Lebanon County

Countywide Action Plan Overview

Narrative 2025

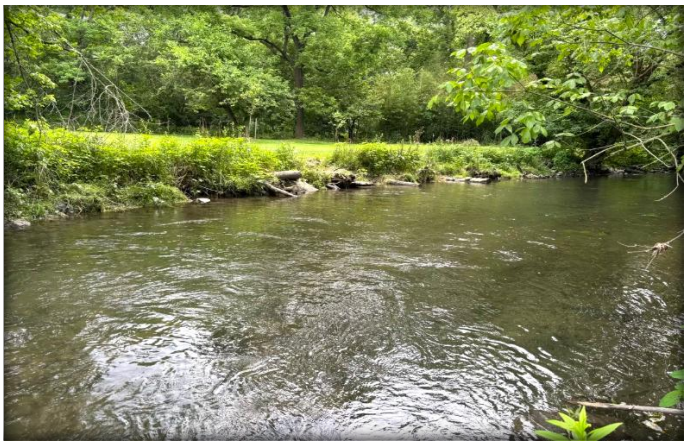


Figure 1. Quittaphallia Creek at Spruce Street stream restoration project after restoration. Improved riparian and created habitats for fish and invertebrates by installing best management practices.

Introduction:

The Lebanon Countywide Action Plan (CAP) is a summary of approaches, initiatives, and considerations for existing and proposed water quality improvements in the county. The initiatives are intended to protect the future of Lebanon County's natural resources while preserving other community goals and focus areas. Local improvements will benefit the community while assisting the state with meeting its Chesapeake Bay obligations.

The Lebanon CAP in conjunction with state efforts aims to reduce nearly 2.3 million pounds of nitrogen and 120,000 pounds of phosphorus annually delivered to local streams through BMPs implemented by 2025. Additionally, the proposed BMPs will provide significant reductions in sediment (over 75 million pounds reduced annually). Despite the short time frame for BMP implementation, the Lebanon CAP is also intended to serve as a long-term blueprint for improved local water quality beyond 2025.

The Lebanon CAP is a dynamic and adaptive plan summarizing approaches and tracking implementation efforts for local water quality improvements. The plan is aspirational but realistic. The CAP will be updated on an annual basis, and reports will be provided to both local

stakeholders and PADEP through 2025 and beyond summarizing progress towards identified long-term goals or adjustments to overall approaches. Key goals and objectives of the Lebanon CAP are:

- Capturing and memorializing collaborative and cooperative efforts of the many existing entities ("Legacy Partners") that have been working towards water quality improvements or improved quality of life in Lebanon County.
- Outlining realistic scenarios of Best Management Practices (BMPs) implementation balancing theoretical improvements with actual on-the-ground conditions.
- Continually adjusting BMP implementation scenarios based on new opportunities, successful outreach initiatives, and on-going calculated nutrient reductions.
- Maintaining a Steering Committee with experts and leaders across multiple sectors to help guide CAP development and implementation efforts with equal representation from each sector.
- The overall approach, message, and benefits are for Lebanon County and its' residents and businesses first and foremost; but will inherently assist the state with Chesapeake Bay obligation. Development of a Catchment Management Database (CMD) to help guide targeting of BMP types and resources within priority small drainage basins.
- CAP continues to encompass and consider all areas of the county (developed, agricultural, and forested/natural areas).
- Continuing to grow involvement with Action Teams focused on agriculture, education & outreach, data management & monitoring, stormwater, legislative & programmatic changes, and watershed.
- Focus on the approximate 270 miles (of 363 total stream miles) of impaired streams in Lebanon County for restoration and implementation of agricultural and urban/suburban practices improving local water quality, reducing flood damage, preserving drinking water supply, and protecting infrastructure.
- While reductions are based on reduced nutrient loadings, significant sediment reductions are proposed to ensure the long-term health of local waterways.

Key Findings:

Lebanon County has many existing organizations and efforts for improved water quality, but there is always opportunity for continual improvement and growth. In order to achieve the recommendations laid out by the plan the county's efforts will have to be better coordinated and monitored. By creating a county-specific project database and creating lines of communication between all the local stakeholders and organizations, there will be partnerships and pollutant reductions never seen before in Lebanon County.

Opportunities for Success:

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

- Continual monitoring and updates to an active funding resources inventory to align projects with applicable funding assistance.
- Engagement with the National Fish and Wildlife Foundation (NFWF) and other grant programs to obtain additional funding for Lebanon County for project implementation.
- Alignment of proposed practices in the CAP with existing efforts conducted by "Legacy Partners."
- New and innovative stormwater management approaches that achieve both economic development improvements and protect local natural resources.
- Re-imagined education and outreach approach to increase public knowledge and buy-in.
- Creation of signage for the sub-watersheds within the Chesapeake Bay to bring more public recognition.
- Foster collaborative arenas focusing on agricultural and urban area boundaries.
- Development of county-specific project database to ensure decision points and approaches by multiple groups complement each other in lieu of competing with one another or duplicating efforts.

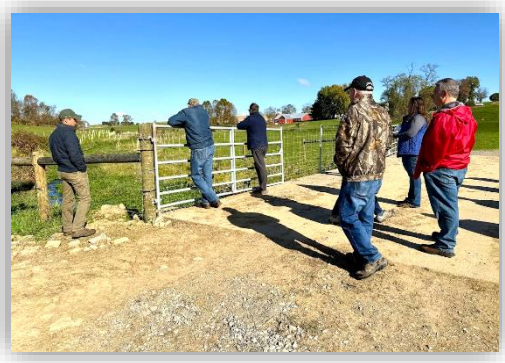


Figure 2. Hammer Creek site tour, engaging local organizations and legislators.

Challenges to Implementation:

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

- Funding for BMP implementation and future inspections.
- Efficient and effective long-term verification processes.
- Adoption of better fertilizer/biosolids legislation at the state level.
- Conflicting and/or inconsistent regulatory requirements.
- Relative short timeframe for BMP implementation to achieve significant nutrient reductions.

A primary challenge that was identified is local landowner willingness to implement water quality approving BMPs. A lot of these projects are completely voluntary and come with costs that might not exactly align with their other priorities for their land. Despite these challenges the CAP team and local stakeholders are motivated to make progress and bring real reductions to the county.

Summary:

The implementation of the Lebanon Countywide Action Plan (Lebanon CAP) will center around five (5) priority initiatives: 1) agriculture, 2) stormwater, 3) education and outreach, 4) data management and monitoring, and 5) coordination. Working groups were established in the planning stages, but were replaced by fully functioning Action Teams responsible for oversight of focus points under each Priority Initiative.

The Lebanon CAP focuses on establishing a framework to follow and help guide implementation

efforts. The implementation of the Lebanon CAP is best described as an iterative process as the plan and structure provides the ability to adequately respond to new opportunities, funding streams, and changing conditions like the county has never seen before.

Priority Initiative 1: Agriculture

- Action 1.1 Reconcile ag-specific Bay model theoretical BMP implementation and loading numbers with on-the-ground and real conditions
- Action 1.2 Expand implementation of cover crops (specific focus creating a county-specific cover crop program)
- Action 1.3 Capture existing conservation plans and BMPs into PracticeKeeper
- Action 1.4 Engage industrial and large ag operation farmers
- Action 1.5 Promote and assist implementation of Agricultural Compliance practices in priority areas
    - Soil Conservation and Water Quality Plans (57,000 total acres)
    - Core Nitrogen Nutrient Management (56,000 total acres)
    - Core Phosphorus Nutrient Management (17,000 total acres)
    - Barnyard Runoff Controls (112 new acres)
- Action 1.6 Promote and assist implementation of soil health practices in priority areas
    - High Residue Tillage Management (24,000 acres/year)
    - Conservation Tillage Management (13,000 acres/year)
    - Traditional Cover Crops (13,700 acres/year)
    - Traditional Cover Crops with Fall Nutrients (18,000 acres/year)
    - Commodity Cover Crops (3,000 acres/year)5
    - Prescribed Grazing (6,000 total acres)
- Action 1.7 Promote and assist implementation of expanded nutrient management practices in priority areas
    - Core Nitrogen Nutrient Management (6,000 acres)
    - Core Phosphorus Nutrient Management (2,000 acres)
    - Nutrient Management-Nitrogen Rate (10,000 acres)
    - Nutrient Management-Phosphorus Rate (10,000 acres)
    - Nutrient Management-Nitrogen Placement (12,000 acres)
    - Nutrient Management-Phosphorus Placement (10,000 acres)
    - Nutrient Management-Nitrogen Timing (13,000 acres)
    - Nutrient Management-Phosphorus Timing (10,000 acres)
- Action 1.8 Promote and assist implementation of improved animal unit practices in priority areas
    - Manure Storage Facilities (118,000 New Animal Units (AUs))
    - Dairy Cow Precision Feed Management (20,000 Dairy Cow Animal Units
    - (AUs))
    - Manure Transport out of Lebanon County (25,000 dry tons/year)

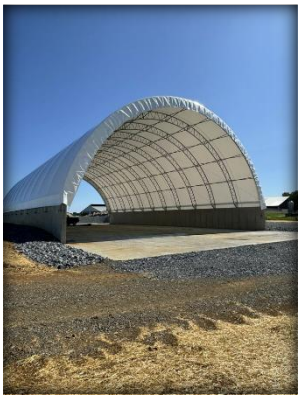


Figure 3. Hoop structure installed to address manure storage issues.

- Action 1.9 Promote and assist implementation of buffers in agricultural riparian zones in priority areas
    - Forest Buffer (3,100 new acres)
    - Forest Buffer with Streamside Exclusion Fencing (962 new acres)
    - Grass Buffer (1,900 new acres)
    - Grass Buffer with Streamside Exclusion Fencing (550 new acres)
- Action 1.10 Develop and implement game plan outlining identification of farms missing plans, plan development assistance, long-term inspection processes, and BMP verification processes
- Action 1.11 Identify and foster ag-specific funding streams and opportunities to assist farmers with BMP implementation

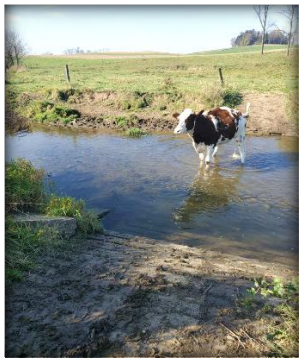
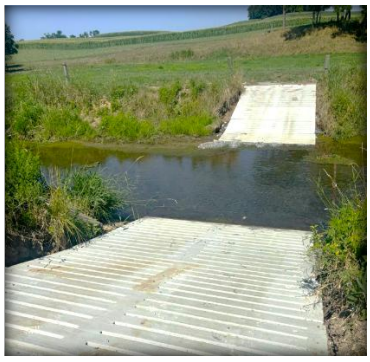


Figure 4. LCCD collaborated with the owner of a local dairy operation to implement BMPs. The existing stream crossing structure and fencing are in disrepair, allowing cows to access the stream and creating a resource concern.



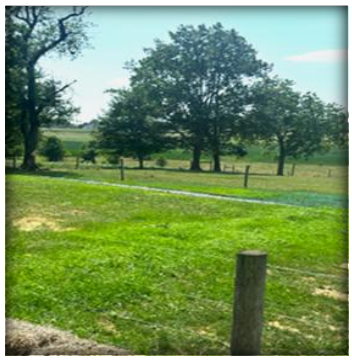


Figure 5 & 6. A new stream crossing and fencing system controls the cows' access to the stream, helping to reduce erosion and prevent sediment from entering the water.

Priority Initiative 2: Stormwater (Developed Areas) (e.g. Stormwater)

- Action 2.1 Engage legacy partners (Stormwater Consortium, etc.) to ensure capture and support of initiatives as it relates to local water quality improvements
- Action 2.2 Integrate other water resources initiatives (e.g. source water protection) into overall approaches
- Action 2.3 Pursue regional stream and wetland restoration projects that provide additional benefits to multiple communities and MS4s
    - Urban Stream Restoration (6,000 new linear feet)

    - Non-urban Stream Restoration (55,068 new linear feet)
    - Wetland Restoration (125 acres)
- Action 2.4 Engage and collaborate with PSU Extension to coordinate efforts for protection of private wells
- Action 2.5 Engage Lebanon County MS4 permittees for identification and support for known BMPs for implementation, funding streams, maintenance, and related needs
- Action 2.6 Identify and foster potential alternative stormwater BMP Implementation approaches (e.g. developer implemented regional stormwater facilities)
- Action 2.7 Promote and assist implementation of riparian zone, habitat, and tree canopy, and conservation practices in priority areas
    - MS4 Riparian Forest Buffers (69 new acres)
    - Non-MS4 Forest Buffers (50 new acres)
    - Conservation Landscaping (125 new acres)
    - Urban Forest Planting (125 new acres)
    - MS4 Urban Tree Canopy (12 new acres)
    - Farmland Conservation (2,000 total acres)
    - Forest Conservation (2,300 total acres)
    - Wetland Conservation (125 total acres)
- Action 2.8 Promote and assist implementation of urban/suburban sector controls for nutrient and sediment reductions
    - Advanced Grey Infrastructure for IDD&E Control (4,000 acres treated)
    - Impervious Surface Reduction (15 acres)
    - Urban Nutrient Management (2,000 acres)
    - Street Sweeping (122 acres treated)
- Action 2.9 Promote and assist implementation of stormwater control measures that incorporate Low Impact Development (LID) approaches
    - Wet Ponds and Wetlands (197 acres treated)
    - Stormwater Performance Standards-Runoff Reduction (915 acres treated)
    - Bioretention/Raingardens (24 acres treated)
    - Bioswale (9 acres treated)
    - Vegetated Open Channels (15 acres treated)
    - Filtering Practices (8 acres treated)

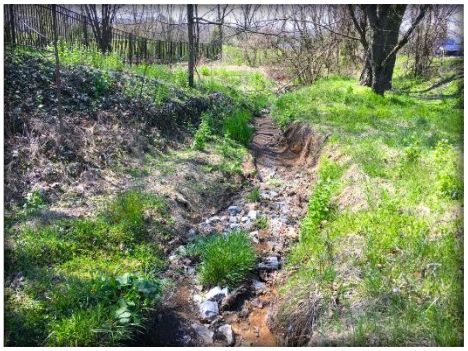
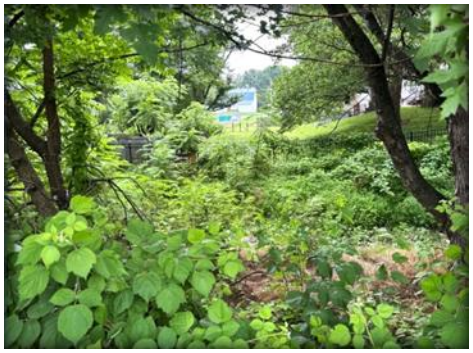



Figure 7 & 8. Before-and-after photos of the Palmyra Borough bioswale project, which provides pollutant control and improves Spring Creek's water quality.

Priority Initiative 3: Education and Outreach

- Action 3.1 Identify alternative and creative messaging and outreach methods
- Action 3.2 Collaborate with state to improve statewide branding and messaging
- Action 3.3 Unify messaging and outreach methods across sectors
- Action 3.4 Support and build on existing education and outreach efforts while preserving the messaging the central focus is Lebanon County
- Action 3.5 Provide oversight and guidance for CAP-specific media outreach approaches and methods (website, radio, etc.)

Priority Initiative 4: Data Management and Monitoring

- Action 4.1 Identify and expand water quality monitoring efforts to assist with prioritization of BMP implementation and measure long-term success
    - Form partnership with USGS to bring more real-time data to Lebanon County
- Action 4.2 Build a Lebanon County-specific monitoring network
- Action 4.3 Maintain an inventory of acceptable BMP verification processes for long-term monitoring efforts
- Action 4.4 Identify potential additional monitoring activities that may accompany existing monitoring activities to capture missing or needed information
- Action 4.5 Establish FieldDoc use and access protocols (SOPs)

Priority Initiative 5: Coordination

- Action 5.1 Establish and maintain a coordination sub-committee focused on implementation of the QWA 319 plan and local municipal PRPs/efforts
- Action 5.2 Continually engage and support The Conewago Initiative
- Action 5.3 Continually engage and update local legislators for CAP implementation support
- Action 5.4 Collaborate with Lancaster and Berks County for shared watersheds (Upper Hammer, Chiques, Little Swatara, etc.)
- Action 5.5 Engage local/regional programs (e.g., Master Watershed Stewards) to coordinate efforts for long-term CAP implementation success
- Action 5.6 Assist with progressing efforts in the Swatara with the Lower Little Swatara as a priority watershed.

Programmatic/Policy Recommendations: Lebanon County

- Action 1.1 Expand the definition for cover crops to include other successful approaches accepted and working in Lebanon County
- Action 1.2 Act 537 Plan funding
- Action 1.3 Improve watershed/regional permitting approaches
- Action 1.4 Manure transport tracking program
- Action 1.5 Act 167 Planning

- Action 1.6 Enhance local water quality monitoring

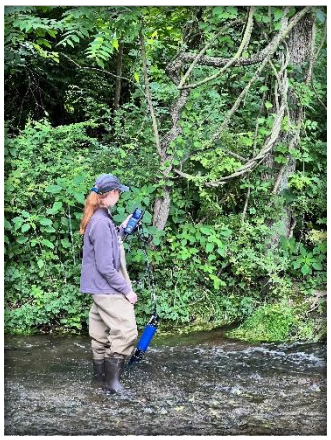
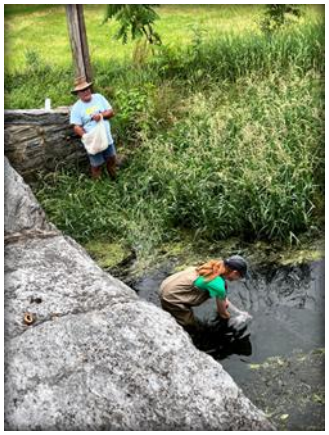



Figure 9 & 10. LCCD's Watershed Specialist, assists the Quittapahilla Watershed Association (QWA) with discrete water monitoring at six sites along "Quittie" Creek.