

LEHIGH AND
NORTHAMPTON COUNTIES,
PENNSYLVANIA

2024 Lehigh Valley Hazard Mitigation Plan

2025 Annual
Review / Meeting
Participation &
Documentation

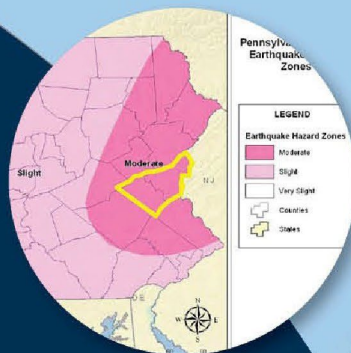


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1. Introduction

1.1 – Background

Hazard mitigation is taking sustained action to reduce or eliminate long-term risks to life and property from hazards and create successive benefits over time. The creation of a comprehensive hazard mitigation plan and actionable strategy may allow a community to anticipate potential threats and tackle them head on. Emerging weather patterns, demographic transitions, and rapid technological advancements mean that these plans need to be routinely updated to remain relevant. Lehigh and Northampton Counties in the Lehigh Valley are committed to the maintenance of their plan, as reflected in this 2024 update.

FEMA requires that Hazard Mitigation Plans (HMP) include a process to ensure that the plans are regularly reviewed, updated and maintained. This encourages progress towards implementation of the mitigation strategies laid out in the plan. Refer to Section 7, Plan Maintenance Pg. 333 within the Master Plan for more information.

1.2 – Mitigation Planning Committee (MPC)

The Mitigation Planning Committee (MPC) is responsible for monitoring the progress, evaluating the effectiveness, and updating the plan annually. Each participating jurisdiction (municipality or authority) has a representative on the MPC. Refer to Section 7, Plan Maintenance Pg. 333 within the Master Plan for more information.

MPC will review goals, objectives, and activities and evaluate how other programs and policies have conflicted or augmented planned or implemented measures and can be modified. The plan will also be evaluated and revised following any major disasters to determine if the recommended actions remain relevant and appropriate. The risk assessment will also be revisited to see if any changes are necessary based on the pattern of disaster damages or if data has been collected (Section 4.3, Hazard Profiles) that facilitates the risk assessment.

1.3 – Public and Stakeholder Input

Both Lehigh and Northampton counties as well as the participating municipalities are committed to the continued involvement of the public and stakeholders in the hazard mitigation process. The public and all stakeholders are encouraged to review the plan and submit any questions to their local municipal representative or to the county.

2. Evaluating the Plan

2.1 – Annual Evaluations

The HMP will be evaluated annually to determine the effectiveness of the programs, to measure if goals are being reached and to reflect changes that may affect mitigation priorities or available funding. The status of the HMP will be discussed and documented at an annual plan review meeting. This review will provide the opportunity to increase a municipality's disaster resistance and will build a better and stronger community. Evaluations will assess whether:

- Planning goals address current and expected conditions
- The nature or magnitude of the risks has changed
- Current resources for funding, personnel, and equipment are appropriate for implementing the HMP, and if additional resources are now available
- Schedules and budgets are feasible, and if actions taken were cost effective
- Implementation problems, such as technical, political, legal or coordination issues with other agencies, are present
- Outcomes occurred as expected
- New agencies/departments/staff or other local governments should be included

During the annual evaluation and/or review process the co-chairs ask that all entities with annexes within the plan review their respective annexes and report back any edits or updates needed. Responses to these annex reviews as well as annual meeting participation is captured and documented in Tables 1, 2 & 3.

2.2 – Monitoring Mitigation Actions

Each year, beginning one year after the plan's development, the plan co-chairs (and/or delegated representatives) may contact, collect and process information from the persons, departments, agencies and organizations involved in overseeing and implementing mitigation projects or activities. To standardize the information collected, FEMA guidance worksheets and a progress matrix shall be utilized to track progress by the county and participating municipalities/authorities.

2.3 – Annual Progress Reports

An annual progress report, based on the local participant progress reports, information presented at the annual MPC meeting and the HMP evaluation, will be prepared by the MPC. The annual reports will provide data for the five-year update of the HMP and assist in pinpointing implementation challenges. By monitoring the implementation of the Plan on an annual basis, it is possible to assess which projects are completed, which are no longer feasible and what projects may require additional funding or other resources.

The following reports are the culmination of annual activities completed or underway by the County and participating municipalities.

- Plan Adoption: List of municipalities and the adoption dates
- Year One Annual Report
- Year Two Annual Report
- Year Three Annual Report (including scope and timeline for update)
- Year Four Annual Report (including update status)
- Year Five HMP Update

3. HMP 5-Year Update

HMPs are required to be updated every five years. State and federal representatives shall be consulted to provide guidance on plan update procedures and timelines. A scope will be developed which identifies the resources needed for the HMP update and the timeline that will ensure the update is completed in advance of the expiration of the current plan. Resources will be secured and the update process followed. Following each five-year update of the mitigation plan, the updated plan will be distributed for public comment. After all comments are addressed, the HMP will be revised and distributed to all planning group members, and state and federal agencies for review and approval.

Figure 1: 5-Year Hazard Mitigation Plan (HMP) Cycle



Any questions about the data within this document please contact one of the Lehigh Valley Hazard Mitigation Plan co-chairs, information found below.

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Table 1: Lehigh County Municipalities 2025 Review Participation

Lehigh County					
Municipalities	Annex	Meeting	Municipalities	Annex	Meeting
Alburtis Borough	X	X	Lynn Township	X	X
Allentown City		X	Macungie Borough		
Bethlehem City *			North Whitehall Township		
Catasauqua Borough	X	X	Salisbury Township	X	X
Coopersburg Borough		X	Slatington Borough		
Coplay Borough			South Whitehall Township	X	X
Emmaus Borough			Upper Macungie Township		
Fountain Hill Borough			Upper Milford Township		X
Hanover Township	X		Upper Saucon Township		
Heidelberg Township	X	X	Washington Township		
Lower Macungie Township	X	X	Weisenberg Township		X
Lower Milford Township	X	X	Whitehall Township		
Lowhill Township	X	X			

* Bethlehem City lies within both Lehigh & Northampton Counties.

Table 2: Northampton County Municipalities 2025 Review Participation

Northampton County					
Municipalities	Annex	Meeting	Municipalities	Annex	Meeting
Allen Township	X	X	Moore Township	X	
Bangor Borough	X	X	Nazareth Borough	X	X
Bath Borough	X		Northampton Borough		
Bethlehem City *			North Catasauqua Borough	X	X
Bethlehem Township	X	X	Palmer Township	X	X
Bushkill Township			Pen Argyl Borough		X
Chapman Borough		X	Plainfield Township	X	X
East Allen Township	X		Portland Borough		
East Bangor Borough	X		Roseto Borough		
Easton City	X	X	Stockertown Borough	X	X
Forks Township	X	X	Tatamy Borough	X	X
Freemansburg Borough	X		Upper Mount Bethel Township	X	X
Glendon Borough			Upper Nazareth Township	X	
Hanover Township	X	X	Walnutport Borough		
Hellertown Borough	X	X	Washington Township		
Lehigh Township	X	X	West Easton Borough		
Lower Mount Bethel Township	X		Williams Township	X	X
Lower Nazareth		X	Wilson Borough	X	X
Lower Saucon Township	X	X	Wind Gap Borough		X

* Bethlehem City lies within both Lehigh & Northampton Counties.

Table 3: Authorities / Special Districts / Commissions 2025 Review Participation

Authorities / Special Districts / Commissions					
Entities	Annex	Meeting	Entities	Annex	Meeting
Lehigh County Authority		X	Lehigh Valley Planning Commission (LVPC)		
Lehigh-Northampton Airport Authority		X			

4. 2025 Annual Update Documentation

4.1 – 2025 Annual Update Synopsis

We held an annual review and update meeting in December, 2025. All entities within the Plan were provided requests in early November, 2025 to review their respective annexes and provide any feedback or edits to us (co-chairs) before Friday, December 5, 2025. Any edits requested by the municipalities and/or authorities were completed as asked, and updated annexes were sent back to the entity that requested the change and updated annexes were shared on the county EM websites.

On Thursday, December 11, 2025 we held two virtual annual review/update meetings. Both meetings were hosted on the Zoom platform with one meeting held at 10:00 a.m. and the second meeting held at 4:00 p.m... We discussed changes made to the Master Plan, Lehigh Valley joint annex, appendixes and shared with those in attendance any mitigation actions (both municipal level and county level) that were completed or are in progress.

During the two meetings we also had the following presenters:

- Thomas Hughes, Director of EM Mitigation, Insurance & Resilient Communities (MIRC) Office – Pennsylvania Emergency Management Agency (PEMA)
- Rachel Hogan Carr, Executive Director – Nurture Nature Center
 - Kathryn Semmens, Science Director

Can find copies of the presentations below. 2025 annual review and participation tracking can be found in Tables 1, 2 & 3.

4.2 – Northampton / Lehigh County EM Presentation



ANNUAL REVIEW MEETING – December 2025

Annual Review Meeting Agenda

- **Introductions**
 - ✓ Lehigh & Northampton County Plan Co-Chairs
- **Hazard Mitigation Plan Update Presentation**
 - ✓ Updates / edits to Master Plan
 - Appendix edits / additions
 - ✓ Updates / edits to the Lehigh & Northampton Counties Annex
 - ✓ Municipal / Authority annex review, participation & feedback
 - ✓ FEMA mitigation grant opportunity updates
 - ✓ Current mitigation projects being completed
 - ✓ Substantial Damage / Substantial Improvement discussion
- **Presenters**
 - ✓ Tom Hughes, Director, EM Mitigation, Insurance & Resilience Communities Office (MIRC) – PEMA
 - ✓ Rachel Hogan Carr, Executive Director – Nurture Nature Center
 - Kathryn Semmens, Science Director
- **Open Discussion / Comments, Questions**



Lehigh Valley Hazard Mitigation Plan

Synopsis



2024 Lehigh Valley Hazard Mitigation Plan

Synopsis

- The Lehigh Valley Hazard Mitigation Plan is a **bi-county mitigation covering both Lehigh & Northampton counties**.
✓ *This plan is only 1 of 2 plans that covers more the 1 single county in PA.*
- This plan **encompasses a combined population of 708,644 (est. 2025) residents, 725 combined square miles of land and 62 municipalities**.
- Current Plan was **awarded FEMA's Approval-Pending-Adoption (APA) status on September 6, 2024**.
✓ *Currently plan is set for expiration on September 6, 2029 if not updated.*
- **We received participation and adoption from 58 of the 62 municipalities as well as three authorities** within the plan during the 2024 update. Actively working to get the remaining municipalities through FEMA's approval process and included into the plan.



Lehigh Valley Hazard Mitigation Plan

Updates / edits to the Master Plan

- Moved footnotes to endnotes in document.
- Corrected any misspellings, grammar errors located.
- Removed some historical data information from charts, transferred historical data into its own appendix (will discuss further).



Lehigh Valley Hazard Mitigation Plan

Updates / edits to the joint Annex

- Edited some verbiage in Mitigation Action items.
- Added / edited hazards addressed in some Mitigation Actions.
- Removed 19 total actions listed in the joint annex, many of which were duplicated verbiage or no longer relevant.
- Corrected any misspellings, grammar errors located.
- Removed some historical data information from charts, transferred historical data into its own appendix (will discuss further).



Lehigh Valley Hazard Mitigation Plan

Appendix edits / additions

- **Created Appendix "A"** which holds historical data for all 27 hazards up to 2024, prior to Plan completion. Plan will cover events from previous Plan (2018) through current year. Shall be updated annually as well.
- **Created Appendix "E"** which will share all municipal / authority Adoption Resolutions. This shall be posted publicly.



Lehigh Valley Hazard Mitigation Plan

Municipal / Authority review participation and edits

Received annex review responses from **31** of the **58** municipalities as of December 10th.

- **Lehigh County** – changes/updates/edits to **8** municipal annexes & **2** authority annexes
- **Northampton County** – changes/updates/edits to **23** municipal annexes



Lehigh Valley Hazard Mitigation Plan

Mitigation grant funding opportunity updates

As of December, 2025 we can share the following FEMA grant information:

- The **Building Resilient Infrastructure and Communities (BRIC)** grant program was **cancelled** by FEMA on **April 4, 2025**, with the announcement to terminate the program and cancel the Fiscal Year (FY) 2024 funding round, also halting all prior awards from FY 2020-2023 if funds hadn't been dispersed. This decision aimed to reallocate funds and develop a new mitigation strategy, but faced legal challenges, with a federal judge temporarily blocking the reallocation in August 2025.
- The **last full Notice of Funding Opportunity (NOFO) for the Flood Mitigation Assistance (FMA) grant program was the FY2023 offering** which was posted October, 2023 & closed in February, 2024. 2024's NOFO was late to open and never has. **FEMA has since announced they would not accept new FMA applications for 2025** under the existing structure as they reform the program.



Lehigh Valley Hazard Mitigation Plan

Mitigation grant funding opportunity updates

Introduction of the FEMA Act of 2025.

Some highlights of the proposed FEMA Act of 2025

- **Preapproved project mitigation plans:** The bill proposes creating a process for preapproving state mitigation project plans, which would make these projects eligible for expedited funding and an enhanced federal cost share of up to 85%.
- **Funding strategy changes:** Traditional cash-flow assumptions would be changed and match-fund reserves and other funding schedules would be recalibrated.
- **Streamlined processes:** The overall goal is to simplify assistance, reduce red tape, and reward state-level preparedness.



Lehigh Valley Hazard Mitigation Plan

Mitigation grant funding opportunity updates

Program-specific updates

- **BRIC program changes:** Potential bring back the BRIC program which would be converted to a formula-based allocation.
- **FMA:** Speed up funding with “pre-approved” plans, up to 85% cost-share.
- **Hazard Mitigation Grant Program (HMGP):** 16 states with FEMA-approved “enhanced” state mitigation plans are now eligible to receive more funds after a disaster declaration.
 - **PA is one of the 16 states with an “enhanced” Plan.**
- **Hazard Mitigation Assistance (HMA) program:** The HMA program has an updated guide (version 2.1) that removes the requirement to adhere to the Federal Flood Risk Management Standard and makes other administrative changes.
- **Nonprofit Security Grant Program (NSGP):** The FY 2025 NSGP is available to nonprofits at high risk of a terrorist or extremist attack to fund physical security enhancements.



Lehigh Valley Hazard Mitigation Plan



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

2024 Mitigation Action Plan

Mitigation Action	Mitigation Action Category	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding	Lead Agency / Department	Implementation Schedule	Applies to New and / or Existing Structures
1. Retrofit structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Phase 1: Identify appropriate candidates for retrofitting based on cost-effectiveness versus relocation. Phase 2: Where retrofitting is determined to be a viable option, work with property owners toward implementation of that action based on available funding from FEMA and local match availability.	1	Structure & Infrastructure	Flood, Windstorms/ Tornado, Winter Storm, Earthquake	High	High	FEMA Mitigation Grant Programs and local (budget or property owner) for cost share	Municipality (via Municipal Engineer/NPBP Floodplain Administrator) or support from FEMA, FEMA	Long-term (depending on funding)	Existing

Lower Mount Bethel & Forks Townships

- **Elevating three properties** along the Delaware River. One residence in Forks Township and two residences in Lower Mount Bethel Township.
 - Funded with Hazard Mitigation Grant Program (HMGP) funds from COVID declaration (DR-4506).
 - Consultant retained to oversee projects, RFP's shall go out in January, currently working through DEP permitting process and awaiting approval from FEMA for additional funds since costs have skyrocketed since grant entry in 2021/2022.



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress...

2	Install silk matting along banks of Bushkill creek at Braden Park.	20	Natural Systems Protection	Flood	Medium	Medium	FEMA Mitigation Grant Programs; Municipal Budgets	Road Department	Ongoing	Existing
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Tatamy Borough

- **Installing silk matting along the banks of the Bushkill Creek at Braden Park.**
 - Two Rivers train extension and Geo-tech completed in December, 2025!



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress...

10	Walnut Street and 10th Street Drainage Issues: Incorporation of roadside swales along Walnut Street and Turner Street along with extension of existing 36" storm pipe to Nancy Run. This system was approximated with the goal of capturing and conveying the 25-year (4%) storm event.	15	Structure & Infrastructure	Flooding	Medium	High	FEMA Mitigation Funding, Municipal Budget	Municipality w/ support	Short-Term	Existing
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Bethlehem Township

- Drainage issue at Walnut Street & 10th Street.
 - Mitigation action has been completed.



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress...

Mitigation Action	Mitigation Action Category	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding	Lead Agency / Department	Implementation Schedule	Applies to New and / or Existing Structures
14 Sculac Drive and Wilson Avenue Flooding Alternative 1: (Initially Preferred Alternative) This alternative involves the extension of a culvert system to collect and convey runoff from a tributary of the Lehigh River. This conveyance system is proposed to include five structures and approximately 415 LF of 72" RCP. This system was sized to capture and convey the 100 Year (1%) storm event. Alternative 2: (Value Engineering Option) This alternative follows the same design approach as alternative 1 but instead considers the use of structural steel plate corrugated metal pipe (CMP). This is presented as a value engineering option; however, it was not selected as an initially preferred alternative since the service life of a CMP collection header would not compare well to the service life of RCP.	15	Structure & Infrastructure	Flooding	Medium	High	FEMA Mitigation Funding, Municipal Budget	Municipality w/ support	Short-Term	Existing

Bethlehem Township

- Sculac Drive & Wilson Avenue flooding alternatives
 - Municipality reports that some work has been completed, remaining work is ongoing.



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

Lehigh and Northampton Counties Annex

2024 Counties Mitigation Action Plan

Mitigation Action & (Goal - Objective #)	Mitigation Technique Category	Hazard(s) Addressed	Priority (H / M / L)	Estimated Cost	Potential Funding	Lead Agency / Department	Implementation Schedule	Applies to New and / or Existing Structures
1. Lead and support the implementation, monitoring, maintenance and update of this Plan on an annual basis at minimum. (3-2)	All	All Hazards	High	Low-High (for 5-year update)	County Municipal Budgets, FEMA HMA Grant Funding for 5-year update	LC & NC EMA, working w/ the HazMit Plan Admin. Team, participating jurisdictions, FEMA & FEMA Region II	Ongoing	N/A
2. Maintain a centralized library of all data, information and documents compiled, developed and used for the 2024 LV HMP update process, including HAZUS/SHI datasets and projects (HPIR files). This data shall be used to support plan implementation and future updates, and may be used to support other emergency management and planning functions. (2-1)	All	All Hazards	High	Low	County Budgets	LC & NC EMA, County GIS Dept.	Short-Term	N/A

- **#1:** Continue to update the documents within the dedicated Hazard Mitigation area on the Northampton County EM/911 website to maintain transparency and easy access to our partners, stakeholders and the public.
- **#2:** Have all pertinent documentation saved and available to those authorized to view it.



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

8. Continue to educate, promote and support municipal officials and resident's participation in available hazard mitigation grant funding opportunities such as: FEMA, HMA, SHI, or any other grant program to mitigate flood-prone structures and infrastructure, including RI/SRI, outreach. (2-A)	Education & Awareness	Flood	High	Medium	County Budgets	LC & NC EMA, w/ support from municipal NIP/FPAS, Support provided by FEMA, FEMA Region II	Ongoing	Ongoing
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- **#8:** Provided available grant opportunities to municipal officials. Assisting municipal officials and residents with grant applications.



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

11	Provide representation & support of local/regional flood & watershed committees/ commissions & task forces (e.g., Delaware River Basin Commission, DRBC)	Education & Awareness	All Hazards	High	Low - Medium	County Budgets	LC & NC EMA w/ support from LVPC	Ongoing	N/A
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- **#11: Participate in meeting opportunities and exercises such as Northampton County EM participation in the Delaware River Basic Commission (DRBC) Subcommittee on Source Water Protection (SSWP) tabletop exercise (TTX) exercise to be scheduled in early 2026.**



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

14	Continuous participation in the NOAA "Storm Ready" program to enhance County/community resilience to severe storms. The NOAA "Storm Ready" program includes providing information on the program, facilitating public outreach and awareness programs, and supporting community storm risk reduction activities as appropriate. Specific actions addressed by "Storm Ready" participation include establishing a 24-hour warning Point, increasing the number of ways EOCs receive NWS warnings, increasing the number of ways to disseminate warnings, monitoring hydro-meteorological data, providing annual weather safety talks, training weather spotters, creating a formal hazardous weather plan, hosting annual visits by NWS to communities, etc. (B-A)	Education & Awareness	Flood, Winter Storms	High	Low - Medium	County Budgets	LC & NC EMA, w/ support from NWS	Ongoing	N/A
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- **#14: Maintain StormReady status with NOAA. Northampton County StormReady application renewal is due in July, 2026.**



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

16	Continue to identify vulnerable county-owned structures and infrastructure, develop and prioritize appropriate mitigation projects, and implement projects as funding is appropriated. (3-A)	Structure & Infrastructure	All Hazards	Medium	Medium - High	County Budgets	LC & NC EMA working w/ county depts. & agencies w/ critical facilities & infrastructure	Ongoing	Existing
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- **#15:** Continue working with county departments such as sheriffs department, O & M, etc. to apply for funding opportunities to mitigate concerns within county owned facilities/properties.



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

17	Leverage existing regional & local meetings, conferences and media outlets (social media, local websites, newsletters, email "blasts" and mailings) to promote awareness & understanding of personal preparedness & mitigation activities the public can take to reduce or eliminate the impact of hazards on their services and infrastructure. (3-B)	Education & Awareness	All Hazards	High	Low	County, Municipal Budgets & LVPC	LC & NC EMA, and/or LVPC working w/ municipalities	Ongoing	N/A
18	Improve public understanding of disaster preparedness and what to do during an emergency. (3-B)	Education & Awareness	All Hazards	High	Low - Medium	County, Municipal Budgets	LC & NC EMA, working w/ local EM & response agencies	Ongoing	N/A

- **#17 & 18:** Continue to attend, participate and host public awareness events to share pertinent preparedness and recovery information. Continue utilizing social media platforms to share the same information to help create a more resilient community.



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

23	Lehigh County EMA to continue their efforts to recruit individuals for the following programs: Citizen Corps Council, Ready, Pack, Go, Community Emergency Response Team (CERT) and update and expand programs for those with access and functional needs. (7-11)	Education & Awareness	All Hazards	Medium – High	Low – Medium	County Budget	LC EMA, partnering w/ LV Center for Independent Living	Ongoing	N/A
24	County EMAs to continue their efforts at identifying and partnering w/ owners/operators of critical facilities as necessary to provide adequate planning and protection. (3-6)	Structure & Infrastructure	All Hazards	Medium	Low	County Budgets	LC & NC EMA	Ongoing	Existing

- **#23:** Lehigh County Emergency Management continues to recruit and train persons for their county CERT program.
- **#24:** Both counties EM agencies and Local Emergency Planning Committees (LEPC's) continue to tour facilities and maintain updated plans for each facility.



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

26	Develop county-level debris management plans for the Lehigh Valley. (7-8)	Local Plans & Regulations	Flood, Windstorms, Winter Storms	Low-Medium	Medium	County Budgets, FEMA-EMPG	LC & NC EMA	Long-Term	N/A
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- **#26:** Northampton County Emergency Management has created a thorough and county specific Debris Management Plan. Must work through the official adoption process.



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

28	Improve coordination and cooperation with colleges and universities in the Lehigh Valley to address their emergency management & services needs, including mass gatherings / civil disturbance risks. (7-A)	Education & Awareness	All Hazards, spec. Civil Disturbance/ Mass Gatherings	High	Low	County Budget	LC & NC EMA, working w/ college & university emergency services	Ongoing	N/A
29	Enhance the County website to create a place to consolidate public information related to disaster response and recovery (3-2)	Education & Awareness	All Hazards	Medium	Low	County Budget	LC & NC EMA	2025	N/A
30	Continue to review SARA site plans to ensure they are exploring critical facilities surrounding their facility. (3-A)	Structure & Infrastructure	Environmental Hazard/ Explosion, Terrorism	Medium	Low	County Budget/ LEPC	LC & NC EMA & LEPCS	LC Ongoing, NC Short-Term	Both

- **#28:** Both counties working to build cohesive relationship with higher education entities emergency management/response personnel. Including initiations to meetings, events, participation in exercises and training courses.
- **#29:** Both counties continue to work toward self-serving websites with robust preparedness and/or recovery information accessible by all residents or visitors.
- **#30:** Both counties Planning personnel work diligently to try to satisfy this mitigation action.



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

31	Continue to provide County EMA personnel and LC Mutual Team tours of large & new SARA facilities w/in the county to maintain familiarization of facility layouts and build working relationships with facility owners and operators. (7-A)	Structure & Infrastructure, Education & Awareness	Environmental Hazard/ Explosion	Low	Low	County Budget	LC & NC EMA	Ongoing	Both
32	Revise Lehigh County Evacuation Plan (7-B)	Local Plans & Regulations	All Hazards	Low	\$5,000	Grants	LC EMA	Long Term	N/A
33	Lehigh County EMA to revise Mass Care and Shelter Plans; Northampton County EMA to develop same plans. (7-B)	Local Plans & Regulations	All Hazards	Low	Low	County Budget	LC & NC EMA	Ongoing	N/A
34	Work with American Red Cross PA River Chapter to revise & update the LC & NC list of Evacuation / Warning Center & Shelter locations. Conduct Site surveys for all facilities on the current list & include new facilities that may be utilized during emergencies. (7-B)	Education & Awareness	All Hazards	Medium High	Low	County Funding, Staff Time, & American Red Cross Staff / Volunteer Time	LC & NC EMA w/ American Red Cross	Ongoing	N/A

- **#31:** Both counties EM agencies and Local Emergency Planning Committees (LEPC's) continue to tour facilities and maintain updated plans for each facility.
- **#32:** Lehigh County continues to pursue funding to complete this mitigation action of revising their evacuation plan(s).
- **#33 & 34:** Shelter locations throughout both counties were surveyed during 2025 with the help of the American Red Cross volunteer staff. List/plans continue to be updated and maintained in both counties.



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

36	Continue to train Local Emergency Management Coordinators, Community Emergency Response Team (CERT), Lehigh Valley Community Annual Response Team (CART), Allentown Medical Reserve Corps and Bethlehem Medical Reserve Corps volunteers in Evacuation / Working Center and Sheltering Operations, and Points of Dispensing Trainings and Exercises. (7-10)	Education & Awareness	All Hazards	Low-Medium	Low	County Funding / Staff Time, Local Hospitals, American Red Cross, Allentown Bethlehem Health Bureau and Volunteer Time	LC EMA, Allentown Bethlehem Health Bureau and American Red Cross	Ongoing	N/A
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- **#35: Lehigh County continues to offer a robust training regime to all entities listed in this mitigation action. Continued cooperation between all entities listed helps to be able to provide the training opportunities to a larger group of members within the organizations.**



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

37	Meet quarterly with Volunteer Organizations Active in Disaster (VOAD) partners to maintain preparedness, ensure situational awareness, identify resource capabilities and build stakeholder relationships pre-disaster. (7-A)	Education & Awareness	All Hazards	Medium	Low	County Budgets	LC & NC EMA / PA & NEPA VOAD	Ongoing	N/A
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- **#37: Both county EM agencies continue to attend and participate in events with VOAD partners. Meetings are always attended including state and/or regional VOAD conferences to help build networks of assistance for those in need post-disaster.**



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

38	Support resiliency of the private sector through information sharing, partnership building, training and education on preparedness, Continuity of Operations Planning (COOP), mitigation principles and the Lehigh Valley Hazard Mitigation Plan. (7-C)	Education & Awareness	All Hazards	Ongoing	Low	County Budget	LC & NC EMA	Ongoing	Both
39	Conduct Mass Casualty Exercises (7-A)	Education & Awareness	All Hazards	Low	Low	HSOP	LC & NC EMA, Hospitals, EMS, Fire & Police	Ongoing	N/A
40	Update the Emergency Operations Center (7-D)	Structure & Infrastructure	All Hazards	Low	Medium	HSOP	LC EMA	Ongoing	Existing
41	Enhance THIRA process to identify response gaps. (5-A)	Education & Awareness	All Hazards	Low	Low	Staff Time	LC & NC EMA	Ongoing	N/A

- **#38:** Both counties participated in the Lehigh Valley Safety event held at the Northampton Community College in spring of 2025. Both county EM offices provided useful preparedness and recovery information to private sector entities within their respective county. Private and non-profit agencies were invited to participate in the 2024 Plan update process.
- **#39:** Continue to participate in exercises as they are created and opportunities arise.
- **#40:** Updates to the EOC are continuous due to constant upgrades in technology.
- **#41:** Both counties, with the help of contracted vendor, completed a thorough review and rewrite of their THIRA during late 2023/early 2024.



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

42	Purchase of necessary response vehicles and equipment for all-hazard response to disasters. (7-5)	Structure & Infrastructure	Environmental Hazard: Explosion, Terrorism	High	High	LC Capital Projects Plan	LC & NC EMA	Ongoing	N/A
43	Install generator legs at all county critical facility sites including the generator located at County EOC in Upper Nazareth Township. This will allow a mobile generator to be installed in place of the current backup generator if there is a failure. (7-6)	Structure & Infrastructure	All Hazards	Medium	Medium	County Rebuild Grants	NC EMA	Short-Term (DOF)	Both

- **#42:** Both counties submit for grant funding during 2024/2025 for much needed vehicles, unsuccessful. Equipment for response has been more fruitful with some grant funding being awarded to help make much needed equipment purchases or upgrades.
- **#43:** Northampton County did submit a grant in late 2024 to complete this project, grant opportunity (BRIC) was discontinued in early 2025.



Lehigh Valley Hazard Mitigation Plan

Mitigation projects in progress or completed...

45	Funding for training programs for first responders within both Lehigh & Northampton Counties. (7-A)	Education & Awareness	All Hazards	Medium	Low	County Budget, Grants, LEPC, FEMA, FEMA & NEPA Task Force	LC & NC EMA	Short-Term	N/A
46	Installation of wireless monitoring devices on waterways/rivers through the county. Used to monitor water levels, real time data on ice jams, flooding and possible life emergencies. Wireless cameras along the river would be considered for this project (11-B)	Structure & Infrastructure	Flood, Drought, Dam Failure, Levee Failure	Medium	Medium	County Budget/Grants	NC EMA w/ support from the Delaware River Joint Toll Bridge Commission	Medium-Long	N/A

- **#45:** Northampton County has successfully obtained funding via US DOT PHMSA grants to hold training courses both response and incident command related courses. Currently obtain funding to host 12-13 courses during 2026.
- **#46:** Northampton County continues to make contact with the Delaware River Joint Toll Bridge Commission (DRJTBC) to discuss their current capabilities and their thoughts on this mitigation action.



Substantial Damage Estimator (SDE)

What is the FEMA SI/SD?

The FEMA Substantial Damage Estimator (SDE) tool is a program and methodology for state and local officials to determine if a building damaged by an event like a flood, wind, or wildfire is "substantially damaged" under the National Flood Insurance Program (NFIP). It helps officials apply NFIP requirements, ensuring damaged structures are brought into compliance with current building codes during reconstruction to reduce future risks.

FEMA's "[Substantial Damage Fundamentals](#)" pamphlet



The SDE is a tool to help local officials administer the Substantial Damage requirements of their floodplain management ordinances in keeping with the minimum requirements of the NFIP.



Substantial Improvement / Damage Estimator (SDE)

Why is SI/SD important?

When a structure in the SFHA (**Special Flood Hazard Area**) is **more than 50% modified** (damaged and repaired or improved), the structure **must be brought into compliance with NFIP requirements and local floodplain ordinance standards**. Modifications can come after disasters such as floods or wildfires or they can happen when a structure undergoes general repairs or improvements. Any modification to a structure in the SFHA is an opportunity for structure owners and floodplain management programs to reduce future risk of flooding or otherwise.

Communities are **required to execute the SI/SD process to remain in compliance with the minimum NFIP requirements**. Within the NFIP, one of the primary mechanisms a community can use to ensure risk reduction is including an SI/SD provision in their floodplain management ordinance. According to this provision, when the **cost to repair or improve a structure equals or exceeds 50 percent** (or less, if specified by the community) of the structure's pre-damage value (market, assessed, or otherwise), the **structure must be brought into compliance with current NFIP standards, local building codes, and other requirements**.



Substantial Damage Estimator (SDE)

Who is responsible for completing SI/SD?

The community is responsible for making SI/ SD determinations and notifying impacted property owners about those determinations, but a community also has the authority to delegate SI/SD responsibilities if in-house resources are not available. MOU's can be established with neighboring communities to step in and help after a disaster, third party contractors can be hired on an emergency, as-needed basis, and in the event of a large scale disaster, FEMA damage assessment teams may be asked to respond to local requests to assess the extent of disaster-caused damage to some structures.

A preliminary evaluation of several representative structures may be necessary to determine the average interior flood depth and extent of damage to structures in that area. Evaluating the damage to structures before they are inspected allows communities to determine where inspection resources are needed most. This initial screening of structures is based on the following criteria:

- *Structures damaged between 50 and 100 percent are considered substantially damaged and are required to be brought into compliance with both the local building code and the local floodplain development regulations.*
- *Structures damaged between 0 and 49 percent will not be subject to rebuilding requirements triggered by an SI/SD determination.*
- *Structures that are not substantially damaged are still subject to all repair and replacement requirements of the local building code.*



Substantial Damage Estimator (SDE)

How to get more information?

LEARN MORE

This information come from Mr. Ken Roberts, State NFIP Coordinator

The annual report is a **requirement to be submitted each year between January 1st, and February 28th**. It is **intended to capture all development that has occurred in the special flood hazard areas, and to provide us with updated contact information** while identifying any areas of training that may be needed. **This is a FEMA NFIP minimum requirement.**

- [Pennsylvania Floodplain Development Guide](#)
- [Submit Your Annual Floodplain Management Report](#)

FEMA Substantial Damage Estimator Tool training. This takes the guessing out of the process. The tool itself can be downloaded in the 3rd link below.

- [FEMA - Emergency Management Institute \(EMI\) Course | IS-284.A: Using the Substantial Damage Estimator 3.0 Tool](#)
- [SDE 3.0 User Manual and Field Workbook](#)
- [Substantial Damage Estimator Tool | FEMA.gov](#) (The download is mid-way down the page)



Municipal Annex Review & Update



- Municipal participants/stakeholders should **take the time to review all sections of their respective annex** within the Hazard Mitigation Plan. Any requests for change or updates must be forwarded to your county's Chairperson as soon as possible.
- Any **edits or additions to the Action Plan list must be submitted** to your county's Chairperson **for appropriate addition into your municipal annex.**
 - *Reminder: Can not apply for a Hazard Mitigation item/project unless it is listed within your Action Plan list!*



Municipal Annex Review – Points of Contact

HAZARD MITIGATION PLAN POINTS OF CONTACT

Lehigh and Northampton Counties Annex

Lehigh County:

Primary

Tanya Hook
Community Outreach Coordinator
Lehigh County Emergency Management Agency
640 W. Hamilton St., 8th Fl., Allentown, PA 18101
610-782-4600
tanyahook@lehighcounty.org

Alternate

Scott Lindenmuth
Director
Lehigh County Emergency Management Agency
640 W. Hamilton St., 8th Fl., Allentown, PA 18101
610-782-4600
scottlindenmuth@lehighcounty.org

Northampton County:

Primary

Thomas E. Guth, Jr.
Hazard Mitigation/Disaster Recovery Manager
Northampton County Emergency Management Services
100 Gracedale Avenue, Nazareth, PA 18064-8894
610-746-3194
tguth@ncem-pa.org

Alternate

Todd Weaver, ENP
Director
Northampton County Emergency Management Services
100 Gracedale Avenue, Nazareth, PA 18064-8894
610-746-3194
tweaver@ncem-pa.org

➤ Any changes to your Point-of-Contacts?



Municipal Annex Review – NFIP Compliance

Compliance with the National Flood Insurance Program (NFIP)

Topic	Identify source of information, if different from the one listed	Additional Comments
1. Staff Resources		
Is the Community Floodplain Administrator (FPA) or NFIP Coordinator certified?	Community FPA	
Is floodplain management an auxiliary function?	Community FPA	
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	Community FPA	
What are the barriers to running an effective NFIP program in the community, if any?	Community FPA	
2. Compliance History		
Is the community in good standing with the NFIP?	State NFIP Coordinator, FEMA NFIP Specialist, or community records	
Are there any outstanding compliance issues (i.e. current violations)?		
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?		
Is a CAV or CAC scheduled or needed?		
3. Regulation		
When did the community enter the NFIP?	NFIP Community Status Book	
Are the Flood Insurance Rate Maps (FIRMs) digital or paper? How are residents assisted with mapping?	Community FPA	
Do floodplain regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Community FPA	
Describe the permitting process.	Community FPA, State, FEMA NFIP	

➤ Any change(s) to your municipalities NFIP compliance?



Municipal Annex Review – Capability Assessment

Capability Assessment										
Capability		Status			Department/ Agency	Effect on Hazard Loss Reduction: - Supports - Neutral - Hinders	Change since 2013 Plan? + Positive - Negative	Has the 2013 Hazard Mitigation Plan been integrated into the Regulatory Tool/Program? If so, how?	How can these capabilities be expanded and improved to reduce risk?	Additional Comments
		In Place	Date Adopted or Updated	Under Develop- ment						
1. Planning & Regulatory Regulatory Tool/Program	Comprehensive Plan	X	10/12/2017		Board of Supervisors	S	+			
	Capital Improvement Plan			X	Board of Supervisors		+			
	Economic Development Plan									
	Continuity of Operations Plan									
	Stormwater Management Plan/Ordinance	X	2014			S	+			
	Open Space Management Plan (or Parks/Rec or Greenways Plan)			X	Board of Supervisors		+			
	Natural Resource Protection Plan									
	Transportation Plan									
	Historic Preservation Plan									
	Floodplain Management Plan	X				S				
	Farmland Preservation									
	Evaluation Plan									

➤ Any change(s) to your municipalities Capability Assessment?



Municipal Annex Review – Mitigation Action Plan

2018 Mitigation Action Plan									
	Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding	Lead Agency/ Department	Implementation Schedule	Applies to New and/or Existing Structures
1	Retrofit structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Phase 1: Identify appropriate candidates for retrofitting based on cost-effectiveness versus relocation. Phase 2: Where retrofitting is determined to be a viable option, work with property owners toward implementation of that action based on available funding from FEMA and local match availability.	Structure and Infrastructure	Flood	Medium-High	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from FEMA, FEMA	Long-term (depending on funding)	Existing
2	Purchase, or relocate structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Phase 1: Identify appropriate candidates for relocation based on cost-effectiveness versus retrofitting. Phase 2: Where relocation is determined to be a viable option, work with property owners toward implementation of that action based on available funding from FEMA and local match availability.	Structure and Infrastructure	Flood	Medium-High	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from FEMA, FEMA	Long-term (depending on funding)	Existing
	Maintain compliance with and good-								

➤ Any change(s) to your municipalities Mitigation Plan/Actions List?



Presenter.....

Thomas Hughes

Director of EM Mitigation, Insurance & Resilience Communities (MIRC) Office
Pennsylvania Emergency Management Agency (PEMA)



Visit them at: <https://www.pa.gov/agencies/pema>

Presenter.....

Rachel Hogan Carr

Executive Director

Nurture Nature Center



Visit them at: nurturenaturecenter.org



Hazard Mitigation Plan Contacts

Lehigh County Co-Chairperson

Kevin McGowan

Community Outreach Manager
Lehigh County Emergency Management Agency
640 W. Hamilton Street, 8th Floor
Allentown, PA 18101
610-782-4601
kevinmcgowan@lehighcounty.org

Northampton County Co-Chairperson

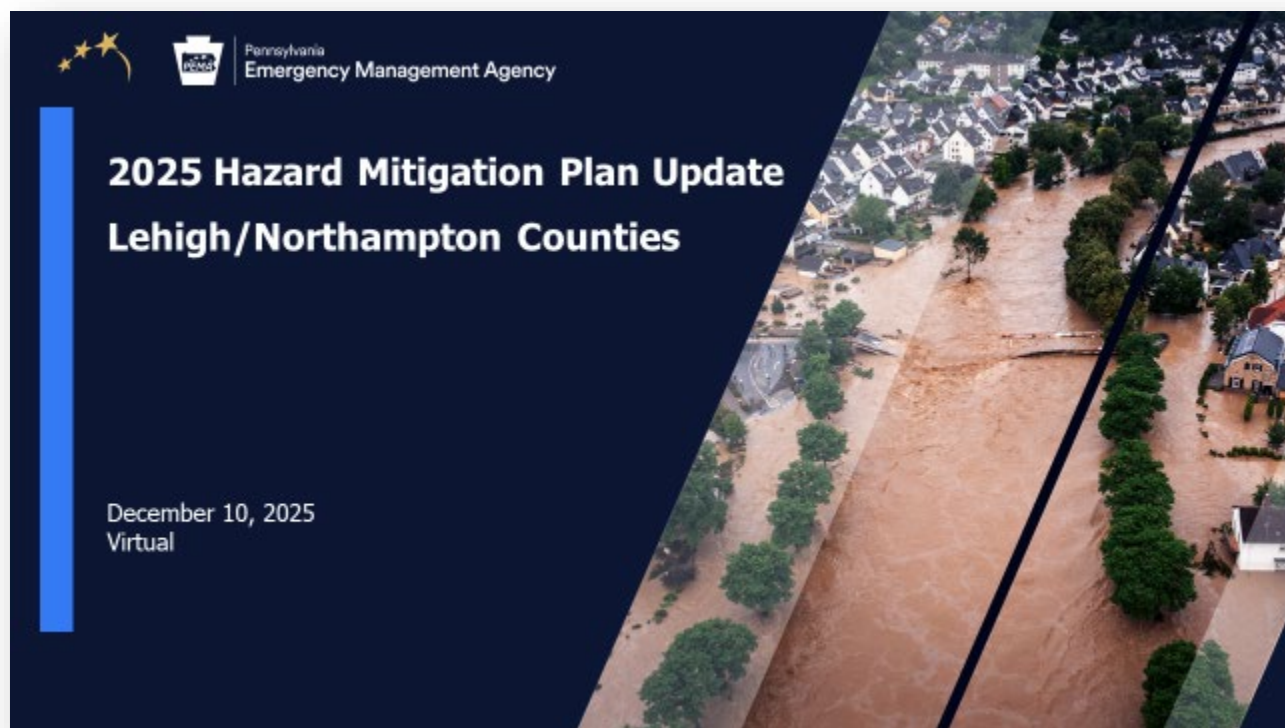
Thomas E. Guth, Jr.

Hazard Mitigation / Disaster Recovery Manager
Northampton County Emergency Management
100 Gracedale Avenue
Nazareth, PA 18064
610-746-3194 Extension 3228
tguth@ncem-pa.org

Find hazard mitigation plan documents at (click on links): [NCEM](#) or [LCEM](#)



4.3 – Thomas Hughes, PEMA Presentation



State Discussion

FEMA HM Planning Requirements

- 44 CFR 201.4 State Standard HMP
- 44 CFR 201.5 State Enhanced Plan
- 44 CFR 201.6



HM Planning is a need part for the Community!!



ELIGIBLE HMA PROJECT TYPES (SLIDE 1)

Acquisition/Relocation, **Catch Basins/Water Retention Projects**, Community Planning, Capacity Building, Coral Reef Restoration, Creation or Expansion of Wetlands, Freshwater Marshes, and/or Salt Marshes, Decreasing Slope Angles, Drought, Dry Floodproofing, Dry Floodproofing of Structures, Sewer backup protection, Ecological Forest Management, Elevation of structures, Elevation of utilities, **Erosion and sediment control projects**, Extreme Temperature Projects, Flood control gates, Flood Diversion and Storage Projects, Flood Risk Reduction (Both Localized and Non-localized), Floodplain and Stream Restoration Projects, Floodplain and Stream Restoration to Return Natural Flows to a Riverine System, Floodplain and Stream Restoration, and Improved Surface Infiltration, **Floodplain Reconnection and Restoration**, Floodwalls, Fuel Reduction (that addresses wildfire mitigation and includes restoration to natural conditions), Generator/Co-Generators / **Microgrids/ Solar**

ELIGIBLE HMA PROJECT TYPES (SLIDE 2)

Photovoltaic Systems/Battery Back-Up Systems, Green Roofs, Green Streets, Increasing the Tree Canopy, Landslide/Soil Stabilization, Living Shorelines, Mitigation Reconstruction, Natural Wildlife Buffer Zone (that uses earthen materials and native and/or fire-resistant vegetation), NOAA weather radio projects, Permeable Pavement, Preservation of Mature Vegetation, Rain Gardens, Bioswales, Urban Trees and Forests, and Constructed Wetlands, Riparian Buffers, Greenways, Waterfront Parks, Geotextiles, Stabilizing Sod, Vegetative Buffer Strips, Riverine Flooding, **Sand Dune Restoration or Stabilization**, Sewer backup protection, Shoreline Stabilization, Slope Stabilization, Tsunami Protection, Tsunami Vertical Evacuation Refuge Projects, Urban Flooding, Urban Forests, Utility and Infrastructure Protection, Water diversion, **Wildfire Mitigation** - Ecological Forest Management (fuel reduction that addresses wildfire mitigation and includes restoration to natural conditions), Wildfire Mitigation - Creation of Defensible Space (using native and/or fire-resistant vegetation), Wildfire Mitigation - Greenbelts (of diverse vegetation including trees, shrubs, grasses and wildflowers, ideally native to the area, that act as natural buffers to create separation from wildlands), Wildfire Mitigation - Natural wildlife buffer zone that uses earthen materials and native and/or fire-resistant vegetation, Wildlife Mitigation - Post-Fire Soil Stabilization (using earthen materials and native and/or fire-resistant vegetation), **Wind Retrofit**, Wind Retrofit for One- and Two-Family Residences, etc.

Failure to Participate/Adopt a HM Plan

- Hazard Mitigation Grant Program – Disaster – Disaster Grant
- Flood Mitigation Assistance – Swift Current – Disaster Grant
- Flood Mitigation Assistance – Non-Disaster Grant
- HUD CDBG-DR – Buy-Out Funding – Disaster Funding
- Rehabilitation of High Hazard Potential Dam – Non-Disaster
- Public Assistance Categories A&B but not C-G



FEMA Community Lifelines



FEMA



pennsylvania
EMERGENCY MANAGEMENT AGENCY

Inspections/Assessments after a Disaster

Assessments are an essential part of the response and recovery process and are critical for assessing the size, scope, and severity of an event.

THE CHALLENGE

When a home is damaged as a result of a natural or man-made disaster, numerous damage assessments are performed to assess the safety of the structure, quantify the damage, and determine financial aid from the government and/or insurance company. While each assessment is conducted for a specific purpose, this puts a significant burden on the survivors and community and often times delays recovery efforts.

THE SOLUTION

Consistent standards and data sharing mechanisms are needed so various programs and agencies (e.g., state and local authorities, federal agencies, statutory authorities, non-profit organizations) can leverage the same data collected during the preliminary damage assessment. This will help avoid duplication of effort, conflicting information, and delays in bringing relief to the homeowner.



Other Discussions

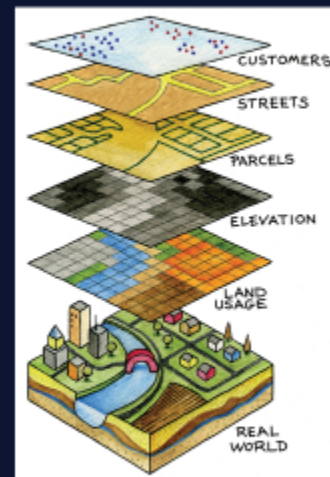
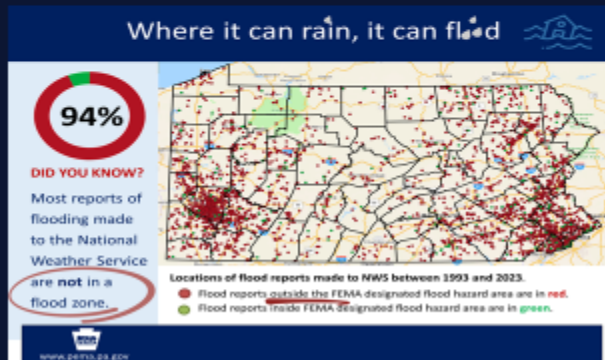
- Hazard Mitigation Definition: *sustained actions taken to reduce or eliminate long-term risk to people and property from hazards and their effects*
- Jurisdiction could be left in a precarious situation to include elected officials
- Disaster Declaration - County has 1 year to update and communities must adopt, to include Special Districts – no way that they can get this done post-disaster with the requirements of the Local FEMA Guidance as is required
- Plan is a big part of resilience efforts and assists in BCEGS ratings from ISO
- Could affect municipal bond ratings



We know what's coming....

- **Wicked Weather: Northampton County tied for most disaster in Pa. over last decade, study finds**

[Wicked weather: Northampton County tied for most disasters in Pa. over last decade, study finds - lehighvalleylive.com](http://lehighvalleylive.com)



4.4 – Rachel Hogan Carr, Nurture Nature Center Presentation



Rachel Hogan Carr
Executive Director

Kathryn Semmens
Science Director

About NNC

Nurture Nature Center, located in Easton, PA and born in 2007 in response to flooding in the Delaware Basin, is a place where community members can build knowledge about global and local environmental issues



...and also...



a center for the study of communication about weather and climate hazards - *and how to improve it*

OUR WORK

Engages science, art and community programming, as well as social science research and the development of educational models





Hazards



Research and
Community Learning
HUB
A project of the Nurture Nature Center

Resiliency



Climate



A whole community approach rooted in the Hazard Mitigation Plan: CREATE Resilience



Funded through Award NA18SEC0080005 from the Environmental Literacy Program of the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce

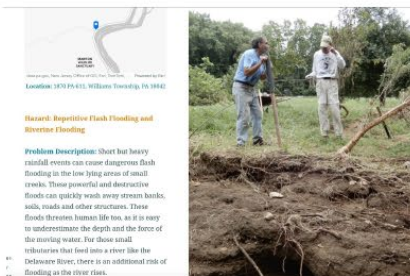
NURTURE NATURE CENTER CREATE Resilience Project



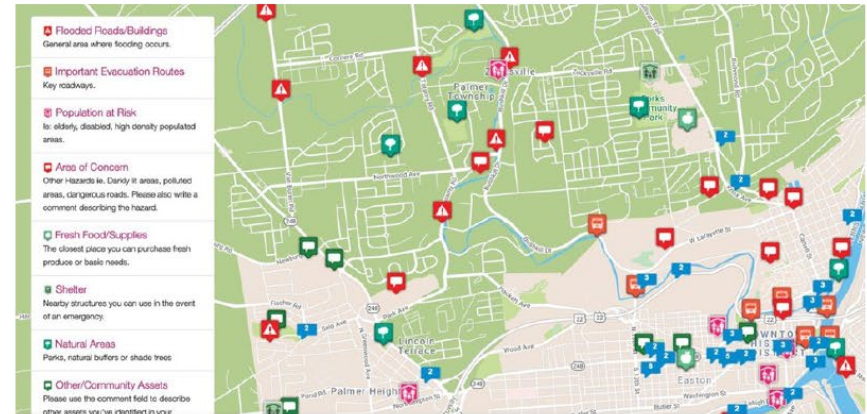
This Community Stories exhibit led to a majority of the 89 attendees feeling a connection with the hazards and community—provoking emotional and motivational responses most.

How do these stories resonate with you?	
My heart goes out to the people impacted.	95%
I want to help.	90%
This makes me worry.	85%
I have experienced something like this.	80%
Our families suffer this hazard and threat.	75%
I want to find out more about hazard and mitigation strategies.	70%
I need an emergency plan for.	65%





Community Remarks – a citizen mapping process to identify areas of concern



Emergency Preparedness Kits



CREATE Resilience Mural – Bangor, artist James Gloria

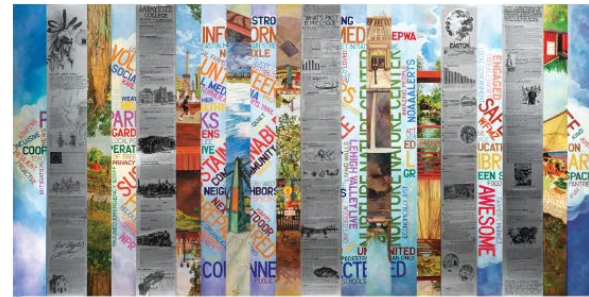


CREATE Resilience Mural – Wilson, artist Don Wilson



CREATE Resilience: Community Resilience through Education, Art, Technology and Engagement

CREATE Resilience Mural – Easton, artist Jackie Lima



CREATE Resilience: Community Resilience through Education, Art, Technology and Engagement

Engaging Municipalities in Building Resilience to Hazards



Funded through the Community Funding Program, supported by Representative Susan Wild's office, administered through NOAA under award number NA22SEC4090012

The CREATE Resilience HUB expanded the CREATE model to the entire Lehigh Valley and...

Provided Roundtable education sessions for municipal officials, school administrators and key stakeholders

Identified continued and shared education needs and opportunities for our local communities, providing resources including digital education, print templates, physical visitors' exhibit, program and webinars, to address those needs

Implemented a **youth internship** program that provides resiliency education and civic opportunities and connects youth to their local communities

Engaged science and arts-based programming to facilitate community learning, including creative asset-mapping exercises facilitated by local artists

Developed templates to assist 6 pilot municipalities in completing vulnerability assessments, asset mapping and resiliency planning

CREATE Resilience Series | join us virtually or in person
 Join us for a 5-part educational series about how to make the Lehigh Valley more resilient.
 To register for one or all sessions please, fill out this short form or email communities@nurturenature.org.
 or call 610-253-6432.
<https://forms.gle/5Kd4DmDmDmDmDmDm>

Wednesday January 25, 2023, 12-1 pm
National Flood Insurance Program (NFIP): What are your community's responsibilities?
 Did you know every community in Pennsylvania must participate in the National Flood Insurance Program (NFIP)?
 Speaker: Josh Kline, FEMA Region 3
 Proper administration and enforcement of floodplain management activities in accordance with the NFIP requirements, is a municipality's responsibility. This session will review what is required of local community and offer guidance on how to make a resilient and compliant municipality.

Wednesday February 22, 2023, 12-1 pm
How to Fund a Resilient Community
 Speakers: Thomas R. Smith Jr., Hazard Mitigation/Disaster Management, Todd Winters, Director, Northampton
 Learn about the many funding opportunities available for communities to reduce natural hazard risk, from reduction of building codes and more. Find out how you can get the most out of these opportunities.

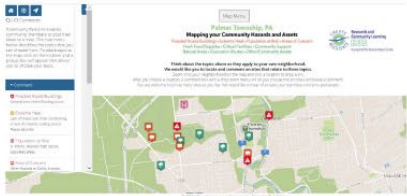
Upcoming sessions topics and dates to be date.

CLIMATE CHANGE
 The Lehigh Valley is one of the fastest warming regions in Pennsylvania.
 The impact... Climate change affects many of the other natural resources we experience, leading to increased frequency of severe weather events, more severe storms, higher risk of flooding, more sea level rise, and more variability in winter storms. Loss of property and businesses from events like hurricanes, wildfires, and droughts are just a few of the impacts. We've experienced 11 billion dollar natural disasters in the 20th century and 50 billion in the 21st. The Lehigh Valley has experienced high heat and strong storms, loss of agricultural crops and property damage, but also others to improve health and safety can have lasting impacts on us.

For more info: <https://www.epa.gov/climatechange>
 (state name.gov)



Community Remarks Map



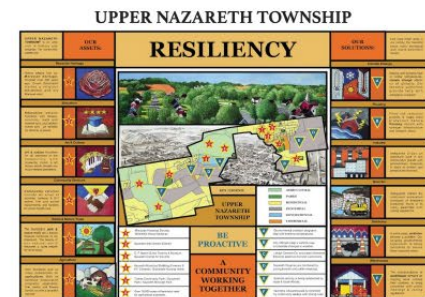
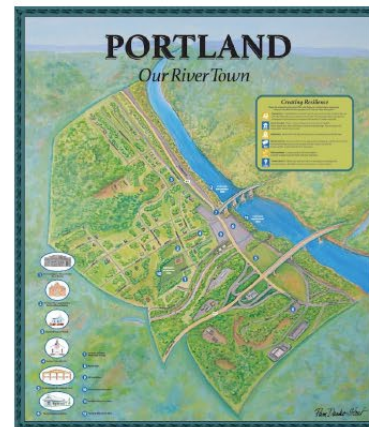
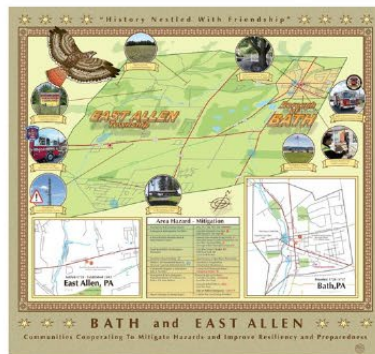
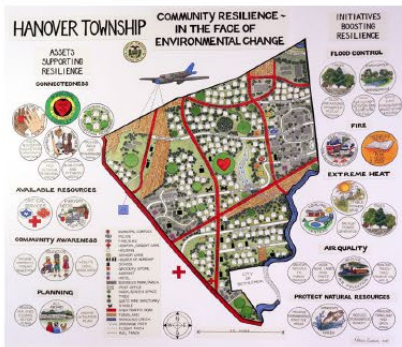
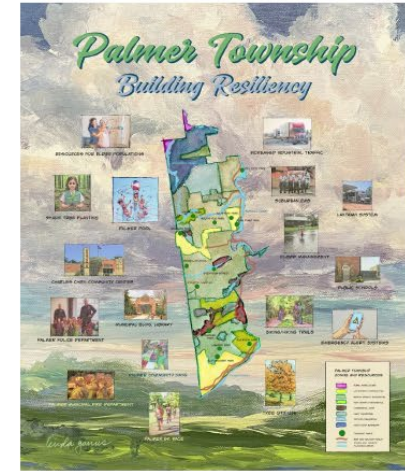
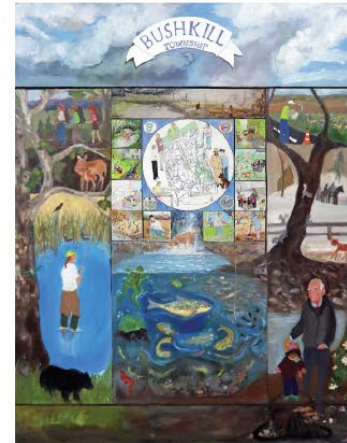
Offered a citizen science reporting platform for municipalities to use to engage their residents in observing environmental conditions, for use in informing planning templates for resiliency

Created a physical in-person visitors' exhibit at NNC that can accommodate evolving information, examples and videos about local resiliency efforts

Provided preparedness kits for municipalities to distribute to residents

Developed artist-designed maps that creatively illustrate the assets and priorities of select municipalities, as identified through forum discussions

Disseminated these planning tools to the many LV communities looking to improving planning and resiliency





It Takes the Whole Community to Act



Project Approach

- Education and outreach around Climate Action Plans in Easton & Bethlehem, PA
- Seeks to build social capital, connectedness and community resilience through a multi-pronged educational approach

Listen to our podcast!



Project Activities

- build **partnerships** with local community-based organizations to help reach and engage with diverse populations including Community Bike Works
- develop active learning programming for youth and their families in collaboration with **public libraries**
- create easy to understand, **educational strategy spotlights**



Project Activities

- coordinate **storefront educational campaigns**
- work with local artists to create interactive **public art installations**
- disseminate free **climate-friendly kits** to educate about climate change and the actions that will help with mitigation and adaptation,
- hold an annual **Youth Climate Summit** event to engage local middle and high school youth



CREATE Connections Educational Materials, Newsletter, and Podcast



Welcome

to the
NNC Climate Partners Newsletter!

A part of the CREATE Connections project
Welcome to the first edition of the Climate Partners Newsletter! This quarterly newsletter will highlight the many people, organizations, and projects working collaboratively to address climate change and its effects in the Lehigh Valley. Climate action takes all of us, and no one person or group can do it alone.

REDUCEREUSE



EPISODE

Localized with Megan Phillips

Environmental Agency Outreach with Mike and Jen

How and When to Plant with Lisa Christensen

TAKE CLIMATE ACTION



This strategy spotlight is part of a series created by the Nurture Nature Center to connect Eastern and Southern residents with the information and resources they need to take action and create change in support of their vision Climate Action Plan (CAP).

If you're ever wondered "What can I do?" these strategy spotlights are for you!

Middle and High School Students

Here's what you can do:

Talk to others and build community support for renewables

There are a variety of policies that would support cities, regions, and the state in increasing renewable energy generation. Learning about these policies and spreading the word about them you support is important in making them reality. Some examples include Community Choice Aggregation, community solar, and the Regional Greenhouse Gas Initiative.

Get more familiar with our local public transportation

Plan a fun outing by bus. Invite some friends to go for ice cream, to a new restaurant, or visit a park you have never been to before with public transportation. Research what bus route will get you there other than driving a parent to drive you.

By 2024, there will only be 12, and it's a day from 5:45 AM to 10:00 PM. Download the NNC app to view routes near you.

Sign up for a program that plants trees

There are a variety of free websites and apps that allow you to learn about planting trees. Some examples include the iStock Internet browser or the new productivity focus app - a quick internet search the best way to find the most current opportunities.

Join at a community garden or urban farm

As a volunteer, you can learn a lot from experienced gardeners and gain experience in a garden even if you can only get your hands in the dirt once or twice a week.

Explore eating a more plant-rich diet

You don't have to fully cut out meat, dairy, or eggs to eat a more climate-friendly way. Reducing meat and dairy consumption is one way people try plant-based protein sources for just one day a week.

Learn and share about single-use plastic bans

Single-use plastic bans are one strategy to reduce use of plastic bags and other items. California, Connecticut, Delaware, Hawaii, Maine, New York, Oregon, and Vermont all have bans on bags, as do many other states and cities.

Talk to someone about climate change and climate action

When we know others around us also care about climate and a healthy environment, it is much easier to join forces for change. It's also more fun and motivating to take action together!

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Sharing Spotlights



ONLINE
English
and
Spanish

TAKE CLIMATE ACTION



This strategy spotlight is part of a series created by the Nurture Nature Center to connect Eastern and Southern residents with the information and resources they need to take action and create change in support of their vision Climate Action Plan (CAP).

If you're ever wondered "What can I do?" these strategy spotlights are for you!

Middle and High School Students

Here's what you can do:

Talk to others and build community support for renewables

There are a variety of policies that would support cities, regions, and the state in increasing renewable energy generation. Learning about these policies and spreading the word about them you support is important in making them reality. Some examples include Community Choice Aggregation, community solar, and the Regional Greenhouse Gas Initiative.

Get more familiar with our local public transportation

Plan a fun outing by bus. Invite some friends to go for ice cream, to a new restaurant, or visit a park you have never been to before with public transportation. Research what bus route will get you there other than driving a parent to drive you.

By 2024, there will only be 12, and it's a day from 5:45 AM to 10:00 PM. Download the NNC app to view routes near you.

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TAKE CLIMATE ACTION

Grow your own food (home gardens, community gardens, urban farms)



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Why act?

Two-thirds of the world's population is expected to live in cities by 2050, growing food close to where people will eat it is critical to reduce greenhouse gas emissions and improve food security.

Of all of the emissions generated by producing our food, nearly one-third come from transportation. That's not to say what you work down the street for your community garden to dig up your plot can't make a difference.

Resources

Write-Garden-Remember! Vegetable Gardening Basics from Penn State Master Gardeners

How to Grow a Community Garden from the National Gardening Association

Center for Urban Policy Community Gardening Program from the National Gardening Association

Urban Farming from the National Gardening Association

Urban Farming from the National Gardening Association

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Urban Farming from the National Gardening Association

Ways to help

1. Container gardening

Try growing a small tree of herbs on your windowsill or a pot of tomatoes on your porch. A pot of cherry tomatoes can cost about 1 dollar at the grocery store, a single tomato plant can produce up to 10 pounds of the fruit in one season!

2. Volunteer at a community garden or urban farm

As a volunteer, you can learn a lot from experienced gardeners and gain experience in a garden even if you can only get your hands in the dirt once or twice a week.

3. Maintain your own plot at home or in a community garden

Planning, planting, watering, and harvesting your own garden is a time-consuming but highly rewarding process. Consider participating in a 4-week urban farm (https://www.nurturenature.org/) to create your seedling to those who do not have enough to eat.

Urban Farming from the National Gardening Association

Urban Farming from the National Gardening Association

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Youth Climate Summit 2025

- Friday April 25th (Youth only)
- Saturday April 26th (open to public)
- Global to Local Themes
- Mosaic Youth Chorus performance
- CREATE Expo
- Climate Action Planning
- Youth spotlights
- Plant-based food demo



Community Day at the 6th Annual Youth Climate Summit of the Lehigh Valley



Come see how local youth are supporting sustainability and climate action in our community and connect with other organizations and individuals working on these topics.

When: Saturday, April 26, 10:00 AM - 2:00 PM
Where: Nurture Nature Center, 1111 Northampton St., Easton, PA

What: Performance by Mosaic Youth Chorus with Science as a Spirit (Live Concert)
Student Spotlights - Short presentations by local youth on climate sustainability topics - meet local organizations and learn how you can get involved in our community!

*Take ride (with Community Bike Works) and Tree planting (with The City of Easton's Arbor Day celebration) is also on hand.

View the full agenda and link to sign up on our webpage. There is a limit on registration to ensure we can support all of our youth and community members.

Join for part or all of the day!

Join for part or all of the day!

...and also...

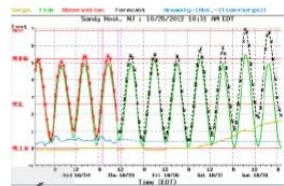
- Scientists and Policy Makers
- National Weather Service
- National Oceanic and Atmospheric Administration
- Federal Emergency Management Association



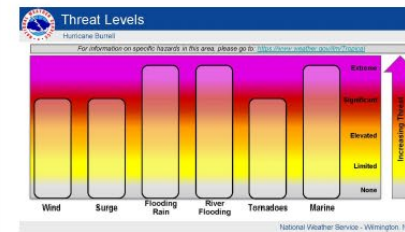
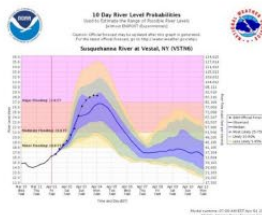
a center for the study of communication about weather and climate hazards - and how to improve it

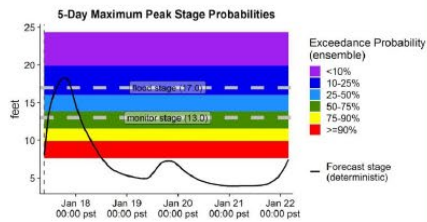
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- Professional users (emergency managers, dam managers, water resource professionals, road and transportation departments, school district administrator)
- Residential users
- From flood-prone riverine and coastal communities in Pennsylvania, New Jersey, New York, West Virginia, Maryland, Colorado, California, North Carolina, Nebraska
- ***Collectively, nearly 1000 participants across hundreds of hours of focus group discussions (~ 90 focus groups) and surveys over 13 years***

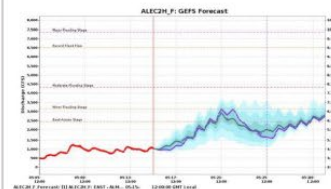
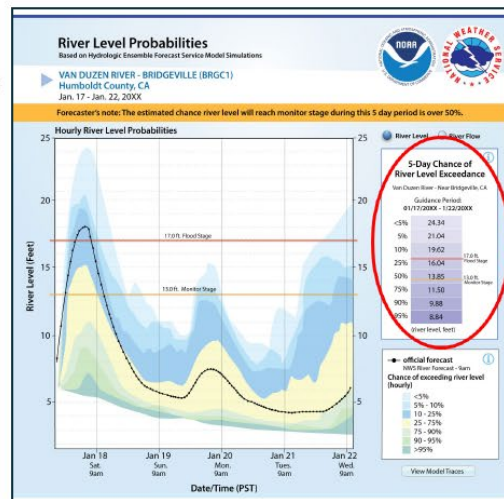


- If you are being asked to evacuate a certain location by state and local officials, please do so.
- Sandy is an extremely dangerous storm. There will be major property damage and a high probability of fatalities, but the goal is to save lives.
- If you are reluctant to evacuate, and you know someone who rode out the '62 storm on the barrier island, tell them if they would do it again.
- If you are not sure, call the emergency management office of the emergency responders who will be asking you when you make the parked phone call. Please don't think that you are being overreactive. Please call. Please rescue you or you are injured, or recover your remains if you do not survive.
- If you think the storm is overhyped and exaggerated, please see on the slide of the 1962 storm. I will tell you that the (consequence information is at the end of this briefing) and tell you all you want.
- I will listen to your concerns and comments, but I will tell you in advance, I will be asking you to evacuate. I will, so make sure you are ready right now.
- Thanks for listening.
- Gary Swanson – National Weather Service, Miami-Dade Office in Charge, MI, Haiti, and the Caribbean.

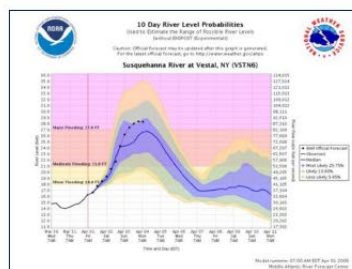
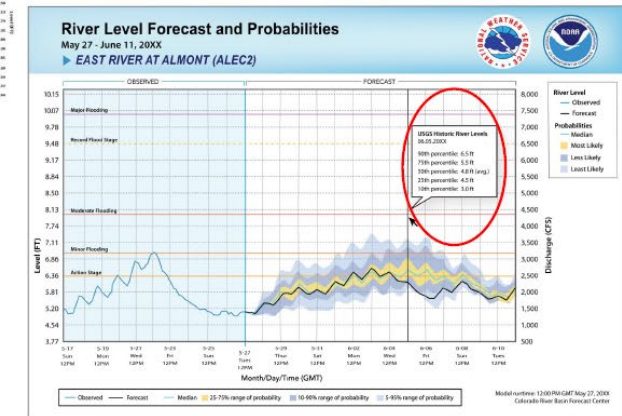




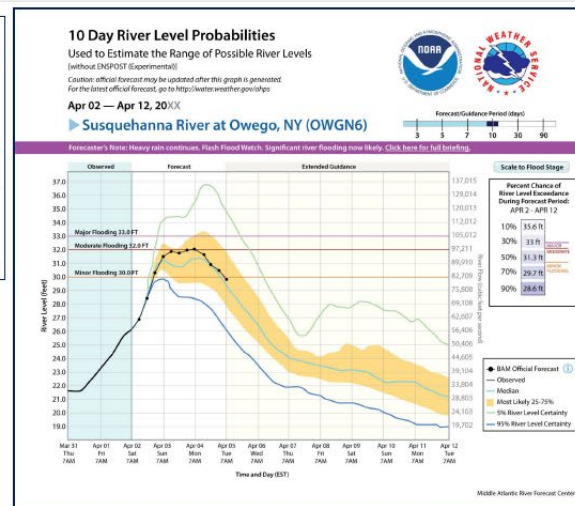
Eureka, CA Round 1 to Round 2



Gunnison, CO Round 1 to Round 2



Owego, NY Round 1 to Round 2



National Product Recommendation

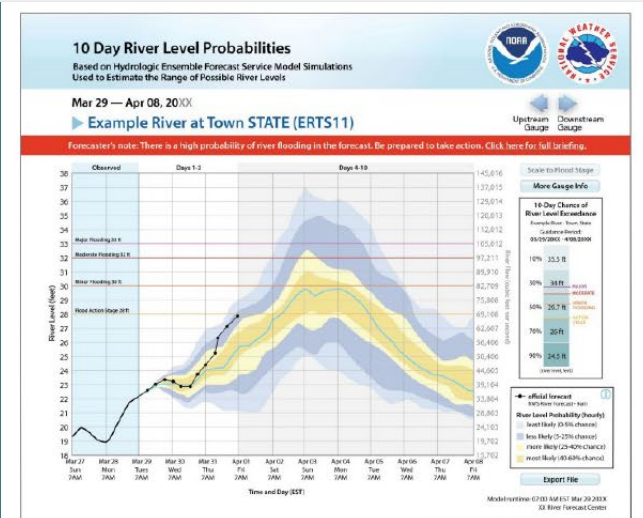
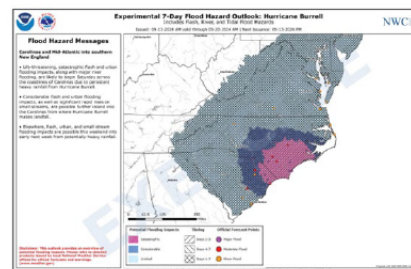


Figure 18. Promote national HEFS product tested in Round 3 online survey.

But: What happens in the most vulnerable communities?

- Canetuck, NC:
 - Small, rural community, 300 people, heavily affected in Matthew (2016) and Florence (2018) – some didn't know they were going to flood until emergency services knocked at their door giving them two hours to flee
- Lumberton, NC:
 - City of 19,000, very low-income, frequent flooding, affected by slow-rising floods that peaked days after the storm event in 2018 – millions in damage in that county
- Baltimore, MD
 - Dense, urban, low-income neighborhood with frequent flash flooding along Frederick Road neighborhood – people's homes filling, water rising quickly on roads, little notice

How do we get out? Flood Hazard Outlook



You have all this area that's not being used, that you could literally take that key or the legend, make it larger, and put it to the side, make it more definitive. **Because, you got to understand, people are in a state of, they're trying to figure out what they need to do, where I need to go...I don't have time to try to figure out what to say about this thing.**

And what if you don't even get the information?

Lack of awareness of forecast product availability

Lack of internet/cell phone capacity

Small communities not located on forecast maps

Social isolation – elderly, shut in

What do we do about it?

- Forecast information is a starting point in decision-making, which is influenced by many other factors
- **These decisions don't happen in a vacuum, but in conversation with trusted neighbors and officials**
- **In the absence of trusted, understandable information, people will still make readiness decisions, but perhaps not the ones we want**
- **Building trust, engagement and networks of information exchange on sunny days is critical - and it's not just flooding**

Persistent risks, increasing impacts

- **Flooding**
 - Not just 1955, 2004, 2005 and 2006: an evolving challenge of urban and flash flooding in extended areas
- **Air quality**
 - Grade "F" for particle pollution
- **Extreme heat events**
 - Challenging emergency response for cooling options

City of Easton Climate Action Plan



Early Warnings for All: a global view

- United Nations has set a goal for all nations to have effective early warning systems by 2027
- NNC is leading a World Meteorological Organization project, InPRHA, in support of this effort, gathering researchers internationally to improve flood early warning systems – inclusive of forecasts, observations and dissemination and communication of warnings to communities
- NNC recently published a paper on global Flood Early Warning Systems



Big questions ahead of us

- Are our communities ready for a flood bigger than they have seen before? What do we learn from Kerr County, TX and Asheville, NC?
- How can we use available tools, like flood inundation maps, to identify our vulnerable areas and plan now for how we will respond?
- How are we preparing our communities for extended heat waves, and making development decisions that prevent social isolation among elderly to reduce risk?
- How are we communicating with residents about air quality hazards and how are we regulating development to account for pollution impacts?
- How are our individual behaviors contributing to challenges and development patterns?

Image, 1903 flooding in Easton



- Opening 2027, a 75-seat immersive dome theatre that can show earth, astronomy and cultural programming
- Anticipated to be a major destination for visitors, school groups, and significant educational resource for the region
- Funded through \$3.9 million award from federal Economic Development Administration with \$4 million match from NNF, plus additional \$2 million investment from NNF in the dome theatre technology



From Earth programming...
To Sky programming...
To live cultural performances



NNC presenters will take visitors on imaginary and fact-based journeys, from the local Easton environment to the extremities of the universe – from backyard puddles to galactic-devouring black holes.

Thank you!

www.nurturenaturecenter.org

Rachel Hogan Carr

rhogan@nurturenature.org



An invitation to join us

Nurture Nature Center
MEMBERSHIP PROGRAM

Together we can Nurture Nature,
Nurture Knowledge, Nurture Community



The Nurture Nature Center is a nonprofit that advances environmental stewardship and resiliency within our communities. We do this work by bringing science to people of all ages, fostering learning through art, and encouraging community dialogue.

Your partnership enables the Nurture Nature Center to expand its educational programs and outreach, empowering communities and individuals with innovative solutions where it matters most.

General Member Levels:

- Student and SNAP card holders - \$15
- Individual - \$60
- Friend - \$100
- Supporter - \$250
- Sustainer - \$500
- Champion - \$1000

Nurture Nature Giving Circle Memberships:

- Strategic level - \$2,500
 - Impact level - \$5,000
 - Vision level - \$10,000
- Contact Kim Kmetz (kim@nurturenaturecenter.org) for more information about our Giving Circle opportunities

Corporate/Business Membership Levels:

- Corporate/Business members receive promotional acknowledgment of their support in multiple ways.
- Friend - \$100 • Supporter - \$250 • Sustainer - \$500

Membership Benefits:

- All members will be invited to a Members Only annual gathering.
- All Giving Circle members will be invited to an annual "behind the scenes" Giving Circle Reception.
- There may be additional Members Only or Member Preview events announced throughout the year.

Become a member today

<https://nurturenaturecenter.org/membership>



Learn more about NNC events and activities:
www.nurturenaturecenter.org

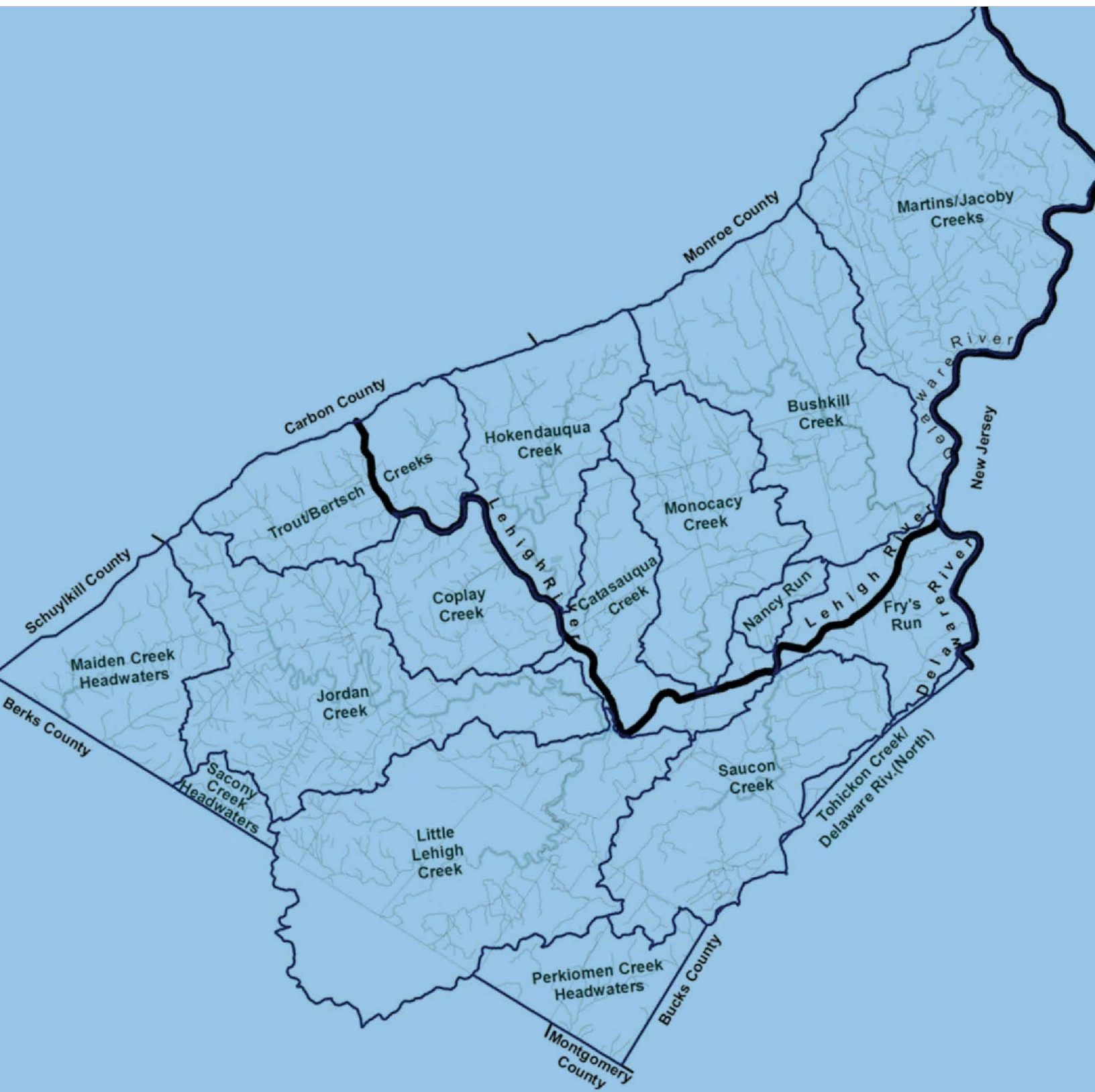
Questions? Contact Kim Kmetz, Development Director at kim@nurturenaturecenter.org

Nurture Nature Center
518 Northampton Street, Easton, PA 18042
www.nurturenaturecenter.org

5. 2026 Annual Update Documentation

6. 2027 Annual Update Documentation

7. 2028 Annual Update Documentation



2024 LEHIGH VALLEY HAZARD MITIGATION PLAN

NORTHAMPTON AND LEHIGH COUNTIES,
PENNSYLVANIA