCORING			MASS LDG SUB-SCORE	WQ DATA	WQ DATA ADJ FACTOR	QUALITATIVE NOTES	QUAL ADJ FACTOR	TOTAL CATCHMENT SCORE
										SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS		SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS						
Upper Swatara Creek	Lower Little Swatara Creek 20503050603	050603-1	UNT Lower Little Swatara Headwaters	UNT to Lower Little Swatara	Agriculture	Yes	Sandstone, Siltstone	VRS	portions	4.5	3.35	4.50	4.12	5.00	5.00	5.00	5.00					
		050603-2	UNT Lower Little Swatara	UNTs to Lower Little Swatara	Agriculture	Yes	Sandstone, Siltstone	VRS, VRC	No	4.80	3.83	4.50	4.38	4.90	4.67	4.83	4.80					
		050603-3	Iron Ore Run-Lower Little Swatara	Low Swatara Creek, Spruce Run, Iron Ore Run	Forest	No	Shale, Sandstone, Siltstone	VRS, VRC	No	4.50	4.40	4.50	4.47	4.90	4.90	4.93	4.91					
		050603-4	UNT Lower Little Swatara	UNT to Lower Little Swatara	Agriculture	No	Shale, Siltstone, Sandstone	VRS	No	4.00	3.00	4.00	3.67	5.00	5.00	5.00	5.00					
		050603-5	Lower Little Swatara Middle	Lower Little Swatara and UNTs	Agriculture and Forest	No	Sandstone, Shale, Siltstone	VRS, VRC	No	4.33	3.60	4.40	4.11	4.50	4.50	4.50	4.50					
		050603-6	Lower Little Swatara Lower	Lower Little Swatara and UNTs	Agriculture and Forest	No	Sandstone, Shale, Siltstone	VRS, VRC	No	4.67	4.50	4.83	4.67	4.80	4.40	4.50	4.57					

HUC-10	HUC-12	CATCHMENT GROUPING ID	CATCHMENT GROUP NAME	STREAMS	PRIMARY LAND USE	IMPAIRED STREAMS	GEO. CLASS.	HGMR CLASS.	URBANIZED AREA	INCREMENTAL LOADING SCORING			INC LDG SUB-SCORE	MASS LOADING SCORING			MASS LDG SUB-SCORE	WQ DATA	WQ DATA ADJ FACTOR	QUALITATIVE NOTES	QUAL ADJ FACTOR	TOTAL CATCHMENT SCORE
										SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS		SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS						
Upper Swatara Creek	Mill Creek 20503050604	050604-1	MillCreek	Mill Creek and UNT	Forest	No	Siltstone, Mudstone, Sandstone	VRS	No	4.70	4.70	5.00	4.80	5.00	5.00	5.00	5.00					
		050604-2	Fishing Creek	West Branch Fishing Creek, Fishing Creek, DeHaas Run, Baird Run, Evening Branch	Forest	No	Sandstone, Shale	VRS	No	4.50	4.10	5.00	4.53	5.00	5.00	5.00	5.00					

HUC-10	HUC-12	CATCHMENT GROUPING ID	CATCHMENT GROUP NAME	STREAMS	PRIMARY LAND USE	IMPAIRED STREAMS	GEO. CLASS.	HGMR CLASS.	URBANIZED AREA	INCREMENTAL LOADING SCORING			INC LDG SUB-SCORE	MASS LOADING SCORING			MASS LDG SUB-SCORE	WQ DATA	WQ DATA ADJ FACTOR	QUALITATIVE NOTES	QUAL ADJ FACTOR	TOTAL CATCHMENT SCORE
										SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS		SEDIMENT	TOTAL NITROGEN	TOTAL PHOSPHORUS						
Upper Swatara Creek	Middle Swatara Creek 20503050605	050605-1	Middle Swatara Creek Upper	Swatara Creek	Residential	Yes	Siltstone, Shale	VRS	No	4.00	4.00	4.00	4.00	4.00	3.00	3.00	3.33					
		050605-2	Middle Swatara Creek Middle	Swatara Creek and UNT	Forest, Residential	Yes	Siltstone, Shale	VRS, VRC	No	4.50	4.40	4.60	4.50	3.00	3.00	3.00	3.00					
		050605-3	Swope Valley Run	Swope Valley Run and UNTs	Forest	No	Shale, Siltstone, Sandstone	VRS, VRC	No	5.00	4.50	5.00	4.83	5.00	5.00	5.00	5.00					
		050605-4	UNT Middle Swatara Creek	UNT Swatara Creek	Agricultural	No	Mudstone, Siltstone, Shale	VRS	No	4.50	3.75	4.25	4.17	5.00	5.00	5.00	5.00					
		050605-5	Middle Swatara Creek Lower	Swatara Creek	Forest	Yes	Shale, Siltstone	VRS	No	4.20	5.00	5.00	4.73	2.60	2.60	2.60	2.60					
		050605-6	UNT2 Middle Swatara Creel	UNT Swatara Creek	Agricultural	No	Siltstoe, Mudstone, Shale	VRS	No	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00					
		050605-7	Bear Hole Run	Bear Hole Run	Forest	No	Shale, Sandstone	VRS, VRC	No	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00					