Trumbull County Hazard Mitigation Plan

2026

Trumbull County Emergency Management Agency

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Trumbull County is dedicated to creating and maintaining a safe, secure environment for everyone in this rural Ohio county. Situated in northeast Ohio just north of Youngstown, Trumbull County is home to many small industries and businesses, as well as farms and large woodlands and parks. The Trumbull County Emergency Management Agency is dedicated to helping the county develop sustainable solutions to natural disaster threats through a progressive program of hazard mitigation and disaster preparedness.

The Trumbull County Hazard Mitigation Plan was developed through community-wide participation in the assessment of risks and hazards, creation of solution-driven mitigation strategies, and planning for implementation and sustainment of loss reduction efforts. Through several meetings and work sessions described in this plan, the county, municipalities, and townships came together to assess the current risks and identify sustainable solutions to reduce those vulnerabilities. As a part of this action plan, they considered various regional, county, and local plan documents that provide guidance to developers, regulators, and residents as they implement community growth initiatives. They considered conservation of the environment as well as economic development and community growth. A wide array of professionals and officials were included in these meetings to look not only at Trumbull County today, but to consider future developments that might affect them in the future.

This plan is intended to help in comprehensive community planning, construction of new facilities, and growth of residential areas, as well as general evolution of local governance. It discusses the impact of natural hazards on not only buildings and infrastructure, but also on the various populations of the county, especially the underserved and disabled. It discusses assistance available after significant incidents, especially for special populations. It documents the history of disasters in Trumbull County and considers the unique characteristics of the county's footprint. The plan documents past casualties and identifies mitigation strategies that will effectively protect and preserve the county's many natural and man-made assets.

The Trumbull County Hazard Mitigation Plan process followed the guidance established by the Federal Emergency Management Agency in April of 2025, and, to the degree possible, modifications that were released while the plan was being written in early 2026. The community was involved in the process as input and feedback was sought from all county stakeholders according to that guidance. This is evidenced by documentation in this plan.

As one of many ways to make Trumbull County resilient to catastrophic incidents, this plan provides a comprehensive review of mitigation needs, including its unique vulnerabilities to hazards. The mitigation strategies and planning process helped community leaders plan to implement projects and develop policies that make Trumbull County resistant to long-term devastation and facilitate rapid recovery when disasters do occur. It is intended to help give every resident in Trumbull County an opportunity to survive the disasters that strike, and enable everyone to have a chance to rebuild their lives.

1.0 THE PLANNING PROCESS

To develop a natural hazard mitigation plan that reflects Trumbull County's unique hazards, risks and vulnerabilities, the Trumbull County EMA utilized a comprehensive planning process that involved all jurisdictions, stakeholders, organizations, and agencies from across the county. Input and feedback methods were designed to meet the needs of various stakeholders, providing options for both in-person and digital participation due to personal schedules and circumstances. Efforts included collecting not only information that was relevant regarding current threats and vulnerabilities, but also making sure that the entities being asked specific questions, such as the status of current mitigation strategies, would be individuals who would provide accurate feedback. Significant attention was dedicated to planning a process that would combine efficiency and effectiveness with accuracy and appropriateness. This section describes the process utilized to develop the plan and explains how stakeholders and the community were involved and included throughout the plan development process.

1.1 PLAN DEVELOPMENT

Trumbull County EMA projected a planning period of eight to ten months for development of the new mitigation plan, plus the time it would take for state and federal review, local adoption, and grant management. They intended to involve the entire community, with a focus on leadership from political subdivisions, county leadership, and key groups and organizations in the county. With a new administration in Washington D.C., new mitigation plan standards were released in mid-April 2025, and the full effect of those changes were not yet understood, and would require additional attention.

Trumbull County's current Hazard Mitigation Plan expiration date is March 8, 2026; it was anticipated that there could be a gap in plan coverage due to fluctuating mitigation standards and grant changes that could affect payments to the county. The EMA Director and Contractor moved forward to schedule meetings and set planning specifics in place once new standards were available and grant documents were signed and in force.

1.1.1 Initial Project Planning

Trumbull County EMA was awarded a Building Resilient Infrastructure in Communities (BRIC) Grant Program grant in late 2024 to update this plan as part of the required five-year approval process. The application identified the jurisdictions in Trumbull County that would participate in the planning process. Most officials were familiar with the mitigation plan process because they were involved in the development of the current plan and expressed interest in participating in this plan.

Upon award of the grant, Trumbull County EMA completed the approved procurement process to identify a contractor to manage the plan update process. The Trumbull County EMA Director met with Ohio EMA Mitigation Branch mitigation planner to review the requirements for plan development, and submitted the required documentation to the State of Ohio EMA Mitigation Branch.

Resource Solutions Associates LLC (RSA) was chosen as the contractor for the project. On January 28, 2025 the county signed a contract with RSA to coordinate the project, work with jurisdictions and stakeholders to collect information, and develop the new plan. The Trumbull County EMA Director discussed the work plan to update the current mitigation plan with RSA, and they established intended timelines.

The EMA Director and the Contractor developed a project timeline and discussed specific methods and processes for the project that would result in the best outcomes for Trumbull County. Priorities in planning included the following points:

- The first meeting would involve the EMA Director and other key county employees who are part of the community development group, as well as other emergency management officials and workers. They would be the "champions" of the project.
- Meetings would be held over two days, but repeated at different times of the day, to make it easier for a wide array of county residents to attend.
- Stakeholder meetings would be held in person, but makeup meetings would be done through digital meetings or phone calls.
- Written surveys would supplement the information provided verbally, and would allow for every participant to have a voice whether they spoke at a meeting or not.
- Invitations would be sent by email by the EMA Director.
- Surveys would be sent by email and returned in the same way to allow stakeholders who could not attend in person to participate in the process.
- The Contractor would speak directly to various stakeholders when creating parts of the plan to clarify, expand upon, or provide additional information about hazards, vulnerabilities, and strategies.
- Demographic and descriptive information would be gathered by research and reviewed by the EMA Director when the new plan was released.
- Additional organizations and individuals would be involved this time, and the topics covered would consider resiliency and sustainability issues.

The Contractor reviewed the current hazard mitigation plan and discussed it with the EMA Director. His wishes were to create a more personalized, less lengthy document that was user-friendly and easy for the typical stakeholder to understand. The county intended to get a document that was usable and practical, and took into consideration the unique needs of the various jurisdictions and regions of the county. High hazard dams, flood zones, and storm damages were especially important to the EMA Director, as was helping cities and villages find ways to reduce damages using the resources at hand to do so. With six cities and five villages, three of which are very small, resources at hand are a key factor in implementation.

The EMA Director expressed the need to make meeting time beneficial and efficient. The Contractor agreed to create an agenda that would allow for any input stakeholders wanted to provide, yet would not extend beyond a three-hour block of time, in recognition of schedules and workload concerns.

The EMA Director and Contractor developed the list of individuals and organizations that would serve as the Core Committee. This group worked with the EMA Director to encourage attendance, and to relay invitations to the meetings to other workers within their jurisdiction, organization, or agency.

The Core Committee participants are listed in Table 1-1.

Table 1-1 Mitigation Project Core Committee

Last Name	First Name	Role	Organization
Anthony	Edward	Executive Board Chairman	Trumbull County Executive Committee
Coggins	Nic	Assistant Director	Trumbull County Planning Commission
Cvetkovich	Andrew	Environmental Coordinator	Trumbull County Planning Commission
Green	Julie	Director	Trumbull County Planning Commission
Hickey	John	EMA Director	Trumbull County EMA
Stelk	Randy	EM Specialist	Trumbull County EMA
Yoder	Martha	Auditor	Trumbull County

1.1.2 Planning Team and Stakeholder Meetings

The first meeting was held with the EMA staff and Core Committee on September 17, 2025 to discuss an overview of the planning process. The Contractor reviewed the current mitigation plan standards and the process for collecting information and completing research. They reviewed the current hazard mitigation plan, discussed changes and additional components the EMA Director wanted to be included, and discussed the latest federal plan requirements. The intention was set to submit a new plan before or near the expiration date for the current plan, March 8, 2026.

Stakeholder meetings were set for November 5 and 6, 2025, and these were advertised as "open to the public". Sessions were conducted in the morning, afternoon, and evening for stakeholder convenience. The EMA Director reserved Kent State University's conference hall in Champion Townships because this was convenient to all areas of the county, provided adequate parking and meeting space, and audio-visual technology was available. The EMA Director and Contractor developed a flyer and email invitation for the meetings, and the EMA Director distributed it to the county, municipalities, and other organizations with an interest in mitigation. Core Committee members were asked to help promote the meetings.

Stakeholder meetings were then held three times on November 5 and twice on November 6. All meetings were similar in presentation and handouts. Conversations varied between meetings based upon discussions and questions. The Contractor used slides to guide the presentation, and distributed survey forms to be completed in an instructor-led process during the meetings. This process allowed for any questions stakeholders may have to be answered in an open forum where everyone heard the answers before they completed the survey forms.

All meetings lasted two and a half hours. There were participants who asked questions individually both during and after the meeting was dismissed, and the Contractor and EMA Director welcomed those discussions. There were only two attendees who did not want to fill

out survey forms, but they engaged in discussions. All relevant information was included in the plan.

The slides and survey forms used are included in the plan as 05 Meeting Materials.

Topics discussed at all five meetings included the purpose of hazard mitigation, the planning process, stakeholder identification, hazard identification, damage identification and descriptions, vulnerability assessment, current strategy status, new strategy development, and the adoption and implementation process for the new plan. Participants were always reminded that all meetings were open to the public, and they were welcome to attend as many meetings as they wished to attend.

Participants were not only asked to identify hazards, damages, and strategies, but were also asked to prioritize them. They were told that any hazard was up for discussion, and did not have to be a naturally-occurring meteorological threat like storms or tornadoes. Mass shootings and contagious disease, for example, were eligible for inclusion. Participants were given information about using frequency, severity, magnitude, impact, and recovery time as considerations in prioritization. They were asked to consider damages that were the responsibility of government entities to address, as well as consider damages to individual public and private property. Loss of access, interruption of business or operations, and loss of income were explained as part of damages.

Discussion about infrequent threats like earthquake or disease outbreaks as compared to those like severe storms that happen regularly ensued, and participants were assisted with their questions about how to prioritize those hazards and damages. They were advised that frequency is only one of the considered factors, and that severity of damages was also important, using a serious earthquake as an example.

Some participants shared information about events that were remarkable for one reason or another. Some of the remarkable factors involved an extended event time wise, having an extreme extent of damages, the consequence of deaths or injuries, damages to critical infrastructure, or long recovery period. Some of the cited incidents were part of a declared emergency, but others were exceptional incidents that took place on a small scale, affecting only the local community.

Discussion covered issues of social vulnerability and community resilience, and the local factors that make Trumbull County unique. Participants, in general, felt that the county had low social vulnerability and high community resilience, which is not consistent with the NRI results. NRI indicated a higher than believed social vulnerability. This was attributed to loss of major employers, closure of a hospital, and other incidents that look worse statistically than they are in impact. The Contractor noted information presented to support those conclusions, and used that information in developing the plan.

Stakeholders were also provided information about strategies based upon cost, benefit, available resources, and feasibility of the action. They were encouraged to provide feedback that addressed feasibility, practicality, and cost. Local resource support was discussed because Trumbull County has, for example, a robust fire service system, but they are concerned about maintaining that resource. They were advised that those kinds of strategies could be included.

Forty-nine people attended these meetings and represented various jurisdictions and organizations in doing so. Jurisdictions represented included Trumbull County, City of Cortland, City of Girard, Village of Newton Falls, City of Niles, Village of West Farmington, and Bristol, Fowler, Howland, Hubbard, Liberty, Mecca, Newton, Southington, Vienna, Warren, and Weathersfield Townships. The list of people who attended are listed in the following table.

The EMA Director engaged conversation with others in the community who were unable to attend. They were strongly encouraged to fill out survey forms, attend the upcoming review meeting in February, and to participate in the public review process. Offers to meet individually were extended, but not scheduled.

The Contractor spent most of December, January, and February doing research and writing the draft plan. Section 1.4 Research Methodology describes the resources that were used to research information. There were several conversations with key officials during this time, and those are described in the section headed “Individual Discussions and Meetings.”

Final plan review meetings were held on February 24, 2026, in the afternoon and again in the evening for stakeholder convenience and to encourage robust attendance. The EMA Director invited all jurisdictions and key officials to this meeting, with special emphasis upon those jurisdictions who did not attend the November meetings. These two meetings were open to the public. Adjacent county EMA Directors were invited.

The EMA Director provided a printed copy of the plan for the group to examine, and the link where the plan was posted online was shared. He explained that the plan could be read online, or a printed version of the plan was available at the EMA Office during regular business hours. If anyone needed assistance to see the document, the EMA staff would help. It was emphasized that input was encouraged, and comments could be submitted by email for documentation purposes. All comments would be considered and discussed, and the EMA Director would determine how to include the comments provided.

The Contractor gave a section-by-section review of what was in the plan, and what parts of each section were especially relevant to jurisdictions or parties. A handout that described the plan organization and identified how to locate those sections of particular interest. A guide to the maps and tables in the plan was provided to each attendee. Those handouts are included in Section 05 Meeting Materials.

The Contractor explained the strategy section in detail, outlining the types of strategies, the responsible parties, and the prioritization process. Review by the State of Ohio and FEMA

Region V was outlined. She also detailed the adoption process for the municipalities and Trumbull County, and discussed with townships their inclusion in the county's adoption. She addressed time periods allowed for adoption, and the benefits of adopting the plan.

Table 1-2: Stakeholder Workshop Participants

Last Name	First Name	Position	Organization
Dray	Christopher	Superintendent	Bristol Local School District
Petrosky	Deidre	Mayor	City of Cortland
Maynonel	Brian	Chief of Operations	City of Girard
Petruzzi	James	Fire Chief	City of Girard
Scoville	Michael	Superintendent	City of Girard
Rentz	Shawn	Safety Service Director	City of Hubbard
Stevens	John	Fire Chief	City of Niles
Nussel	Ken	Fire Chief	City of Warren
Lucarelli	Frank	Director of Utilities	City of Warren
Welke	Mike	Director of Water Pollution Control	City of Warren
Colbert	Eddie	Safety Services Director	City of Warren
Makosky	Paul	Director of Planning and Engineering	City of Warren
Taylor	Grant	Safety Prog. Manager	Eastgate Regional Council of Govt.
Baldwin	Ed	Superintendent	Joseph Badger Local Schools
Jamison	Jon	Superintendent of Purification	Meander Water and Mineral Ridge Dam
Flickinger	Chet	EM Supervisor	Mercy Health Hospitals
Cutshall	Matt	Mgr. Env. Risk & Liability	Sheeley, Inc.
Higgins	Peggy	Trauma Program Mgr.	St. Joseph Warren Hospital
Haniford	Tim	Chief Auditor	TC Auditor
Yoder	Martha	Auditor	TC Auditor
Kriebel	Kris	PIO	TC Combined Health Department
Migliozzi	Frank	Commissioner	TC Combined Health Department
Hickey	John	EMA Director	TC EMA
Stelk	Randy	EM Specialist	TC EMA
Kuriatanyk	Kevin	Chief	TC Hazardous Materials Response
Cvetkovich	Andrew	Env. Coordinator	TC Planning Commission
Green	Julie	Director	TC Planning Commission
Manusakis	Danette	Executive Assistant	TC Planning Commission
Moran	Emily	Grants Coordinator	TC Planning Commission
Steines	Zak		TC Planning Commission
Vaughn	Kimberly	Plats & Zoning Coordinator	TC Planning Commission
McDorman	Dale	Chief Deputy	TC Sheriff's Office
Wilson	Michael G.	Sheriff	TC Sheriff's Office
Ragozzino	Agostino	Treasurer	TC Treasurer
Young	Samuel	Chief Deputy Treasurer	TC Treasurer
Craiger	Steve	Fire Chief	Township of Bristol
Seeman	Doug	Trustee	Township of Bristol
Farrar	Mark	Trustee	Township of Brookfield
Masirovits	Dave	Fire Chief	Township of Brookfield

Dale	John	Trustee	Township of Farmington
Metzendorf	Todd	Fire Chief	Township of Fowler
Kohler	Eric	Trustee	Township of Greene
Proper	Robert	Trustee	Township of Greene
Wakefield	Jim	Trustee	Township of Greene
Wilhelm	Phil	Trustee	Township of Hartford
Dillon	Frank	Trustee	Township of Howland
Pace	Ray	Fire Chief	Township of Howland
Pantalone	James	Administrator	Township of Howland
Baker	Monica	Trustee	Township of Hubbard
Lucarell	Phil	Captain	Township of Liberty Liberty Fire Department
Theobald	Doug	Chief	Township of Liberty Liberty Fire Department
Domes	Thomas	Fire Chief	Township of Mecca
Hall	Mike	Road Department	Township of Newton
Montgomery	Susan	Fiscal Officer	Township of Newton
Nemet	John	Trustee	Township of Newton
Speaker	Cindy	Trustee	Township of Southington
Vanek	Chuck	Trustee	Township of Southington
Pegg	Phil	Trustee	Township of Vienna
Anthony	Edward	Trustee	Township of Warren
Harrell	Ben	Police Chief	Township of Warren
King	David	Supervisor	Township of Warren
Miner	Jason	Administrator	Township of Warren
Natali	Joe	Fire Chief	Township of Warren
Yoho	Ryan	Trustee	Township of Warren
Gerberry	Steven	Trustee	Township of Weathersfield
Whittaker	Ed	Trustee	Township of Weathersfield
Eastham	Travis	Fire Chief	Village of Lordstown
Cunningham	Amy	Office Manager	Village of McDonald
Bauman	Rob	Representative Assistant Principal	Village of Newton Falls NF Exempted Village School Dist.
Johannsen	Andreas	Representative Superintendent	Village of Newton Falls NF Exempted Village School Dist.
Bennett	Ruth E.	Mayor	Village of Orangeville
Gladd	Dan	Police Chief	Village of West Farmington
Masirovits	David	Fire Chief	Village of Yankee Lake
Grossman	David	Village Fiscal Officer	Village of Yankee Lake
Individual Meetings, Conference Calls, E-mails, and Messages			
Coggins	Nic	Assistant Director	TC Planning Commission
Jamison	Jon	Superintendent of Purification	Meander Water – Mineral Ridge Dam
Massuri	Jacklyn	Property Owner	Pleasant Valley Dam
Meek	Dennis	Engineer	City of Girard and Upper Girard Lake Dam

Worksheets and Surveys

Because of the extensive number of jurisdictions in Trumbull County – twenty-four townships and eleven municipalities – and the desire to obtain information from all of them, the decision

was made to use worksheets throughout the process. For this reason, meetings were conducted in an instructor-led discussion format using a slide presentation and worksheets.

This methodology would also allow for participation by jurisdictions that were unable to attend meetings by sending the slides for them to review, and the worksheets for them to complete. This would allow for as consistent as possible dissemination of facts and questions, and give the Contractor a consistent, trackable way to tally the input.

Worksheets generally asked participants to make choices to include or not include a particular hazard or damage, and then to rank them according to importance.

Each worksheet asked participants to supply their name, email, and jurisdiction for follow up by the EMA Director or Contractor if there were questions. This allowed the Contractor to tally responses by jurisdiction, including by township or municipality, for unique results from the various areas of the county.

An initial hazard ranking was established when answers were tabulated. Land subsidence, erosion, landslide, and invasive species ranked unexplainably high, and storms, tornadoes and utility failure were ranked inexplicably low. Recent local activity regarding removal of low head dams and sedimentation were seen as a possible contributing factor, as well as episodes of algal bloom in some large bodies of water. These conclusions, while clearly selected on the worksheets, were not accurate. Therefore, adjustments were made to the final ranking of hazards by the EMA Director based upon frequency of occurrence, extent of damages, EMA and local emergency services responses, documented damages, and severity of the impact of each hazard in the opinion of the EMA.

The EMA Director increased the ranking for severe storms of all types, flooding, and utility outages based upon his long-term knowledge of the county and its responses to various hazard impacts. He reduced the ranking of landslide, erosion, and invasive species based upon the same factors. There is very little history of these hazards in the county, and the conditions for new heavy impact do not exist. Considerations for these rank adjustments involved looking at floodplain areas, areas of past damages, and typical storm pathways in past incidents. The Contractor agreed that these adjustments were logical and supported by statistical data, and were reasonable changes to implement.

Out-of-County Participation

Emergency managers from counties adjacent to and outside Trumbull County were invited to the workshops, and they were included in the announcement asking for review and comments on the final posted plan. While external organizations did not attend workshops, they were all given an opportunity to comment on the plan. They are listed in Table 1-3.

Table 1-3: Adjacent EMA Organizations

Person	Position	Organization	Participation
Bob Zentbauer	Regional Supervisor	Ohio EMA	No
Mike Fitchet	EMA Director	Ashtabula County EMA	No
Robin Lees	EMA Director	Mahoning County EMA	No
Ryan Shackleford	EMA Director	Portage County EMA	No
Blake Rogers	Planner	Geauga County EMA	Yes
Austin Rice	Director	Geauga County EMA	Yes
John Nicklin	Deputy Director	Mercer Co. PA EMA	No
Allen Clark	EMA Coordinator	Crawford Co. PA EMA	No

Surveys for Strategy Information

The EMA staff and Contractor felt that the mayors, administrators, and engineering staff of the jurisdictions would know what current mitigation strategies were being implemented, which were delayed, and those that had been completed more accurately than the large group of stakeholders. Since the strategies are developed and assigned to the municipality and county positions, the decision to ask those individuals for assessments was reasonable. Therefore, current strategy worksheets were provided for each jurisdiction to assess the status of each strategy in the 2021 plan. Each jurisdiction's contact person would then involve all appropriate entities in assessing the status of the current strategies for their jurisdiction, based upon their role and responsibility to implement the actions throughout the last five years.

The Contractor prepared survey forms for each jurisdiction using the strategies they had selected in the 2021 Hazard Mitigation Plan. Each goal was listed on the form, and the strategies associated with that goal were listed underneath the goal. Those who completed the form were asked to indicate the status of every strategy by marking one of the following:

- *Completed* indicates that the strategy was implemented, and does *not* need to be continued in the 2025 HMP.
- *Continue* indicates that the strategy is not completed, although it may have been started, but it is necessary to continue this strategy in the 2025 HMP.
- *Delete* indicates that the strategy is no longer a viable opportunity, or the impact the strategy intended to address is no longer valid.

Respondents were encouraged to add notes, explanations, and other relevant comments to the survey. They were given two full weeks to complete the forms, and were asked to email the forms to the Trumbull County EMA Director.

Completed surveys were received from all municipalities and several additional key county entities. Answers were complete, notes were added in some cases, and the EMA Director endorsed the feedback.

These surveys are included in this plan as section 10 2021 Strategy Status.

Individual Meetings and Discussions

Some hazards were discussed with specific individuals because the input needed is well defined and detailed, and does not lend itself to public meetings. This included the high hazard dam threat in Trumbull County from three high-hazard dams. Two of the dams are publicly owned and three are privately owned. The owner/operators are not necessarily residents or workers in Trumbull County, so the decision was made to include dam failure in the mitigation workshops, but to meet with the dam owners individually for in-depth discussion of their structure.

Mosquito Lake Dam is owned by the United States Army Corps of Engineers. Past contact with USACE regarding emergency action plans for dams has not been fruitful, and the USACE office in Huntington has refused to share EAPs multiple times, stating that the EAP is confidential information and not shared with the public. They have directed the Contractor to the National Inventory of Dams website, stating that any public information that is available is posted there.

In the case of Mosquito Creek Dam, there is some inundation information posted; however, there is no information about timing after breach when specific areas would be affected. Because the dam is owned by USACE and it not eligible for HHDGP funding, the information listed is limited to what is available on the National Inventory of Dams.

The Contractor worked with Meader Water personnel, City of Girard engineering personnel, and a private landowner working with Pleasant Valley Lake Dam to gather specific information about those dams. A representative of the City of Girard had spoken about Coalburg Dam at one of the meetings. Copies of emergency actions plans, when available, were provided. An extensive number of documents were made available about improvements being made to the dams at Mineral Ridge and Upper Girard Lake.

Trumbull County has five high-hazard dams, and Table 1-4 below lists the facility contacts.

Table 1-4 High Hazard Dam Owner Participants

Dam	Contact Person	Organization	Contact Methods	EAP on File
Coalburg Dam	Dennis Watkins	Trumbull Co. Prosecutor	Meetings	No
Mosquito Creek Dam	None	United States Army Corps of Engineers	None	NID Information
Mineral Ridge Dam	Jon Jamison	Meander Water	Emails	Yes
Pleasant Valley Lake Dam	Jacklyn Massuri	Property Owner	Emails, Phone calls	No
Upper Girard Lake Dam	Dennis Meek	City of Girard	Emails; Phone calls	No

Comprehensive Schedule of Meetings and Workshops

The following table shows an overall summary of the workshop and meeting activity conducted to update the Trumbull County Hazard Mitigation Plan. This does not include research,

tabulation of worksheets and meeting notes, or other activities that were used to develop the plan.

Table 1-5: Mitigation Plan Project Activity Schedule

Date	Location	Purpose/Audience
9/17/25	Trumbull County EMA Offices	Met with Core Committee to plan project
11/5/25	Kent State University in Champion Township	Mitigation Planning Meeting #2 @ 10:00 a.m. Open to the public
11/5/25	Kent State University in Champion Township	Mitigation Planning Meeting #3 @ 1:00 p.m. Open to the public
11/5/25	Kent State University in Champion Township	Mitigation Planning Meeting #4 @ 6:00 p.m. Open to the public
11/5/25	Kent State University in Champion Township	Mitigation Planning Meeting #5 @ 6:00 p.m. Open to the public
11/6/25	Kent State University in Champion Township	Mitigation Planning Meeting #6 @ 9:00 a.m. Open to the public
11/6/25	Kent State University in Champion Township	Mitigation Meeting #7 @ 1:00 p.m. Open to the public
6/2/2025 through 3/1/2026	Several emails and phone calls regarding HH dams in Trumbull County	Various Parties
3/10/26	Trumbull County EMA Warren OH	Mitigation Plan Review Meeting #8 @ 3:00 Open to the public
3/10/26	*Trumbull County EMA Warren OH*	Mitigation Plan Review Meeting #9 @ 6:00 Open to the public
3/12/26	*Digital and Physical Access Trumbull County EMA*	*Start of Public Review of Trumbull Co. HMP 2026*
3/24/2026	*Trumbull Co. EMA*	*Meeting with Yankee Lake Village*
3/26/26	*n/a*	*End Public Review of Trumbull County HMP 2025*
3/27/2026	*Trumbull County EMA*	*Meeting with City of Warren*
3/31/2026	*Trumbull County EMA*	*Meeting with Village of Orangeville*
4/3/2026	*Trumbull County EMA*	*Meeting with Village of McDonald*
5/5/26	*Digital Submission*	*Submit Draft Plan to Ohio EMA via MIP*
April 2026	*Local Adoption*	*Adoption Process Began with Jurisdictions*
June 2026	*Local Adoption*	*Adoption Process Completed*
TBD	*Letter*	*Final Approval of Plan by FEMA/OEMA (anticipated)*

1.2 STAKEHOLDER INVOLVEMENT

With eleven municipalities and twenty-four townships, a wide array of stakeholders was identified as having a role in the mitigation planning process. The Hazard Mitigation Planning Team included broad participation from these groups.

From the beginning of the planning process, the EMA attempted to include the whole community in planning activities. The input and opinions of the public were viewed as critical to the process, as were the opinions of elected and appointed officials and key community leaders. A broad, inclusive list of planning team members was developed with the intention of

including any, every, and all agencies with an interest or role in emergency management, and thus in disaster mitigation. As the process unfolded and planning began, an inclusive planning approach was used, and even more people became part of the process. Additional descriptions of the stakeholder involvement are found on pages 1-3 through 1-10. A list of workshop participants is found in Table 1-2. Others are found in Tables 1-3, 1-4 and 1-6.

Invitations were extended to the following officials, leaders, and stakeholders from Trumbull County and adjacent jurisdictions:

- Incorporated jurisdictions;
- Township trustees and fiscal clerks;
- Specialized disciplines, including fire service, law enforcement, engineering, utilities, public health, healthcare, hospitals, business and industry, nonprofits, social agencies, and stakeholders as part of the public;
- Specific appointed officials, including the county floodplain manager, GIS mapping specialist, conservation specialists, regional planning, building regulation and zoning officials, community and economic development officials, fire chiefs, police chiefs, public health commissioner, agricultural extension agents;
- Key elected officials such as the county auditor, treasurer, engineer, and commissioners;
- Emergency management officials from the adjacent counties;
- Non-profit agencies including American Red Cross and United Way as well as community action groups;
- Special interest groups such as watershed coalitions, conservancy districts, federal partners, state agencies with facilities in the county, and others with a special interest in the well-being of Trumbull County;
- Residents, businesses, and stakeholders from the public.

1.2.1 Jurisdiction Participation

All incorporated jurisdictions in Trumbull County chose to participate in the countywide hazard mitigation plan.

Trumbull County sent key officials to the meetings, and the County Commissioners were also invited to participate in the Core Planning Committee. The elected and appointed county officials represented the residents. The county government sometimes handles services including ditch maintenance, plowing and repair of main and secondary roadways, bridge and culvert maintenance, land use planning, community development, emergency management, and many other humanitarian and financial functions on behalf of the townships. Many daily governance functions are handled by the county because townships must, by law, meet only annually.

Participating jurisdictions included the six cities, five villages, the twenty-four townships and the county. They sent key elected and appointed officials, as well as employees like road superintendents, fire chiefs, and police chiefs to the meetings.

All township trustees and fiscal officers were invited to participate. Trumbull County elected and appointed officials participated on behalf of all areas, but participation was solicited through both county officials and the township government to reach those community members who live in the rural areas. This methodology assured that both municipal and rural interests would be included in the mitigation plan.

In Ohio, every county is divided into sub-sections called "townships." Townships are small sections of land, sometimes as small as six square miles. Incorporated jurisdictions (villages) lie within the townships and supersede the township authority as governance for those parcels is absorbed by the municipality. In general, the remaining land outside the municipalities is considered a "township," and the elected officials' duties are primarily road upkeep and cemetery maintenance. Census areas, neighborhoods, homeowner association districts, and postal zones may exist as part of the townships, but those have no governance structure, and are generally included as township entities.

Townships originally, in the 1800's and before, provided a means to identify plats of land and to create the verbiage in documents like deeds. In Ohio, townships may choose to be zoned, but other land use planning is done by the county level of government. Townships can provide very basic services such as plowing snow from tertiary roads and maintaining cemeteries. Townships do not have the same full authorities as municipalities and counties. Townships cannot levy taxes and must participate in most programs as an unincorporated area of the county, through the county government officials.

Consistent with other types of whole community planning, these townships do not adopt the mitigation plan individually, and for the purposes of hazard mitigation, work through the Trumbull County Commissioners as unincorporated areas.

Townships do not have the structural sophistication of villages, so there are few committees or commissions associated with townships. The direct connection with leaders, as mentioned, enables a solid working relationship and inclusion in strategic and development plans and activities in these townships. Some townships have adopted regulations, such as zoning, but others have not. Most townships are primarily agricultural in nature. In many cases, the Trumbull County Commissioners act on behalf of the townships.

The officials identified in Table 1-6 served as the primary contacts for the jurisdictions. These individuals assisted by inviting additional relevant individuals to the meetings. All communication throughout the planning process was shared with this group of officials and employees. They were asked for their own input at sessions, and asked to notify others within their jurisdiction of meetings and work sessions and invite any other residents or officials to participate in the planning meetings. They provided organizational skills to complete current strategy assessments, review of plan sections, and adoption assistance between late 2025 and mid-March 2026.

Table 1-6: Jurisdictional Leadership Participants

Jurisdiction	Position/Title	Representative
Trumbull	President, County Commissioners	Rick Hernandez
	Planning Commission Assistant Director	Nic Coggins
	Planning Commission Director	Julie Green
	EMA Director	John Hickey
	EMA Specialist.	Randy Stelk
	Auditor	Martha Yoder
	Health Commissioner	
City of Cortland	Mayor	Diedra Petrosky
City of Girard	Service/Safety Director	Mark Zuppo
City of Hubbard	Service Director Safety Director	Raymond Farcas Shawn Rentz
Village of Newton Falls	Manager	Jamie Vernaccini
City of Niles	Service Director Safety Director	Anthony Flarey George Kaniclides
City of Warren	Safety/Service Director	Eddie Colbert
Village of Lordstown	Mayor	Jackie Woodward
Village of McDonald	Administrator	Thomas Domitrovich
Village of Orangeville	Mayor	Ruth Bennett
Village of West Farmington	Mayor	Shirley McIntosh
Village of Yankee Lake	Mayor	John Jurko
Township Representatives	Bazetta Township	Stacy Marling
	Bloomfield Township	Fannie Miller
	Braceville Township	Tom Shay
	Bristol Township	Nicole Klingeman
	Brookfield Township	Dena McMullin
	Champion Township	Laurie-Jo Miller
	Farmington Township	Angelo Bizarro
	Fowler Township	Cathy Carr
	Green Township	Erin Wakefield
	Gustavus Township	Laura Hall
	Hartford Township	Robin Snyder
	Howland Township	James Pantalone
	Hubbard Township	Monica Baker
	Johnston Township	Sharon Carlson
	Kinman Township	Margaret Crupi
	Liberty Township	Martha Weirick
	Mecca Township	Beverly Lytle
	Mesopotamia Township	Maureen Foster
	Newton Township	John Nemet
	Southington Township	Cindy Speaker
	Vernon Township	Barbara Peterson
	Vienna Township	Phil Pegg

Jurisdiction	Position/Title	Representative
	Warren Township	Christopher Haught
	Weathersfield Township	Steven Gerberry
Public Schools K-12	Superintendent Joseph Badger Local Schools	Ed Baldwin
	Superintendent Newton Falls School District	Andreas Johansson
Social Services	Eastgate Regional Council of Governments	Grant Taylor
Healthcare	St. Joseph Warren Hospital	Peggy Higgins

Most municipalities and county departments participated through attendance at face-to-face meetings, but others met with the EMA director individually due to schedule conflicts. Some communities and do not have the advantage of available employees to attend meetings. They were able to meet and discuss all the topics that were covered at the November meetings, and were provided with surveys and worksheets to complete, which they did. They discussed the plan, their considerations, and questions with the EMA Director. They returned all written surveys they were asked to complete.

The following table lists the dates on which each jurisdiction participated in the phases of a mitigation plan. There was flexibility and meetings were able to facilitate full participation despite scheduling challenges.

Table 1-7: Jurisdiction Participation Summary

Full Participation	Jurisdiction	A. Planning Process	B. HIRA Discussion	C. Strategy Development	D. Plan Maintenance	E. Plan Update Process &	F. Plan Adoption
Yes	**Trumbull County**	11-5-25 11-6-25	11-5-25 11-6-25	11-5-25 11-6-25	11-5-25 11-6-25	11-5-25 11-6-25	11-5-25 11-6-25
Yes	**City of Cortland**	11-6-25	11-6-25	11-6-25	11-6-25	11-6-25	11-6-25
Yes	**City of Girard**	11-6-25	11-6-25	11-6-25	11-6-25	11-6-25	11-6-25
Yes	**City of Hubbard**	3-4-26	3-4-26	3-4-26	3-4-26	3-4-26	3-4-26
Yes	**Village of Newton Falls**	11-5-25	11-5-25	11-5-25	11-5-25	11-5-25	11-5-25
Yes	**City of Niles**	11-5-25	11-5-25	11-5-25	11-5-25	11-5-25	11-5-25
Yes	**City of Warren**	3-27-26	3-27-26	3-27-26	3-27-26	3-27-26	3-27-26
Yes	**Mahoning Valley Sanitary District/Meander Water**	1-28-26 3-10-26	1-28-26 3-10-26	1-28-26 3-10-26	1-28-26 3-10-26	1-28-26 3-10-26	1-28-26 3-10-26
Yes	**Township of Howland**	11-5-25	11-5-25	11-5-25	11-5-25	11-5-25	11-5-25
Yes	**Township of Liberty**	11-6-25	11-6-25	11-6-25	11-6-25	11-6-25	11-6-25
Yes	**Village of Lordstown**	2-19-26	2-19-26	2-19-26	2-19-26	2-19-26	2-19-26
Yes	**Village of McDonald**	4-3-26	4-3-26	4-3-26	4-3-26	4-3-26	4-3-26
Yes	**Village of Orangeville**	3-31-26	3-31-26	3-31-26	3-31-26	3-31-26	3-31-26
Yes	**Village of West Farmington**	11-5-25	11-5-25	11-5-25	11-5-25	11-5-25	11-5-25
Yes	**Village of Yankee Lake**	3-24-26	3-24-26	3-24-26	3-24-26	3-24-26	3-24-26

Final Plan Review

The updated Trumbull County Hazard Mitigation Plan was released for public review on Thursday, March 12, 2026. It was printed and available in hard copy at the EMA office and the Trumbull County Commissioners Office. Residents were told that they could request a printed copy by calling the EMA. The plan was posted on the Trumbull County EMA website at https://www.co.trumbull.oh.us and https://www.co.trumbull.oh.us/commissioners. There was no access control for viewing the plan, and the plan was open to everyone. This request for review and comments was published in local publications and social media. Links to the online plan were published in various county and department social media sites. The draft plan was sent by email to all officials and others who either participated in the planning efforts or were key individuals notified of plan activity. All communications asked for input and feedback on the draft plan by close of business on March 30, 2026.

The release of the plan included a description of how to find the plan and access it and offered for the EMA Director and/or Contractor to meet with anyone who had questions or concerns about the content. Comments were requested by email or phone call to the Trumbull County EMA Director.

The plan remained open for public review through March 10, 2026. The review period was two weeks in duration.

The following summarizes comments received during the comment period:

- On March 11, 2026 an email was received from Julie Green, Trumbull County Planning Commission, with corrections changing the "city" of Newton Falls to a "village" due to a change in their status, and she provided a name clarification.
- On March 18th, Dave Bujak provided an email that requested amplification of strategies in dam failure prevention, cybersecurity, critical facilities data, operational issue clarifications in public safety capabilities, and additions in regulatory transparency and communications. The Contractor drafted additional strategies and discussed them with the EMA Director. The strategies were included in the plan, adding Strategies 2.6, 11.9, 11.10, 11.11, and 11.12.
- An email was received from an unnamed Trumbull County resident requesting expansion of social vulnerability regarding cascading incidents and multiple hazard impacts. The Contractor drafted five additional paragraphs to address the items in the email, and reviewed it with the Director. The additions were added to the plan.
- Julie Green from the Trumbull County Planning Commission suggested changes to the narrative that discusses elected officials' governance basics in the HIRA introduction, and provided some clarification of wording regarding the Planning Commission roles and responsibilities. She provided population census data to clarify jurisdiction populations. All suggestions were incorporated into the plan except the population numbers. The plan uses population numbers for townships that include the municipal populations, as well as township numbers without the municipal population. The plan also used municipal population estimations for 2023 because the census date is now six years old. Regarding population numbers, the plan was left as is.

1.3 PUBLIC PARTICIPATION

Public involvement in the mitigation planning process was a critical part of the project. Meetings were announced to the public through various methods, including news articles, social media posts, emails, and inter-department notices. The Core Planning Committee and the Trumbull County EMA helped by talking to individuals and encouraging attendance, and the EMA staff assisted with this too.

Workshop participants were encouraged to talk about the mitigation plan to their family, friends, neighbors, and coworkers to get more input and feedback. They were told that all assemblies were open to the public, and encouraged to invite others. EMA staff and Contractor

contact information was openly shared and posted so stakeholders were able to contact them with additional information or questions.

When the draft plan was made available, it was accessible by the public. It was posted on an open county website so anyone would have access. There were no passwords or passkeys necessary to view the plan. Additionally, anyone who did not want to view the plan digitally was provided a printed copy by the EMA. They were directed to call or email the EMA and to ask how to view the plan. A printed version was available at the EMA or by request. Arrangements to deliver a plan or establish an alternate viewing site could be made by individual request.

The public review period was set for a full two weeks to allow for ample opportunity to view the document, provide feedback or ask questions. The entire plan was posted on Tuesday, February 24, 2026 and left for open review through close of business on Tuesday, March 10, 2026.

The availability of the drafted plan was announced through emails to all involved parties, all jurisdictions, county and other public agencies and departments, as well as all jurisdiction primary contacts, on Tuesday, February 24, 2026 in an email from the EMA. The draft plan link was included in the emails. A printed copy of the plan was kept at the Trumbull County EMA Office at 640 North River Road NW, Suite B in Warren.

The public was encouraged to actively engage in the review process and to submit any thoughts or comments to the EMA Director by email or phone call. The Contractor and EMA Director were available to answer questions, address comments, and explain segments of the plan.

Feedback during the public review period is listed on page 1-16 of this section. Comments were reviewed by the EMA Director and incorporated accordingly.

1.4 RESEARCH METHODOLOGIES

A significant amount of research was performed to develop the hazard mitigation plan, which is based on multiple sources of information. Research was conducted through reviews of existing data, plans, and reports and through interviews and conversations with county stakeholders and subject-matter experts. This information was used both in work sessions for discussion, as well as included in the written documents.

Since Trumbull County's most recent plan was approved in 2021, the Contractor obtained hazard information and data from 2020 through mid-2025 to ensure that the new plan included current, relevant, and accurate hazard and risk information. The information contained in the previous plan that continued to be accurate and relevant was maintained as part of this plan.

Additional information was identified through research of recorded events from the National Climatic Data Center Storm Events Database. Incidents that were researched included past ones included in former plans simply for verification, and new incidents after 2020 so that the

most recent storms were included. Data was presented to the stakeholders represented on the planning team. Their knowledge of the impact, consequences, and recovery efforts of any past disaster incident was documented. These anecdotal points were included as appropriate in the revised plan.

The county profile includes information discovered through the study of various county documents. Information about community development, business and industry, land use regulations, and community life were researched and findings that were relevant to mitigation planning were included as parts of narratives and explanations. Online sources including the US Census Bureau data and the Ohio Trumbull County Profile were accessed for statistical data. Federal, state, and local government agency websites and reports were utilized for statistical and historic information.

The hazard identification was developed through research of actual recorded events based on records from the Storm Events Database of the National Climatic Data Center. Supporting data was obtained from the Ohio EMA, FEMA, Stanford University Dam Program, Ohio Department of Natural Resources, and other sources. Planning team members provided additional detail, context, and descriptions of the community impact for many historical incidents. The most significant events for each hazard are described in narrative form in the HIRA. Appendix 06 NOAA Storm Event Data includes a complete list of all recorded occurrences of each hazard, organized by type of hazard between 2020 (when the last plan was approved) and 5-31-2025.

The vulnerability assessment and risk analysis were developed using multiple data sources. The National Risk Index was used to examine and consider natural hazards and the loss estimates associated with each hazard. Current critical facility and key resource locations were identified through use of the RAPT online tool, confirmed by residents and officials. The 2020 Trumbull County Hazard Mitigation Plan contained information that was still reflective of risks, vulnerabilities, and conditions, which were retained in this plan where applicable. FEMA documents were referenced to identify how many losses were reported, when, and because of what impact in the past. Included in this estimation were possibility, probability, magnitude, and frequency of each category of hazard and its potential impact upon Trumbull County.

There was some discussion about changing weather patterns and the potential for climate change to affect Trumbull County in work sessions. Changes in how and when storms strike, the amount of precipitation or the force of winds was covered in detail. These discussions, when compared to online climate projections, were in sync. Anecdotal comparisons were made in online research of newspaper articles about recent storms and damages. There was nothing found that was inconsistent with meeting discussions.

Significant discussion ensued regarding resources needed during and after catastrophic level events. Although Trumbull County has over 200,000 residents and a robust system of first responders, stakeholders felt a catastrophic incident would require additional assistance. However, stakeholders expressed doubts that Trumbull County would receive outside resources in an event that involved other counties because of the significant populations in

Mahoning, Summit, and Cuyahoga County that are all in the same storm pathway. The pervasive opinion was that Trumbull County will automatically and successfully fend for themselves.

While the county residents perceive themselves as highly resilient and willing to take care of themselves, there are challenges that come with this commitment. For example, across Ohio and the Midwest, volunteerism is declining. The average age of volunteers is rising, and the younger generations to someday take their places are not as interested in volunteering as previous generations. Therefore, conversations took place about diminishing volunteerism, especially in public safety organizations. Consideration of mutual aid agreements, department planning for equipment purchases in collaboration with adjoining departments, and other forms of collaboration were believed to be best practices for local entities. The exodus of adequate sheltering and family assistance by social organizations that are used to help after residents were displaced from homes is a huge concern for Trumbull County. They now receive assistance from adjacent counties or nearby metropolitan areas. There is concern whether this regional help will continue in the coming decades. Trumbull County is concerned for the same response resource reasons as most counties in Ohio.

The following table, Table 1-8, provides a list of the written sources utilized in the research phase of this project. Many resources were online references, and others were digital documents that were shared with the planning group. Some were printed documents that were shared with the group, and others were provided digitally to the Contractor by various county stakeholders. Others were found online and determined to be relevant to the project, and used in the process.

Table 1-8: Studies, Reports, and References

Document	Author/Agency	Date
FEMA Flood Map Service Center Trumbull County FIRM	https://msc.fema.gov/portal/advanceSearch#searchresultsanchor	2-20-2026
Federal Disaster Declaration Statistics	FEMA	2026
The Climate Explorer	Online resource	2026
Floodplain Management Community Contact List	Ohio Department of Natural Resources	2025
Trumbull County Hazard Mitigation Plan 2021	Trumbull County EMA	2021
Emergency Action Plans for high hazard dams	Mineral Ridge Dam Upper Girard Lake Dam	various
State of Ohio Enhanced Hazard Mitigation Plan	Ohio EMA	2023
Storm Events Database	NOAA	2026
United States Census	US Census Bureau Trumbull County Profile	2020 V2024

Document	Author/Agency	Date
National Pipeline Mapping System	Map of Trumbull County pipelines	2025
Headwaters Economics – Economic Profile System for Trumbull County OH	Socioeconomic and Neighborhoods at Risk Reports	2026
National Risk Index	FEMA	2026
Resilience Analysis Planning Tool (RAPT)	FEMA	2026
Climate Risk and Resilience Portal (ClimRR)	FEMA https://climrr.anl.gov/localprojections	2026
National Inventory of Dams	FEMA	2026
National Levee Database	FEMA	2026
Ohio Department of Natural Resources GIS Maps	ODNR	2026
2022 Census of Agriculture County Profile	USDA	2022
Ohio County Profile	Ohio Office of Research	2024
Ohio Economic Profile Trumbull County	OH DJFS	2024
National Inventory of Dams	USACE; FEMA Mosquito Creek Information	2026
NFIP Community Status Book for Ohio	www.fema.gov/cis/OH.html	2026
PHMSA Hazmat Incident Report Search	Portalpublic.phmsa.dot.gov	2026
Trumbull Co. PAFR 2024	Trumbull County Auditor	2024
Farmland Preservation Plan For Trumbull County	Trumbull County Commissioners	1999
Cortland Strategic Plan	City of Cortland	2021
Eastgate Comprehensive Economic Development Strategy	Eastgate Reg. Council of Govt.	2022-23
Floodplain Regulations	Trumbull County	2011
Girard Mills Dam Removal	City of Girard	2025
Dam Safety Insp. Rpt.	City of Girard	2021
Leavittsburg Dam Summary	Eastgate RCG	2025
Mahoning Dam Removal Study	GPD Group/EnviroScience/Eastgate	2020
Mineral Ridge TMDL Report	Ohio EPA	2011
Mineral Ridge EAP	Meander Water	2025R
Pymatuning Creek Designation Study	ODNR	2018
Trumbull County Drainage Manual	TC Engineer & SWCD	2012
Upper Girard Lake Dam EAP	City of Girard	2010
Warren Strategic Plan	City of Warren	2022
Warren Waterworks Dam Summary	Eastgate RCG	2025

Document	Author/Agency	Date

1.5 PLAN MAINTENANCE

Plan maintenance is a critical element of the hazard mitigation plan. Diligent plan maintenance establishes a schedule to re-engage stakeholders in the mitigation plan at regular intervals during the plan's validity period and lays a solid groundwork for the required five-year update. Continual attention to mitigation allows for and facilitates purposeful actions and planning efforts. By reviewing disaster occurrences on an annual basis and frequently assessing the county's progress on mitigation activities, a five-year update can be a quick and efficient process. Upon approval of this plan, Trumbull County is determined to follow a regular plan maintenance schedule. The EMA Director will lead this effort and involve countywide stakeholders, jurisdictions, and the community, maintaining and strengthening the solid foundation in place for the plan update in 2031.

1.5.1 Plan Maintenance Methodology

A significant challenge in conducting annual plan reviews is the difficulty in holding meetings that are well attended. Many stakeholders perceive meetings as unnecessary, yet others struggle to combine many demands and are available. Government officials, community leaders, and other key stakeholders have competing demands on their time and must and prioritize their attendance at different events. In Trumbull County, some jurisdictions and organizations have only a few employees; some have no employees, and leaders serve voluntarily. In the villages and townships, many elected and appointed officials serve in a volunteer capacity. Yet the larger municipalities have employees to share the work and attend planning meetings. These staffing realities often make conducting community-wide meetings a challenge. Trumbull County's plan maintenance strategy attempts to address these barriers by incorporating other communication and data-collection methods throughout the five-year life of the plan.

Traditional face-to-face meetings have been the most common method to discuss disaster responses, catastrophic incidents, and storms. The 2019 Pandemic made face-to-face meetings impossible, and people became accustomed to online meetings, written or digital surveys, and email communication. Even in the rural communities in Trumbull County, officials and workers have gotten somewhat used to digital meetings, and avoiding the travel required to meet in a face-to-face manner. This familiarity has led to some acceptance of alternatives to meeting in person, and those digital and remote options will be seriously considered in the coming five years. The EMA will also work closely with the villages, asking each to consider reviewing their plan sections and submitting comments each year as an individual community rather than a whole county. The EMA Director can then compile these reports and share across the entire county. Records of participation, copies of results, and other communication surrounding these events will be maintained just as it would be for a meeting.

1.5.2 Annual Plan Review

The Executive Board of the Trumbull County EMA will be called upon to review, evaluate, and discuss the plan annually, on or about the anniversary of the plan approval date. Annual plan maintenance discussions may be conducted through traditional in-person meetings or remote meetings, electronic surveys, questionnaires, or other forms of communication. The choice of methodology will be at the discretion of the EMA Director based on what best meets the needs of stakeholders and ensures that mitigation strategies are considered on a regular basis. All information-gathering efforts will include evaluation of the past year's disaster incidents and a summary of the resulting damages, costs, and recovery efforts. Status reports on any mitigation projects in process and an update on progress towards achieving the mitigation strategies and actions developed by each jurisdiction will also be included. The EMA will maintain records of these annual discussions.

As part of the annual review process, the larger jurisdictions will be asked to conduct an internal analysis of the mitigation strategies developed by their jurisdiction and submit a short report to the EMA with their findings. The report will include an assessment of any disaster incidents that occurred during the year, a summary of damages and recovery efforts, and a status report on the status of adopted mitigation strategies because of those incidents. If a strategy has been completed, the jurisdiction will evaluate its effectiveness at reducing losses. This information will be shared with the countywide planning team during the annual countywide review process. The EMA will maintain a summary of these reports and findings.

The EMA Director may choose to convene a planning team meeting after any significant disaster or large-scale emergency to review and document any changes, needs, additions, or deletions that should be considered at the five-year update. The EMA may also convene a committee if a significant development project, change in land use, or addition of a major industry occurs to review the effect of that incident on mitigation intentions. Any time a disaster is declared in Trumbull County, the planning team will assemble after the incident is closed to review the plan with emphasis on the strategies and the status of each. Given the direction of new mitigation guidance, the records of incidents will include social vulnerability concerns as well as physical damage information. Who served special needs, what organizations helped the underserved, and what gaps existed will be documented. Best practices and opportunities for improvement will be recorded and addressed. They will consider the integration of mitigation goals into the emergency operations plan, and make any changes that improve the manner and extent to which Trumbull County can serve disadvantaged and underserved populations. The EMA will maintain records of these meetings and findings.

At each review point, the EMA will review the Hazard Identification and Risk Assessment for completeness and accuracy, as well as changes that occur due to changing weather patterns or history. Loss estimates will be evaluated for ongoing accuracy and any significant developments will be added to the list and mitigation strategies will be reviewed for progress and effectiveness. All findings will be recorded and saved for the 2031 update process.

1.5.3 Community Participation

While the EMA is responsible for leading the plan maintenance effort, that process only works if stakeholders are engaged. Ongoing consideration of hazard mitigation strategies is critical to creating a resilient and sustainable community. It is the EMA's intention that the stakeholders representing the municipalities, jurisdictions, agencies, and organizations involved in plan development will continue to participate in its ongoing review and maintenance. Without their participation, ongoing input will not be comprehensive or accurate. Therefore, all parties involved in developing this plan must perceive the annual review process as critical to the pre- and post-disaster welfare of the county. The new mitigation partners who address issues of social vulnerability and community resilience will be critical parties moving forward, and will continue to be critical companions in mitigation planning and implementation.

Public involvement is an important component of ongoing mitigation planning efforts. To encourage public involvement in plan maintenance, notices of annual plan review activities will be published through local media and appropriate websites and social media accounts of participating jurisdictions and agencies. The public will be invited to participate in these activities and provide input. Meeting announcements will include the date, time, and location of the session and adequate notice so that people have reasonable time to plan their attendance. As with all meetings conducted during plan development, annual update meetings will be open to the public and community input will be encouraged. If surveys and other electronic tools are utilized to collect feedback from stakeholders, these documents will also be made available to the community.

1.5.4 Integration with Community Planning Mechanisms

Local government participation in plan maintenance activities is a major factor in the implementation and achievement of mitigation strategies as well as assessment for new and additional mitigation actions. This participation occurs during intentional mitigation plan review and, more importantly, during daily operations within each jurisdiction that guide the growth and development of specific communities.

There is a very collaborative and communicative relationship between Trumbull County officials, the municipalities, and the economic and regional planning professionals. The Planning Commission and the EMA work together frequently and easily. Many of these employees and individuals participate in not only jurisdictional governance, but also community development and economic development. Those involved in economic and community growth communicate with and through local officials on a regular basis to share development goals and activities that are in planning and implementation stages. Ongoing communication and collaboration are maintained between countywide partners.

Table 2-21 in Section 02 HIRA of this plan identifies the capabilities of each jurisdiction and should be used as reference for this integration discussion. This table, along with discussion in Section 2.1.11 Community Development illustrates the capabilities the various jurisdictions must carry out mitigation projects, as well as development activities. While some jurisdictions

are fully capable of implementing sophisticated projects, others have very limited resources and capacity to do the same.

Ideally officials will all bring new development and growth concepts back to their communities to implement Trumbull County initiatives. They provide leadership for recruiting, promoting, and securing new industries, businesses, and residential facilities. These groups work together to guide the construction of new buildings and homes, and oversee and inspect new structures.

In Trumbull County, there is a practical and effective structure to allow mitigation efforts to be included in other economic and community development activities. The EMA Director is included in many community activities, and in turn, the EMA includes a wide array of organizations in their planning efforts. Those representatives ensure that Trumbull County's voices are all heard. The county has determined that they should consider hazard mitigation with all community planning efforts, especially in the comprehensive planning efforts, and intends to include information about hazards, risks, and vulnerabilities in all planning areas in future endeavors.

The EMA will share responsibility to integrate mitigation planning into economic development, land use planning, land use regulation, conservation, response plans, and other plans that are important to the daily operation of the county with other county officials. Disaster mitigation will be promoted as part of community development, making its way into a comprehensive array of disciplines and interests. Key stakeholders, including the County Commissioners, Planning Commission, floodplain administrators, engineer's offices, zoning officials, development professionals, and public safety officers from across the county will be important partners in this effort. The elected and appointed officials from all jurisdictions are considered partners in mitigation efforts, and will work with and beside one another to include the efforts described in this plan into the guiding documents for their jurisdiction. Whether the person charged with this responsibility is the elected mayor, the appointed administrator, or a volunteer committee chairman or council member, they will be expected to work with other jurisdictions to exchange ideas, implement efforts, develop regulations, and create guidance for future efforts and endeavors. These individuals will work through their respective agencies to promote mitigation planning and its inclusion in the plans, procedures, guidelines, and priorities of each agency, thus making mitigation a true community-wide effort.

The Hazard Mitigation Plan has previously been integrated into the Trumbull County Emergency Operations Plan and the Hazardous Materials Response Plan. The EMA Director is responsible for developing and maintaining the Trumbull County Emergency Operations Plan, and she uses the Hazard Mitigation Plan as the hazard identification and risk analysis for that plan. The emergency response actions are based upon the conditions and vulnerabilities established by the mitigation plan. The EMA Director also carries the hazard mitigation plan information into the creation of a Hazardous Materials Response Plan as the vulnerability to natural hazards intersects with a hazardous materials spill or release, either due to related or unrelated factors of natural hazard incidents. The EMA Director works with high-hazard dam owners to include

what is necessary in the EOP to cover an actual emergency, and works to integrate the dam safety issues into department plans in those jurisdictions.

It is hoped that the Hazard Mitigation Plan will become a reference for the various development, strategic, and community plans that are created to guide Trumbull County's future. The risk assessment and vulnerability profiles can be used to develop community resources, and the strategies can be used as a window into progressive building practices and land use. With some opportunities to grow, Trumbull County would benefit from such inclusion and cross-communication.

1.5.5 Documentation of Plan Maintenance

Trumbull County will consider communication with stakeholders and the public regarding hazard mitigation to be an annual necessity. The EMA will schedule, complete, and record these communications and the results of all meetings to facilitate an expeditious plan update in 2031. It will be the EMA's responsibility to maintain documentation of all ongoing plan maintenance activities. These records should include the date, time, and attendance at review meetings, findings of each review, and recommendations from stakeholders for changes, additions, or deletions at the next update. Results from any surveys and questionnaires used to collect information should be maintained, as well as reports submitted by jurisdictions. Electronic mail and written communication from stakeholders and the public should be saved for consideration during annual review activities. All reports, documents, and files can be saved electronically so that they are easier to find and less cumbersome to maintain.

1.5.6 Plan Update Cycle

Trumbull County's Hazard Mitigation Plan will expire in 2031. With generous documentation of ongoing plan maintenance, the county should be positioned to submit an updated plan well before the current plan's expiration date. To ensure the appropriate timeline is met, formal efforts to update the plan will begin in mid-2029. The EMA Director will ensure that the appropriate and necessary steps are taken to complete this process.

2.0 HAZARD IDENTIFICATION AND RISK ASSESSMENT

The purpose of the Hazard Identification and Risk Assessment (HIRA) is to identify the type and frequency of disasters in Trumbull County and to describe the risk to people, property, and structures resulting from those hazards. This process allows officials and residents to better prepare for incidents before they occur, and to act ahead of time to reduce the negative impacts of those incidents.

The HIRA is composed of four sections. The County Profile (2.1) provides demographic and descriptive information about Trumbull County and its jurisdictions. The Hazard Identification (2.2) identifies and describes hazards that pose a threat to Trumbull County and provides a brief history of significant occurrences. The Vulnerability Assessment (2.3) examines the vulnerability of each individual jurisdiction, and the Risk Analysis (2.4) evaluates and ranks the risks Trumbull County will address through its mitigation efforts.

This plan section will also describe the local ability to respond to a variety of incidents. The social, financial, and physical vulnerability of each community and the county will be discussed. The local capacity to address core capabilities associated with response will be examined and analyzed, and gap areas where capabilities are not sufficient for worst-case scenarios will be addressed. Trumbull County's ability to manage all eight community lifelines will be examined and gap areas will be described, including where and how the county would compensate for and backfill those needs based upon past significant events and community history.

Various demographic online tools have been used to research and address social vulnerability and community resilience, factors that will provide the foundation for mitigation strategies formulated to meet the unique and individualized needs of Trumbull County's large and smaller communities. Despite being a relatively diverse county among Ohio's more populous areas, Trumbull County is unlikely to receive outside assistance in a widespread disaster. Most assistance from outside the immediate region would likely come from Cleveland, but this is only likely if Cuyahoga County were not adversely affected. Some assistance may come from Portage, Summit, or Mahoning County, but again, only if the disaster were not regional. To realistically discuss these theoretical situations, stakeholders have diligently worked to identify gaps in local capabilities and resources, potential areas of response compromise, and the special needs of various populations within the county. This section will address disabled and disadvantaged persons, and transient populations that are passing through the county at the time of the incident, as well as the more typical populations like elderly, isolated, and those without local family connections.

Discussions examined and analyzed community capabilities to respond in a significant disaster as well as a long-term incident, and to identify where additional help would be found if an incident reached past the limitations of local capabilities. Trumbull County Emergency Management officials recognize that it is the county's burden to identify alternate and non-

traditional resources to meet potential disaster needs to minimize long-term negative effects on residents, their families, and their property.

Goals included the identification of ways to ensure that every person in Trumbull County has a similar opportunity to survive a disaster in a similar manner, and can recover to the same degree as other residents. Realizing that the county could require more resources and services than it has on hand, discussions included the identification of those probable groups of people and discussion about how that process might work to enable them to survive the worst of days.

Indicators of changing weather patterns have been discussed and deliberated. Situated relatively near Youngstown and Cleveland metropolitan areas in Ohio, Trumbull County could be significantly affected by new massive manufacturing plants or excessive traffic flow across federal highways. With a third of the area in woodlands and another third in some form of agricultural production, the county is not overburdened with extensive industrial or residential development. Some of the very negative environmental and social impacts felt in the major metropolitan areas like Cleveland are not present in Trumbull County at this time.

In Trumbull County, people tend to know one another and take their neighbor in when disaster strikes because outside resources are limited, at least within the communities where people know one another. Many families have lived in Trumbull County for generations. Communities have adequate resources in most situations, but many neighbors are willing to share their homes, supplies and help one another. They cite the infrequency with which disaster strikes, although they realize the possibilities. While they may be limited in equipment or other goods, they are filled with the desire and willingness to help one another. They can improvise, adapt and overcome.

Needs after a severe storm may be addressed differently, and perhaps anecdotally, in these communities because they, like most of Ohio, have limited access to fully certified shelters, commercially provided food supplies, and sufficient response personnel to meet post-disaster expanded needs for assistance systems. Residents will identify a need, and develop a solution to solve it. Trumbull County residents assume they will need to help themselves, if only for the first few days in the worst situations. These characteristics unique to many Ohio communities change little over the years. However, changes in storm characteristics and other natural phenomenon are noted, and discussions included these potential effects of worsening storms that hit much harder and faster.

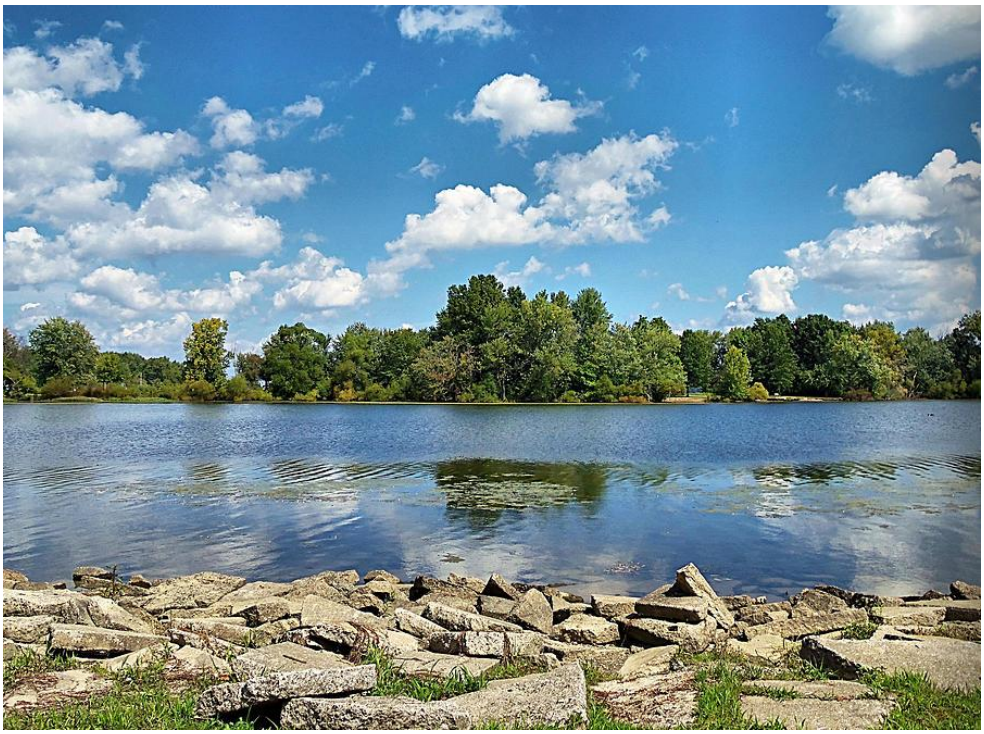
This plan, through application of the information in this section, intends to then develop mitigation strategies that will equitably and inclusively provide potential solutions for disaster outcomes likely in Trumbull County. Stakeholders worked to identify, characterize, and understand how each group of its local society will react and respond to disasters of catastrophic or serious magnitude, and developed solutions to ensure that all populations, all communities, and all parts of this small county can survive and recover from a disaster successfully and become as whole as possible after the incident.

Trumbull County is in the extreme northeast corner of Ohio, one county south of Lake Erie and bordering the Ohio-Pennsylvania border. Travel to Cleveland, the closest major city, takes about one hour. Youngstown is part of Trumbull County, sitting on its far southeastern border, and mostly located in Mahoning County. Warren is the county seat of Trumbull County.

Map 2-1: Trumbull County Map

The US Census and the Ohio County Profile for Trumbull County, 2023 estimations, shows a total population of 200,373. Trumbull County is the 15th largest county in Ohio, but it is anticipated that the population will fall to just over 160,000 by mid-century as people move to more metropolitan areas and population in general decreases.

Trumbull County is one of state's larger counties geographically at approximately 617 square miles. The Mahoning River flows through the county, and it is home to Mosquito Lake State Park and Mosquito Creek Lake, one of Ohio's most visited state parks with over two million visitors each year. This year-round facility brings campers, boaters and fisherman, horseback riders, and dog owners to the park to enjoy the scenic outdoors in a variety of ways.



Mosquito Lake Park – photo online attributed to Monnie Ryan – Fine Art America

The Trumbull County Board of County Commissioners and other elected and appointed officials provide leadership, support, and service to the county. In addition to the commissioners, elected officials include the county Engineer, Auditor, Treasurer, Clerk of Courts, Prosecutor and Sheriff, all of whom are instrumental in mitigation planning activities. The Trumbull County Coroner, County Recorder, and several judges are also elected officials and are part of the local governance body. Appointed officials particularly involved included the chief elected and appointed officials for the municipalities, floodplain managers, community development coordinators, social assistance departments, agricultural industry leaders, conservation and natural resources employees, social service departments, social organizations, healthcare providers, and many others. Many officials in Trumbull County fill multiple roles in the community, crossing local levels of government and combining responsibilities in a non-traditional way that is very common to Ohio communities.

2.1.1 Demographics

All demographic data comes from the US Census, 2020 version, unless otherwise stated. According to US Census data, the estimated 2023 population in Trumbull County is 200,373. The 2010 population was 210,312. The county is experiencing a slight downward trend in

population; this is expected to continue for the next several decades, anticipating a population of about 162,000 by 2050. This slight decrease is common in Ohio's counties and represents an elderly population decrease through death and a challenging job environment for younger workers, as well as a gradual migration to larger metropolitan areas.

Table 2-1: Trumbull County Demographics

Statistic	Figure
Population Density	325.39 persons/sq. mile
Population (2023 Est.)	200,373
Female Population	51.0%
Male Population	49.0%
Median Age	43.3 years
Population 18-64 years	57.0%
Population under 18	20.0%
Population over 65 and over	23.0%
White	84.0%
Black	8.0%
Hispanic	2.0%
Bi-Racial	5.0%
Households	87,955
Average Household Size	2.2 persons
Median Household Income	$51,016
Families in Poverty	17.6%
Percent w/o health insurance	8.6%
Persons with a disability	17.4%
Owner-occupied Residential structures	71.0%
Single Family Homes	79.0%
Multi-Family Homes	15.0%
Mobile Homes	7.0%
Median Value of Owner-Occupied Home	$142,900
Language spoken other than English	n/a
Veterans	8.6%
Households with no vehicle or access	7.9%
Rental Units	28.5%
Total Housing Units	86,135
New home construction in 2024	127
High School Graduates >25 y/o	90.0%

Trumbull County has 94,407 housing units according to the Ohio County Profile. Of those, 86,135 are occupied. The owner-occupied housing rate is 71.5%; median value of owner-occupied units is $128,100. The median monthly cost for a home with a mortgage is $1,129, and median gross rent is $783.

Rental housing structures such as apartment buildings account for 28.5% of all housing units. Mobile home occupancy is 4.1%. There are 31 registered mobile home parks in the county, according to Trumbull County Combined Health Department

According to Ohio Department of Development and Broadband.Ohio.gov/maps, a large part of the county has access to 0-9 Mbps internet service only, which is the same as most of Ohio's rural counties. Some areas, which may overlay with woodlands and forest, are undeveloped insofar as broadband service.

2.1.2 Incorporated Jurisdictions

Trumbull County's jurisdictions include eleven municipalities and twenty-four townships. Six of the municipalities are cities, and five are villages. Two villages are large, and three are very small. The townships range in size of a few hundred to almost thirty thousand residents.

Cortland

Located in the heart of Trumbull County, next to Mosquito Creek Lake Reservoir and State Park, this city is highly accessible, boasts of robust retail and service businesses, and welcomes visitors who come to enjoy the outdoor attractions. Their mission statement indicates they serve not only the city's visitors, but also their residents, with a safe, caring and fiscally responsible governance. The city is highly accessible from outside the general area via the nearby Ohio Turnpike, using various exits and locally accessible via SR5, SR11, SR46 and SR305.

An aerial view of Cortland – online photo

Table 2-2: Cortland Demographics

Statistic	Figure
Population, 2023	7,091
White	93.0%
Black, Hispanic, or Asian	2.0%
Households	3,645
Median Income	$61,740
Persons in Poverty	10.2%
Owner-Occupied Homes	76.0%
Single-Family Homes	78.0%
Multi-Family Homes	20.0%
Mobile Homes	1.0%
Elderly >65 y/o	27.0%
Veterans	8.3%
Median Value Owner-Occupied Home	$199,300

Girard

Girard refers to itself as a vibrant and close-knit community where tradition meets progress. It is in the heart of Trumbull County, with a historic downtown and new-found modern amenities as well. The website indicates that they cherish the city's roots while embracing the future.

Girard City Schools High School

Table 2-3: Girard Demographics

Statistics	Figure
Population, 2023	9,521
White	88%
Black, Hispanic, or Asian	7.0%
Households	4,359
Median Income	$42,861
Persons in Poverty	19.9%
Owner-Occupied Homes	65%
Single-Family Homes	78.0%
Multi-Family Homes	20.0%
Mobile Homes	2.0%
Elderly >65 y/o	19.0%
Veterans	6.1%
Median Owner-Occupied Home Value	$105,700

Hubbard

This city's mayor welcomes readers to explore the wealth of information on the city's website, and touts the 140 years of thriving business and community in the city. As part of the Connecticut Western Reserve, the city has flourished and grown to be a robust center of commerce, service, and residential areas.

Hubbard Aerial View

Table 2-4: Hubbard Demographics

Statistic	Figure
Population, 2023	7,600
White	95.0%
Black, Hispanic, or Asian	5.0%
Households	3,526
Median Income	$62,468
Persons in Poverty	7.0%
Owner-Occupied Homes	78.0%
Single Family Homes	85.0%
Multi-Family Homes	15.0%
Elderly >65 y/o	24.0%
Veterans	5.1%
Median Value Owner-Occupied Home	$123,600

Lordstown

This village, located in the southwestern quarter of the county, allows residents and businesses to combine well-established networks that provide both business and industry access to major markets and resources. Where rail and highway meet, transportation thrives. Incorporated since 1975, Lordstown has grown into an enticing location for both families and businesses.

Lordstown Public Park

Table 2-5: Lordstown Demographics

Statistic	Figure
Population, 2023	3,329
White	94%
Black, Hispanic, or Asian	2%
Households	1,389
Median Income	$64,503
Persons in Poverty	7.8%
Owner-Occupied Homes	86.0%
Single-Family Homes	77.0%
Mobile Home Households	22.0%
Boat, RV, or Van Occupancy	1.0%
Elderly >65 y/o	28.0%
Veterans	9.5%
Median Owner-Occupied Home Value	$161,900

McDonald

This village claims to be "Ohio's finest Village," providing a quiet, warm, and friendly community that embraces small-town values. Located in the southern half of the county with most other municipalities, they provide all basic services and amenities for residents and visitors. This community is filled with pride and hope for a vibrant and attractive future in Trumbull County.

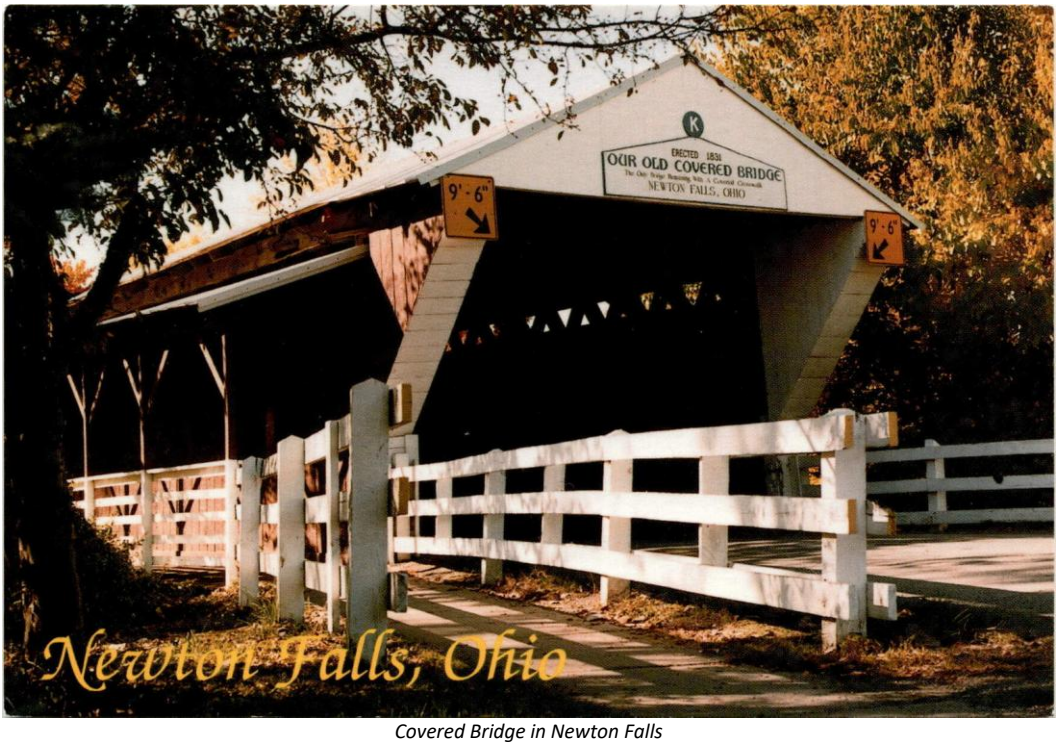
Village of McDonald Administration Building

Table 2-6: McDonald Demographics

Statistic	Figure
Population, 2023	3,150
White	98.0%
Bi-Racial	2.0%
Households	1,380
Median Income	$73,625
Persons in Poverty	3.8%
Owner-Occupied Homes	83.0%
Single-Family Homes	98.0%
Multi-Family Homes	2.0%
Elderly > 65 y/o	21.0%
Veterans	6.2%
Median Value of Owner-Occupied Home	$146,500

Newton Falls

"Working Toward a Better Tomorrow" is the first statement observed on the city's webpage, declaring the intentions to provide for its residents and visitors, businesses and manufacturers, well into the coming years. They claim to be a charming, historic, walkable community conveniently accessible to nearby metropolitan centers in both Ohio and Pennsylvania.



Covered Bridge in Newton Falls

Table 2-7: Newton Falls Demographics

Statistic	Figure
Population, 2023	4,553
White	93.0%
Black, Asian, or Hispanic	6.0%
Households	2,287
Median Income	$51,840
Persons in Poverty	13.9%
Owner-Occupied Homes	53.0%
Single Family Homes	64.0%
Mobile Home Occupancy	<1.0%
Multi-Family Unit Occupancy	36.0%
Elderly >65 y/o	25.0%
Veterans	11.0%
Median Owner-Occupied Home Value	$102,200

Niles

As one of the larger cities in Trumbull County, Niles refers to itself as a comfortable, growing city with resource rich living. The city provides a full array of services to its residents, and works to attract business and industry to the city. They are a strong, progressive environment for new businesses, and envision a robust future of progressive growth and technology-centric development.

McKinley Birthplace Memorial Museum in Niles

Table 2-8: Niles Demographics

Statistic	Figure
Population, 2023	18,301
White	88.0%
Black, Hispanic, or Asian	7.0%
Households	8,506
Median Income	$31,216
Persons in Poverty	13.0%
Owner-Occupied Homes	56.0%
Single Family Homes	69.0%
Mobile Homes	1.0%
Multi-Family Unit Homes	30.0%
Elderly >65 y/o	23.0%
Veterans	7.9%
Median Owner-Occupied Home Value	$108,400

Orangeville

This small village lies near the Ohio-Pennsylvania border, and the name may be a direct transfer from Orangeville, Connecticut when the area was settled as part of the Western Reserve.

Church in Orangeville

Table 2-9: Orangeville Demographics

Statistic	Figure
Population, 2023	343
White	96.0%
Bi-Racial	4.0%
Households	84
Median Income	$79,167
Persons in Poverty	4.4%
Owner-Occupied Homes	48.0%
Single-Family Homes	95.0%
Multi-Family Homes	5.0%
Elderly >65 y/o	6.0%
Veterans	2.5%
Median Owner-Occupied Home Value	$125,000

Warren

As the county seat in Trumbull County, the City of Warren houses most county government offices and services. The city officials are quick to point out to potential business that "location, location, location!" is what the city is all about. With a network of rail and highway resources, the city is a perfect location for manufacturing and industrial ventures. Supported by robust educational resources, entertainment, and the arts, as well as well-kept residential areas, Warren serves as a major center of business as well as residential area for the entire county.

Aerial View of a section of Warren

Table 2-10: Warren Demographics

Statistic	Figure
Population, 2023	39,057
White	61.0%
Black, Hispanic, or Asian	33.0%
Households	16,824
Median Income	$36,955
Persons in Poverty	32.9%
Owner-Occupied Homes	54.0%
Single Occupancy Homes	74.0%
Mobile Homes	1.0%
Multi-Family Homes	25.0%
Elderly >60 y/o	26.0%
Veterans	8.2%
Median Owner-Occupied Home Value	$80,100

West Farmington

This small village was originally settled by Connecticut-borne settlers who lived in log cabins with few amenities and a tough lifestyle. Josiah and Erastus Wolcott worked to build with resources available, and the village was settled in the 1820's. The village was originally made up of land owned mostly by the Wolcott family, and was home to Western Reserve Seminary. Over the years, various brave settlers contributed to the ongoing development of the village, resulting in the close-knit community that the village is today.

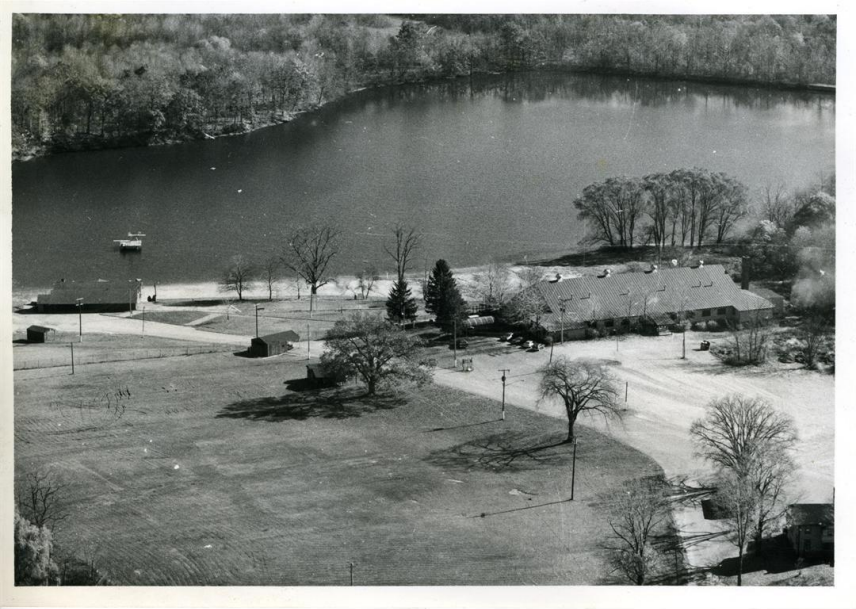
The old seminary building in West Farmington

Table 2-11: West Farmington Demographics

Statistic	Figure
Population, 2023	496
White	98.0%
Bi-Racial and Other	2.0%
Households	169
Median Income	$58,250
Persons in Poverty	16.7%
Owner-Occupied Homes	69.0%
Single-Family Homes	86.0%
Multi-Family Homes	12.0%
Mobile Homes	2.0%
Elderly >65 y/o	8.0%
Veterans	0.3%
Median Owner-Occupied Home Value	$111,700

Yankee Lake

First known as "Lingamore Lake" this very small village was settled along the man-made Yankee Lake along Yankee Run. During the "Big Band" era in the early 1900's, a dance hall became a regular stop for entertainers like Glenn Miller, Tommy Dorsey, and Count Basie. Rumor has it that gangsters like John Dillinger visited the ballroom. The lake was drained in 1979, but the village has hosted various entertainment events since then. Most recently, bike nights and truck nights have provided entertainment for many.



Yankee Lake in the Big Band era

Table 2-12: Yankee Lake Demographics

Statistic	Figure
Population, 2023	85
White	98.0%
Black, Hispanic, or Asian	2.0%
Households	63
Median Income	$46,875
Persons in Poverty	2.4%
Owner-Occupied Homes	78.0%
Single Family Homes	90.0%
Multi-Family Homes	10.0%
Elderly >65 y/o	51.0%
Veterans	3.8%
Median Owner-Occupied Home Value	$181,300

Mahoning Valley Sanitary District/Meander Water

This special district is the only system in Ohio that was created under the Sanitary Act of Ohio. It was formed in 1926, and has provided water to its customers since 1932.

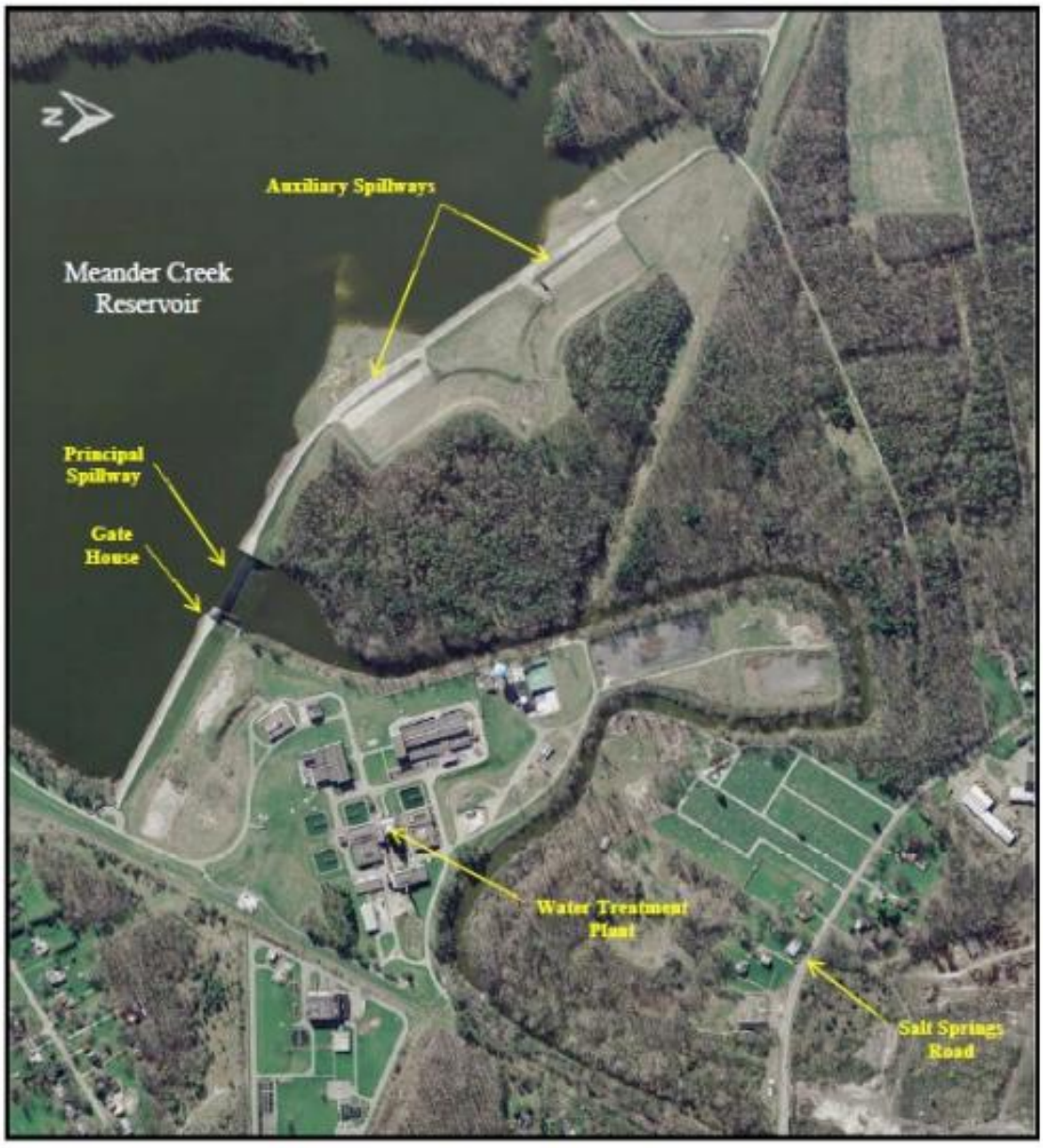
This utility district is included as a separate jurisdiction. Created under the oversight by Trumbull and Mahoning County Cort of Common Pleas and a Board of Directors, the district provide water to Youngstown (Mahoning County) and Niles, as well as the Village of McDonald. These municipalities then supply treated water to Girard, Canfield, Mineral Ridge, the Village of Lordstown, Craig Beach, and portions of ten townships in Mahoning and Trumbull Counties. They serve approximately 220,000 residents in those areas. This does not include schools, hospitals, other institutions, and other entities that use water from this district. The district owns and maintains supply lines to its direct customers, who then own and maintain supply lines to their customers.

MVSD/Meander Water owns the Mineral Ridge Dam and Meander Reservoir. The reservoir covers over two thousand acres and has forty miles of shoreline. Its capacity is 11 billion gallons. The district owns 5,500 acres of forested land enclosed by fencing. The area serves as an unofficial fish and game refuge and has no public permitted access. They process sixty million gallons of water daily, and store 35.9 million gallons of water. They have 17.4 miles of distribution pipelines. They employ approximately eighty workers.

Meander Water is currently utilizing over $38M in FEMA funding to complete renovations and upgrades to Mineral Ridge Dam. The local share is being paid by the district so user fees and water rates do not have to increase to cover this expense. The project addresses potential failure modes in a maximum potential flood scenario, and addresses ODNR and federal dam safety criteria and needed repairs. The existing two emergency spillways are being replaced the a roller-compacted concrete auxiliary spillway, the embankment concrete core wall is being raised, the downstream embankment slope is being flattened and internal filter drains are being installed to limit seepage. The primary spillway is being raised and buttressed with concrete walls, the ogee surface is being lined, and the basin is being reinforced with a concrete

liner slab with rock anchors. The dam's foundation is being anchored to improve stability, and the existing inflatable rubber bladder and controls at the primary spillway are being replaced. A rock berm on the upstream embankment, replaced stairway on the east embankment, removal of existing spoil pipe on the east embankment slope, upgrades of instrumentation, electrical and lighting systems, and improvement of the access roads are all part of the project. Total project cost is approximately $42 million with an additional $3.5 million in engineering costs. Original completion was slated for late 2026. The project is ongoing.

Map 2-03 Mineral Ridge Dam Project



Project map taken from Meander Water Project Fact Sheet

2.1.3 Townships and Unincorporated Communities

Trumbull County is divided into twenty-four townships. Each township is governed by three trustees and a fiscal officer elected by the voters. In general, they meet monthly and are responsible for the health, safety, and welfare of township residents. Townships are not required to adopt the mitigation plan; Trumbull County acts on their behalf for mitigation actions and projects. However, the townships are very active and may play a significant role in a mitigation project, or choose to conduct the project without management from Trumbull County if they have the capacity and resources to do so.

When a municipality lies within a township, as most do, the residents of that municipality are generally served by the municipality. There may be instances where the municipal officials and the township officials work together on a service or project, but there may be times when one or the other assumes full responsibility for a particular activity or action. Municipalities are more fully staffed than townships and have a chief executive officer, commonly a mayor, who is responsible for carrying out duties and activities. Townships have a board of three equal trustees who share executive responsibility. Variances result from this structure and remove incorporated areas from the governance area the trustees cover, using as an example of the City of Warren being held as a separate entity from Warren and Howland Townships where this city is co-located, and Lordstown village incorporating the entirety of Lordstown Township, thus rendering the township defunct.

Townships that are populated by more than 2,500 people can adopt resolutions of limited home rule. If the township has between 2,500 and 5,000 residents, they can adopt a home rule resolution, but must appoint a township administrator and have estimated resources of at least $3.5 million. If over 5,000, these two requirements do not apply.

Howland and Liberty Townships are both limited home rule jurisdictions. As such, they are permitted to “exercise all powers of local self-government within each township, other than powers that are in conflict with general laws”. This phrase comes from the Ohio Constitution. Home rule townships also have the authority to operate their own police department as well as establish their own sanitary, and other regulations so long as these rules do not conflict with other general laws. They have the authority to incur a higher percentage of indebtedness than other townships, and can supply water and sewer services to users within their boundaries. They can, among other advantages, adopt emergency resolutions, file initiative and referendum petitions, adopt building codes and other standards not in conflict with state or local standards of the same type, and adopt standards regarding soil erosion and water degradation from nonfarm development. They do not have the authority to modify or establish subdivision regulations, road construction standards, urban sediment rules, or storm water and drainage regulations.

While these townships participated in the hazard mitigation plan as part of the county’s twenty-four townships, and are part of the countywide assessment of hazards, consequences, and threats, they are listed as specific jurisdictions in the strategy section of this plan. Due to

the responsibilities and authorities of their jurisdictions, they would act autonomously in the area of mitigation grant application, administration, and implementation.

Census designated areas and unincorporated communities are governed by the townships, and for mitigation purposes, fall under the direction of Trumbull County. Some areas that are not incorporated serve as postal areas, and are indicative of a specific zip code for the purpose of establishing a specific zone for purposes. For example, Bristolville, Burghill, and Farmdale are zip code identifiers. Following is a variety of relatively populated areas with their population indicated in parenthesis, including the following sixteen census designated areas.

- Bolindale (1,921)
- Brookfield Center (1,141)
- Champion Heights (6,386)
- Churchill (2,176)
- Hilltop (658)
- Howland Center (6,351)
- Kinsman Center (574)
- Leavittsburg (1,571)
- Maplewood Park (243)
- Masury (2,001)
- McKinley Heights (950)
- Mineral Ridge (3,951)
- Morgandale (1,139)
- South Canal (1,101)
- Vienna Center (622)
- West Hill (2,218)

There are eight unincorporated communities as follows. Statistics are not generally tracked for these areas. These resemble neighborhoods and have no official governance body. These areas are often designated zip code areas, and exist from earlier postal delivery designations that have carried on into today's system. It is common practice for these areas to be named the same as a township, village, or city as well, stemming from historical populations and governance practices.

- Bristolville
- Burghill
- Center of the World
- Farmdale
- Fowler
- Hartford
- North Bloomfield
- Southington

Trumbull County also has "ghost towns" that existed formally in years past, but over time have been absorbed and included in other municipalities. Long-time residents may still refer to these by name, but there is no official governance.

It is common in Ohio counties for townships, municipalities, and/or unincorporated areas of various types to carry the same or very similar names. In Trumbull County's case, the City of Warren is in Warren and Howland Townships, and all are located in Trumbull County. In other areas, a municipality may exist in one county, and a county of the same name may be located elsewhere. There are multiple townships that carry names common to townships elsewhere.

There are twenty-four townships, listed in the Table 2-13 below. Union (also known as Lordstown) Township is a defunct township, and is entirely incorporated as the Village of Lordstown. It is no longer listed.

Table 2-13: Township Population Statistics

Township	Population 2020	Population Unincorporated Area Only	Population 2010	Change
Bazetta Township	5,912	5,912	5,874	+38
Bloomfield Township	1,249	1,249	1,322	-73
Braceville Township	2,467	2,467	2,856	-389
Bristol Township	2,704	2,704	2,919	-215
Brookfield Township	8,447	8,372	8,854	-407
Champion Township	9,381	9,381	9,612	-231
Farmington Township	2,993	2,451	2,728	+265
Fowler Township	2,360	2,360	2,595	-235
Greene Township	950	950	1,015	-65
Gustavus Township	834	834	829	+8
Hartford Township	1,861	1,861	2,070	-209
Howland Township*	17,191	17,191	19,106	-64
Hubbard Township	12,969	5,333	13,528	-559
Johnston Township	1,739	1,739	1,952	-213
Kinsman Township	1,751	1,751	1,876	-125
Liberty Township*	21,514	11,936	21,982	-468
Mecca Township	2,319	2,319	2,674	-355
Mesopotamia Township	3,404	3,404	3,387	+17
Newton Township	8,618	4,061	8,875	-257
Southington Township	3,731	3,731	3,717	+14
Vernon Township	1,337	1,337	1,536	-199
Vienna Township	3,978	3,978	3,980	-2
Warren Township	4,744	4,744	5,551	-807
Weathersfield Township	24,689	8,072	25,908	-1,219

**Limited Home-Rule Township*

Townships

Trumbull has four townships that have between 10,000 and 15,000 residents, including Howland, Hubbard, Liberty, and Weathersfield. The cities of Girard, Hubbard, and Niles sit in these townships, and the population statistics above include the municipal population along with the township population in the first column; the second shows the township population less those who live inside city limits. Although the City of Warren sits in both Warren and Howland Townships, these population numbers are not incorporated into the township statistics.

There are four townships with over 5,000 residents, including Bazetta, Brookfield, Champion, and Newton. Only Newton Township includes a municipality, Newton Falls, and when those numbers are reduced accordingly, the township population falls below five thousand.

This is relevant from a mitigation program perspective because any mitigation actions in those townships that include a municipality would likely involve the municipality as well as the township, and carry a high likelihood that the action would be a joint venture between multiple jurisdictions. Both the municipality and the township may contribute to the administration and execution of the project.

It also means that the larger townships may have higher capacity to manage a mitigation project than a more typical township. They may have significant staff, and may be divided into service departments that provide services like engineering, building regulation, or public safety in a manner very similar to that of a city.

Statistically, since at least the year 2000, the population living outside an incorporated area in Trumbull County has remained approximately 46%. Decreases in population over the past two decades have affected municipalities and townships equally.

2.1.4 Institutions and Special Facilities

Trumbull County residents have access to multiple educational and healthcare resources in the county. Access to these services improves the quality of life for residents and contributes to the successful development of the economy and workforce.

Education

Students in Trumbull County are served by over twenty public school districts. Vocational education is provided by Trumbull Career & Technical Center in Champion Township. The Trumbull County Educational Service Center supports Trumbull County public schools.

Table 2-14: Trumbull County Schools

Public School Districts	Private/Parochial Schools
Bloomfield Mespo Local School District	Deer Run School
Bristol Local School District	Gates Hill School
Brookfield Local School District	Grand River Valley School
Champion Local School District	Grapevine Creek School
Girard City School District	Holy Trinity Orthodox Christian
Howland Local School District	JFK Catholic School Lower Campus
Hubbard Exempted Village School District	John F Kennedy Catholic School
Jackson-Milton Local School District	Kinsman Amish School
Joseph Badger Local School District	River Valley School
LaBrae Local School District	Saint Rose School
Lakeview Local School District	St. Patrick's School
Liberty Local School District	St. Stephen School
Lordstown Local School District	Shady Lane School
Maplewood Local School District	Stagecoach Run School
Matthews Local School District	Summit Academy Community Sch.
McDonald Local School District	STEAM Academy of Warren
Newton Falls Exempted Village School District	Valley View School
Niles City School District	Victory Christ School
Southington Local School District	Villa Maria Teresa Elementary

Trumbull Career & Technical Center Warren Dity School District Weathersfield Local School District	Willow Creek School

In addition to the schools named above, some Trumbull County students attend Cardinal Local Schools and Youngstown City Schools which are not in Trumbull County.

ETI Technical College of Niles and Kent State University provide post-secondary education. KSU, while based in Portage County, has an additional campus in Champion Township to easily serve Trumbull County residents.

According to the Ohio County Profile for Trumbull County, there are 23,457 students and 1,951 teachers in the county's public schools. Charter and private schools add 1,749 students and at least 70 teachers to the statistics. The profile lists 63 school buildings (not indicative of the number of school districts as most districts have more than one building), four charter schools and six private schools. A general online search yielded a longer list of charter and private schools than the profile indicated, and found 24 public school districts. It is assumed that the student and teacher statistics in the profile are understated, partly due to the population for school-aged children being approximately 15% higher than the estimated school enrollment.

Healthcare

Mercy Hospital St. Joseph Warren Hospital operates in Warren, and serves Trumbull County residents. It is part of the Mercy Health System (Youngstown) and is licensed through the Ohio Department of Health for 200 beds.

Trumbull Regional Medical Center and Hillside Rehabilitation Hospital in Warren both closed in March 2025. Insight Health System purchased the facilities out of bankruptcy in 2024, but ultimately was unable to access funding to operation due to issues with the former owner. As of November 26, 2025, the Insight Hospital and Medical Center Trumbull website indicates the hospital is on diversion for all services. The hospital currently holds certification for 280 beds and the rehabilitation center maintains a license for 69 beds, although they are not open or operational.

There are nine licensed federally qualified health centers in Trumbull County, but only seven are open and operating. They include the following:

- Axesspointe Community Health Center, Inc., 150 E. Market Street, Warren
- Axesspointe Community Health Center, Inc., 318 Mahoning Ave. NW, Warren
- East Market Pediatrics, 1821 E. Market Street, Warren
- Falls Family Care, 175 E. Broad Street, Newton Falls
- Lloyd McCoy Community Health Center, 1977 Niles Rd SE, Warren
- Ohio North East Health Systems, Inc, 2642 SR 5, Cortland
- Warren West Community Health Care, 1230 Palmyra Road, Warren

There are seventeen nursing homes that are open and active in Trumbull County, with a total of 1,556 beds, as listed below:

- Windsor House at O'Brian Memorial with 87 beds
- Windsor House at Liberty with 110 Beds
- Windsor House at Champion with 100 beds
- Continuing Healthcare of Niles with 120 beds
- Continuing Healthcare at The Ridge with 187 beds
- Concord Care Center of Hartford with 54 beds
- Niles Way Grace Woods Senior Living with 78 beds
- White Oak Manor with 52 beds
- Shepard of the Valley with 99 nursing beds (partial capacity)
- The Suites at Continuing Healthcare of Niles with 68 beds
- Cortland Healthcare with 98 beds
- Shepard of the Valley Howland with 65 beds (partial capacity)
- Gillette Nursing Home with 99 beds
- Country Club Rehabilitation Campus with 60 beds (partial capacity)
- Warren Nursing and Rehab with 107 beds
- Addison Healthcare with 89 beds
- Washington Square with 83 beds

Other healthcare institutions include the following:

- Seven assisted living residential communities capable of housing 325 individuals
- Ten home health care agencies will current licensure
- Two hospice centers

2.1.5 Infrastructure

Infrastructure and related systems provide residents, workers, and visitors with access to critical services. This section describes transportation infrastructure, airports, and utilities.

Transportation Systems

Trumbull County has 462 miles of county roadways, in addition to the interstates, federal highways, and state highways that are maintained by the Ohio Department of Transportation. There are 378 bridges and 1,601 culverts maintained by the county engineer. Then Engineer's Office also handles driveway access issues, driveway culvert issues, drive and yard pipe policy and enclosure requirements, and road boar or right of way permits. Special hauling permits and mailbox standards and installation instructions come from the Engineer's Office as well.

Trumbull County township trustees are responsible for nearly 637 miles of township roads. Trustees work with and engage the county engineer to perform much of the work to maintain these roads, bridges, and culverts, and to resurface and repair the roads. The Engineer also may provide services to some of the municipalities to maintain their streets, bridges, and culverts. Other work not performed by the county is either performed by the jurisdiction or contracted out.

Table 2-15: Trumbull County Highways

Interstates	U.S. Highways	State Highways	
I-80	US 62	SR 5	SR 193
	US422	SR 7	SR 303
		SR 11	SR 304
		SR 45	SR 305
		SR 46	SR 534
		SR 82	SR 609
		SR 87	SR 616
		SR 88	SR 711
		SR 169	

Rail

According to the Ohio Railway Map, there is significant rail mileage in Trumbull County. CSX Transportation, Norfolk Southern Railroad, and Ohio Central Railroad are the major operators in the county.

CSX Transportation owns and operates a line that enters Trumbull County from the north and travels through Gustavus, Johnston, Fowler, Hartford, Brookfield, and Hubbard townships. The line breaks in southern Johnston Township and travels into Cortland, then through Warren and Newton Falls. This same line splits in north Warren and a splinter line heads west through Braceville Township. Another CSX line heads north out of Youngstown into McDonald, and then heads west through Niles, Lordstown, and Newton Falls.

Norfolk Southern lines cross through the center and west side of Warren, into Newton Falls and head west to the Akron area. Another NS track comes north out of Youngstown and turns west in McDonald, heading west through Niles, Lordstown and Newton Falls.

There are no rail yards or switching yards in Trumbull County.

According to PUCO, there are 334 rail crossings in Trumbull County, of which 284 are public crossings. Of those, 61 have gates and 139 have crossbucks. The remainder have “Yield” or “Stop” signs.

Airports

Trumbull County has three airports, including Braceville Airport (41N) at 4720 State Route 5 in Newton Falls, and Warren Airport (62D) owned by SKEETS Airport Inc. at 3599 Herr Fieldhouse Road in Southington. The third, Youngstown-Warren Regional Airport is in Vienna Township. All airports are open to the public, but neither small airport has a control tower. Youngstown-Warren Regional Airport has a control tower that is open and staffed at all times with air traffic control personnel.

Utilities

The highest percentage of homes in Trumbull County, approximately 80.8%, are heated with natural gas. An additional 11.8% have an electric heat source, and 2.1% heat with bottled or LP gas.

The remaining properties in the county are heated by other sources, including:

- Solar energy or other fuel 0.6%
- Coal, coke, or wood 2.1%
- Fuel oil, kerosene 2.1%
- No fuel used 0.4%

Hazardous liquid pipelines cross Trumbull County in several locations. Lines run across southwest quadrant from north of McKinley Heights to Deforest, then southwest where the line splits near Austintown Warren Road; it then extends to Lordstown's maintenance building, and through Duck Creek Golf Course as it leaves the county. Another splint of that line heads northwest at Austintown Warren Road, and leaves the county between Newton Falls and West Farmington. There is a breakout tank along SR 422 north of McKinley Heights where SR 46 intersects the highway. There are no recorded incidents on the PHMSA website.

A gas transmission pipeline runs north to south from West Farmington to the south, around Newton Falls and just west of the Lordstown incorporation line. AA line branches off just south of the Warren Airport and heads toward the Champion Heights area. There are no incidents listed on the PHMSA website, and not LNG plants indicated.

The PHMSA website does not indicate that any of these lines flow through highly populated areas. The map does not show any abandoned pipelines in the county.

Water treatment and distribution, wastewater collection and treatment, electrical and gas utilities, and telecommunications/internet are provided by a variety of public and private providers. The Mahoning Valley Sewer District/Meander Water is a primary provider, and is a separate jurisdiction in this plan. See page 2-17 and 2-18.

2.1.6 Topography and Climate

Topography

Trumbull County has a variety of topographical characteristics. There are many flat areas, especially in the southern half of the county, that have been settled into communities with homes, businesses, and manufacturing. On the other hand, a third of the county is rolling hills or woodlands, with some development but significant natural areas. According to the Ohio County Profiles, 33.06% of the county is forest, 10.25% is wetlands, 0.13% is barren, and 0.81% is shrub and grassland. Open water amounts to 2.23% of the county area. Consequently, almost half of the county is not developed or built upon.

Climate

The climate of Trumbull County is considered humid continental, meaning there are four distinct seasons. Winters can be cold and snowy, and summers are warm and humid. Fall and spring are less severe, with increased precipitation and more variation from day to day. The average annual high temperature is 82 F in July, and the average annual low is 33 F. in January. July is the warmest month and January is the coldest month generally. Average annual precipitation is slightly over 53 inches. The most precipitation falls in June, with an average of 6.0 inches. January, February, and November are tied for the driest month with an average precipitation of 3.5 inches. Trumbull County residents see the most sun in June, July, and August and the least in December, January, and February.

2.1.7 Waterways and Watershed

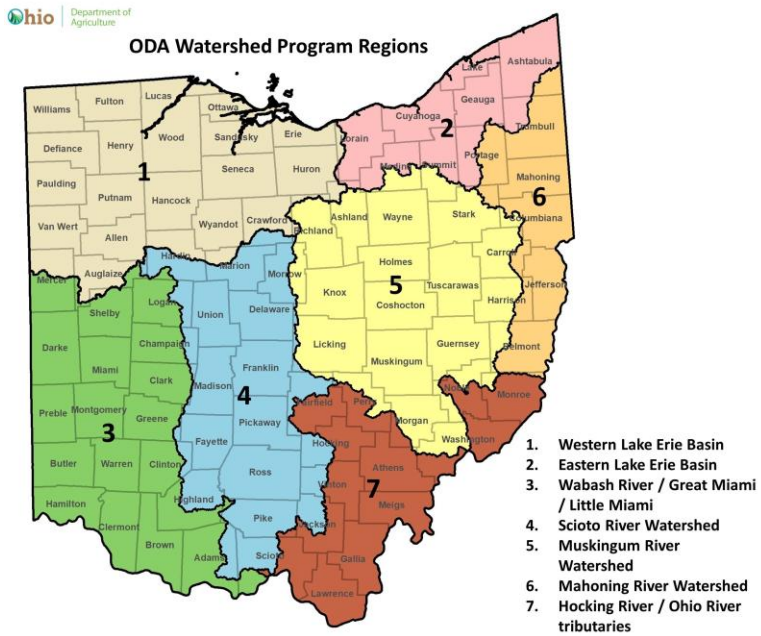
Trumbull County is part of three watersheds. The Continental Divide passes through Trumbull County, directing two of the watersheds, eventually, to the Ohio River and one to Lake Erie.

The Grand River Watershed, located in the northwest quadrant of Trumbull County, flows into Lake Erie and out the St. Lawrence Seaway into the Atlantic Ocean. The Mahoning River Watershed and the Pymatuning River Watershed both end up in Beaver River south of Pittsburgh, and then on to the Ohio River. The Ohio River then flows into the Mississippi River and moves on to the Gulf of Mexico.

Map 2-4 Continental Divide in Ohio

The map below shows the Grand River Watershed as part of the Eastern Great Lakes watershed, labeled as “2”. It shows the Mahoning and Pymatuning River Watersheds as “6”. Part of this watershed includes counties in Pennsylvania, but the map is limited to the portion of the watershed that is in Ohio.

Map 2-5 Ohio Watersheds



Grand River Watershed

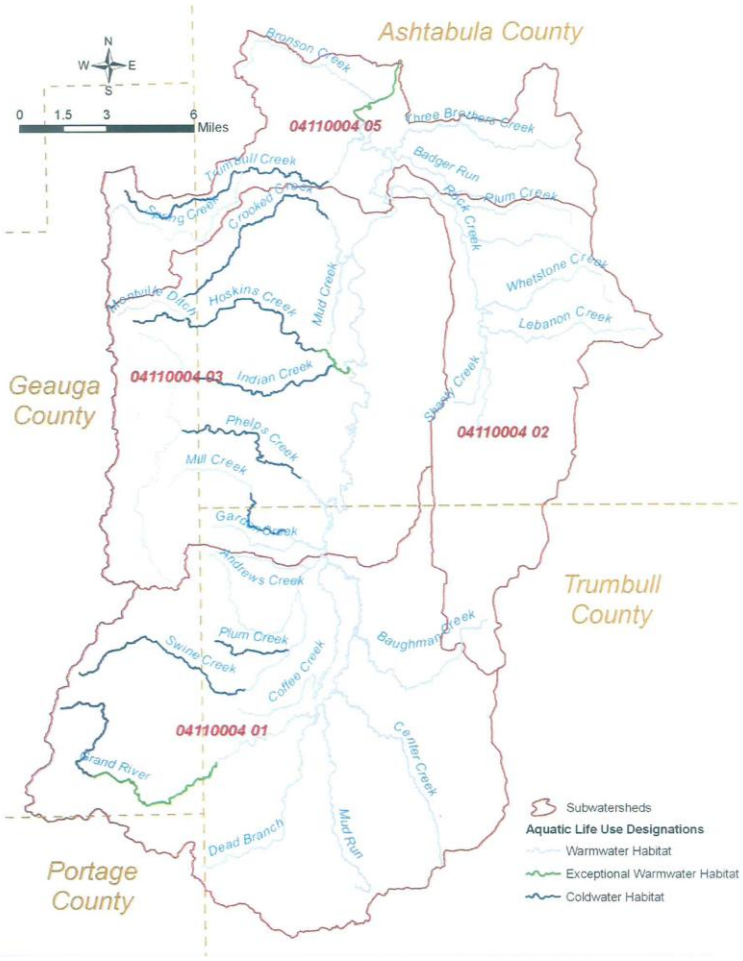
Trumbull County is part of the Upper Grand River Watershed, specifically the Headwaters Sub-watershed area. This area consists of Mesopotamia, Bloomfield, Farmington, and Southington townships entirely, and parts of Bristol, Champion, and Greene Townships. West Farmington is included in this watershed.

This watershed is divided into four sub-watersheds. Trumbull County is in the Headwaters sub-watershed area.

Waterways that are part of this watershed include Dead Branch, Mud Run, Center Creek, Baughman Creek, Coffee Creek, Swine Creek, Plum Creek, Andrews Creek, Garden Creek, and Snyder Ditch. These waterways flow into the Grand River.

The following map illustrates this area. Note that Trumbull County is only the part of the map below the line that shows where Trumbull and Ashtabula counties border one another.

Map 2-6 Grand River Watershed – Headwaters Sub-watershed



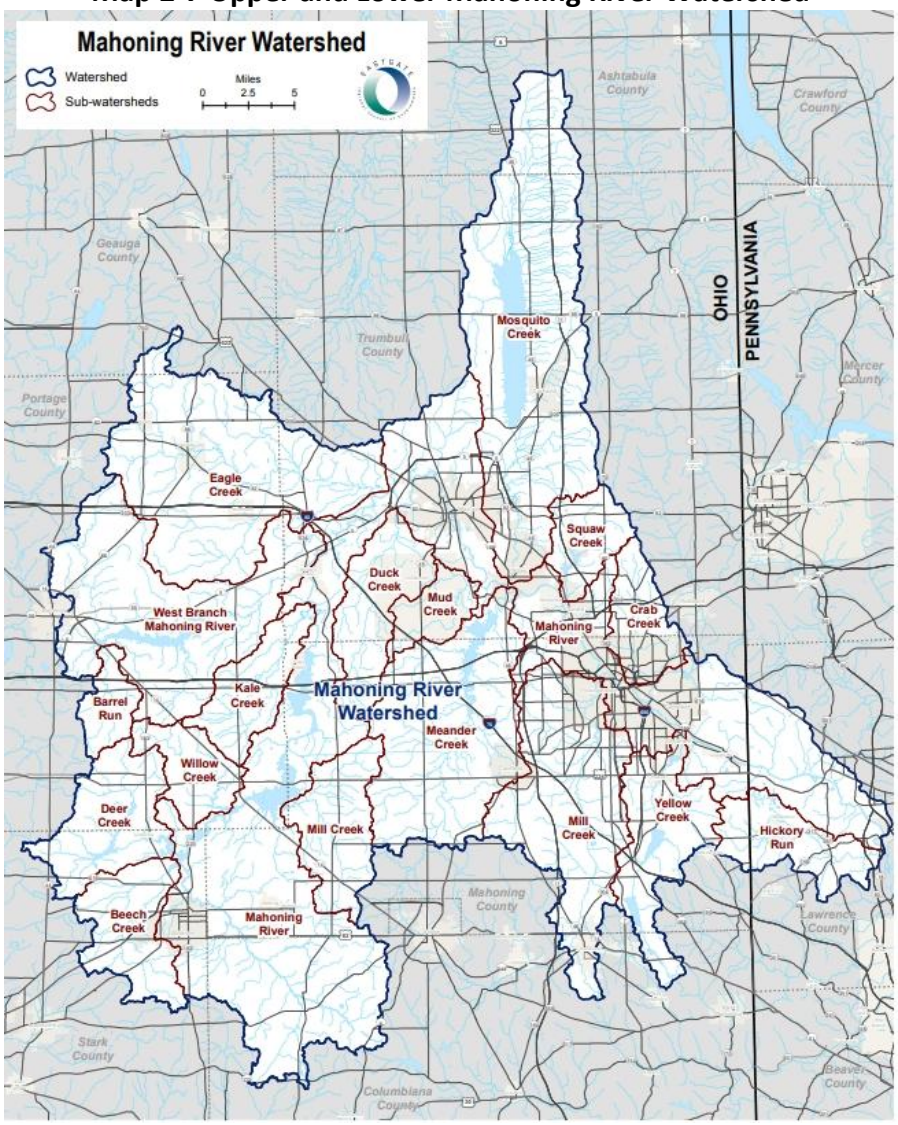
Mahoning River Watershed – Upper and Lower

The Mahoning River Watershed, includes all areas in the central and southern sections of the county, except for a strip along the northeast border. It includes almost all municipalities, except for West Farmington and Orangeville. The waterways included in this watershed are as follows:

- Eagle Creek
- Mosquito Creek
- West Branch
- Meander Creek
- Mill Creek
- Yellow Creek

Several reservoirs are included in this watershed; those include Mosquito Creek Reservoir, West Branch (Kirwin) Reservoir, Berlin Reservoir, and Meander Reservoir.

Map 2-7 Upper and Lower Mahoning River Watershed

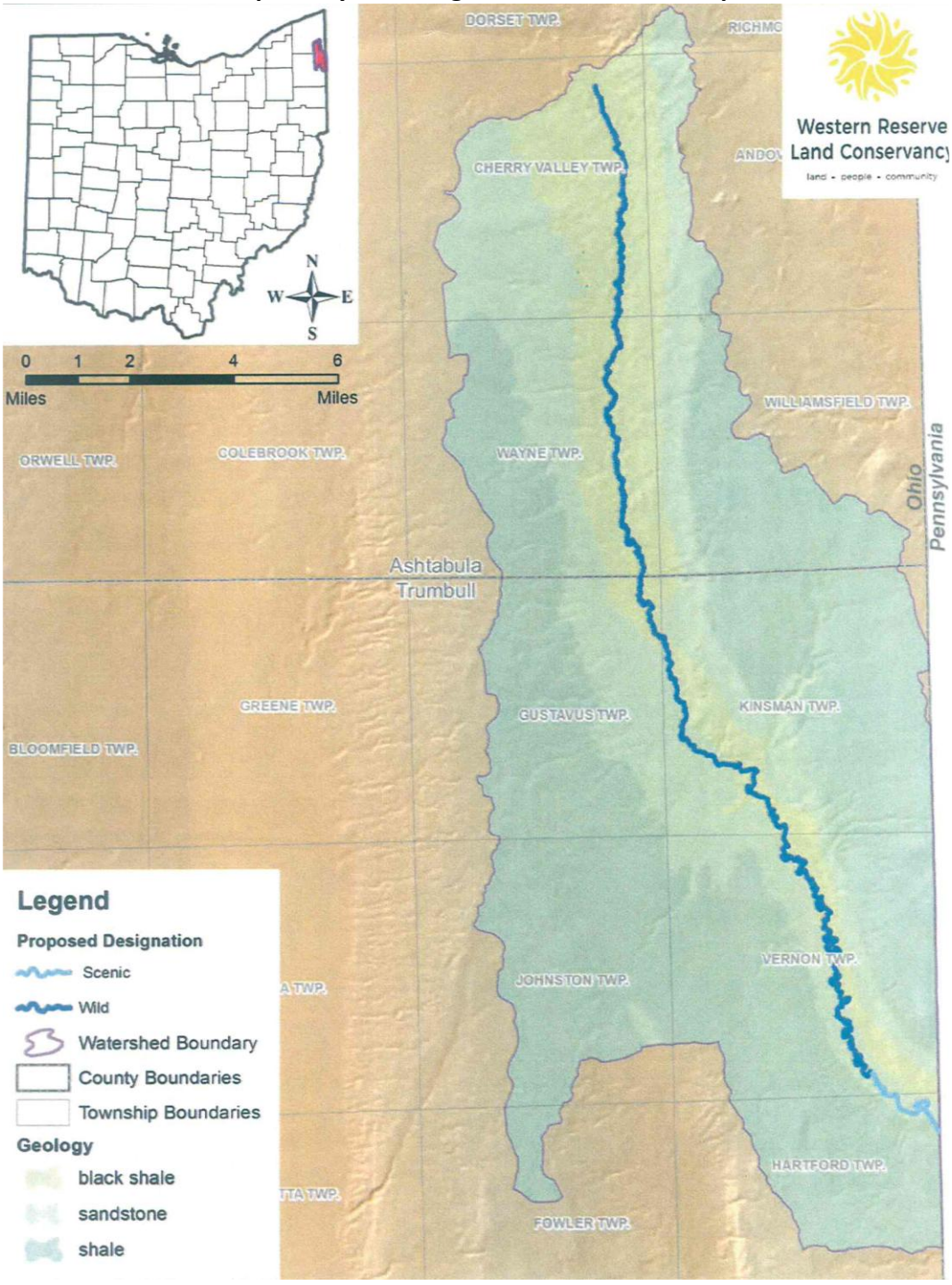


Pymatuning Creek Watershed

This watershed is located along Pymatuning Creek in the far northeast part of Trumbull County. The topography of this watershed includes significant wetlands, and many acres of preserves and natural habitat. The creek is not easily navigable due to a high prevalence of woody debris, beaver dams, and tree snags through a rooted vegetation environment. This creek flows southeast to the Shenango River which shortly joins into the Mahoning River. A short time later, it joins the Beaver River and flows south to the Ohio River downstream of Pittsburgh.

This watershed includes Clear Creek, Sugar Creek Mill Creek, and Stratton Creek. The Shenango Wildlife Area is also in this watershed. This watershed ends its Trumbull County venture as it exits the county in Orangeville.

Map 2-8 Pymatuning Creek Watershed Map



2.1.8 Land Use

Almost half, 46.48%, of Trumbull County is forest, wetlands, open water, grasslands, and barren areas. Another 30.69% is pasture and cultivated crops. The remaining 22.82% is low or high intensity developed.

Table 2-17: Trumbull County Land Use

Use Category	Percentage
Forest	33.06%
Pasture/Hay	16.18%
Developed, Lower Intensity	18.6%
Shrub/Scrub and Grasslands	0.81%
Open Water	2.23%
Developed, Higher Intensity	4.22%
Wetlands	10.25%
Barren (strip mines, gravel pits.)	0.13%
Cultivated Crops	14.51%

2.1.9 Regulation and Community Development Planning

Trumbull County communities have adopted comprehensive building regulation and development standards. There are commercial and residential building codes that are enforced by the county and municipal building departments.

Ohio requires all commercial projects to comply with State of Ohio commercial building codes. Trumbull County has adopted residential building codes for the unincorporated areas of the county. Municipalities can adopt those regulations or pass legislation to exclude their community from the residential codes. The table at the end of this section shows the municipal residential adoption by inspector and regulator identification.

Specific codes in effect in Trumbull County include the following:

- Commercial: Ohio Basic Building Code (OBBC 2024)
- Commercial Electrical: National Electrical Code 2023
- HVAC & Mechanical: OBC – OH Mechanical Code 2924
- Residential Building Code: 2019 Residential Code Ohio (2019 RCO)
- Residential Electrical: National Electrical Code 2023
- HVAC & Mechanical: RCO 2019

Zoning and Floodplain Management

Zoning provides guidance for the location of various types of development. It acts to preserve farmland, natural areas, and other specially developed lands, and protects it from conflicting kinds of development. Generally, zoning regulations drive commercial development to areas that have the infrastructure to support their operations, prevents the loss of productive farmland, and clusters residential areas around infrastructure to serve them. The Trumbull County Commissioners provide guidance to the unincorporated areas of the county, but do not regulate zoning standards.

The Trumbull County Planning Commission provides guidance for the township zoning officers, and establishes other sets of regulations, described later. Municipal zoning officers work under the direction of their jurisdiction. Zoning is enacted through a voting process at the municipal or township level, but allows for exceptions to the rules through an appeal process. A zoning inspector administers the rules, and exceptions are determined through appeal to the Zoning

Board of Appeals of that jurisdiction. Residents and businesses pay fees to the township or municipality for permits to conduct projects that are covered in the zoning regulations. Most areas of Trumbull County are zoned, as shown in Table 2-14.

Table 2-18: Trumbull County Zoning Status

Zoned		Not Zoned
City of Cortland	Fowler Township	Brookfield Township
City of Girard	Greene Township	Mecca Township
City of Hubbard	Gustavus Township	Mesopotamia Township
Village of Newton Falls	Hartford Township	Vernon Township
City of Niles	Howland Township	Village of Orangeville
City of Warren	Hubbard Township	Village of Yankee Lake
Village of Lordstown	Johnston Township	
Village of McDonald	Kinsman Township	
Village of West Farmington	Liberty Township	
Bazetta Township	Newton Township	
Bloomfield Township	Southington Township	
Braceville Township	Vienna Township	
Bristol Township	Warren Township	
Champion Township	Weathersfield Township	
Farmington Township		

The Trumbull County Planning Commission administers subdivision regulations regarding development and construction on behalf of Trumbull County. They establish subdivision regulations that guide the creation and operation of residential areas that fit the established criteria, which may include the number and size of parcels within a specific size area or requires the creation of utility or infrastructure improvements to serve the eventual residential buildings. The county, through the Planning Commission activity, sets fees, classifies subdivision types, sets rules for lot splits and dimensions, and manages the frontage size of lots for those unincorporated areas that have not adopted lot size parameters as part of their zoning resolution or have no zoning in place.

The Planning Commission provide floodplain management services that establish standards for building in flood-prone areas, and examines and approves permits to build where flooding is likely. This process is completed prior to any excavation or site preparation, construction, alteration, remodeling, or expanding any structure within a flood-prone area. They manage flood permit applications, floodplain administration, flood elevation certificates, and instruction, dry-floodproofing project permits, and “no-rise” certifications. The FEMA Map Service Center documents are used to administer these regulations.
The Planning Commission participates in the update and upgrade of floodplain regulations, and responds to or reacts to Letters of Map Change (LOMC)and/or Letters of Map Amendment (LOMA), or Letters of Map Revisions Based on Fill (LOMR-F) process. They assist residents with questions about the National Flood Insurance Program and assist with flood prevention and mitigation issues on the county’s behalf.

There are septic regulations, address assignment procedures, and driveway requirements that are enforced by the Trumbull County Combined Health District, Township Zoning and/or fire officials, the Trumbull County Engineer and the State of Ohio Department of Transportation.

In areas where there are no sanitary sewers and homes must install a septic system, the Trumbull Combined Health Department inspects potential septic installations and issues those permits. If the structure is within a city or an area where sanitary sewers are provided, the jurisdiction having authority may require an application for installation or connection.

In areas where there is no water distribution, homeowners depend upon individual wells. Trumbull County Combined Health Department approves the wells by testing the water for safe consumption. If there is water distribution, there may be tap-in fees paid to gain access to that system.

Most new development or significant change to an existing structure, residential or commercial, begins and ends with a zoning application where zoning regulations have been adopted. The zoning application initiates a review of the intended property use against the zoning regulations, and triggers a floodplain check and subdivision and curb break rule review through Trumbull County Regional Planning. The zoning application will also, when applicable, trigger a fire code compliance inspection, facilitated by the fire authority having jurisdiction, applicable to commercial property only.

Should the intended use be inconsistent with the zoning rules in one of the zoned jurisdictions, the property owner will be advised to consider the application for a variance. If the property owner decides to proceed, the zoning variance will be considered by the zoning board with a ruling issued. Special stipulations may be issued as part of a zoning variance, or the variance may be approved or denied. The project will proceed only if a variance is granted.

Each jurisdiction that has area in a floodplain and belongs to NFIP has a floodplain manager, listed in Table 2-18 Floodplain Managers in this section. The floodplain manager, sometimes in concert with the Planning Commission Director, is involved in construction of any property that is in a floodplain. If the property is not located within a floodplain, the appropriate floodplain officials will sign off on the project. If it is in a floodplain, the floodplain manager and/or the Planning Commission Director will discuss options for materials, construction modifications, or other mitigation efforts necessary to move forward, or will deny the project if that is the appropriate action.

The NFIP requires that participating communities develop and maintain floodplain regulations, and appoint a floodplain manager. Participating NFIP communities are eligible to purchase flood insurance through FEMA. The following table shows which jurisdictions participate in the NFIP and lists their designated floodplain manager. Floodplain regulations determine if and how construction can occur in a designated floodplain, and what mitigation measures must be engaged to build in a flood-vulnerable location. Any financial assistance or incentive program,

and any mortgage on the property, requires a property in a floodplain to carry federally-supported flood insurance through FEMA.

Table 2-19 NFIP Participation for Trumbull County

Community	Init FHBM Identified	Init FIRM Identified	Curr Eff Mapp Date	Re-Emer Date
Cortland	10-6-1978	6-18-2010	(NSFHA)	2-5-1992
Girard	1-18-1974	7-2-1980	6-18-2010	7-2-1980
Hubbard	4-12-1974	8-15-1978	6-18-2010	8-15-1978
Lordstown	1-13-1978	3-1-1979	6-18-2010	3-1-1979
McDonald	5-17-1974	8-8-1979	6-18-2010	8-8-1979
Newton Falls	8-8-1975	8-1-1978	6-18-2010	8-1-1978
Niles	3-1-1974	6-1-1978	6-18-2010	6-1-1978
Orangeville	4-18-1975	9-4-1987	6-18-2010 (M)	9-4-1987
Warren	10-26-1973	8-1-1977	6-18-2010	8-1-1977
West Farmington	9-29-1978	10-16-1984	6-18-2010	*
Yankee Lake	7-29-1977	6-18-2010	6-18-2010	*
Trumbull County	---	9-29-1978	6-18-2010	9-29-1978

***** Sanction Date 9-29-1979

The Trumbull County Planning Commission is also involved in comprehensive planning, economic development, and general community development, lending guidance, and knowledge of specific areas to the process. They are involved in the administration of Community Development Block Grants and other grant programs, Environmental Mapping, Recommendations and preservation, and GIS mapping for the county. They administer compliance with fair housing regulations as applied to sales, rental, and financing of residential property. The three Trumbull County Commissioners are joined by eight community leaders to form the Planning Commission that meets every month to address current issues, applications, and permits.

Stakeholder meetings that included inspection and regulatory staff provided information that an update of building regulation technology would improve inter-department efficiency and collaboration after disasters, at a time when the various types of inspectors are required to perform many building inspections and regulatory services. They indicated that having a platform that holds existing building data for those doing emergency response and recovery inspections for multi-agency work could pull all inspectors into one real-time mobile application, would improve outcomes. It would allow for sharing of existing building data in real time, on-site. Survivors could get back into their homes faster, and businesses could re-open faster as the currently-cumbersome process of post-disaster inspection delays re-entry and recovery results would be replaced by a more robust, dynamic system.

Table 2-20 Regulatory Inspectors and Managers

Jurisdiction	Zoning Inspector	Fire Inspector	Commercial Inspection	Residential Inspection	Floodplain Manager
Trumbull County	Kimberly Vaughn	n/a	Michael Silwinski Blake Peterson	Darren Mancini Anthony Canderino	Nic Coggins
Cortland		David Rea	City	City	Kimberly Blasco

Girard	Nancy Thomas	James Petruzzi	City	City	David Hall
Hubbard		Ron Stannish	City	City	Chris Struck
Lordstown	Kellie Bordner	Travis Eastham	Village	Village	Kellie Bordner
McDonald		Fred Marcum	Paul Pancoe	Paul Pancoe	Thomas Domitrovich
Newton Falls	James Lampkin	James Williamson	City	City	Mike Novotny
Niles	Matt Durno Don Wheeler	John Stevens	Don Wheeler	Don Wheeler	Duke Wheeler
Orangeville		Larry Foltz	Ohio Department of Commerce	None	Ruth Bennett
Warren	Erik Jennings	Kenneith Nussle	Chris Taneyhill	Chris Taneyhill	Chris Taneyhill
West Farmington	Dale Olp	Fire Chief	Village	Village	Shirley McIntosh
Yankee Lake		David Masirovits	Village	None	Not Listed
Bazetta Twp.	Mark Posey	Thomas Rink	Michael Silwinski (CBO) Blake Peterson (Inspector)	Daren Mancini (RBO) Anthony Canterino (Inspector)	n/a
Bloomfield Twp.	Dave Hudnill	Dave Peterson			n/a
Braceville Twp.	Jose Nogales	Todd Garland			n/a
Bristol Twp.	Erik Jennings	Steve Craiger			n/a
Brookfield Twp.	Not Zoned	Dave Masirovits			n/a
Champion Twp.	Gerry Brown	Thomas Dempsey			n/a
Farmington Twp.	Dale Olp	Jonathan Bland			n/a
Fowler Twp.	Brian Gates	Todd Metzendorf			n/a
Greene Twp.	John Starkey	Chad Holko			n/a
Gustavus Twp.	Mark Posey	Jamison Conley			n/a
Hartford Twp.	Jim Davies	David Masirovits			n/a
Howland Twp.	Daniel Morgan	Raymond Pace			n/a
Hubbard Twp.	Nicole Caldwell	Ron Stanish			n/a
Johnston Twp.	Daniel Bagaglia	Scott Gardner			n/a
Kinsman Twp.	Mark Posey	Tyler Elser			n/a
Liberty Twp.	Melissa Ritchie	Douglas Theobald			n/a
Mecca Twp.	Not Zoned	Tom Domes			n/a
Mesopotamia Twp.	Not Zoned	Jamie Loza			n/a
Newton Twp.	Timothy Irons	James Williamson			n/a
Southington Twp.	Al Haberstroh	Scotty Bower			n/a
Vernon Twp.	Not Zoned	George Snyder			n/a
Vienna Twp.	Mark Posey	Gus Birch			n/a
Warren Twp.	Tyler Wilson	Joe Natali			n/a
Washington Twp.	Kelly Clarke	Tom Lambert			n/a

As limited home-rule townships, both Howland and Liberty Townships have adopted regulations that apply to their jurisdictions under that authority. Howland Township includes portions of the City of Warren and the City of Niles. Liberty Township includes the City of Girard. The limited home rule regulations do not supersede the municipal regulations, but may, depending upon how the rules are enacted, apply in the absence of a municipal rule.

Relevant to mitigation issues, Howland Township adopted Erosion and Sediment Control Regulations (Home Rule Resolution 2005-07) that is intended to allow for development yet minimize increased vulnerability to flooding, protect water resources, and establishes the process of administering and enforcing the resolution. Howland Township also adopted Storm Water and Site Development Standards (Resolution 2005-06) to guide, regulate and control the design, construction, use, and maintenance of storm water facilities in the township.

Liberty Township has also adopted home rule resolutions. In January 2006, they adopted the 2006 International Property Maintenance Code to drive and enforce proper maintenance and upkeep of properties in the township. Other resolutions provide for sidewalk repair, public nuisance (noise), and street light use fees.

In the interest of mitigation funding and projects, these two townships can act autonomously. They are, therefore, listed in the strategy selection table as independent jurisdictions.

Community and Economic Development

Many public and nonprofit partners work together in Trumbull County to attract new business and industry to the county, to retain and improve existing businesses and industries, and to provide the services and features needed to support the workers in those businesses and industries.

The Trumbull County Planning Commission serves as the link between regulation and guidance development and implementation of growth initiatives and special programs. They serve as the central entity in guiding municipalities and townships to work together to formulate feasible and effective strategies, relying upon common goals and principals, to enhance the features and benefits of living in Trumbull County. Through their planning efforts and collaboration, they can foster growth that takes advantage of existing resources and infrastructure, and that improves the quality of life in each of the county's jurisdictions.

Through Planning Commission efforts, the twenty-four townships have all addressed comprehensive planning, and the municipalities have also created their specific growth strategies and plans. This helps new development occur in a manner that utilizes existing land and resources, and ensures adequate transportation, water, sewers, schools, parks, recreation, housing, and other components that are needed.

The Planning Commission reviews regulations and plans, and works to ensure consistency and compatibility of all the programs established by the jurisdictions. They can contract to write the plans for the jurisdictions, with their input, or they can simply assist in the development. They work to help create updates to regulations, including zoning and floodplain rules.

The Trumbull County Planning Commission serves as a coordinating entity, representing county governments, but also coordinating and connecting local, regional, state, and federal resources to the benefit of Trumbull County businesses and residents. Their work involves the following programs:

- Ohio Enterprise Zone Program – this provides tax incentives and exemptions for new and expanding businesses in the county;
- Ohio Community Reinvestment Program – this program provides tax exemptions for renovated and improved properties in lieu of new construction projects;

- Community Development Block Grants – this grant program provides, generally, 50% funding for expansions and efforts that create jobs, reduce blight, and focus on low-income and moderate-income job opportunities;
- Joint Economic Development District – this district was formed to allow for multi-jurisdictional participation and benefit for the recruitment and establishment of new businesses;
- Provides local demographic, site, financing, and job development information to new and interested entities looking to locate businesses in Trumbull County;
- Provides connections and enhances cooperative and jurisdictional efforts in community and economic development planning and execution;
- Coordinates floodplain and zoning regulation efforts, and provides guidance to jurisdictions.

The Lake To River Economic Development group was created in 2024 to attract, develop and retain businesses in the greater region, including Trumbull County. With a staff of eight and a board of fourteen, they focus on attracting new businesses and leading the way for a more prosperous and productive future. This group provides, in general, the following services:

- Detailed and specific information about available business sites and existing real estate;
- Demographic, technical, and business information regarding several types of businesses, concentrating on advanced manufacturing, automotive and electric vehicles, primary and fabricated metals, energy and chemicals, food and agribusiness, and logistics and distribution.
- Talent and workforce development assistance that considers overarching program goals, collaboration among businesses, educational institutions, and occupational training entities;
- Leadership in investing in development through membership and sponsorship of ideas and programs, appealing to individuals, jurisdictions, businesses, and the philanthropic community.

The Youngstown-Warren Chamber of Commerce describes itself as “your partner in business development” and is a membership-based organization that provides business recruitment, retention, and continuing improvement for the Trumbull County area. They conduct the following general programs:

- Their mission is “to provide economic development, advocacy and business services to promote the growth of our members and Valley.”
- Their vision is “to be a catalyst for economic success, creating a prosperous Valley that is the preferred community in which to live, learn, work, and play.”
- They provide member benefits that include access to healthcare program, JobsNow access to receive weekly employment information, access to pre-employment testing programs, access to payroll management providers; shipping programs and discounts, environmental services special offers, business consulting services, and energy savings programs.

- They provide public policy forums and information about legislation and rulemaking that affects businesses.
- Outstanding members are awarded for their efforts and scholarships for appropriate programs are granted.
- The Chamber Foundation raises funds through various efforts and activities to support the furtherance of businesses and the programs conducted by the Chamber.
- They set strategic initiatives that are supportive of local efforts and needs in business development and retention.
- They hold regular, varied events to foster business-to-business cooperation and collaboration between all local entities for the betterment of the business environment.

Valley Economic Development Partners supports the creation and expansion of small businesses and local jobs. They focus on the following efforts:

- Since 1978, they have helped businesses obtain financial support in the form of loans, grants, tax abatement programs, and other options through partnering and collaborating with a variety of financial institutions.
- They assist businesses with operations planning and execution, using established methods of creating management tools like business plan and profit/loss statements. They provide tools as well as educational offerings.

Eastgate Regional Council of Governments fosters collaboration and cooperation between the various jurisdictions in the area to solve problems, address concerns, and share best practices. They provide the following services:

- This group has developed several key documents through the involvement of community leadership and others, using local and consultant resources to create specific documents. The leading document is the Trumbull County Comprehensive Economic Development Plan (CEDS). The Policy Board that assisted in developing this plan included the jurisdictions of Trumbull County, Orangeville, Warren, Lordstown, Newton Falls, Hubbard, West Farmington, Girard, Niles, Cortland, and McDonald.
- Their Live Zone program addresses the recent loss of population and businesses but setting strategies to refresh and renew interest in the area and improve development results;
- Utilize the Appalachian Community Grant Program to enhance and improve public investment in the area, including Trumbull County;
- Spearheaded a planning project after the Lordstown automotive plant closure to establish a recovery program that would address the consequences and outcomes of that, and other local losses. A full report focuses on mitigation of unemployment impacts, strategy management, reuse and redevelopment, workforce and industry asset management, and business development.
- A project to restore and refresh the Mahoning River addresses the changes in use of the river's features, as well as identifying and determining its role in business and industry development in a contemporary setting. Among other actions, the plan intends to

remove nine low head dams, four of which are in Trumbull County, to help the river flow better and provide opportunities for recreational and natural use of the rivers.

Western Reserve Port Authority intends to promote financing and economic development activities in Trumbull and Mahoning counties. They have a primary interest in job creation. Originally created to support the Youngstown-Warren Regional Airport in 1992, they utilize the unique powers granted to port authorities by Ohio to operate an agency dedicated to promoting growth and economic development in the general area.

There are several planning documents the organizations and jurisdictions have prepared and implemented to further improve development and growth in Trumbull County. These include the following documents:

- *Housing Strategy Implementation Plan* – developed by Eastgate Regional Council of Governments in conjunction with a consultant to benefit the entire county.
- *State Route 46 Corridor Plan* – developed by Eastgate Regional Council of Governments under the guidance of a General Policy Board led by Julie Green, Trumbull County Planning Commission, and supported by Orangeville, Trumbull County, Warren, Hubbard Township, Lordstown, Newton Falls, Hubbard, Warren, West Farmington, Niles, Girard, Cortland, and McDonald.
- *The Belmont Avenue Corridor Plan*, again, developed by Eastgate Regional Council of Governments under the Policy Group led by Julie Green, Trumbull County Planning Commission, and representatives from Trumbull County, Orangeville, Warren, Lordstown, Newton Falls, Warren, Hubbard, West Farmington, Niles, Girard, Cortland, and McDonald.
- *Trumbull County Emergency Response Plan and Annexes, Community Health Assessment and Community Health Improvement Plans* developed by the Trumbull County Combined Health Department.
- A *Directory of Trumbull County Officials*, prepared and distributed by the Trumbull County Planning Commission.
- *Trumbull Neighborhood Partners* is a volunteer group that helps upgrade and maintain neighborhoods in Warren, and has a website for their programs and information. The plans they have online include City of Warren Parcel updates, the Warren Comprehensive Plan 2022 Update, Warren Park Plan, Warren Community Food Security Strategic Plan, and the Warren City Parks Action Plan.

As all these entities work together, bringing in business partners as well as elected and appointed officials, growth in Trumbull County is organized, logical, and beneficial to the residents and businesses. They can take a pro-active approach to challenges, and apply best practices from the past to resolve concerns before they become problems.

Mitigation efforts are frequently considered at the Planning Commission level, but the actions may be carried out by another entity. A good example of this is the low head dam removal effort being led by the Eastgate Regional Council of Governments. The option to identify

necessary work and then share it with other agencies and departments to complete the objectives works to Trumbull County's advantage.

Under Titles 3 and 7 of the Ohio Revised Code, the county and all municipal corporations have the authority to establish, maintain, and improve many capabilities listed in Tables 2-20 and 2-21, that follow. However, their ability to establish, maintain, or improve upon the capabilities vary based on their respective need, political will, and financial capacity. Compared to smaller communities, counties like Trumbull County have more capacity establish, maintain, or improve the capabilities than their smaller neighbors.

Jurisdictional Capability for Mitigation

The capability to implement mitigation strategies and to manage mitigation projects is varied across the county. The county and cities have good capacity to apply for funding, conduct a project, and oversee the administration of funding. The villages have varied staff and leadership, and in the three small villages, there is no available staff or budget to commit. The county and cities are fully staffed, with managers and department heads as well as support staff. The larger villages (Lordstown and McDonald) have a reasonable staff. Orangeville and West Farmington have elected officials and a full slate of elected officials. However, Orangeville and Yankee Lake are not staffed and elected officials are completely voluntary involvement.

As limited home rule townships, both Howland and Liberty Townships would act autonomously in applying for funding, designing a project, and implementing mitigation projects. They employ administrative and engineering staff with the capabilities to perform these duties, and have the capability to contract with external providers if they do not have adequate full-time staff to perform these tasks. Both have sufficient budgets to meet match requirements for mitigation grants, and have the capability to administer the grants.

The other townships, not including those two mentioned previously, would probably work through Trumbull County for any mitigation project. These jurisdictions are generally staffed by volunteer elected officials, including three trustees and one fiscal clerk. These individuals often work jobs outside their volunteer commitment to their township, and it would be highly unlikely that any of them would be able to help administer a mitigation project. Trumbull County would be called upon to provide that support. The larger townships (Brookfield, Champion, Hubbard, Newton, and Weathersfield) have more resources and could likely, with some help from the county, perform some tasks for a less complex project. As these townships grow and develop, staffing changes and their capacity to manage projects independently may grow as the township gains more residents. This may improve their capacity to manage a mitigation project independently.

Trumbull County has an EMA Director, who also serves as the LEPC Coordinator, who would likely be called upon to help coordinate any mitigation project. The county engineer as well as the administrator would need to assist, especially with technical components of a project. The Planning Commission provides key staffing and expertise. Should funding be adequate,

Trumbull County could contract for grant applications, administration, design and oversight, and management. They have many options to develop, implement, and manage a project that would be of significant benefit to the county and its jurisdictions.

Table 2-21: Jurisdictional Capabilities

Jurisdiction	Planning Commission	Comprehensive Plan	Commercial Building Codes	Residential Building Codes	Zoning Ordinances	Floodplain Regulations	Capital Budget Mitigation	Capital Budget PW Mitigation
Trumbull County	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City of Cortland	Yes	Yes C	Yes	Yes	Yes	Yes	Yes	Yes
City of Girard	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City of Hubbard	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Village of Lordstown	Yes	Yes C	Yes	Yes	Yes	Yes	Yes	Yes
Village of McDonald	Yes	Yes C	Yes	Yes	Yes	Yes	Yes	Yes
Village of Newton Falls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City of Niles	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Village of Orangeville	No	Yes	Yes	No	Yes	Yes	No	No
City of Warren	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Village of West Farmington	No	Yes	Yes	Yes	Yes	No	No	No
Village of Yankee Lake	Yes	Yes C	No	No	No	No	No	No
Mahoning Valley Sanitary District/Meander Water	n/a	n/a	n/a	n/a	n/a	n/a	Yes	Yes
Bazetta Township	Yes	Yes C	Yes	Yes	Yes	Yes	No	In-Kind
Bloomfield Township	Yes	Yes C	Yes	Yes	Yes	Yes	No	In-Kind
Braceville Township	Yes	Yes C	Yes	Yes	Yes	Yes	No	In-Kind
Bristol Township	Yes	Yes C	Yes	Yes	Yes	Yes	No	In-Kind
Brookfield Township	Yes	Yes C	Yes	Yes	No	Yes	Yes	Yes
Champion Township	Yes	Yes C	Yes	Yes	Yes	Yes	Yes	Yes
Farmington Township	Yes	Yes C	Yes	Yes	Yes	Yes	No	In-Kind
Fowler Township	Yes	Yes C	Yes	Yes	Yes	Yes	No	In-Kind
Greene Township	No	Yes C	Yes	Yes	Yes	Yes	No	In-Kind
Gustavus Township	Yes	Yes C	Yes	Yes	Yes	Yes	No	In-Kind
Hartford Township	Yes	Yes C	Yes	Yes	Yes	Yes	No	In-Kind
Howland Township	Yes	Yes C	Yes	Yes	Yes	Yes	Yes	Yes
Hubbard Township	Yes	Yes C	Yes	Yes	Yes	Yes	Yes	Yes
Johnston Township	No	Yes C	Yes	Yes	Yes	Yes	No	In-Kind
Kinsman Township	Yes	Yes C	Yes	Yes	Yes	Yes	No	In-Kind
Liberty Township	Yes	Yes C	Yes	Yes	Yes	Yes	Yes	Yes
Mecca Township	No	No	Yes	Yes	No	Yes	No	In-Kind
Mesopotamia Township	No	No	Yes	Yes	No	Yes	No	In-Kind
Newton Township	Yes	Yes C	Yes	Yes	Yes	Yes	Yes	Yes
Southington Township	Yes	Yes C	Yes	Yes	Yes	Yes	No	In-Kind
Vernon Township	Yes	Yes C	Yes	Yes	No	Yes	No	In-Kind
Vienna Township	Yes	Yes C	Yes	Yes	Yes	Yes	No	In-Kind
Warren Township	Yes	Yes C	Yes	Yes	Yes	Yes	No	In-Kind

Weathersfield Township	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes C = Yes, participated in countywide Comprehensive Plan							

2.1.10 Economy and Business

There are far more service-providing businesses in Trumbull County than goods-producing businesses, although the average weekly wage for workers in the service industry is approximately 42% lower than that for goods-producing employees.

Goods-producing business includes natural resources and mining, construction, and manufacturing. Construction has the most companies (426) according to the Ohio County Profile, but the manufacturing section has far more employees, whereby 220 businesses employ an average of 47 people. Construction employs about seven people per business. Wages for manufacturing works are 15% higher than construction workers. The 32 natural resources and mining employers have fewer employees (210) than manufacturing and construction, and those employees make slightly over 62% of what manufacturing workers make, and about 73.5% of what construction workers earn. The goods-producing sector employs 13,449 people, or about 23.6% of the workforce who earn about 34.8% of the local wages.

The service industry is categorized into trade, transportation and utilities; information; financial services; professional and business services; education and health services; leisure and hospital; and other. While this group employs approximately 76.4% of the local workforce, it accounts for 65.2% of the gross wages. Individual wages in the service sector are about 85% of what they are in goods-producing jobs. There are 3,509 service-based businesses who employ 43,545 people.

According to the Ohio County Profile (2025) for Trumbull County, there were both job increases and decreases across the various job categories. The private sector showed growth in natural resources and mining, construction, and manufacturing, showing an average of almost 19% growth. Trade, transportation and Utilities, Education and Healthcare, and Leisure and Hospitality experienced modest growth, averaging slightly over 5% growth. In all other areas, employment fell. Financial, personal, professional, and other services dropped an average of 11.6%. In government jobs, including federal, state, and local, all fell, an average of 4.5%.

Table 2-22: Total Employment Statistics*

	2024	2023	2022	2021	2020
Civilian Labor Force	88,800	87,500	86,900	86,700	87,700
Employed	84,300	83,700	82,800	81,200	78,900
Unemployed	4,600	3,800	4,100	5,500	8,800
Unemployment Rate	5.2%	4.4%	4.7%	6.4%	10.0

*2025 Ohio County Profile for Trumbull County used for data

Tables 2-21 and 2-22 list the major employers and industries in Trumbull County according to the Trumbull County Ohio Census Profile 2025.

Table 2-23: Major Employers

Employer	Sector
Aptiv PLC	Manufacturing
AVI Food Systems	Service
Howmet Aerospace	Manufacturing
Mercy Health	Service
Trumbull County Government	Government
Ultium Cells	Manufacturing
Warren City Schools	Government
Wal-Mart Stores, Inc.	Retail
Youngstown Air Reserve Station	Government

Table 2-24: Employment by Industry

Employment Sector	Average Employment 2024	Change Since 2017
Local Government	7,642	-4.6%
Trade, Transportation and Utilities	15,530	+5.7%
State Government	694	-4.8%
Education and Health Services	10,874	+1.6%%
Professional and Business Services	4,606	-22.5%
Leisure and Hospitality	8,136	+6.1%
Manufacturing	10,249	+26.1%
Natural Resources and Mining	210	+16.7%
Construction	2,989	+14.1%
Financial Services	2,084	-5.5%%
Other services	1,989	-6.1%
Information	322	-12.3%
Federal Government	493	-3.9%

Agriculture

The U.S. Department of Agriculture defines prime farmland as “land best suited to grow, feed, forage, fiber, and oilseed crops.” This type of land produces the highest crop yields with the least amount of energy and economic resources. According to this definition, 14.51% of the acreage in Trumbull County is prime farmland, making agriculture a moderate economic contributor.

The Ohio Department of Development shows Trumbull County has 945 farms with an average size of 120 acres. The major crops grown include grains (corn, soybeans, wheat), nursery products, fruits, tree nuts, berries, and forage crops like hay. There are single producers of Christmas trees and vegetables, melons, potatoes, and sweet potatoes. There are also cattle and calves, milk from cows, sheep, goats, wool, mohair, milk from sheep, horses, ponies, mules, burros, donkeys, and other animals and animal products. There is a single producer of poultry

and eggs, and one for hogs and pigs. Approximately 67% percent of farm sales are from crops and 33% from livestock and livestock products. The top crops in acreage are soybeans, corn, forage, and wheat.

Agriculture is a modest employer in Trumbull County. Of the 945 farms, only 94 are considered family farms. Only nineteen farms hire outside help. Of 1,687 producers, 1,095 are male and 572 are female. The majority, 907 are between the ages of 35 and 64 while the next largest group consists of 581 farmers who are 65 years old or older. There are only 179 farmers under age 35. Sixty-eight percent of farms have internet access. One farm is considered an organic producer, and only eleven sell products directly to consumers.

Table 2-25: Farm Production Data

Crops	Acres	Livestock	Head
Land Area		Broilers & Turkeys	1,192
Land in Farms	113,107	Cattle and Calves	10,346
Cropland	76,377	Hogs & Pigs	489
Other	7,175	Sheep & Goats	1,205
Pastureland	6,831	Layers & Pullets	3,789
Woodland	22,724	Horses & ponies	1,637
Gross Receipts	**$56,922,000**	**Gross Receipts**	**$28,663,000**

2.1.11 Community Growth and Development Trends

Community growth and development have been challenging for several decades for Trumbull County. Since 1980, their population has been on a downward trajectory, and attracting younger people with families to non-metropolitan counties is difficult across the entire state. Larger cities provide many varied opportunities, and can ensure the support services that are needed by families and individuals, including healthcare, education, entertainment, and cultural opportunities. Counties like Trumbull, while close to metropolitan areas, struggle to provide a similar environment for young families.

Trumbull County sits on the edge of the Youngstown area, and a part of that city lies inside the county. It is easy to see that Youngstown has influenced growth and development when you see that all municipalities except three small villages are in the southern half of the county, nearest Youngstown. The northern half of the county is literally void of municipal development. While the terrain and natural areas in the northern half of the county facilitate this split in developed area, the influence of a metropolitan resource center has also contributed.

The transportation plan developed for Trumbull County lays out a variety of logistical plans and opportunities. They considered both personal and business needs for transportation services, either moving grey goods in for production or supplies for workers to have what they need to work. They also looked at personal transportation, service providers for transporting things people order or for transferring people from one place to another. Ingress and egress for goods and services is critical to a county adjacent to an urban area, and often provides the deciding factor when a new provider chooses to locate in the county.

Commercial development focuses on attracting new industrial and manufacturing jobs. There is a focus on high-tech and cutting-edge production, as well as technology-based industries. In a shift from the steel mills of old to modern, technology-based facilities, Trumbull County could potentially pivot to capture unique opportunities where the characteristics of the county meet the demands and desires of the incoming people. While data centers and businesses that consume extensive amounts of utility resources are not generally popular, movement is being made to modernize business and industry.

Keeping support industries and services in sync with other sectors of employment is challenging, but Trumbull County flexes with the shifts in population and the change in culture of workers. Online shopping, carryout ordering, and the need for personal services like daycare and eldercare are always on the minds of the business recruiters and leadership.

Healthcare needs are increasing, but one hospital has closed; that limits the medical resources for community members. While travel outside the county for medical care is not lengthy, it is still preferable to have local options. There are still plentiful choices in doctors and services in the county, and communities are working to keep it that way. Nursing facilities, assisted living communities, and other care options for elderly and disabled individuals, or those with chronic debilitating conditions, are at this time, adequate. However, healthcare facilities are facing extreme financial stress which could easily affect their ability to continue to serve.

Schools and tax-based institutions, like in every other community in Ohio, are struggling. Trumbull County is working hard to maintain high quality public education in its school districts. They are working to keep schools safe for students and staff, and to help parents feel their children are safe when in the care of local schools. Their hope is that safe schools will bring families to Trumbull County.

Housing is always a strong consideration in development. Having housing that meets the needs and financial capacity of workers and others who come to the county is critical. As a county with many older homes built to house steel workers and other laborers, the county must focus on being able to provide a variety of housing types. With younger workers wanting multi-family apartments or condominiums that limit personal need to maintain large lots of land, the county must re-consider traditional thoughts about housing. With the loss of farmsteads and movement into the urbanized areas, what to do with unoccupied farmhouses and outbuildings can develop into a challenge as younger generations move away. Trumbull County development officials realize they must keep constant tabs on the housing pulse in the county to be agile enough to meet changing needs and fluctuating preferences.

The cost of new housing, as well as the cost of renovation of existing housing is a concern for community development officials, as it is across all of Ohio. They cite an adequate housing shortage as a significant barrier to economic growth. Costs of construction that have raised significantly have caused the overall maintenance of existing homes to fall, and housing for new employees is limited.

Table 2-26: Residential Construction Permits

	2024	2023	2022	2021	2020
Single Family Homes	127	98	103	101	96
Avg. Construction Cost	$265,394	$240,494	$185,789	$179,948	$175,237
Multi-Family Units	0	0	3	19	9
Average Cost per unit			$126,960	$117,836	$112,933

New Business Development or Expansion Process

Trumbull County has adequate and reasonable building codes and development regulations, and should be capable of handling varied complexity development projects well. There are multiple inspectors and regulatory staff to assist the businesses and individuals as needed, and projects could be expected to progress reasonably well.

Collaboration between the Planning Commission, municipal and county departments, and the various development organizations appears to have solid footing, and the parties in charge of specific components are willing to work together.

The following table lists the key individual in charge of specific organizations and departments active in development.

Table 2-27: Trumbull County Growth & Development Organization Leadership

Individual	Agency or Business	Position
Rick Hernandez	Trumbull County Commissioners Office	President
Julie Green	Trumbull County Planning Commission	Director
John Hickey	Trumbull County EMA	Director
Jim Kinnick, P.E.	Eastgate Regional Council of Governments	Executive Director
Guy Coviello	Youngstown-Warren Chamber of Commerce	President & CEO
Dani Robbins	Lake to River Economic Development	Chief Executive Officer
Teresa Miller	Valley Economic Development Partnership	Executive Director
Anthony Trevena	Western Reserve Port Authority	Executive Director
Matt Martin	Trumbull Neighborhood Partnership	Executive Director
Frank Migliozzi	Trumbull County Combined Health District	Health Commissioner
Amy Reeher	Trumbull County Soil & Water Conservation	District Administrator
Nic Coggins	Trumbull County Planning Commission	Economic Development Director

The Trumbull County Planning Commission serves as a central point for information about business opportunities in Trumbull County. The various development organizations are the entities who recruit and secure potential clients and companies for location in Trumbull County, or expansion in the county.

New or renovating construction projects are facilitated by local officials who work in various regulatory roles. The Planning Commission, commercial building inspection, floodplain managers, zoning inspectors, and others help with physical locations as they are built or

improved to meet business needs. Many of these regulations are administered by the Planning Commission office or the jurisdiction where the construction occurs. Other organizations, as described previously, provide background information about transportation, logistics, housing or other needs for employees or businesses.

Development Summary
While there is a great deal of shared responsibility for various regulations and standards within Trumbull County officials, and with officials from municipalities and townships, there are areas where the collaboration can be vague. In most cases, the role of multiple agencies is appropriate and consistent with statutory assignments, the connections between those parties that ensure all perspectives are considered is undefined.

As one of Ohio's larger counties, Trumbull County professionals are all well acquainted with one another despite their size, and tend to do business across disciplines casually and comfortably. While the business culture of working together exists and thrives, the formal structure to support one another is always apparent in formal communication.

It is difficult to find the specific regulatory information needed on websites, and the individuals that are responsible for specific duties are not always identified by name. The online information, in general, lacks specificity unless the searcher opens multiple documents and goes beyond an initial click to find details. This would likely be frustrating to the searcher, and unless they are willing to make phone calls, will probably not find the correct and complete information they are searching.

The Planning Commission Director is the floodplain manager for much of the county, and as such has a say in many development projects. He serves as floodplain manager for most jurisdictions that have floodplain regulations. He is also closely tied to building regulations and inspections, and works well with the EMA staff. He is connected to all the townships, and works regularly with the municipalities. Through all this work, he stays connected to all parts of the county, and has a thumb on developing issues and concerns.

The EMA has a full-time director who is very familiar with and known in the county. He also acts as the LEPC Coordinator. Both are familiar with and to the development officials in the county, and maintain a two-way communication channel on an ongoing basis. Between these individuals, any business entering Trumbull County with hazardous materials in their process would cross paths with the EMA. However, there is no formal step requiring connection with the EMA during the development and building process, at least formally.

2.2 HAZARD IDENTIFICATION

Trumbull County has experienced many disasters in its history, ranging from floods and tornadoes to blizzards and windstorms. In this section, the hazards that can impact the county are defined and the risk for each hazard is assessed. As part of this process, the Hazard Mitigation Planning Team analyzed the hazards and risks present throughout the county. Twelve hazards were identified as relevant to Trumbull County, as listed below.

- Complex Coordinated Incident
- Dam Failure
- Disease Outbreak
- Drought
- Earthquake
- Extreme Temperatures
- Fire and Wildfire
- Flood
- Hazardous materials
- Invasive Species
- Land subsidence, landslide, and erosion
- Severe Storms (thunder and wind)
- Tornado and windstorm
- Utility Failure
- Severe Winter Storm and Blizzard

Cyber-system failure and terrorism was discussed as a developing hazard, and the responsibility for planning was determined to lie with Trumbull County, for now. This was therefore not listed as a hazard, but as a potential hazard that would be considered in the coming months and years. A strategy would be listed for the county to begin efforts to plan for these issues. The Ohio General Assembly created new cybersecurity requirements for local governments in the recently passed Amended Substitute House Bill 96, effective September 30, 2025. This law set forth requirements for each political subdivision to implement a basic cybersecurity program, and established reporting criteria for cyber incidents to the Ohio Cyber Integration Center and the Auditor of the State. It also requires that political subdivisions pass an authorizing resolution before paying a ransomware demand.

Climate change was not listed as a specific hazard, but changing weather patterns and characteristics were incorporated into the discussions about all hazards, and are applied as it relates to Trumbull County throughout this plan. Participants discussed how storms have changed, and how impacts are different than they used to be, even five years ago. One of their greatest concerns is the drought and lack of rain in the summer and fall in the past two years. While spring and early summer have had ample rain, temperatures have warmed slowly. In mid-summer, rain seemed to stop. This pattern is not typical of Trumbull County and the surrounding area. They also remarked about light winters of late with less snow, warmer temperatures, and less incidence of severe winter storms.

Strategies were considered in the context of how these kinds of changing weather patterns and presentations would affect the incidence, circumstances, and outcomes of a particular impact. For example, as rain falls faster and more intensely, flooding is more likely to include surface runoff, flash flooding, and surface flooding. Consideration for how increased rainfall, and resulting increased runoff, would affect Trumbull County was noted. The effects of hard, pounding rain and pooling on surfaces causes additional rapid surface drainage which worsens surface stress and topsoil erosion. All these kinds of effects were considered in the context of what is happening now, and the plan has been modified to include those changes. Therefore, climate change in an implied part of every hazard, and will be continually assessed as this plan is implemented and later updated.

Some hazards were excluded from this plan because they pose no risk to Trumbull County. The excluded hazards and the justification for the exclusion, are identified in the table below.

Tsunami and volcano do not exist in Trumbull County, and therefore were excluded. Coastal erosion is not relevant, nor is avalanche. They considered all hazards from the perspective of possibility, probability, and magnitude. They also considered damages and recovery from an incident that was moderately severe.

Table 2-28: Excluded Hazards

Excluded Hazard	Justification
Coastal Erosion	The county has no open coastline.
Tsunami	Geographically impossible
Volcano	Geographically impossible
Avalanche	Insufficient mountainous area
Coastal Flooding	No coastline present in the county

Trumbull County does not have a long history of federal disaster declarations or assistance. The county has been included in twelve federal declarations. A comprehensive list of federal disaster declarations for Trumbull County is provided in Table 2-29.

The most frequent declaration cause for Trumbull County is severe storms with a combination of severe thunderstorms, heavy or extended rain that causes flooding, and tornadoes that accompany the severe storm fronts. On occasion, high winds are part of the severe storms. This combination of hazards constitutes seven of the twelve declarations. The Blizzard of ’78 was one declaration. Three others involved the COVID-19 pandemic, sheltering for Katrina evacuees and survivors, and the massive power outage in 2003.

Table 2-29: Federal Disaster Declaration History

DR/EM Number	Incident Date	Incident Type(s)
DR 266	July 15, 1969	Tornadoes, Severe Storms, Flooding
EM-3055-OH	January 26, 1978	Severe blizzard
DR-738	June 3, 1985	Severe Storms, Tornadoes
DR-870 OH	June 6, 1990	Flooding, Severe Storm, Tornado
DR-951	August 4, 1992	Flooding, Severe Storms and Tornadoes
DR-1484	August 1, 2003	Tornadoes, Flooding, Severe Storms, High Winds
EM- 3187	September 23, 2003	Ohio Power Outage
DR 1556 OH	August 27, 2004	Severe Storms and Flooding
EM-3250-OH	September 13, 2005	Hurricane Katrina Emergency Shelter Ops
EM 3346	June 30, 2012	Severe Storms
EM-3457 OH	March 13, 2020	COVID 19 Pandemic
DR-4507-OH	March 31, 2020	COVID-19 Pandemic

Future Hazards

Very recently, Trumbull County has engaged in discussions about cybersecurity. Information passed on from the State of Ohio prompted county officials to consider their risk of a cyber event, and to establish a program to reduce vulnerability and manage any incident or potential risk.
Included in these considerations are failure of the county computer system and digital devices, thereby inadvertently releasing confidential or classified information about operations, residents or properties, response plans, or other inappropriate information. They also considered situations such as a ransom attack where county operations are held at bay and a significant ransom is demanded for release of the system back to the county. Contamination of county or other jurisdiction files, networks, and devices was included, as was a simple breach for the purpose of gathering confidential information for tax payers, employees, clients, or others who use or provide county services. It was quickly decided that the list of potential vulnerabilities could be lengthy, and required significant effort and involvement to create.

It was initially determined that the Trumbull County EMA would be the department to manage the creation and implementation of a Trumbull County Cybersecurity Plan. While no particular entity was completely logical to assume this role, the EMA is responsible for a great deal of planning, among those plans is the Trumbull County Hazard Mitigation Plan. Therefore, the EMA and the core committee decided to include cybersecurity as a new, developing threat for the coming years. While this concern is not developed well enough, at this point, to describe the vulnerabilities and to assess the specific risks, it is well enough defined to include as a future risk.

Included Hazards
To understand the risk posed by natural hazards in Trumbull County, it is important to examine the characteristics of each hazard and evaluate local occurrences. Historical information was obtained from the National Oceanic and Atmospheric Administration's National Climatic Data Center (NCDC) and supplemented with information from local officials. This section defines each hazard and describes Trumbull County's history with each.

2.2.1 Climate and Weather
To meet the requirements of mitigation planning and make the topic relevant and applicable to the local community, the potential effects of climate change are discussed in each of the hazards to which it applies. The Climate Mapping for Resilience and Adaptation website information was researched, and the reactions are appropriate to that data and other data that was anecdotally included by participants.

How storms occur and the impact on the community is changing. Stakeholders reported differences in thunderstorms, windstorms, and precipitation in general. Most participants felt that rain falls in more intense storms now and with greater amounts at one time, rather than gentle rains that came frequently in past years. In general, stakeholders felt that winters are less harsh, not as cold, and have less snowfall. They see very recent change in drought, claiming that rain is heavier when it falls, and then there are periods between rainfall that last longer than they used to. At the time of meetings, the county was experiencing an extremely

dry period which continued to last through the last stages of mitigation planning efforts. Last fall, 2024, was an anomaly because it was incredibly dry from mid-summer through fall. Precipitation ended up below normal, and many crop yields were low due to the lack of precipitation at critical times in plant and fruit development.

Data suggests that there is also a change in temperatures, although local stakeholders did not feel this change is remarkable in Trumbull County. They did report that cool weather lasts longer into May now than it used to, and that the warm-up to summer-like temperatures often does not happen until June. There are still cool spells in June, but there are warmer days in between the cooler ones, whereas May is generally consistently cooler than in the past. They remarked that falls seem to be warmer, and the warm weather commonly stretches into November.

Trumbull County stakeholders felt that climate change will have moderate effects locally due to proximity to Youngstown and more so, Cleveland. Located near and beside only a few carbon-dissipating industries with modest operations, they feel climate change will impact them in a slower and less profound manner than metropolitan areas closer to Cleveland and other major cities. Therefore, climate change was considered a less imminent threat than in many other counties, but was recognized. While it does affect the various meteorological events, the change is not profound yet. The only factor that brought great concern was the last two years of drought and dry spells, and there was some opinion that cold spells come earlier in winter in recent years.

Data below is from the Climate Mapping for Resilience and Adaptation (CMRA) website. This tool is consistent with the USGS and NOAA datasets. Projections can be expressed in tracts like the Economic Justice Screening Tool and Building Code Adoption Tracking, but the following table is a countywide projection.

In general, this tool indicates that ambient temperatures are rising, and higher emissions cause a greater increase than lower emissions. More days are expected to be considered “hot”, with that expectation rising from a day over 90 degrees now to a day over 100 degrees by the turn of the century. The single highest temperature day now is at 97.6 degrees, while by the turn of century could reach 106.3 degrees.

While precipitation totals are not expected to change a lot, the way the rain falls is anticipated to change. Periods between rainfalls might become longer, and the consecutive dry days will likely increase. While total annual rainfall will change minimally, storms may result in more rainfall per storm. This can increase flash flooding and erosion as surface flooding drains.

Rising temperatures, with the hottest days being hotter, and with the number of days without rainfall increasing, fire risk goes up. The chances of grass being dry tinder for a spark, resulting in all types of fires, is a logical progression of these changes in climate.

These projections are consistent with stakeholder conversations. Higher emissions will cause more dramatic results, and this can be from vehicles or other industrial or commercial sources. The following table illustrates the climate projections according to the CMRA resource over the next seventy-five years, and lists both high and low emission projections.

Table 2-30: Climate Projections per CMRA –Trumbull County OH

Category of Climate Condition	1976-2005 Low	2015-2044 Low	2015-2044 High	2035-2064 Low	2035-2064 High	2070-2099 Low	2070-2099 High
EXTREME HEAT							
Annual Days max temperature > 90	8.7	22.6	25.3	32.2	41.5	43.0	76.2
Annual days with max temperature >95	0.9	5.4	6.8	9.9	15.0	16.0	41.2
Annual day max temp >100	0.1	0.8	1.2	2.2	4.0	4.6	17.7
Annual single highest max temp. >105	0	0.1	0.1	0.3	0.9	0.9	6.7
Annual single highest temperature	94.2	97.6	98.2	99.4	01.1	101.2	106.3
Annual highest max. temp avg. over 5 days	89.5	92.9	93.4	94.6	96.3	96.5	101.4
Cooling degree days	640.4	949.7	994.4	1137.0	1298.5	1330.8	1989.8
DROUGHT							
Average annual total precipitation	37.7	39.2	39.5	39.7	40.2	39.8	41.8
Days/year with precipitation	212.5	209.1	208.5	207.9	206.4	206.5	202.5
Days/year with no precipitation	152.5	156.0	156.7	157.2	158.7	158.6	162.6
Max # consecutive dry days	9.9	10.4	10.5	10.5	10.8	10.9	11.7
Annual day max. temp. >90	8.7	22.6	25.3	32.2	41.5	43.0	76.2
Annual days max. temp >100	0.1	0.8	1.2	2.2	4.0	4.6	17.7
WILDFIRE							
Days/year no precipitation	152.5	156.0	156.7	157.2	158.7	158.6	162.6
Max. # consecutive dry days	9.9	10.4	10.5	10.5	10.8	10.9	11.7
Days/year with precipitation	212.5	209.1	208.5	207.9	206.4	206.5	202.5
Annual days max temp >90	8.7	22.6	25.3	32.2	41.5	43.0	76.2
Annual days max temp >100	0.1	0.8	1.2	2.2	4.0	4.6	17.7
FLOODING							
Average total precipitation	37.7	39.8	41.8	39.7	40.2	39.8	41.8
Days per year with precipitation	212.5	206.5	202.5	207.9	206.4	206.5	202.5
Max number of consecutive wet days	13.7	13.6	13.7	13.7	13.7	13.6	13.7
Annual days with precipitation >1 inch	2.5	3.5	4.5	3.3	3.5	3.5	4.5
Annual days with precipitation >2 inches	0.2	0.3	0.4	0.2	0.3	0.3	0.4
Annual days with precipitation >3 inches	0	0	0.1	0.1	0.1	0.0	0.1
Annual days > 99th percentile precipitation	4.4	6.1	7.8	5.8	6.3	6.1	7.8
Days with max temp <32	0.5	18.0	9.4	21.8	19.0	18.0	9.4

2.2.2 Complex Coordinated Event

A complex coordinated event is simply stated as a planned, aggressive criminal event involving damage to property and/or people. These events can involve shootings, bombings, arson, or other actions considered terrorism, and very frequently result in the loss of human life. Other incidents destroy property, inventory, finances, or other assets. These incidents are generally

linked to a cause, or a specific purpose that has ignited a desire for retribution and attack on the part of the aggressor(s). There may be a specific social cause associated with the attack. The target of these attacks can be institutions, such as public or private schools, churches, or hospitals as well as individual businesses or public areas where large groups of people gather.

Various forms of terrorism are sometimes used.

- Cyberterrorism involves the use of technology – computers, software, hardware, and other programs – to steal or hold hostage critical and confidential information or finances. This is done through ransomware, computer viruses, and malware, and through agents that prey on vulnerable individuals and businesses or institutions. These attacks can involve ransom payments to recover information, loss of financial assets, and/or extreme costs in restoring systems to functional status.
- Agroterrorism uses agricultural products and processes to contaminate food supplies or food-producing operations, or to introduce disease and pestilence into farm operations, thereby destroying confidence in the food supply and costing farmers and food distributions extreme amounts of money.
- Biological Terrorism involves the intentional spread of disease through the release of viruses, bacteria, or toxins to an unsuspecting set of people or animals.
- Chemical Terrorism involves the release of harmful chemicals like nerve agents, choking agent, blood agents, or blister agents that prevent normal bodily functions to work and the interference results in death through respiratory or cardiac failure.
- Active Aggressors are attackers who use knives, guns, bombs, and other weapons to hurt and kill people. They sometimes combine fire and chemical agents with their attack, using tear gas or incendiary devices to worsen the situation and make response more difficult.

These events normally occur where large numbers of people or extensive property can be destroyed. Public schools, shopping areas, and churches are among the most frequent sites for these attacks. Sometimes interstate highways are used for sniper sites, especially when the social cause related to the incident is somehow present on the highway, or the beneficiaries of the transportation route are the target of the attack.

Stakeholders reported their concerns about this kind of incident included, in order of importance, physical health concerns about death and injuries that would occur; system concerns like public safety capacity to respond and long-term operational concerns; mental health responses and needs for children, adults and responders, as well as fear and trust in the general community; and of least concern, structural damages that would occur in the process of the event unfolding.

There are no recorded mass incidents of this type in Trumbull County, but frequency and severity do not impact the possibility of the event. Incidents where there are populations as large as Trumbull County can have small incidents that are like larger ones, and they are generally more likely to have a mass casualty event in general. Perpetrator(s) generally want to see very large numbers of people harmed, and the county has a large enough population and

events with large enough attendance to meet that objective. Rural counties are sometimes perceived as having little ability to investigate, prosecute and convict the criminals that carry out these incidents. While stakeholders felt the vulnerability was low, it is sufficient to cause concern and the desire to prevent the incidents in the first place.

2.2.3 Dam/Levee Failure

A dam is an artificial barrier built across flowing water. This barrier directs or slows the flow of water and often creates a lake or reservoir. A dam is considered hydrologically significant if it has a height of at least 25 feet from the natural streambed and a storage capacity of at least fifteen acre-feet or an impounding capacity of at least 50 acre-feet and is six feet or more above the natural streambed. Dams are constructed for flood control purposes or to store water for irrigation, water supply, or energy generation. Dams can also be created for recreational purposes. They can be composed of earth, rock, concrete, masonry, timber, or a combination of materials. Dams are classified by USACE and ODNR according to an assessment of hazard potential, specifically low, significant, or high hazard. Low hazard dams that fail would likely cause no loss of life, few economic or environmental losses, and damage would likely be confined to the owner's property. Significant hazard dams may cause economic or environmental damage, disruption of lifeline facilities, or impact other entities. High-hazard dams, upon failure, are expected to cause a loss of human life, in addition to economic and environmental damage, and disruption to lifeline services. USACE ratings and information is utilized for mitigation planning in lieu of the ODNR classifications.

Levees are embankments constructed to prevent the overflow of a river and subsequent flooding of the surrounding land. They can be built using earth, rock, or other materials. Levees constructed from concrete or masonry materials are referred to as floodwalls.

A failure of these structures is defined as the uncontrolled release of the water held back by the dam in a lake or reservoir. Most dams have a small enough storage volume that a breach or failure will have limited impact on the surrounding community, and many are classified as low-hazard dams. Many dams are classified as significant hazard, and some are considered high-hazard. Failure of a large, high hazard dam can cause substantial flooding downstream and lead to significant loss of life and property.

There are many causes of dam failure, including:

- Sub-standard construction
- Geological instability
- Spillway design error
- Poor maintenance
- Internal erosion
- Extreme inflow
- Earthquake

Should the amount of rain that falls, or ice melt after significant winters, increase, dams could be at increased risk of failure. Holding back an increased amount of water, especially when upstream melting or drainage is taking place, puts more stress on the structure and increases the chances of failure. Over-topping of the structure could occur under conditions of long-lasting heavy precipitation with saturated soils and waterways already full of draining water.

Repeated additional stress through ongoing waves of heavy rainfall places extra wear and tear on structures, and could potentially decrease the lifespan of a structure, or require additional maintenance and repairs. Earthen dams could deteriorate faster due to the erosive nature of gravitational drainage. The engineering requirements for dams that hold water back within a waterway could increase as stress on those structures. This hazard could be impacted by upstream communities.

Extreme drought could negatively impact a wastewater lagoon through excessive evaporation and causing natural imbalances and chemical changes. More evaporation would be reasonable to expect, further depleting the water content. Algal bloom is more robust in hot weather, and the presence of phosphates and other contaminants could cause treatment problems.

The National Inventory of Dams (NID) identifies the dams across the United States. The NID Data Dictionary (2021) defines critical verbiage associated with that resource. Each dam has an identification number and name. The owner, dam condition, and filing of an Emergency Action Plan (EAP) is described. Other information utilized include the dam classification (high-hazard, significant hazard, etc.) and the inspection date and condition of the dam. The dam is described in the context of size and capacity, and the river or stream that feeds the structure is identified. The nearest municipality is identified. While significant detail about the dam is included on this site, for the purpose of this mitigation plan, the basic information is used.

Dams are classified by the potential magnitude of a breach. "High Hazard" indicates that failure of that structure would probably cause the loss of human life. This is determined by the presence of homes and highly inhabited facilities within the inundation zone. Economic, environmental, and lifeline losses are probable as well, although the loss of human life probability is the only required indicator for high-hazard classification. "Significant hazard" indicates that the loss of life is not anticipated, but there would be measurable economic, environmental, and lifeline losses should a breach occur. "Low" hazard indicates the losses would likely be limited to those on the property of the dam owner.

According to the National Inventory of Dams, fourteen county dams have emergency action plans. This includes all high hazard dams except Pleasant Valley Lake Dam. Of eight significant hazard dams, only three have emergency action plans. Of the eight low and undetermined hazard dams, seven have emergency plans.

The National Levee Database identifies the same information for levees in all states. There are no levees in Trumbull County according to the National Levee Database.

Table 2-31: Federally Hazard Ranked Dams in Trumbull County OH (NID)

Structure	Owner	Primary Purpose	Hazard Classification
Mineral Ridge Dam	Mahoning Valley Sanitary District	Water Supply	High
Upper Girard Lake Dam	City of Girard	Water Supply, Recreation	High

Mosquito Creek Dam	USACE – Pittsburgh District	Flood Risk Reduction, Fish & Wildlife Pond, Recreation, Water Supply, Other	High
Coalburg Lake Dam	Coalburg Land Partners, LLC	Recreation	High
Pleasant Valley Lake Dam	Multiple Owners	Recreation	High
Kirila Pon Dam	Kirila Ltd.	Recreation	Significant
Yount Pond Dam	Grayson Real Estate LLC	Recreation	Significant
Genon Energy North Pond Dam	Trogon Development LLC	Recreation	Significant
Turon Lake Dam	Joseph Turon, Jr.	Recreation	Significant
Newton Falls Low Head Dam	Village of Newton Falls	Water Supply	Significant
Youngstown Country Club Lake Dam	Youngstown Country Club	Recreation	Significant
Thomas Lake Dam	George P & Marilyn Thomas	Recreation	Significant
Genon Energy South Pond	Trogon Development LLC	Tailings	Significant
Pintail Pond Dam	ODNR Division of Wildlife	Recreation	Low
Chestnut Ridge Lake Dam	Clover Hill Ventures, LLC	Recreation	Low
Sauer Lake Dam	Wm. G. & Dorothy Sauer	Recreation	Low
West Branch Channel Dam	Village of Newton Falls	Water Supply	Low
Paradise Lakes Campground Lake Dam	Land Lease America	Recreation	Low
Coppedge Lake Dam	Paula B. Coppedge, Successor Trustee	Recreation	Low
Westwood Lake Dam	Westwood Lake Development Corp.	Recreation	Undetermined
Liberty Street Dam (aka McDonald Industrial Dam)	McDonald Steel Corporation	Water Supply	Undetermined

The Ohio Department of Natural Resources inspects the dams and reports information to USACE. ODNR also maintains a database of dams, but they include dams that are smaller and hold less water back, referred to as “Class IV” or “Other” as a classification. Because these dams are not regulated at all, the NID does not include them.

Below is a listing of all dams identified by ODNR for Trumbull County. There is complete consistency between ODNR’s Class I and NID’s High Hazard classifications, and well as Class II and Significant Hazard rated dams. Class III, IV, and Other listings do not necessarily match the NID dams listed as “low” or “undetermined” risk. All totaled, NID lists 21 dams in Trumbull County, and all of those are regulated and inspected. ODNR lists 125 dams, of which 22 are not regulated because they are Class IV or Other designated.

The ODNR Division of Dam Safety performs inspections for the Army Corps of Engineers. The USACE Pittsburgh District covers Trumbull County.

USACE and ODNR owned dams are not eligible for the High Hazard Dam Grant Program; however, those dams are assessed and included in the mitigation plan because they pose a danger to county residents and businesses. Assessments are fully completed for those dams, but the local government has no jurisdiction over those structures. While ODNR has shared technical information, USACE does not share emergency action plans for the purpose of mitigation planning. Information on the NID website is used to estimate vulnerability based upon what they list as inundation zones and vulnerable communities.

Table 2-32: ODNR Listed Dams in Trumbull County OH

Name	Owner	Type Impound	Structure	Length (Feet)	Height (Feet)	Pool (Acres)
Class I Dams						
Mosquito Creek Lake Dam	COE, Pittsburgh District	Dam & Spillway	Earthfill	5650	47.0	8,600
Pleasant Valley Lake Dam	Multiple Owners	Dam & Spillway	Earthfill	300	20.3	11.3
Coalburg Lake Dam	Coalburg Land Partners, LLC	Dam & Spillway	Earthfill	600	24.0	57
Upper Girard Lake Dam	City of Girard	Dam & Spillway	Earthfill	2.720	54.6	4,289
Mineral Ridge Dam	Mahoning Valley Sewer District	Dam & Spillway	Earthfill	3,480	60.0	62,000
Class II Dams						
Yount Pond Dam	Grayson Real Estate LLC	Dam & Spillway	Earthfill	600	25.1	8.50
Turon Lake Dam	Joseph Turon Jr.	Dam & Spillway	Earthfill	590.0	19.4	114.0
Kirila Pond Dam	Kirila Ltd.	Dam & Spillway	Earthfill	1,200	45.7	134.6
Thomas Lake Dam	Geo. & Marilyn Thomas	Dam & Spillway	Earthfill	395.0	15.0	34.9
Newton Falls Low Head Dam	Village of Newton Falls	Channel Dam	Concrete	100.0	17.0	1,244
Genon Energy South Pond Dam	Trogon Development LLC	Upground	Earthfill	2,150	14.0	41.7
Genon Energy North Pond Dam	Trogon Development LLC	Upground	Earthfill	2,000	20.0	36.0
Youngstown Country Club Lake Dam	Youngstown Country Club	Dam & Spillway	Earthfill	170.0	14.6	28.6
Class III Dams						
Coppedge Lake Dam	Paula B Coppedge, Successor Trustee	Dam & Spillway	Earthfill	477.0	29.7	22.0
Rogel Lake Dam No. 1	Henry Rogel Limited Partnership	Dam & Spillway	Earthfill	430.0	21.8	49.62
Pintail Pond Dam	ODNR – Division of Wildlife	Dam & Spillway	Earthfill	2,600.0	8.20	72.0
Paradise Lakes Campground Lake Dam	Land Lease America	Dam & Spillway	Earthfill	600.0	21.6	131.8
Rose Island Lakes Dam	Don Augusta	Dam & Spillway	Earthfill	340.0	12.9	21.6

Sauer Lake Dam	Wm. & Dorothy Sauer	Dam & Spillway	Earthfill	280.0	14.0	55.9
West Branch Channel Dam	Village of Newton Falls	Channel Dam	Concrete, Gravity	175.0	15.5	156.0
Chestnut Ridge Lake Dam	Clover Hill Ventures LLC	Dam & Spillway	Earthfill	460.0	11.1	81.0
Mease Lake Dam	Broannlyn Limited	Dam & Spillway	Earthfill	260.0	19.0	37.3
Class IV and Other						
Unknown – Mesopotamia Twp.	n/a	Dam & Spillway	Earthfill	320.0	6.0	n/a
Hoehn Lake Dam	Gomer & Margaret Mathias	Dam & Spillway	Earthfill	230.0	12.5	12.5
Groves Lake Dam	Lawrence Groves	Dam & Spillway	Earthfill	346.0	15.0	n/a
Collens Lake Dam	John Collens	Dam & Spillway	Earthfill	300.0	16.0	n/a
Highland Presbyterian Lake Dam	Highland Presbyterian Church	Dam & Spillway	Earthfill	250.0	23.5	n/a
Quarry Standpipe	ODNR – Division of Mineral Resources	n/a	n/a	n/a	n/a	n/a
Isaacs Lake Dam	Bernie Isaacs	Dam & Spillway	Earthfill	500.0	15.2	n/a
McDaniel Lake Dam	Homer McDaniel	Dam & Spillway	Earthfill	120.0	23.1	n/a
Dillon's Upground Reservoir	ODNR – Division of Wildlife	Upground	n/a	n/a	10.0	n/a
Kubovick Lake Dam	JF Kubovick	Dam & Spillway	Earthfill	n/a	10.0	n/a
Barnett Lake Dam	WT & CL Barnett	Dam & Spillway	Earthfill	n/a	10.0	n/a
Scott Pond Dam	I.E. Scott	Dam & Spillway	n/a	n/a	10.0	n/a
Kinsman Lake Dam	Kinsman Lakelands Association	Dam & Spillway	Earthfill	570.0	23.0	154.4
Kinrod Gun Club Lake Dam	Kinrod Gun Club	Dam & Spillway	Earthfill	n/a	25.0	n/a
Unknown – Vernon Twp.	n/a	Dam & Spillway	n/a	n/a	10.0	n/a
Shaffer Lake Dam	Archie Shaffer	Dam & Spillway	Earthfill	935.0	13.0	n/a
Unnamed Lake Dam	n/a	Dam & Spillway	Earthfilll	200.0	10.0	n/a
Johnson Lake Dam	Walter Johnson	Dam & Spillway	n/a	n/a	10.0	n/a
Pierce Lake Dam	Margarette Pierce	Dam & Spillway	n/a	n/a	10.0	n/a
Hillman Lake Dam	Larry Hillman	Dam & Spillway	Earthfill	n/a	10.0	n/a
Novicki Lake Dam	Matt Novicki	Dam & Spillway	Earthfill	n/a	10.0	n/a

Peterson Lake Dam	Ann Peterson	Dam & Spillway	Earthfill	245.0	10.0	n/a
Fox Lake Dam	Dr. Stanley Fox	Dam & Spillway	Earthfill	1,080	9.0	27.5
Hardesty Lake Dam	Hiram Hardesty	Dam & Spillway	Earthfill	460.0	20.6	n/a
Rogel Lake Dam	Phil Rogel	Dam & Spillway	Earthfill	460.0	14.3	n/a
Rogel Lake Dam No. 2	Henry Rogel	Dam & Spillway	Earthfill	425.0	9.9	42.5
Steele Property Lake Dam	ODNR, Division of Wildlife	Dam & Spillway	Earthfill	570.0	9.4	40.3
Wildlife Pond Dam	ODNR – Division of Wildlife	Dam & Spillway	Earthfill	n/a	10.0	n/a
Largen Lake Dam	Tess Largen	Dam & Spillway	Earthfill	n/a	10.0	n/a
Zupanc Lake Dam	Rudolph Zupanc	Dam & Spillway	n/a	600.0	8.5	24.4
Wood Curtis Lake Dam	n/a	n/a	n/a	n/a	n/a	n/a
Fimple Pon Dam	n/a	Dam & Spillway	n/a	350.0	10.0	n/a
Doan Pond Dam	EH & LM Doan	Dam & Spillway	n/a	350.0	10.0	n/a
Can Do Pond No. 2 Dam	Can Do Construction	Dam & Spillway	n/a	400.0	10.0	n/a
Unknown – Southington Twp.	n/a	Dam & Spillway	n/a	n/a	10.0	n/a
Unknown – Southington Twp.	n/a	Dam & Spillway	n/a	650.0	10.0	n/a
Davenport Pond Dam	Jack Davenport	Dam & Spillway	n/a	200.0	10.0	n/a
Valley Lake Dam	Robert Rieke	Dam & Spillway	Earthfill	300.0	0.00	114.8
Valley Lake Dam	Warren YMCA Camp Wildwood	Dam & Spillway	n/a	360.0	14.0	26.6
Karl & Cashman Pond Dam	R. Karl and R. Cashman	Dam & Spillway	n/a	420.0	10.0	n/a
Unknown – Southington Twp.	n/a	Dam & Spillway	n/a	850.0	10.0	n/a
Unknown – Champion Twp.	n/a	Dam & Spillway	n/a	400.0	10.0	n/a
Dillon Pond No. 1 Dam	Homer Dillon	Dam & spillway	n/a	400.0	10.0	n/a
Dillon Pond No. 2 Dam	Homer Dillon	Dam & Spillway	n/a	280.0	15.0	n/a
Optimist Club Lake Dam	Optimist Club Foundation of Bazetta	Dam & Spillway	Earthfill	300.0	8.10	8.9
Kern Pond Dam	Dr. Farid Naffah	Dam & Spillway	Earthfill	206.0	16.0	48.6
Johnson Pond Dam	Johnson	Dam & Spillway	n/a	500.0	10.0	n/a

Mineral Spring Lake Dam	Lawrence Anderson	Dam & Spillway	n/a	600.0	10.0	Na/
Ray Rock Farm Pond Dam	Ray Rock	Dam & Spillway	Earthfill	600.0	11.0	n/a
Amorganos Lake Dam	Phillip Amorganos	Dam & Spillway	Concrete	150.0	41.0	9.7
Unknown – Hartford Twp.	n/a	Dam & Spillway	Earthfill	n/a	10.0	n/a
Kepwer Upper Lake Dam	RL & H Kepwer	Dam & Spillway	Earthfill	n/a	10.0	n/a
Kepwer Lower Lake Dam	RL & H Kepwer	Dam & Spillway	n/a	500.0	10.0	n/a
Fowler Lake Dam	Joe Fowler's Daughter	Dam & Spillway	N/a	230.0	10.0	n/a
Yankee Lake Dam	Paul Jurko Sr.	Dam & Spillway	Earthfill	520.0	26.0	570.0
Mureko Lake Dam	S. Mureko	Dam & Spillway	n/a	200.0	10.0	n/a
Unknown – Brookfield Twp.	n/a	Dam & Spillway	n/a	500.0	10.0	n/a
Sewage Disposal Pond Dam	n/a	Dam & Spillway	n/a	300.0	10.0	n/a
Strimbu Lake Dam	N & J Strimbu	Dam & Spillway	Earthfill	220.0	11.3	7.2
Trailer Park Pond Dam	n/a	Dam & Spillway	Earthfill	n/a	10.0	n/a
Brookfield Station Pond Dam	RL & JS Thompson	Dam & Spillway	Earthfill	230.0	9.8	23.7
Unknown – Brookfield Twp.	n/a	Dam & Spillway	n/a	200.0	10.0	n/a
Powell's Pond Dam	Wm. H. Powell	Dam & Spillway	Earthfill	470.0	13.5	14.5
Unknown – Vienna Twp.	n/a	Dam & Spillway	n/a	400.0	10.0	n/a
Country Club Pond Dam	Squaw Creek Country Club	Dam & Spillway	n/a	350.0	10.0	n/a
Rappach Lake Dam	Frank Rappach	Dam & Spillway	Earthfill	100.0	15.4	17.5
Kandella Pond Dam	Dr. Kandella	Dam & Spillway	n/a	300.0	10.0	n/a
Gleason Pond Dam	James Gleason	Dam & Spillway	n/a	450.0	10.0	n/a
Unnamed Lake Dam – Vienna Twp.	n/a	Dam & Spillway	Earthfill	430.0	10.0	15.0
Golf Course Pond Dam	Avalon Golf Course	Dam & Spillway	n/a	400.0	10.0	n/a
Unknown – Howland Twp.	n/a	Dam & Spillway	Na/	300.0	10.0	n/a
Warren Steel Lowhead Dam	BDM Warren Steel Holdings LLC; ISG Warren Inc.	Channel Dam	n/a	n/a	n/a	n/a

Unknown – Warren Twp.	n/a	Dam & Spillway	n/a	500.0	10.0	n/a
Unknown – Warren Twp.	n/a	Dam & Spillway	n/a	n/a	10.0	n/a
Unknown – Braceville Twp.	n/a	Dam & Spillway	n/a	n/a	10.0	n/a
Unknown – Braceville Twp.	n/a	Dam & Spillway	n/a	n/a	10.0	n/a
McFarland Pond Dam	Geo. McFarland	Dam & Spillway	Earthfill	225.0	8.7	21.0
Ridge Ranch Lake Dam	J. Perigo	Dam & Spillway	Earthfill	300.0	6.0	n/a
Unknown – Newton Twp.	n/a	Dam & Spillway	n/a	720.0	10.0	n/a
Unknown – Newton Twp.	n/a	Dam & Spillway	n/a	n/a	10.0	n/a
Heckathom Pond Dam	L. Heckathom	Dam & Spillway	n/a	Na/	10.0	n/a
General Motors Lake Dam	General Motors Corporation	Dam & Spillway	Earthfill	n/a	10.0	n/a
Cedar Lake Dam	n/a	Dam & Spillway	n/a	430.0	10.0	n/a
Westwood Lake Dam	Westwood Lake Development Corp.	Dam & Spillway	Earthfill	420.0	17.6	157.4
Heaton Dam	City of Niles	Lowhead	n/a	n/a	n/a	n/a
Unknown - Weathersfield Twp.	n/a	Dam & Spillway	n/a	350.0	10.0	n/a
Unknown– Weathersfield Twp.	n/a	Dam & Spillway	n/a	280.0	10.0	n/a
Casele Pond Dam	Mike Casele	Dam & Spillway	n/a	400.0	10.0	n/a
Reliant Finishing Pond Dam	Reliant Energy	n/a	n/a	1,000	16.0	11.9
Lower Girard Lake Dam	City of Girard	Dam & Spillway	Concrete & Earthfill	436.0	42.9	2,040
Liberty Street Dam	McDonald Steel Corporation	Channel Dam	Timber Crib	265.0	12.0	222.0
Belmont Park Cemetery Pond Dam	Belmont Park Cemetery	Dam & Spillway	n/a	400.0	10.0	n/a
Unknown – Liberty Twp.	n/a	Dam & Spillway	n/a	400.0	10.0	n/a
Unknown – Liberty Twp.	n/a	Dam & Spillway	n/a	500.0	10.0	n/a
Unknown – Liberty Twp.	n/a	Dam & Spillway	n/a	750.0	10.0	n/a
Tompkins Lake Dam	Jack & Patricia Tompkins	Dam & Spillway	n/a	300.00	20.00	n/a
Unknown – Liberty Twp.	n/a	Dam & Spillway	n/a	300.0	10.0	n/a

Brauninger Pond Dam	LE Brauninger	Dam & Spillway	n/a	200.0	10.0	n/a
Troung Lake Dam	Dr. Thong Thi Troung	Dam & Spillway	Earthfill	n/a	7.0	n/a
Cafaro Pond Dam	JA Cafaro	Dam & Spillway	n/a	300.0	10.0	n/a
Unknown – Hubbard Twp.	n/a	Dam & Spillway	n/a	280.0	10.0	n/a
Hubbard Low Head Dam	William L. Quinn	Channel Dam	Concrete, Gravity	60.0	13.0	36.8
Harding Park Pond Dam	City of Hubbard	Dam & Spillway	n/a	n/a	15.0	n/a

Class II and III ODNR-listed dams, or commensurately "significant" or "low" hazard dams listed by the United States Army Corps of Engineers, are not individually described in the hazard mitigation plan. These dams are not anticipated to result in the loss of human life if failure occurs. Instead, they are expected to damage property, interrupt services and utilities, or provide difficulties in the use of local infrastructure. Damages may be limited to those on the property of the dam owner for the smaller dams. While those circumstances are inconvenient, the degree and duration of interruption is not generally extensive enough to warrant mitigation efforts or financial assistance. Current mitigation guidance does not call for the specific description of these structures. However, the strategies established for high-hazard dams can be used to benefit lower classified dams, or to benefit responders in working with those dam owners to plan for response capacity.

Coalburg Lake Dam

Coalburg Lake and Coalburg Lake Dam were built over 100 years ago on Little Yankee Run in the far northwestern corner of Hubbard Township, very close to Brookfield Township. The dam and spillway are an earthen structure that is 24 feet high and 600 feet long. It holds up to 770 acre-feet of water back, and has a drainage area of 14.92 miles. The normal pond storage is 350 acre-feet, and it covers a surface area of 57 acres. The dam was completed in 1916, but there is no engineer or dam designer of record listed on the NID. It was created for recreational activity like boating, fishing, and swimming.

File photo of Coalburg Lake Dam

As with many inland lakes, housing has developed around the lake in an unincorporated community commonly referred to as Coalburg. The area surrounding the lake in this fashion is about 340 acres in size.

Little Yankee Run flows from the north into the area covered by Coalburg Lake, feeding the body of water with drainage from the upstream land that is mostly farmland and residential area. Trumbull County's northern townships are mostly farmland, and little Yankee Run is one of the main waterways that drain this area into the Coalburg Lake.

Collar Price Road winds along the eastern shores of Coalburg Lake, and at its furthest distance from the lake, it measures 347 meters. This area is peppered with homes that are residential properties with swimming pools, outbuildings, and sublots. This section of roadway is approximately two miles in length with homes along the entire length. The homes appear to be on lots of at least several acres.

At the south end of Coalburg Lake, where the dam is located, Little Yankee Run transitions from the dam and spillway into a large waterway. Chestnut Ridge Road crosses Collar Price Road, and the Chestnut Ridge Campgrounds sits on the south side of the roadway. This facility provides space for recreational vehicles as well as activities. There is another area of water on the Little Yankee Run as it meanders through the campground.

Across the road from the campgrounds sits Coalburg United Methodist Church. The entire area is scattered with homes on rural size lots of an acre or more, with outbuildings, swimming pools, garages, and other structures.

There is an Ohio Turnpike interchange south of Coalburg Lake and Coalburg Dam, Exit 234 Youngstown/Poland that travels to Hubbard and SR 7 and 62. This interchange has the typical fueling stations, restaurants, and other amenities for travelers. The railroad tracks from the north also runs through this area. Little Yankee Creek flows under the highway and through Hubbard to the Shenango River just west of the PA line. While most of this area would likely be outside any inundation area from Coalburg Dam, water levels could be higher than normal.

The City of Hubbard is downstream, located on Little Yankee Run. A railroad track, coming from the north and running alongside Coalburg Lake, comes into Hubbard and winds through the city on its way to the Youngstown area. While the Little Yankee would likely be filled higher than it normally is if the Coalburg Dam were to fail, it is not anticipated that there would be heavy flooding or inundation within the City of Hubbard.

Coalburg Dam has what ODNR referred to as a "cursory" emergency action plan. There are no inundation maps in the plan, according to local sources. The pathway cited above is consistent with the elevations and general drainage of the area. In the absence of an engineered inundation pathway, this defined area is what local emergency officials would consider a potential inundation area.

In a lawsuit filed by the State of Ohio vs. Coalburg Land Partners, LLC with Trumbull County Clerk of Courts on December 9, 2021, failure of the dam would potentially cause the loss of human life. The complaint indicates that structural collapse of the dam would endanger one home, buildings, a children's playground, state and local roads, a bridge, and another dam. The complaint also indicated that failure would result in the loss of human life and flooding of high value property downstream.

The complaint above indicates that multiple drafts of an emergency action plan were submitted in April and May 2021, but that no final draft with all information had been submitted, to date.

As stated in the complaint, Coalburg Lake Dam was inspected in November 2019 and found to be in poor condition. According to an article in "Mahoning Matters," a local publication, several deficiencies were found. These include the following:

- The discharge and storage capacity count not pass the minimal flood design for a dam of its class, meaning that the dam could not withstand the stress of flood conditions in a reasonably expected situation in the affected watershed;
- Controls to drain the lake were found to be not working;
- There was identified seepage through and under the embankment which would weaken both the dam structure when erosion impacted the spillway;
- Areas along the dam's crest were too low, allowing for water to run over during severe flood conditions;
- The embankment was covered with dense trees and brush, which violates state regulations;
- The dam owners had no filed required operations plans, maintenance documents, or an emergency action plan.

ODNR eventually ordered Coalburg Land Partners, owner of the lake and dam, to submit preliminary plans to demolish the dam no later than November, 2025. If the dam is removed, the lake may be drained as well, having lost the structure that holds water back to form the lake.

That timeline was recently pushed back to March 26, 2026.

In the meantime, the Trumbull County Commissioners, and both Hubbard and Brookfield Townships have attempted to find a way to save the lake and the dam. Consultation with the Western Reserve Land Conservancy (WRLC) has provided an eleventh-hour ray of hope for saving the dam and lake. The WRLC would purchase the land from Coalburg Land Partners for a reasonable price, although less than market value, and would then donate 15 to 17 acres to the Community Foundation, including the land where the dam is located.

The Community Foundation would pursue grants to complete repairs to the dam that are necessary for ODNR to allow the dam to continue to exist. The nonprofit was open about the potential need to remove the dam if repair costs were prohibitive. The current owner, Coalburg Land Partners, LLC has said they would consider removal of the spillway if costs to repair it are too high and no other entity is found to foot the bill for the necessary work. They, too, would consider draining the lake.

Draining the lake and removing the dam comes with baggage. Clean up of the debris and vegetation, silt, and rubbish at the bottom of the lake would be a cost item. Rehabilitating the lake bottom into useable land, potentially as a park or a wetland, would also require significant funding.

All this disposition of the lake and the dam is happening currently, and nothing has been decided or presented in final form. In the coming months, this could change drastically as the ODNR-imposed deadlines arrive. Trumbull County will need to remain diligent to protect residents from danger should the dam fail. An extremely wet spring could bring stress to the aging structure. Residents and officials are aware of this, and attempting to manage the situation in a timely fashion.

The official planning contact for the dam was Dennis Watkins, Trumbull County Prosecuting Attorney. Because the dam is in litigation, all affairs have been turned over to a management company that is listed in Cleveland, but the assigned agent of the dam lives in Texas. Attempts to contact him were fruitless, and locally there were questions posed about the accuracy of that information. ODNR's lawsuit is public information and was used to develop some of this narrative. Other public records were used to develop the information, including newspaper articles and broadcasts about Coalburg Dam. Due to the litigation and confidential requirements of conversation about the dam, the Prosecutor had ordered no public discussion about the dam several months ago. Therefore, no trustees, municipal, or county officials were allowed to discuss this structure at mitigation meetings.

Mineral Ridge Dam

Mineral Ride Dam, on the north end of Meander Creek Reservoir, holds water in Meander Creek Reservoir for the purpose of water supply to the City of Niles. It is owned by Meander

Water District, formerly known as the Mahoning Valley Sanitary District, designed by its own engineers, and built in 1932 for water supply.

The dam is an earthen dam on Meander Creek, which flows to the Mahoning River slightly north inside the Niles incorporation limits. The dam is 3,480 feet in length, and 60 feet high. It holds 151,400 cubic feet of water with a maximum storage of 62,00 acre-feet. The lake covers 2,109 surface acres. The drainage area is 83.9 square miles of populated area, both inside and outside city limits. The Ohio Turnpike, a CSX section of railroad, and several main area roads pass through the area of the dam and lake.

The area around the Mineral Ridge Dam is an unincorporated community called Mineral Ridge, and according to the US Census in 2020, is inhabited by over 5,100 residents. The Mahoning Valley Sanitary District has its headquarters located here. Mineral Ridge School has several buildings, including a high school and an elementary school, in this immediate area. There are churches, businesses, and industries located in this area.

This dam was last inspected on July 8, 2021 and rated in “poor” condition. There is an EAP that was revised in August 2022. This dam supplies raw water for treatment and then distribution to 220,000 residents from Niles to Youngstown, including Lordstown, Girard, Mineral Ridge, and sections of townships as well as parts of Mahoning County. After its completion in 1932, major renovations were completed in 2005; however, the current condition of the dam is poor.

Renovation of the dam will bring it into compliance with current ODNR and USACE requirements. Gannett Fleming engineering services identified five potential failure modes for the dam:

- Failure of the principal spillway during extreme event due to low rock strength, ineffective foundation drains, and relatively flat bedrock bedding;
- Existing twin auxiliary and emergency spillway failure caused by erosion and breaching from high velocities in vegetated and riprapped portions of the discharge channel;
- Dam embankment failure by uncontrolled seepage and internal erosion due to no internal drainage system, high pore pressures measured in downstream embankment, and dispersive soils identified during testing;
- Failure of the top of the dam due to seepage, surface erosion, downstream slope instability, and the absence of an internal drainage system in the embankment;
- Inadequate spillway capacity and overtopping failure.

Alternatives considered where to do nothing and take the chance the no problems would occur, or to engage in dam rehabilitation, covering twelve corrective actions identified and outline by Gannett Fleming. A recommendation was made to accept a modified plan for dam rehabilitation, including nine of the twelve objectives. Decommissioning of the dam and complete removal, thus the “do nothing” alternative, was dismissed because it would eliminate the water supply for 220,000 customers.

The Mahoning Valley Sanitary District applied for a BRIC grant in 2023 and were notified that the grant application was approved. They worked with the State of Ohio to provide all information necessary for that program. The grant has not been transferred to the MVSD due to program delays in 2025 and beyond. Completion of the project is still the intent of the district, but the grant is a critical component in doing so.

Figure 6. TRU-02944-23: Mineral Ridge Dam, looking southwest.

Figure 7. TRU-02944-23: Embankment, looking west.

Photos taken from FEMA Rehabilitation Plan

The inundation zone for Mineral Ridge Dam is extensive. Gannett Fleming prepared an EAP that includes inundation zone information in January 2011. This plan outlines the typical description of the dam, and the various parameters for a dam failure and the consequences of a failure. They considered impact on not only Meader Creek, but also Mosquito Creek and the Mahoning River which all come together a few miles from the dam inside the City of Niles. They considered upstream in the Mahoning River and Mosquito Creek as well as downstream due to the location of the City of Warren, the City of Niles, and the populations in the entire waterway area.

The inundation study includes narrative and tables about critical infrastructure and various other features of the area. Most of the inundation area appears to coincide with the floodplain, and therefore much of it is not part of the built community.

The plan includes a table that shows the hydraulic analysis at selected locations along the waterways. It discusses over half of the bridges in the identified area, and how they would be affected by a dam failure. It does not, however, list residential areas or individual residences and businesses that are included in these areas. Much of the area along the river and both creeks are floodplain and is not developed, but there are areas where homes have been built and the land is not in the designated floodplain. There is no information about how many residents would be in the affected areas, how deep the water would be in their homes or businesses, or if there are anticipated deaths or injuries.

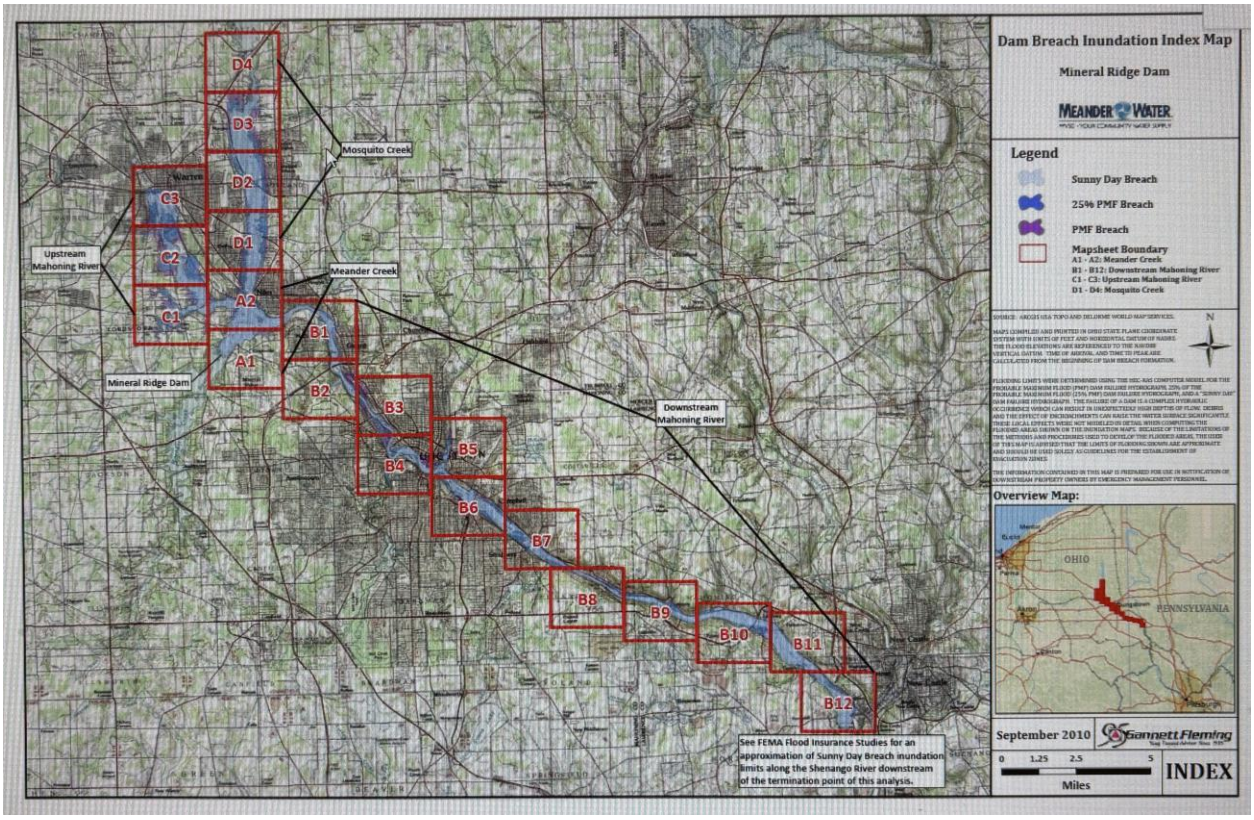
There are full page screens for each inundation zone in the plan. While it is somewhat possible to view underneath the zone shading and understand whether that area is residential, industrial, or undeveloped, it is not possible to determine quickly how to transfer the information to county GIS to quickly warn neighborhoods. It does identify specific streets, and gives associated inundation times under three different scenarios.

There are no charts or tables that describe by number the parcels that would be flooded.

The EAP covers response partner involvement and how local emergency workers would be involved with evacuations and other activities. It defines the responsibility of local officials, including the Trumbull County EMA, and discusses the hierarchy of authority and responsibility during an incident. It includes information about how to contact these individuals and what responsibility their agency holds.

In the Mineral Ridge Dam Rehabilitation Assessment, prepared by Gannett Fleming and the Mahoning Valley Sewer District for FEMA Region V, the describe the overall inundation area to include 15,176 acres, and reenforce that an initial break would send water travelling quickly to the confluence of Meander Creek and the Mahoning River. They state that the high energy of the flood wave and the flat topology of the area would cause the flood wave to push upstream and downstream of the confluence. They expect communities experiencing flooding to include Weathersfield, Niles, McDonald, Girard, Youngstown, Campbell, Struthers, Lordstown, Warren, Holand, Bazetta, Lowellville, Edinburg PA, and Mahoningtown PA.

Map 2-9 Mineral Ridge Dam Inundation Zones



Mosquito Creek Dam

This high-hazard dam sits in Bazetta Township on the south shore of Mosquito Lake. It is owned by the US Army Corps of Engineers, Pittsburgh Division, and was created for flood risk reduction, fish and wildlife habitat, recreation, and water supply. It was designed and built by CELRP (USACE-Pittsburgh) in 1944 on Mosquito Creek. It is regulated, operated, and maintained by USACE Pittsburgh. The structure is an earthen dam, 47 feet in height and 5,650 feet in length. The dam has a maximum storage of 180,000 acre-feet, or 600,00 cubic yards. Its normal storage is 82,400 acre-feet of water, and is cover 7,850 surface acres. The maximum discharge is rated in 4,180 cubic feet per second. It has a drainage area of 97 square miles. The spillway is 260 feet wide and in uncontrolled.

In 2022, USACE labeled its dam “low” risk. They added a disclaimer in the National Inventory of Dams that says “Dams do not eliminate all risk of flooding. USACE works to address all types of flood risk associated with the dam. Dams have limited capacity to store water. Water may be released through the dam to manage water levels up or downstream or to relive pressure on the dam to maintain its structural integrity. Severe weather event that brings inconsistent or larger amounts of water into the system can also lead to dam releases or in some cases overwhelm and lead to issue occurring at a dam. More detail related to this specific dam will be added at a future time.”

Photograph taken from the National Inventory of Dams, Mosquito Creek Dam page.

They have also stated on the NID site the following: "To ensure we are taking all steps to reduce the risk to the public, we will continue to work closely with state and local emergency managers, conducting emergency exercises and incorporate any new information into our emergency action plan. We will also continue our rigorous monitoring and surveillance of the dame, especially during high water events. We closely follow rainfall forecast to determine when high reservoir levels may occur to provide information for any necessary flood warnings. We will work with local communities to provide opportunities to engage with residents to help them understand how they can better prepare for a flood. In partnership with the US Geologic Survey and the National Weather Service, information on current and forecast lake levels at Pittsburgh District reservoirs are available to the vias the internet at https://www.lrp.usace.army.mil/Portals/72/docs/WaterManagement/ResSumPlots.pdf."

USACE shares inundation information on the NID. For a "maximum high breach," which is the worst-case scenario that gives the highest amount of overflow water with a breach of the structure, they anticipated the pool elevation to be at 910.6 feet. During the day, this would put 16,364 people at risk. At night, that number is reduced to 11,745. At any time, there are 4,322 structures at risk, which is assumed to include many residences as well as business, commercial and critical facility properties. The USACE estimates economic loss at $1,881,678,128.

An intermediate high breach, listed as a reasonable expectation during a major flood incident is also outlined. It indicates that there would be 14,752 people at risk during the daytime, and 10,015 people during nighttime hours. Buildings are risk number 3,692 and the economic cost is estimated to be $1,590,615,847.00.

A normal high pool breach scenario is a less catastrophic situation. This is expected to have a pool elevation of 900.9 feet and endanger 8,853 people during the daytime, but 5,806 at night. There would be 2,024 buildings likely affected. Financial loss is estimated to be $678,451,227. In the descriptions, USACE says that this scenario does not include any downstream flooding prior to the breach.

Information regarding the full spectrum of anticipated scenarios can be found at www.nid.sec.usace.army.mil/nid/#/dams/system/OH00031/risk.

Using the advanced mapping feature on the NID, the inundation for Mosquito Creek Dam under maximum height with breach scenario shows inundation all the way into Youngstown in Mahoning County. Most of the breach would occur in central Bazetta Township, Warren and Howland Townships, the City of Warren (east side), City of Niles, Village of McDonald, and City of Girard. The zone basically follows Mosquito Creek as it travels south, and then merges with the Mahoning River in south Niles

There is no specific structural information or inundation timeline on the NID site.

Looking at the expanded map on the NID, structures of concern that are generally in the same area as the inundation zone include many homes and local roads and streets that appear would be inundated to some degree. Griffin Sloas Airport is close to Mosquito Creek, as is SR 82/5 also known as the Warren Outer Belt, Akron Children's Hospital Warren Health Center, Eastwood Mall and retail area, and Niles Middle School. There is no specific information about any of these locations on the NID. There also appears to be a significant amount of state park and wetlands in this general area along Mosquito Creek where there are parks and recreational areas, but no homes or business structures.

South of Niles, Mosquito Creek joins the Mahoning River and the inundation shows that some of the floodwater would flow south into the Youngstown area in that river. The Mahoning flows through McDonald and Girard, and would likely be slightly out of its banks. This is not clearly defined on the maps.

The Resilience Analysis and Planning Tool by FEMA indicates some critical infrastructure could be at risk. As it illustrates the floodplain areas in one screen, the inundation zone and the floodplain appear to be very much the same. There is a significant number of wetlands and natural habitat in the inundation zone.

There are ten or so fire department buildings and law enforcement buildings that are close to the inundation zone for a MH breach. Numerous school buildings, a few nursing facilities, one mobile home park, and three waste water treatment plants are close to the inundation zones, casually speaking. While these are not clearly identified in the NID, when comparing maps of the two online tools, they appear to be within the inundation zones for a worst-case scenario.

No specific structures are listed on the NID as part of the inundation zone.

This dam does have an Emergency Action Plan; however, it is the standard practice of USACE to deny access to this plan for the purpose of mitigation planning. Local resources, including fire and emergency management offices, did not have access to the EAP. The NID indicates that the last EAP exercise date was May 22, 2025.

Note that Mosquito Creek Dam, owned by USACE and the federal government, is not eligible for High Hazard Dam Grant programs.

Pleasant Valley Lake Dam

This dam was built on Squaw Creek in 1925 for recreational purposes. Its nearest municipality is Tibbetts Corners, which is a Census Designated Place between Niles and Girard, and is also known as McKinley Heights. It is regulated and inspected by ODNR, considered to be in poor condition, and is a high hazard dam. It was last inspected in September 2022, and has no emergency action plan. Its ownership is listed as "Multiple Owners" on both ODNR and NID listings.

It is believed that several properties around and adjacent to the lake are the actual owners of the lake and the dam. A group of residents, led by a new property owner in the area, are working to determine exactly who "multiple owners" includes. They are examining sometimes decades-old property deeds and other documents to determine the legal ownership of the dam. It is, at this time, their intention to formalize the ownership group into a business entity so the lake and the dam can be properly managed and maintained. It is their intention to improve the dam's condition, and to determine what can be done with the lake to enhance its use and presence in the community. At the time this plan was developed, those activities were taking place, and conclusions and decisions had not been made.

This is an earthen dam that is 20 feet high and 300 feet in length. It has normal storage of 73 acre-feet, and a surface area of 11.3 acres. Its maximum storage is 139.7 acre-feet and the drainage area is 3.65 square miles in size. The lake covers 11.3 acres. Tibbetts Corners is 4.2 miles away.

There is no hydraulically-engineered inundation map for Pleasant Valley Lake Dam. Maps and aerial views show the dam and spillway to be on the furthest southwest end of the lake, spilling directly into Squaw Creek as it heads to Girard Lake to its southwest. It is assumed by local individuals familiar with the topography that the floodwater would gravitationally flow to Squaw Creek and then into Upper Lake Girard should the Pleasant Valley Lake Dam fail. The potential inundation areas identified below are based upon that assumption, using aerial views to track the creek in relation to homes.

The photograph shows a snapshot of a boat ramp at Pleasant Lake. It is a serene, isolated lake in a quiet rural area away from highways, businesses, and heavily populated neighborhoods. People use the lake for boating and fishing, and simply enjoy the quiet time in a serene setting.

Pleasant Valley Lake Dam, Trumbull County – online image

Pleasant Valley Road travels north-south on the west side of the lake until it intersects Smith-Stewart Road on the north. There are less than 20 houses on that road, in addition to an outbuilding or two on each parcel. These homes appear to be higher than the lake, and upstream from the dam. It is not likely these homes would be affected by a dam failure except to limit ingress and egress somewhat for their own safety. The homes at the south end of the road may be low enough and close enough to flood. There are about five homes in this area, of the 20 mentioned before.

Smith-Stewart Road and Valley Road wrap around the north and east side of the lake, aerial views show approximately twenty houses on the northeast corner where Squaw Creek enters the lake. These houses appear to be higher than the lake and the dam, and are upstream on the creek; therefore, would not likely be in an inundation zone. They are not situated on the lake's shore, but across the road from the lake.

Between Pleasant Valley Lake and Girard Lake, as Squaw Creek meanders, there are about another twenty homes visible on aerial views that lie along Squaw Creek, but not "on" the creek. They are near the creek, and assumed to potentially be affected in some way. These homes are far enough from the waterway that the general opinion is the water would not reach the structures.

On the southern end of Pleasant Valley Lake, there are about eight small ponds that look to be naturally occurring, and would possibly absorb some of the water from the lake. It cannot be determined without hydrological analysis if those bodies of water would be helpful in mitigating flood inundation.

Anecdotally, it appears that the maximum number of homes that could be affected is in the general vicinity of 60. If that is multiplied by four people per household, 240 people could be evacuated and assisted. Without the benefit of engineering, this seems to be a worst-case scenario.

It is assumed that the homes around the lake will eventually constitute a property owners association. In several cases, the owner of the dam is listed as "multiple owners." No where are those individuals identified.

Upper Girard Lake Dam

Built in 1929, this dam provides recreational activities and stormwater management options for the City of Girard. It was designed by Public Works Corporation of New York, New York and is an earthen structure that is 55 feet high and 2,720 feet long. It has storage of 4,289 acre-feet, and has a water volume of 189,108 cubic yards. The drainage area is 13.03 square miles, and it has a surface area of 174 acres. The maximum discharge is 8,500 cubic feet per second, based upon probably maximum flood, or PMF. Upper Girard Lake Dam is built on Squaw Creek with the nearest settled area being Tibbetts Corners, an unincorporated area in the county. The area is 2.3 miles from the dam. It is a state-regulated dam, inspected and regulated by ODNR.

In December 2022, ODNR inspected the dam and rated it in poor condition. While the dam has an emergency action plan, ODNR's concerns included both infrastructure and safety. The city was recently directed by ODNR to fix the dam.

The required remedial measures prescribed by ODNR to the City of Girard in a report issued at some time after the October 12, 2021 inspection, are listed, in summary, below:

- Performance of a hydrologic and hydraulic study to determine the adequacy of the dam's discharge/storage capacity to safely pass the required design flood.
- Install and emergency spillway as required in OAC Rule 1501:21-13-04.
- Investigation and evaluate the condition of all components of the existing drain system and their ability to reliably and substantially drain the reservoir in a reasonable period. Provide plans and specifications for abandoning unneeded components, rehabilitating needed components, installing new components if needed, and providing safe access for operation.
- Prepare plans and specifications for the repair of all spalling on the interior and exposed exterior portions of the principal spillway outlet pipe and for resealing the spillway joint. Investigate the small drain that outlets by the spillway outlet and provide recommendations for repairs or abandonment. Monitor the joint in the principal spillway discharge tunnel quarterly for loss of sealant until repairs are made.

- Due to the age of the embankment drain system, the questionable construction materials, and the inability to monitor the outflow, the entire embankment drain system must be investigated by a registered professional engineer to determine the functionality, suitability, and adequacy of the embankment drain system.
- A geotechnical engineer, experienced in dam safety, must investigate the foundation and embankment materials, and prepare a detailed geotechnical interpretive evaluation of the dam, and, as necessary, prepare plans and specifications to stabilize the structure.

The report also outlined six sets of repairs the City of Girard is required to do to maintain the property. These involved cleaning up and maintaining vegetation around the dam, removal of trees and brush from specific areas, removing vegetation from riprap areas and replenishment with additional riprap, repair to the erosion gully on the left downstream groin, repair of vehicle ruts on a section of embankment, all of which have been completed by the City. It also called for replacement of the staff gage located on the lake drain inlet structure. They additionally directed the City to monitor the entire dam routinely, which is being done.

ODNR and the city have discussed repair and refurbishment options since 2021 when ODNR inspected the dam. The city hired an engineering consultant to assess the dam when ODNR said they wanted an emergency spillway installed. The city's engineer estimated that cost to be $1.5 to $2.0 million in 2014 but anticipated eligibility for FEMA grants. ODNR also wanted the dam embankment to be tested for stability and seepage, and the concrete pipe and morning glory spillway that drains water from the lake to be inspected and repaired if needed. The alternative ODNR provided to Girard was to breach the dam and drain the lake. This is not a preferred resolution because of the projected and even-higher expense to do that.

Currently the City of Girard is planning to make the required safety upgrades and repairs to the dam. They hired an engineering consultant to evaluate the dam, identify, design, and propose and implement refurbishments for ODNR approval. ODNR mandated safety and structural repairs be made to the dam within five years. Girard is evaluating deficiencies, getting assistance in designing and pricing repairs and changes, and working to establish a long-term process for the financial management of the dam and its ongoing maintenance. The city hopes to have the project competed by 2030.

Girard was selected for a 2022 FEMA grant (65% Federal/35% Local funds) which should give them $168,780 toward the project. The city had to commit $90,733 as their match for the FEMA grant. Another application for 2024 improvement design has been submitted to FEMA for 2024 funding, but no action has been finalized and that grant is considered "pending". If funded, it would require the City to contribute $96,250 to receive a federal share of $178,750. The city has obtained an OWDA planning and design loan for $545,700 which would then allow the city to reimburse $195,208 spent from the city's water fund.

The city had tried to sell both Upper Girard Lake and Lower Girard Lake in 2019, but the offers were well below what the city set as a minimum bid. The condition of the spillway and the dam

were perceived as part of the reason for the low bids, and so the city decided to pursue repairs. In late 2025, they received a $547,231 loan at 4.8% interest for five years for the planning and design of safety improvements. The funds came as part of an effort by Ohio Water Development Authority to improve wastewater and drinking water infrastructure and to improve water quality.

Upper Girard Lake Dam – online photograph

Girard Dam Inundation Mapping

The dam has an emergency action plan that was written in 2010 and is approved by FEMA. It was prepared by Burgess & Niple, Inc. from Columbus, OH. The plan contains typical verbiage and information about the various local responders and officials, including the Trumbull County EMA, who would be informed of any pending or occurring situation, and the responders and officials who would be part of the response team once an incident was identified and opened. The local first responders, the Trumbull County EMA, and others are all included in the plan.

There are no inundation maps with zones and time frames that were shared, and it appears that the EAP does not include this kind of detail. It does include a table of flood routing results as displayed below.

Table 2-33 Upper Girard Dam Inundation Chart

Table A-3
Summary of Flood Routing Results

Location	PMF without Failure		PMF With Failure		25% PMF w/Failure		Normal Pool Failure	
	Maximum Flow (cfs)	Maximum Water Surface Elevation (feet)	Maximum Flow (cfs)	Maximum Water Surface Elevation (feet)	Maximum Flow	Maximum Water Surface Elevation (feet)	Maximum Flow (cfs)	Maximum Water Surface Elevation (feet)
Upper Dam	19,328	1028.96	89,211	1028.96	76,584	1024.95	68,901	1020.6
SR 11	19,284	1011.09	85,554	1023.55	72,818	1021.16	48,590	1018.06
Lower Dam	27,657	956.90	75,769	979.43	47,779	968.20	36,288	961.19
Tibbetts Wick Road	27,646	949.57	75,046	963.50	47,976	955.55	37,864	952.57
Glendale Road	27,585	922.78	71,801	930.87	48,396	926.59	37,479	924.59
Near Pittsburg Road	27,596	903.76	70,578	911.89	49,026	907.82	35,032	905.17
US 422	27,604	884.85	69,401	893.88	48,003	889.26	38,558	887.22

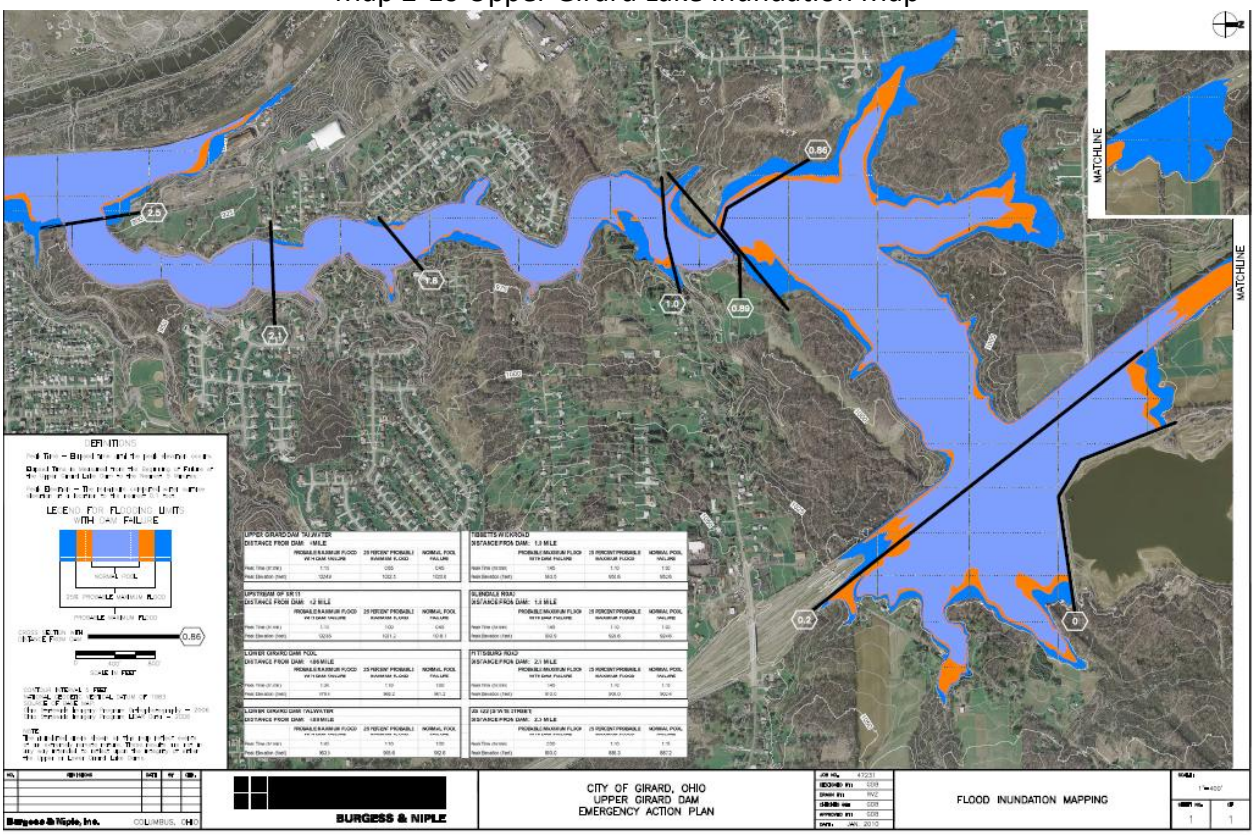
The situations included in this projection include various forms of failure, as named in each column.

Additionally, it identifies five bridges that cross Squaw Creek that may be compromised in a dam failure situation; those include Shannon Cross Wartman Road; State Route 11; Tibbetts Wick Road, Glendale Avenue, and US Route 422/State Street.

The inundation information is not very clearly defined, and would be very difficult to identify in a real situation. The map below seems to show residential areas that would be impacted by flooding, as well as some areas that appear to be industrial. It does establish mile-markers and times.

One of the requirements ODNR placed on the city was to revise and upgrade this mapping, and the stakeholders from the City of Girard affirmed their intention to do that.

Map 2-10 Upper Girard Lake Inundation Map



Local Dam Failure History for Trumbull County

On July 29, 2019 Kinsman Township received almost eight inches of rain in a very short period. The raging creeks and rivers were widespread, and the overflowing Straton Creek caused overtopping of Kinsman Lake Dam in Kinsman Township. The dam did eventually fail during the storm. This washed out a road and bridge, and left about 20 families stranded, in need of rescue and temporary housing as their homes flooded. While ODNR had issued a warning three years earlier about the dam, concerned that it would not withstand heavy rains and flood conditions, there was no imminent threat to life safety, so no follow up by ODNR was done. The dam was not refurbished, and the rains proved to be more than the dam could hold back. While the dam overtopped, it was the road and bridge destroyed, not the dam. The dam still stands today. It is an earthfill "Other" classification dam.

The Association of State Dam Safety Officials has recorded this incident to have cost in the range of one to five million dollars. It characterizes the rain event as six inches of rain in four hours, and indicates that the county instructed the township to reopen the road, but there was no repair or refurbishment of the dam.

Photo from Star Beacon, taken by Warren Dillaway regarding Kinsman Dam Incident where road and bridge washed out after heavy rain.

Other incidents and situations include the following for Trumbull County:

- Newton Falls Low Head Dam had a hole in the spillway in 1988, as noted in the State of Ohio Enhanced Hazard Mitigation Plan of February 2024.
- The same state plan indicates that Pleasant Valley Lake Dam has an emergency plan that is not, or was not in 2024, approved; and that the Coalburg Dam emergency plan is "cursory"

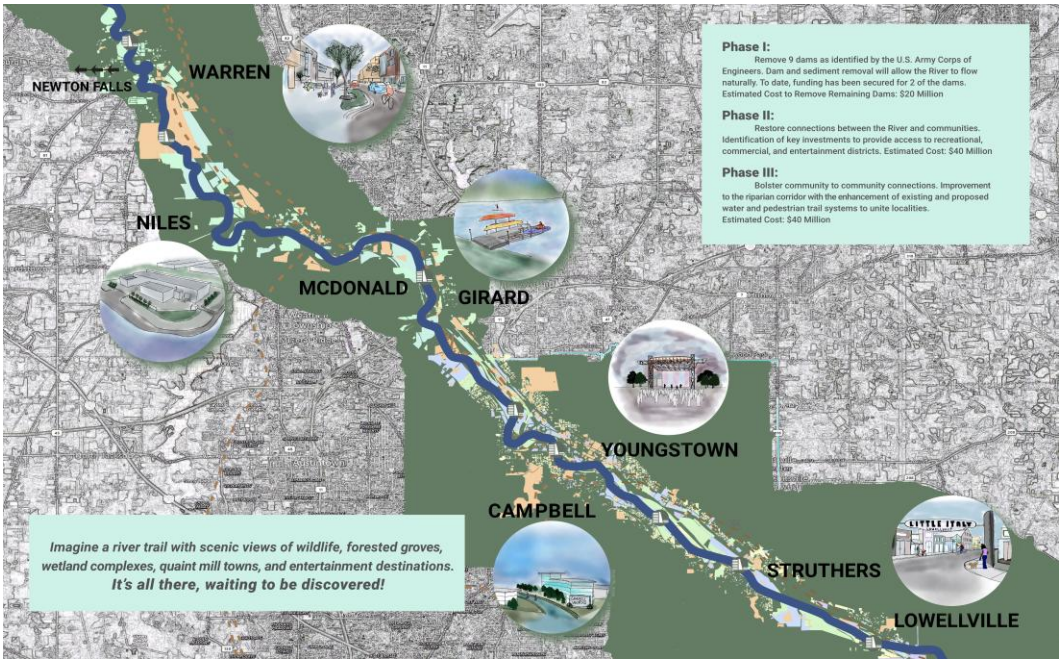
Eastgate Regional Council of Governments has developed a plan to remove nine Mahoning River low head dams in Trumbull County as part of a river restoration project. The dams were originally built to provide energy or water to steel industries. Because those industries no longer exist and the dams are dangerous to canoes and kayaks that peddle the river, the decision to remove them was made in concert with the US Army Corps of Engineers. They said that dam and sediment removal will allow the river to flow more smoothly. To date, Eastgate has received funding for two dams to be removed.

Dams to be removed in Trumbull County include the following:

- Girard Mills Dam, in Girard, including removal of a dam, large abutment, and a large riverbank wall.
- Leavittsburg Dam, in Warren Township, including dredging contaminated sediment
- Republic Steel Warren Works Dam in Warren where a concrete wall and abutment project will remove contaminated sediment and a dam.
- Warren Water Works Dam will remove a concrete structure and contaminated sediment

Leavittsburg Dam removal began in October 2025

Map 2-11 Eastgate Regional Council of Governments Dam Removal Map



Eastgate Regional Council of Governments graphic showing Trumbull Co. Dams

Dam safety and maintenance of structures is a safety concern for Trumbull County stakeholders. With over 100 dams, most of them classified a Category IV dam by ODNR, there are many structures that could affect drainage.

The large dams all drain into the Mahoning River eventually. While an all-dam failure situation is hard to imagine, and rates very low on the likelihood scale, there could be significant flooding

should that occur. Current efforts are focused on emergency plans and refurbishment of dams in poor condition to lessen that chance even more.

2.2.4 Disease Outbreak

The prevalence of a communicable disease that is sufficient in severity to cause public and private disruption is considered a disease outbreak. This can be further categorized as an outbreak, an epidemic, or a pandemic.

An outbreak is a sudden escalation in the number of persons infected with a specific illness that is beyond the normal expectancy for that illness at a particular time. An epidemic is an outbreak that extends beyond one small area, and affects a regional area or larger with the same illness, at higher-than-expected frequency. A pandemic is when that illness extends to an entire country or continent, or more. The presence of the illness, and the communication of the illness from one person to another, is that determining factor in these categories. Severity is not considered, and can be from low to extremely serious.

The determination that an outbreak is in process is made by the public health departments and the Ohio Department of Health for a state-only issue, and by the Centers for Disease Control and the World Health Organization for pandemic issues.

Consequences of a disease outbreak include individual vulnerability and sickness and/or death; community treatment and management capacity including healthcare facilities, healthcare workers, medications, equipment, and facilities; maintenance of normal business operations and workforce capabilities; worker health and safety; and fatalities and fatality management.

Disease outbreaks of any magnitude are most dangerous for vulnerable populations that generally include the very young and the very old, people with compromised immune systems, people with chronic health conditions, and those with disabilities. The very poor are also at risk because of the difficulty in obtaining health care.

The most obvious example of a pandemic is the COVID-19 pandemic that began in very early 2020 and continued for almost three years. Another less applicable example is the Ebola outbreak that started in several African counties between 2014 and 2016, and recent outbreaks in 2022 and 2025. Currently, in 2026, the CDC has recognized over two thousand measles cases across the United States, and it is considered an outbreak at the time this plan was written.

While Trumbull County, like all of Ohio, was dramatically affected by COVID-19, there has been no other declared or prominent disease outbreak in the county. They have typical numbers of people affected by seasonal contagious illness, such as RSV, COVID, and influenza. There has not been any remarkable outbreak since the COVID pandemic was cancelled. The Trumbull Combined Health Department monitors hospital reports and follows up on contagious illnesses as required by Ohio law. Yet, while there are no active outbreaks, stakeholders realize from 2020 experiences how quickly an outbreak can spread, and how deeply the consequences of diminished workforces due to illness can impact the community.

2.2.5 Drought

A drought is a deficiency of moisture that adversely impacts people, animals, and vegetation over an area of significant size. Because drought is a creeping phenomenon characterized by the absence of water, there is no defined beginning or end, nor is there a standard amount of time required for an extended dry period to be considered a drought. It is considered a drought when the dry period lasts long enough to impact the environment and economy of a region, typically a period of months or years.

There are four common types of droughts as illustrated below.

Table 2-34: Drought Classifications

Type	Description
Meteorological	Based on the degree of dryness (rainfall deficit) and length of dry period
Hydrological	Based on impact of rainfall deficits on water supply such as stream flow, reservoir and lake levels and water table decline
Agricultural	Based on impacts to agriculture by rainfall deficits, soil water deficits, reduced ground water, and reservoir levels needed for irrigation
Socio-economic	Based on the impact of drought conditions on supply and demand of some economic goods

Drought severity is measured using the Palmer Drought Severity Index (PDSI). The PDSI measures dryness based on recent precipitation and temperature statistics. Drought classifications are identified in the chart below:

Table 2-35: Palmer Drought Severity Index

Measurement	Description
-4 or less	Extreme Drought
-4 to -3	Severe Drought
-3 to -2	Moderate Drought
-2 to -1	Mild Drought
-1 to -0.5	Incipient Dry Spell
-0.5 to 0.5	Near Normal
0.5 to 1	Incipient Wet Spell
1 to 2	Slightly Wet
2 to 3	Moderately Wet
3 to 4	Very Wet
4 or more	Extremely Wet

Drought is typically accompanied by temperatures that are hotter than normal in Ohio. While that hazard, Extreme Temperatures, is discussed later, it is appropriate to include some heat wave information here because the hot weather significantly exacerbates the impact of a drought.

A heat wave is a period of abnormally hot and unusually humid weather, typically lasting for two or more days. This can be an extended period with higher-than-normal temperatures or a shorter period with abnormally high temperatures. Regardless of the length of time or exact temperatures, heat waves are a safety hazard to anyone exposed to the high heat. People are at risk for heat exhaustion and heat stroke, which can be fatal in the most serious cases. When heat waves are accompanied by drought conditions, the potential for a serious natural disaster rises. Between injuries, fatalities, and crop/property damage, these disasters can significantly impact the economy of a region.

Heat waves can occur in Trumbull County and but the incidence is rare and the duration typically short. Extreme temperatures are considered anything above 90 degrees Fahrenheit. In the humid climate of northeast Ohio, these temperatures are often accompanied by high humidity. Temperatures rarely exceed the mid-90s, although the region does occasionally experience higher temperatures. These brief heat waves are not uncommon, but rarely last more than a few days. A heat wave lasting longer than a week is extremely rare.

Table 2-36: Average Temperatures and Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. High	33°	37°	47°	58°	70°	78°	82°	80°	75°	62°	48°	39°
Avg. Low	20°	21°	30°	39°	50°	58°	63°	61°	56°	46°	34°	28°
Avg. Precip.	3.5”	3.5”	4.6”	5.4”	4.9”	6.0”	5.0”	4.0”	4.1”	4.5”	3.5”	4.2”

Drought/Extreme Heat Risk Assessment

Drought is not generally severe in Trumbull County, but many years include abnormally dry periods and even moderate drought. Dry spells can last for several weeks but most months have sufficient rainfall to support vegetative growth, woodlands, and human sustenance. Drought conditions, when they do occur, have a significant impact on the population and home use of water.

Historically, Trumbull County has experienced abnormally dry conditions at some time during the year in twenty of the past twenty-five years, and moderate drought conditions in thirteen of twenty-five years. There was one severe drought incident recorded since 2000, which was in the fall of 2001. Moderate droughts took place in 2002, 2003, 2006, 2007, 2011, 2012, 2016, 2017, 2018, 2021, 2023, 2024 and 2025. The incident in 2024 began in July and did not end until late October. 2025’s drought began in September and extended into 2006. Most periods of drought began in mid-summer and lasted into mid-fall or later.

Drought is a countywide hazard and can affect all areas and jurisdictions. According to the National Integrated Drought Information System, about 55.7% of the population can be affected by drought. They rate 2025 as the fourth driest August on record, records of which reach back 131 years, and shows rainfall for the month at 2.53 inches less than normal.

One of the unanticipated consequences of drought in Trumbull County is the increase in frequency and severity of field, grassland, and woodland fires during dry spells and drought.

Fire departments from across the county expressed some concern about their manpower and ability to fight fires of this magnitude, especially when the fires are driven by high winds. With challenges to full manpower during the windiest and hottest parts of the day, it becomes incredibly difficult to have adequate personnel to fight the fires to begin with, but if structures become involved, it is even more challenging.

The long-term effects of drought according to climate change higher level projections could increase the maximum number of days with a no precipitation from 156.0 to 162.6 by the end of the century. The maximum number of consecutive days without precipitation could increase from 10.4 days to 11.7 days in that same period. This makes fire risk rise, as well as crop damage due to drought increase. At the same time, annual precipitation is expected to rise from 39.2 inches to 41.8 inches, translating to heavier but less frequent rain events. Potentially this could increase surface flooding, put heavier burdens on storm drainage systems, and cause higher levels of erosion. Areas with wells, or water systems fed by wells or rivers, could become a less stable source of raw water during those days when there is no rainfall.

The drought statistics are not severe for any of the last twenty-five years, but there are more regularity and repetition of measurable drought since 2013 than there was prior to that from 2000 until 2012. During the last two summer and fall seasons, moderate drought has persisted through much of Ohio, with Trumbull County being less severely affected than the northwest quadrant.

Stakeholders listed damages from drought to be the loss of water supply to households, crops and livestock, and firefighting water supply sources. They indicated that health conditions, large institutional operations, bulk distribution issues, business losses, and lawncare problems were common vulnerabilities. Industrial production interruptions, worker safety concerns for outdoor workers were also circumstances they observed in drought.

Local Drought/Extreme Heat History

Drought has had some impact on Trumbull County. Per official NCDC records, the county has experienced eight official droughts as indicated in Table 2-33 below. There were no recorded damages, injuries, or deaths, but there was recorded crop loss.

Table 2-37: Trumbull County Drought/Extreme Heat/Heat History

Hazard	Incidents	Property Loss	Crop Loss	Deaths	Injuries
Drought	6	0	$3.0M	0	0

Drought is often regional in scope. One such case follows: The 1988-1989 North American Drought followed a milder drought in the Southeastern United States and California the year before. This drought spread from the Mid-Atlantic, Southeast, Midwest, Northern Great Plains, and Western United States. It was widespread, unusually intense, and accompanied by heat waves that killed 4,800 to 17,000 people nationwide and substantial numbers of livestock. One reason this drought became very damaging was that farmers likely farmed on land that was marginally arable. Another reason was the pumping of groundwater near the depletion mark.

The Drought of 1989 destroyed crops almost nationwide. Lawns went brown and many cities and jurisdictions enacted water restrictions. This catastrophic drought continued to impact the Midwest and Northern Plains states during 1989. The drought was not declared over until 1990. According to the planning team, this drought did affect Trumbull County, but not to the extent that it did other areas.

In June, July and August of 1999, little rain fell from May through June. Water restrictions were enacted in several communities, but crops were not adequately hydrated in the early stages of the growing season. Dry soils persisted through July and August when much of the needed rainfall missed fields in Trumbull County. Crop yields were believed to suffer a 30% reduction, but there was no determination of actual dollar amounts of loss. These dates are listed in the NOAA Storm Event Database and show no damages for Trumbull County.

The second most recent drought to affect parts of Ohio, but not Trumbull County according to NOAA, occurred in the summer of 2012. This incident, referred to as the 2012 North American Drought, was an expansion of the 2010-2012 United States drought that began in the spring of 2012. Lack of snowfall in the United States caused very little melt water to absorb into the soil. The drought included most of the United States and all of Ohio. Many other counties were designated with moderate drought conditions by mid-June of 2012. This lasted for two months. This drought has been compared to similar droughts in the 1930s and 1950s but was not in place as long. The drought caused catastrophic economic ramifications. According to most measures, this drought exceeded the 1988-1989 North American Drought, which is the most recent comparable drought.

The most recent declared drought to affect Ohio occurred in 2016. On January 6, 2017, the USDA issued a disaster declaration for drought conditions experienced from May through October 2016. The primary declaration was issued for five Ohio counties; ten contiguous counties were also included in the declaration. Trumbull County was not identified as a primary or contiguous county in this declaration but the greater northwest and west central Ohio regions were impacted by abnormally dry conditions. Northeast Ohio was not affected by this.

In 2024, the second half of the calendar year was considered a drought. Trumbull County is listed on the NOAA Storm Event Database as experiencing drought in from July through December. There are no damages, injuries or deaths recorded in that data. Again, in 2025, drought conditions are worsening after late summer and early fall dry periods, and drought conditions are anticipated to spread across the state if the lack of rain continues.

2.2.6 Earthquake

An earthquake occurs when two blocks of earth, called plates, move past one another beneath earth's surface. The location where the plates meet is called a fault. The shifting of the plates causes movement along the fault line. This movement can often be felt in areas surrounding the earthquake's epicenter and can cause damage ranging from insignificant to devastating. Damage caused by an earthquake can include rattling foundations, falling debris, and, in the most severe cases, toppling buildings, bridges, and culverts. The severity of earthquake

movement is measured using the Modified Mercalli Index scale as defined in the following chart:

Table 2-38: Modified Mercalli Index

Intensity	Shaking	Description/Damage
I	Not Felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on building upper floors.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibrations like the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motorcars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very Strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, and walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

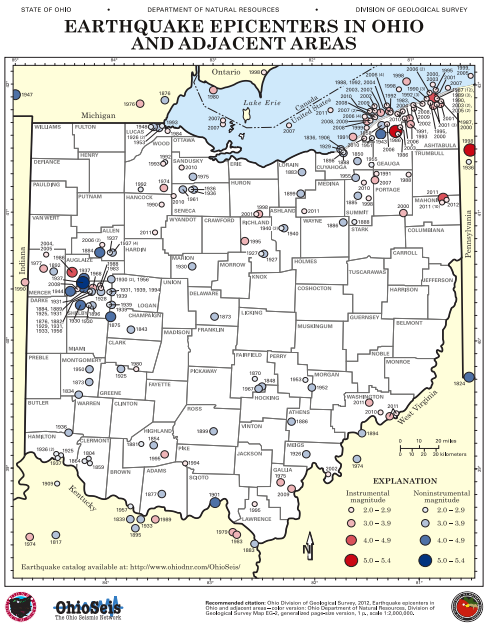
According to the Ohio Seismic Network, seismic risk in Ohio is difficult to evaluate because significant earthquakes are infrequent. The recurrence interval is generally very long, sometimes spanning hundreds or thousands of years. In geologic terms, this classifies Ohio's historic record as an instant. Another factor in earthquake risk is the nature of the geologic materials upon which a structure is built. ODNR states "ground motion from seismic waves tends to be magnified by unconsolidated sediments such as thick deposits of clay or sand and gravel."

Ohio has experienced more than 1,200 earthquakes since 1776 according to the Ohio Department of Natural Resources database. While only fourteen of these events have caused damage, there is a greater risk for earthquakes in Ohio than most people realize. The far northeast corner of Ohio has the most earthquakes, with Lake County showing 163 earthquakes of record in the Ohio Earthquake Database. Shelby County, in northwest Ohio, holds the record

for most intense earthquakes and most structural damage. None of those earthquakes is recent; most occurred in 1937 and before, some dating back to the 1800's.

There is a seismic station in Gustavus Township between Youngstown Kingsville Road and State Route 11, north of Davis Peck Road and south of Gardner Barclay Road.

Map 2-12: Earthquake Epicenters in Ohio



Local Earthquake History

Trumbull County has three earthquakes of record. A 1.0 magnitude quake occurred on January 17, 2022 southeast of Cortland along State Route 11. It occurred just south of Wilson Sharpsville Road between Ridge Road and Youngstown Kingsville Road. The estimated depth was 8.3 kilometers. There was no damage. The other earthquake occurred in Niles on August 31, 2014. It was a 2.10 magnitude with a depth of 3.0 kilometers. It occurred in the Youngtown Belt Railroad area between CR 169 and Warren Avenue. The third earthquake occurred very close to that location, just slightly to the west, on July 31, 2024. This was a 1.7 magnitude quake that had a depth of 3.0 kilometers. There is no recorded damage from any of the three incidents

There is an area just into Mahoning County, south of Niles, McDonald, Girard, and Hubbard that has had eight earthquakes of record. All happened between 2011 and 2013, and ranged from a 2.1 to 2.7 magnitude.

The greatest vulnerability from earthquake is infrastructure. Pipes and devices buried underground are at risk for breakage and dislocation. Sewer lines, water lines, storm sewers, and other underground utilities can be jostled and damaged, sometimes to the point of

destruction. In addition to interrupting water service for homes and businesses, this can negatively impact the use of fire hydrants during firefighting or hazardous materials response.

Likewise, all utilities overhead, such as communication lines, electrical service, and wireless receivers are at risk for heavy damage, toppling poles and pulling lines down. Devices that receive wireless or sound signals can be thrown out of adjustment as receivers are turned and rattled out of place. As wireless communications are impacted, the capacity to warn and notify residents of storms and other threats diminishes abruptly, and this causes a cascading effect when people do not know a threat is materializing. The loss of communications is life-threatening.

Roads, bridges, and culverts are at risk of cracking, disconnecting, and collapsing, dependent upon the severity of the earthquake. Reduced integrity of these structures can lead to washouts, collapses, and erosion of surfaces and foundations.

Building foundations can be impacted by earthquakes that generally are more severe than what Trumbull County has experienced.

All this infrastructure is very expensive to replace, and when old lines and pipes need to be taken out before new is installed, the price rises even further. Between debris management costs and infrastructure repair and replacement, the costs could be devastating and long-lasting.

Stakeholders listed their primary concerns about earthquake damages to include infrastructure and communication system damages, utility damages and extended outages, structural damage to homes, temporary housing availability, extended business closures, and capital equipment loss.

2.2.7 Extreme Temperatures

Extreme temperatures include very low temperatures with wind chill as well as high temperatures with excessive humidity. Both extremes place people in danger, place a burden on heating and cooling systems as well as electrical power generation and distribution, and can result in injuries, deaths, and property and crop damages.

Climate change projections indicate that not only could high temperature days increase in frequency, but the specific high temperature could rise from anything over 90 degrees Fahrenheit, to over 105 degrees Fahrenheit. Currently, Trumbull County averages about 22.6 days with a temperature over 90; by the end of the century, the average could increase to 76.2 days. Currently there are approximately 5.4 days with a temperature over 95 degrees; this could increase to 41.2 days considering the “higher” emission rates that are possible. A day with temperatures over 100 degrees occurs less than once per year, and a day over 105 degrees only happens once in 1000 years. That could change to increase the 100+ temperature days to 17.7 days for temps more than 100 degrees, and 6.7 more than 105 degrees.

With these increases in temperature, average precipitation is expected to increase too, making hot days humid and uncomfortable. Evaporation will increase as temperatures rise, worsening drought should rainfall become minimal. Those days place stress on electrical systems to fuel environmental systems, and stress the water supply to feed vegetation and crops, as well as providing additional potable water for people and animals.

To the contrary, the growing season is anticipated to increase by up to fifteen days, enabling higher production and opening the door to crops that used to need more time to grow than northern Ohio weather has permitted in previous years.

In counties like Trumbull where agriculture is only part of the economy, it is undetermined if climate fluctuations will have a negative impact. It is expected that the stress on the electrical grid as demands grow could be significant, causing outages and interruptions in service. Hot and humid weather is difficult for people with medical issues, especially respiratory or cardiac issues; therefore, this potential increase may negatively affect the elderly and medically-dependent part of the community, as well as others with economic disadvantages. When wheat and other grains and forages are growing, or are cut and drying before baling, the risk of field fires increases in hot, dry weather. Participants generally did not see significant changes in this area of vulnerability.

Table 2-39: Trumbull County Extreme Temperatures History

Hazard	Incidents	Property Loss	Crop Loss	Deaths	Injuries
Drought	6	0	0	0	0
Extreme Heat	0	0	0	0	0
Heat	2	0	0	0	0
Cold/Wind Chill	0	0	$200K	0	0

Stakeholders indicated their greatest concerns included the burdens extreme temperatures put on the power supply and special needs populations. The power supply is already aging and marginally adequate for its daily demands. With communities dependent upon power to conduct business and maintain systems, and with households that require power for not only heat but also communication devices, power is essential to lives in Trumbull County. There is enough need for updates and upgrades that an extended bonus demand on these systems could cause failure or compromise.

They also said that the impact on outdoor workers, water supplies, and productivity would be negative. The additional utility costs for both households and businesses would be hard to bear.

2.2.8 Fire and Wildfire

Trumbull County jurisdictions are concerned about structure, field, and woodland fires. Fire departments discussed how wind and dry spells can make fire risk increase, and with the woodlands and grass cover in the county, a fire can quickly surge out of control. The personnel and equipment necessary to fight a large field or woodland fire is extreme.

Woodland and large field fires are the biggest concern. These often happen in the middle of the day when volunteer personnel are away at work, and staffing is at its lowest. These fires, especially during dry months or periods without rain, start easily and spread quickly. They can engulf many acres before they are even notices, especially if they are out in the townships where there is little traffic during the day and residents are away at work. Winds can fuel these fires, making them almost impossible to contain. While this does not happen frequently, the severity and damages could be extensive to catastrophic.

The natural habitat, parks, and other recreational areas are at high risk during dry, hot weather in the summer, or if drought conditions persist for an extended time. Water availability can be negatively affected in some areas, but many locations have a pond or lake nearby, as well as rivers, ditches, and streams. Drafting water from these sources can help lessen the need to haul water for long distances, or the need to put stress on local water distribution systems.

As far as structures at risk, there is a wide range of residential property that includes small frame homes with typical construction materials to high-end expensive homes with large roof spans, extensive sub-surface areas, complex mechanical systems, and multiple building materials. There are some mobile homes that burn quickly once a fire starts that cause concern. Recreational areas and state parks can have campers, recreational vehicles, and tent areas where visitors stay for a few days at a time. Some of these areas are located off narrow access roads and dirt surfaces as opposed to paving.

There are factories, businesses, retail strip centers, large box stores, and manufacturing facilities that use chemicals and hazardous substances in their work process. Grain bins, sometimes very high and close together, exist in the rural areas. The municipalities have old buildings that were constructed in an era that failed to recognize fire risk in its building practices. In some areas, fire walls and separations have been removed as various property owners adapted the structures to the need of the time. In some cases, construction involved mixed uses without the advantage of isolation of dangerous substances. The risk of fire spreading once it starts is high, and it would not take a long time for a whole block to go up in flames in older business districts. This makes firefighting more dangerous than normal, and requires specialized aerial and pumping equipment that is not necessarily in ample supply or readily accessible.

Some of the county is covered by volunteer departments, vulnerable to the availability of their personnel. That personnel are likely to work outside the village during the workday, leaving the village almost virtually uncovered during working hours. While mutual aid is a given, and neighboring departments are more than willing to help each other any time needed, those volunteers are often out of town for work as well. While the businesses are most active – during the work day – the personnel to address an emergency are the least available in volunteer-staffed areas. This sets up a level of vulnerability many are not comfortable with, but are hard pressed in today's environment to resolve.

Other departments are full-time paid departments with less vulnerable staffing and more robust personnel rosters.

Structure fires, field fires, and other fires affect every jurisdiction every year. All jurisdictions are provided some form of fire service by their jurisdiction. The number of personnel, apparatus and other equipment varies from department to department, as does the training level of personnel. Ohio law requires local government to provide fire service to the residents.

Stakeholders were most concerned about shortages in fire personnel, pertaining to both residential and commercial fires. Institutional fires and woodland fires, requiring large numbers of personnel, are concerning. They cited special rescue equipment, such as swift water rescue or structural collapse rescue equipment, as a high concern and had a desire to provide this for the departments. Fire apparatus is also a worry for many stakeholders as engines, pumps and aerial trucks age and increase in cost. Mutual aid, in a county that would not likely receive any federal response teams, is concerning because the county is one of the most populated counties in Ohio. They also indicated that adequate high-quality training for response personnel is a foundational need, and one that they struggle to meet to their own satisfaction.

Local History of Fire Incidents

Trumbull County has thirty-one fire departments. Departments from the City of Warren, City of Niles, and Youngstown Air Reserve Station are full-time and do not experience many shortages in personnel or equipment when severe incidents occur. The remaining twenty-eight departments are combination (paid and volunteer) or fully volunteer departments. They do frequently experience shortages in personnel as well as equipment. These departments serve less-populated areas, have a smaller tax base, and work with much smaller budgets for both operational costs and capital expenditures.

These departments, overall, have experienced an increase in calls since 2019. The full-time paid departments identified above have managed 15% more calls per year in 2023 as compared to 2019. The rural departments that function with part-paid and volunteer staff have experienced a 23% increase in call numbers.

The most challenging calls across the county are those that require extensive manpower. Structure fires, woodland fires, and fires involving highly dangerous substances are the most manpower-demanding call types. Structure fires are often homes that are occupied and tactics include rescue as well as fire management. Woodland fires can rage out of control due to wind and dry conditions, both of which are common in Trumbull County. Explosions bring an indeterminate danger caused by immediately unknown causes and secondary threats. During the past five years, the top types of fire calls, in order are as follows:

1. Residential Sructure Fires
2. Wildland and Brush Fires
3. Vehicle Fires
4. Commercial Structure Fires
5. Explosions

During the past five years, there have been several instances where manpower and equipment shortages have hampered the efforts of responders. There have been high demands on manpower or the need for specialized equipment and tactics to successfully fight the incident at hand. The five incidents that came to mind when discussed, are as follows:

1. Girard City Scrap Yard Fire
2. Multiple Jurisdiction Woodland Fires
3. Residential Structure Fires – noted an exceptional shortage of personnel
4. Ultium Cells fire in Lordstown
5. Foxxconn fire in Lordstown

The specific need for personnel includes the need for training. Requirements for certifications have increased over the past decade, and while this increases the quality of fire tactics, it costs the departments more to train and retain their workforce, and it requires a volunteer to make a stronger commitment to the department. Because the NFPA Level I firefighter, the training that is optimal for volunteer departments today, is now able to perform interior attack duties, the job presents more danger to the individual and requires a high level of physical performance. These factors can potentially serve as deterrents to workforce growth like what Trumbull County and most of Ohio is experiencing.

2.2.9 Flood

A flood is defined as any high flow, overflow, or inundation of water over typically dry land that causes or threatens damage. Floods occur after meteorological events such as heavy precipitation, thunderstorms with heavy rainfall, rapid snowmelt, or extreme wind events along coastal waterways. In some areas, seismic activity can trigger floods.

Riverine flooding occurs when a river or stream rises to an elevation that causes the river to overflow its banks. The rising water threatens or causes damage to roadways, homes, buildings, and occupied spaces near the overflowing waterway. Lower levels of a watershed are more susceptible to this type of flooding because these waterways receive all the water from the upper levels and are responsible for carrying a much higher volume of water than the tributaries. Water that lays on the surface and is not absorbed into the soils is considered surface flooding; this can occur on concrete or other impervious surfaces, roads and streets, parking lots, or other large areas. Water that ponds and takes an extended period to drain even though it is laying on top of soil is considered areal flooding.

Flash floods are defined as the rapid and extreme flow of high water into a normally dry area; a flash flood can also occur when there is a rapid rise in the water level of a stream or creek and the water rises above a pre-determined flood level within six hours of a precipitation event. This type of flooding occurs when the ground is too saturated, impervious, or flat to drain rainfall into waterways through storm sewers, ditches, creeks, and streams at the same rate as the precipitation falls.

Areal flooding is ponding of water with slow drainage in low-lying areas. This happens in fields, woodlands, and other natural habitat and is not even noticed, but when it occurs on property that is used regularly, it becomes an annoyance and a problem. This is often corrected by engineered systems like storm sewers, retention and detention devices, and drainage tile. Worldwide, flooding is the most common and costly disaster, resulting in significant loss of life and property every year. Floods have a substantial impact on the infrastructure. Common effects include roadway breeches, bridge washouts, roadway wash away, and water-covered roadways. As floodwater moves rapidly and forcefully, it washes away the surface and sub-surface of roads, causing holes, ruts, and other problems for vehicles. Floodwater that is one foot deep is strong enough to carry vehicles away, often with occupants inside. Rescuers are powerless against rapid, rising water because they are unable to exert enough strength to counteract the physics of moving water.

Floodwaters seek the path of least resistance as they travel to lower ground and will seep into and occupy any structure in their path. Basements and lower levels of buildings can become inundated with floodwater. Installing sandbags along the exterior of a building can only serve as a temporary stopgap measure; if floodwaters do not recede quickly, the force of the water will move through the sandbags and enter the structure.

In hilly areas, like parts of Trumbull County, floodwaters can become rapidly flowing death traps. A swollen creek with the strength of moving water rushing through a path of least resistance can take all control from responders or survivors, and pull them into the water without much resistance. The water is much more dangerous than it is perceived, and can swallow vehicles and people in an instant. This makes flood rescue extremely dangerous, and causes urgency to surround the messages sent amid heavy flooding. This, as well, adds to the cost and stress of an already-destructive disaster.

The aftereffects of flooding can be just as damaging and dangerous as the initial incident. Cleanup is often a long, protracted activity with its own set of hazards. Sewer systems can become inundated with floodwater and cease to function properly. Standing water becomes contaminated with household and industrial chemicals, fuel, and other materials that have leaked into the water. All floodwater is considered contaminated, either from germs and disease or hazardous materials. Debris collection of wet, saturated belongings and property is difficult, disheartening, and expensive. Disposal often involves special handling or decontamination actions of some sort. This creates a hazard for responders and residents throughout the initial recovery phase of the disaster and adds significantly to cleanup and recovery costs.

Flood Risk Assessment

Flooding is considered a relatively high risk in Trumbull County. This includes riverine, surface, flash, and flash flooding. The county's flat to slightly rolling terrain and the number of rivers and streams contribute to this risk, but also provide natural drainage that is extremely effective. Many of the communities are built on elevated land, further enabling excess precipitation and

collecting waters to drain rather quickly. Flooding is a countywide hazard and can affect nearly all jurisdictions.

Trumbull County is susceptible to riverine flooding in multiple areas of the county, basically defined as the areas alongside all the large creeks, streams, and rivers. These areas are located along the Grand River and its tributaries in the northwest corner of the county; the Mahoning River, and several large tributaries of the Mahoning in the central and southern half of the county; and the Pymatuning River and its tributaries in the northeast quadrant of the county. Trumbull County is covered by various secondary waterways that include, but are not at all limited to, Squaw Creek, Little Yankee Run, Yankee Run, Mosquito Creek and Meander Creek. Many of the larger waterways are winding pathways that have cut through the terrain to gravitationally drain water into the respective watershed rivers.

Flash flooding is a widespread risk in the county. Municipal streets are vulnerable to surface flooding, but most cities and villages have engineered drainage systems that facilitate water movement. In some areas, elevated state and interstate highways cause drainage onto local roads and other areas where water takes some time to drain naturally. In heavy rainfall events, water does not drain as fast as it falls sometimes, leading to flooded roadways and parking lots. There are some rural roads, as well as city streets and state highways, that are closed after heavy rain due to a low-lying area or bridge, or a winding turn in the road that is flooded over in one section or another. Many of the roads follow creeks and streams that overflow, and in doing so, the roadway is flooded briefly. Some road sections are highly vulnerable to the massive amounts of concrete roadway that dumps water onto the nearby roads, properties, and businesses. This takes some time to drain naturally and allow for use of the infrastructure or property. If ground is frozen or already saturated, this occurs very quickly. This can last for several days, impeding transportation and movement of goods and services within the county for an inconvenient length of time. Collection of water in low-lying roads, bridges that are in low areas, or parking lots that are low lying is common. Some neighborhoods, especially along Mosquito Creek, Squaw Creek and Yankee Run where the population is more concentrated, experience surface flooding after heavy or persistent rains.

Strip developments that are typical locations for retail, restaurants, and professional services are prone to surface flooding when rain falls quickly. They are generally below the surface elevation of the roadway, and water drains naturally into these areas. In some cases, cars can be flooded and water can be high enough to impede access to structures. This flooding, depending upon the adequacy of storm sewers, can drain quickly.

All the villages and cities in the county are vulnerable to flooding. It appears that population centers developed around the waterways, even to the extent that West Farmington and Orangeville are vulnerable. Cortland is probably the least vulnerable municipality because it is located to the east of Mosquito Lake where water would drain to the south. Walnut Creek runs through the city, but its headwaters are just north of Cortland and it may not be as capable of flood magnitude as other waterways in the county, at this location.

Flood damage in Trumbull County could include damage and destruction to physical buildings, infrastructure, crops, business inventory, business equipment, raw materials, manufacturing materials, and livestock or harvested and stored crops. Residential structural damages could include single and multi-family homes, group living facilities, and multi-family housing complexes. Commercial and industrial structural damages could include buildings used for manufacturing, product handling, transportation, warehousing, retail, business, and industrial, and the capital equipment associated with those uses. Damaged businesses may also include utility generation, mining business assets, and gas and oil well equipment and products. Agricultural structures would include barns used for livestock, storage buildings, equipment, and machinery. Grain bins and elevator systems could be damaged very easily by the force of water. Government, nonprofit, and educational institutions include critical structures like fire stations, police stations, hospitals, offices, schools, and special facilities like garages and maintenance buildings, and the capital contents of those structures. Institutions like court houses, churches, and other historical buildings are common in Trumbull County and can be damaged by flooding. All damage would result in large amounts of debris to manage, including finish, structural, and foundation materials. It is unlikely that loss of life would be attributed to flooding. If a death were to occur, it would likely be the result of two or more combined threats, such as lightning, tornado, or driving into standing water. With the robust waterways, it is possible for people to become stranded on roofs and be injured or die as a result of being washed away. The county does have history of water rescues being done due to rapid, severe riverine and surface flooding.

Floodplain Mapping and National Flood Insurance Program

Trumbull County's floodplain maps were updated in 2010 as part of FEMA's Map Modernization Program. The maps became effective June 19, 2010.

The table below provides information on participation in the National Flood Insurance Program for communities in Trumbull County. The information is from FEMA's Community Status Book for Ohio. The communities listed in the first table participate in NFIP and are in good standing with the program. Those identified in the second table are considered under sanction by NFIP because they have identified flood hazard area but do not participate in NFIP.

Table 2-40: NFIP Participating Communities

Community	Initial FHBM Identified	Initial FIRM Identified	Current Map Effective Date	Reg-Emer Date
Cortland	10-6-78	6-18-10	NSFHA	2-5-92
Girard	1-18-74	7-2-80	6-18-10	7-2-80
Hubbard	4-12-74	8-15-78	6-18-10	8-15-78
Lordstown	1-13-78	3-1-79	6-18-10	3-1-79
McDonald	5-17-74	8-8-79	6-18-10	8-8-79
Newton Falls	8-8-75	8-1-78	6-18-10	8-1-78
Niles	3-1-74	6-1-78	6-18-10	6-1-78
Orangeville	4-18-75	9-4-87	6-18-10 (M)	9-4-87
Warren	10-26-73	8-1-77	6-18-10	8-1-77

Trumbull County	n/a	9-29-78	6-18-10	9-29-78

Table 2-40-B: NFIP Sanctioned Communities

Community	Initial FHBM Identified	Initial FIRM Identified	Current Map EFF Date	Sanction Date
West Farmington	9-29-78	10-16-84	6-18-10	9-29-79
Yankee Lake	7-29-77	6-18-10	6-18-10	7-29-78

Communities that are participating in the National Flood Insurance Program (NFIP) are required to adopt and enforce regulations and codes that apply to new development in Special Flood Hazard Areas (SFHAs). These local floodplain management regulations must contain, at a minimum, NFIP requirements and standards that apply not only to new structures, but also to existing structures which are Substantially Improved (SI), or Substantially Damaged (SD) from any cause, whether natural or human-induced hazards.

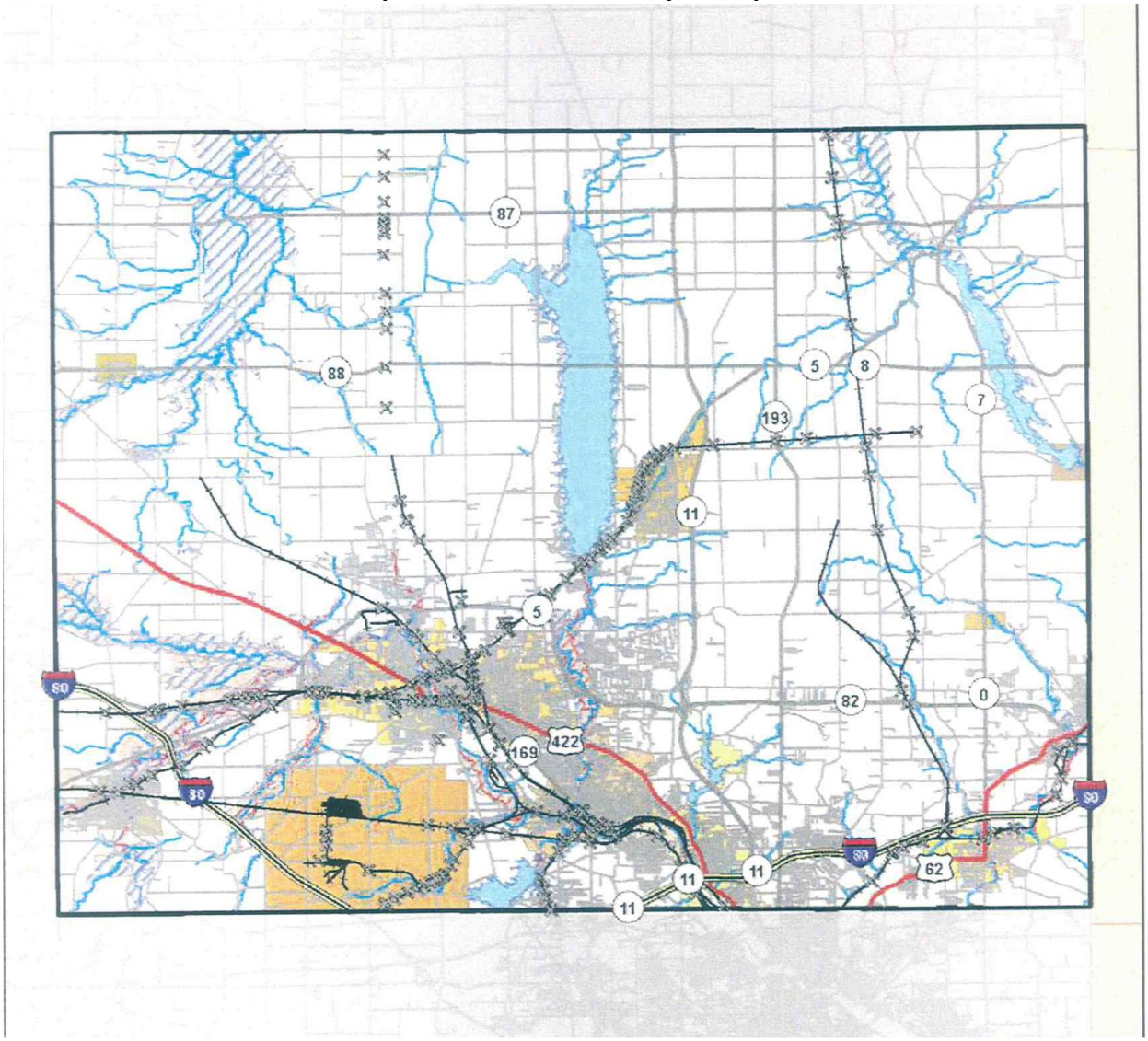
According to 44 CFR 59.1, Substantial improvement means any reconstruction, rehabilitation, addition or other improvement to a structure, the total cost of which equals or exceeds 50 percent of the market value of the structure before the start of construction of the improvement. Likewise, substantial damage means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred. SI/SD requirements are also triggered when any combination of costs to repair and improvements to a structure in an SFHA equals or exceeds 50 percent of the structure's market value (excluding land value).

$$\frac{(Cost\ to\ Repair) + (Cost\ of\ Improvements)}{Market\ Value\ of\ Structure} \geq 50\ Percent$$

Enforcing the SI/SD requirements is a very important part of a community's floodplain management responsibilities. The purpose of the SI/SD requirements is to protect the property owner's investment and safety, and, over time, to reduce the total number of buildings that are exposed to flood damage, thus reducing the burden on taxpayers through the payment of disaster assistance. SD/SI requirements are enforced by the local floodplain administrator and monitored by the Ohio Department of Natural Resources (ODNR) Floodplain Management Program during Community Assistance Visits. If a local floodplain administrator is overwhelmed by the number of SD/SI inspections after a large event, ODNR has developed a network of building code officials that are trained in conducting SD/SI field determinations. Help with SD/SI inspections can be requested through the county emergency management agency director.

For more information regarding Substantial Improvement and Substantial Damage, county officials can refer to FEMA's Substantial Improvement/ Substantial Damage Desk Reference, P-758 or contact the ODNR Floodplain Management Program.

Map 2-13: Trumbull County Floodplain



Flood Map Availability
FEMA provides online access to flood maps at their Flood Map Service Center found at https://msc.fema.gov/portal/advanceSearch.

Trumbull County has seventy-eight panels of floodplain maps. Each one can be viewed, and specific areas can be selected and downloaded as a FIRMette. Specific areas can be isolated and printed. This website has the latest flood maps. Trumbull County's flood maps were adopted in 2010, and that is the latest version. Local floodplain regulations were in place at the time this plan was written; those are accessible at the Trumbull County Planning Commission or the EMA office. The Planning Commission serves as the lead local agency in floodplain regulation.

Repetitive and Severe Repetitive Loss Structures

Trumbull County has several known repetitive loss structures. See the list below for specifics. Additional repetitive loss and/or severe repetitive loss structures may exist in Trumbull County and not have been available or known at the time this was researched.

Repetitive loss and severe repetitive loss properties are sometimes eligible for acquisition and relocation grants that allow the property owner to choose to sell their property to the jurisdiction for a fair market value and relocate to a less vulnerable area. The jurisdiction then returns the property to natural habitat with deed restrictions that prevent other uses.

Note that one property is listed as "Youngstown"; that property physically sits in Trumbull County but has a Youngstown address.

Table 2-41: Repetitive Loss Properties

Trumbull County Rep Loss and Severe Rep Loss Structures (Unmitigated)					
JURISDICTION Occupancy	**Total RL/SRL Structures**	**RL Structures**	**SRL Structures**	**Total Losses**	**Total Paid**
TRUMBULL COUNTY (UNINCORPORATED)					
Multi-Family Residential	2	2	0	5	$32,724
Other Non-Residential	3	2	1	8	$453,832
Other Residential	1	1	0	3	$110,991
Single Family Residential	28	25	3	80	$1,309,071
WARREN, CITY OF					
Other Non-Residential	2	2	0	4	$14,504
Single Family Residential	5	5	0	15	$193,718
MCDONALD, VILLAGE OF					
Single Family Residential	1	1	0	5	$29,685
HUBBARD, CITY OF					
Multi-Family Residential	1	1	0	3	$24,685
YOUNGSTOWN, CITY OF					
Other Non-Residential	1	1	0	2	$11,955
Countywide Total	**44**	**40**	**4**	**125**	**$2,181,164**

Trumbull County has experienced 63 days with flood events since 1950, per NCDC records, but only 37 days of those flood events has resulted in damages. Property damage has totaled $90.015M but there is no crop damage listed on this source. There has been one casualty that occurred in 2003.

Table 2-42: Trumbull County Flood History

Hazard	Incidents	Property Loss	Crop Loss	Deaths	Injuries
Flood	31	$34.735M	0	0	0
Flash Flood	41	$55.28M	10.0M	1	0

The most significant flash flood occurred in Trumbull County on July 21 and 22, 2003. On the first day, the southern part of the county experienced devastating floods. Although some reports came through at seven inches of rain, most of the southern half had four to six inches.

Floodwaters were as deep as five feet, and cars were washed off the roads. Multi-family and single-family homes were evacuated. Factories in Warren were closed, and the 9-1-1 Center in Howland Township evacuated when a concrete wall collapsed and allowed floodwaters to flow into the building. Homes damaged numbered 723, and 90 of those were destroyed. Another 1,400 homes experienced basement flooding. Most roads in the county were closed. Continued rain on the 22nd made the situation worse. All totaled, there was over $37M in damages.

This event caused all rivers to go into flood stage. Evacuations were conducted in Leavittsburg, Warren and Niles. A mobile home in Niles was the first to evacuate on the 21st. Damage to roads, public buildings, parks, and recreational areas exceeded four million dollars.

2.2.10 Hazardous Materials Incidents

A hazardous materials spill or release occurs when a hazardous substance breaches its container. Releases can occur within facilities that store and use hazardous materials and during the transport of these substances. Hazardous materials are stored in numerous types of containers, including drums, cans, jars, pipes, and other vessels. Some releases are incidental and can be safely cleaned up by on-site facility personnel. An incidental release does not threaten the health or safety hazard to the immediate area or greater community because of the small quantity that is released. A release that requires action by first responders or agencies outside of the spiller's facility is considered an emergency response.

Every hazardous material is unique and can be toxic, flammable, explosive, or corrosive, as well as any combination of those threats. When a hazardous substance is released into the environment, it can negatively impact the safety and health of the community by contaminating the air, water, and/or ground. To protect the community, evacuation from the facility or area surrounding the spill may be necessary.

Dangerous chemicals can be hauled in a variety of ways, involving different types of containers and haulers. State and federal regulations provide guidance and regulation in the transportation of chemicals in a quantity sufficient to pose a hazard. These regulations are enforced by law enforcement and transportation officials. Most chemicals are transported by highway and rail, but on occasion there are chemicals flown on cargo planes. Counties generally do periodic commodity studies to determine was is hauled through and inside their county; refer to the Trumbull County LEPC for specific details.

Accidents on highways and roadways can cause the vehicles carrying substances to overturn, collide with other vehicles, or to ignite and burn. The runoff as liquid spreads, the vapors as a chemical dissipates, or the flash point and burning of a substance can expose those nearby to extreme danger from both traumatic injury and chemical absorption. These vehicle accidents compound the vulnerabilities of people and the environment to include both traumatic injury due to the crash or kinetics of the incident, and the negative effects of absorbing the chemical that is thrown into the atmosphere, waterways, or soils.

Rail incidents are a significant concern in Trumbull County because there are many rail tracks inside the county. Most of the rail is in the southern part of the county, and the tracks travel through various municipalities where there are critical facilities like schools, hospitals, and public buildings. The most traffic is in the same place as most of the rail. While there is negligible history of rail incidents, especially involving chemicals, in the county, the vulnerability exists for highly-traveled, higher-populated areas.

First responders who manage hazardous materials spills in waterways should be very familiar with the natural movement of water in their jurisdictions to fully comprehend the point of origin of the spill and the properties at risk as the spilled chemical travels through ditches, streams, and rivers. The county has drainage that naturally falls different directions in various places, and the responders need to understand the vulnerability this brings to given sections of land and population centers. With three separate watersheds that eventually go totally different directions, it is critical that watershed knowledge is prevalent among responders.

Industrial and residential exposure to hazardous substances can also involve both trauma and exposure. Most incidents involve the breech of a container or the undesirable combination of chemicals that results in a lethal substance. These spills and leaks can occur in businesses, homes, and industries or anywhere else that hazardous substances exist. Trumbull County LEPC maintains reporting documents from all businesses and industries that have reportable amounts of hazardous and extremely hazardous substances on their premises, and this information is shared with first responders for awareness and training purposes.

No infallible reporting system for hazardous materials incidents exists. Many times, incidents of non-lethal exposure are not recognized as an emergency. For example, old thermometers are dropped and mercury is spilled, swept up, and thrown in garbage unless individuals know of the risks. They do not always know, and thus those kinds of incidents go totally unreported.

Industrial reporting is gauged by regulation. Spills involving reportable quantities are documented according to regulation. Smaller less significant spills often go undocumented unless someone is hurt and requires medical attention. Large industrial spills and leaks are investigated by local hazardous materials teams, regulators, and government responders. There are no major distribution centers, shipping terminals, or warehouses in Trumbull County, which helps to limit the unknown industrial spills that are cleaned up by on-site personnel and not reported to the LEPC.

Table 2-43: Hazardous Material Classifications

Class	Description
1	Explosives
2	Gases
3	Flammable liquids and combustible liquid
4	Flammable solid, spontaneously combustible, and dangerous when wet
5	Oxidizer and organic peroxide
6	Poison (toxic) and poison inhalation hazard

7	Radioactive
8	Corrosive
9	Miscellaneous

Trumbull County has risk for hazardous materials incidents. The county is home to some manufacturing and industrial sites that manufacture or utilize hazardous substances. These substances are transported across the county on many state, and local roadways and limited rail lines. Most of these transportation routes pass through municipalities and populated areas in Trumbull County, increase the population's risk for exposure. The areas inside villages and cities where multiple state routes intersect, or where railroad tracks cross streets are vulnerable areas. As units hauling hazardous substances navigate their way through the municipalities the opportunity to make a wrong turn, not see a small vehicle, or catch a low-lying wire or pole is present.

Many state highways are two-lane roads. The Ohio Turnpike and some of the state highways inside Warren and the adjacent area are multiple-lane, limited access highways for a distance. These handle traffic that is moving through the area, headed to Youngstown, Cleveland, or Columbus. The narrower state highways handle traffic moving from one village or another, or for those vehicles delivering goods or picking up shipments from individual businesses. Winding and curving highways, along with two-lane passing zones, complex navigation, and intersection hazards cause vehicular incidents at intersections and where buildings sit. Sometimes state highways and larger county roads are used as an alternative to interstates, but this brings the hazards of a major highway to the smaller communities. Moving vehicle accidents often happen when stopping, turning, or navigating turns. Stopped vehicle accidents most frequently occur in loading and unloading cargo or other materials.

Some areas are confusing to navigate, possibly including the juncture of several state highways in villages, and the crossing of several state highways in the Warren area. Entering and exiting the interstate is an area of increased vulnerability. In some areas in the northern half of the county, farm implements and other heavy equipment use the highways but travel at slow speeds. Passing on two-lane highways leads to crashes, and this is probably the highest risk of a hazardous materials spill locally. There are numerous locations where several state highways intersect, and the junctions are not always straight ninety-degree intersections. Angled roadways and confusing stop signs sometimes make one intersection more dangerous than another, and fueling locations with large fuel storage tanks make uncontrolled vehicles very concerning.

Trumbull County is also vulnerable to farm chemical accidents, including anhydrous ammonia, fertilizers, pesticides, and other chemicals used on farms like petroleum products, heating gases, and lubricants and cleaning compounds. Additional risk includes the type vehicle used in transportation, including but not limited to farm equipment, small trucks, pickup trucks, and wagons. This risk is mostly in the northern half of the county, and it increases during planting and harvest seasons.

Pipelines and storage facilities for petroleum products present a hazardous materials risk in Trumbull County. These pipelines carry natural gas, petroleum products, and other substances. While the pipelines are well maintained, there is always risk for an incident. First responders participate in training to prepare for these potential responses, and relationships between pipeline operators and first responders are maintained to facilitate the exchange of information and training. Natural gas and gas transmission pipelines cross several areas of Trumbull County. There are no breakout tanks or LNG plants, and there are no recorded accidents according to this resource. Most of the buried lines are in populated areas.

Because of the movement of hazardous materials on different types of transportation systems throughout the county, hazardous materials incidents are a countywide hazard and can affect all areas and jurisdictions.

Stakeholders indicated that their primary concern about hazardous materials incidents is the evacuation and sheltering process, indicating a large population and limited personnel to execute the process. They were concerned about the ability of the local hospital to meet decontamination and treatment demands, and the casualties that could be a result of a deadly incident. The contamination of their rivers, streams, ditches, parks, and other natural resources weighs heavily, as do concerns about the first responders and their safety. Training, sufficient personnel, proper equipment, and capable medical care are all listed as concerns. With multiple highways, sone multi-lane and interstate, traffic routing and detours are seen as a challenge.

Local Hazardous Materials Incident History

The Pipeline and Hazardous Materials Safety Administration incident data base provided a list of thirty hazardous materials spills in Trumbull County since 2021. While this data is not all-inclusive of hazardous substance spills in that time frame, it presents a reasonable picture of what could be expected to occur. The cause of these incidents was most frequently container failure or loading/unloading spills or container damage, but there was also vehicle accidents included in the database statistics.

The most frequent type chemical involved in these incidents were flammable and combustible substances. Most of these involved some sort of petroleum product, adhesives, or paint. The second highest group of spilled substances were corrosives, which were most frequently listed as a corrosive liquid. There were also acids such as hydrochloric or muriatic acid in this group. The third highest group involved oxidizers, such as hydrogen peroxide, isocyanate, or potassium nitrate.

While the fire departments are trained in response to hazardous materials management, advanced levels of training and supplies needed to contain and control substances are not always available. For on-site facilities, the staff there is frequently trained, but an incident with a deadly exposure could be beyond their capabilities, even before the fire department arrives.

When asked to describe the three most remarkable local incidents, respondents were quick to cite three specific calls that required the execution of multiple skill sets on scene, as well as the use of specialized equipment and personnel.

In September 2016, a semi tanker carrying 8,000 gallons of gasoline went off the right side of I-80 (Ohio Turnpike) and overturned, catching on fire. Two vehicles stopped to help and pulled the driver to safety; however, in the ensuing rolling gasoline fire, their vehicles were consumed by fire. I-80 was closed in both direction for six hours due to smoke and visibility issues. The affected lane was closed for ten hours. Over one hundred nearby residents were evacuated from their homes, and earthen dams with booms were made to protect the Girard water treatment plant and Mahoning River from contamination. This extended operational period placed significant burden on local resources for fuels, personnel, and apparatus for the nine responding departments.

In September 2019, a gas well fire exploded. The gas company attempted to shut off the well but the valve was broken. Complex tactics to replace the valve under these conditions stressed local and gas company resources. The Youngstown Air Reserve Station responded with specialized equipment, but while the valve change was taking place, the well exploded. The valve was eventually replaced with no casualties or injuries, but local resources were highly stressed.

Two other incidents etched in local memories involved aircraft incidents in 2024 and 2025. One incident involved an emergency landing at the Youngstown regional airport in Vienna Township. The plane landed on fire and three fatalities occurred in this multi-jurisdictional response. The later incident involved a plane that just took off and caught fire, landed in a wooded area which became engulfed in fire, and caused the death of three individuals. This extended incident involved site security, extrication of casualties, and management of a large residual fuel load. Again, this was a multi-jurisdictional response.

Hazardous materials incidents are a countywide hazard and can affect all areas and jurisdictions. The populated jurisdictions along highways are particularly vulnerable to this hazard because of their proximity to the major roadways on which these substances are transported. I-80 Ohio Turnpike presents a particular hazard because of the volume and speed of vehicles carrying hazardous materials. Many of the other state highways are multi-lane, divided highways, and others are two-lane state highways. Main county roads and local highways are used for transport of all kinds of goods as well, including hazardous materials.

2.2.11 Invasive Species

An invasive species is a plant or animal species that is not native to the local ecosystem and whose introduction is likely to cause economic or environmental harm or harm to human life. Across the United States, more than 5,000 species are recognized as invasive. Invasive species are classified as terrestrial plants, terrestrial wildlife, insects and diseases, and aquatic species.

Invasive terrestrial plants can displace native species, impact the wildlife that rely on native species as a source of food or shelter, or form monoculture plant communities that reduce biodiversity. While more than 25% of the plant species in Ohio originate from other areas, most are not invasive; fewer than 100 species are considered invasive. Invasive terrestrial wildlife is much less common than other types of invasive species but can still cause significant damage to natural habitats. Aquatic invasive species are plants and animals that impact the quality of waterways. These can affect large bodies of water, such as Lake Erie, and smaller rivers, lakes, and streams. Invasive insects and diseases are small organisms that can negatively impact

plants, forests, and the health of wildlife. Table 2-38 identifies the invasive species across these categories that have the greatest impact in Ohio.

Table 2-44: Invasive Species in Ohio

Aquatic	Insects and Diseases	Plants, Weeds & Shrubs	Terrestrial Wildlife
Asian Carp	Asian Longhorned Beetle	Japanese Honeysuckle	Feral Pig
Curlyleaf Pondweed	Emerald Ash Borer	Japanese Knotweed	Unwanted/Exotic Pets
Hydrillia	Gypsy Moth	Autumn Olive	
Round Goby	Hemlock Wooly Adelgid	Buckthorns	
Ruffe	(HWA)	Purple Loosestrife	
Red Swamp Crayfish	Walnut Twig Beetle	Common Reed or Phragmites	
Sea Lamprey	Spotted Lanternfly	Reed Canary Grass	
White Perch		Garlic Mustard	
Zebra Mussel		Multiflora Rose	
		Bush Honeysuckles	
		Japanese Stiltgrass	
		Kudzu	
		Japanese Barberry	
		Callery Pear	
		Oriental Bittersweet	
		Apple of Peru	
		Canada Thistle	
		Cressleaf Groundsel	
		Giant Hogweed	
		Grapevines	
		Johnsongrass	
		Kochia	
		Marestail	
		Mile-a-Minute	
		Musk Thistle	
		Oxeye Daisy	
		Palmer Amaranth	
		Poison Hemlock	
		Russian Thistle	
		Shattercane	
		Wild Carrot	
		Wild Parsnip	
		Poison Ivy	

Invasive Species Risk Assessment

Trumbull County has many wooded areas and large numbers of trees along with rolling and flat terrain, amounting to one third of the land use in the county. Farmland, with ditch banks and untilled sections, makes up another third of the county. These wooded and unwooded areas are vulnerable to damage from invasive species. The winds that can easily down dead or diseased trees that have been impacted by an invasive species. These fallen trees become storm debris, and fall onto homes, cars and trucks, businesses, and anything else in the way.

They also fall into rivers and streams, further impeding drainage and clogging waterways with excessive debris.

While ash trees have been affected by disease in recent years, Ohio is rich with all kinds of trees that could be affected by another invasive species in the future. Forested areas and waterways could also be impacted by invasive plant and animal species. Any infestation would cause extreme damage to the county. Invasive species is a countywide hazard that can affect all areas and jurisdictions.

Damage from invasive species difficult to quantify because it does not generally affect buildings or other structures. The cost comes from the cleanup phase, including removal and disposal of diseased trees and vegetation, repair of property where fallen trees cause damage; cleaning and dredging of waterways that are filled with debris; cleaning of bodies of water; and repair of infrastructure damaged by the infestation. These are expensive tasks and, when done by government providers or large contractors who respond to emergent needs for service, the cost can be extremely high, costing jurisdictions hundreds of thousands of dollars.

Climate changes could significantly affect this hazard. Invasive species, according to various experts, may increase if temperatures become warmer and precipitation amounts increase. Insects and plants generally thrive in hot, humid, wet weather. Some plant diseases also thrive in hot weather. Dependent upon the specific species, changing climate conditions could facilitate tree disease which increases debris after storms and property damage due to falling trees. It could also decrease farm yields, increase livestock pestilence, and endanger vegetation. Warmer waters promote unwanted results like algal bloom and invasive water species. Algal bloom in rivers is sometimes a problem, and an increase would worsen that situation and perhaps negate some of the efforts farmers and ecologists have taken over the past few years to improve water quality and protect the rivers.
There is no known effect that the past five years' development activities have had on invasive species, and no known effect that future development may have on invasive species. There was some conversation that increased housing development may force nuisance wildlife out of certain areas, but would also push them into other less-densely populated areas. This could potentially have a negative effect on rural areas, further forcing people out of the country and into the cities. That said, Trumbull County does still have very significant wooded and natural areas outside the organized communities.

Local Invasive Species History
The most recent invasive species to impact locally is the Emerald Ash Borer (EAB). EAB is an ash-tree killing insect native to Asia that kills trees within three to five years of infestation. It was first discovered in Ohio in 2003. Since that time, the Ohio Department of Agriculture and partner agencies have worked to protect the state's 3.8 billion ash trees. Wood County and northwest Ohio were ground zero in the EAB infestation; EAB was initially identified in northwest Ohio before spreading across the entire state. According to natural resources officials, the worst of the EAB infestation has passed; the Ohio Department of Agriculture lifted the quarantine on movement of ash wood in 2011. The infestation is no longer spreading but

there are thousands of dead and diseased trees that must still be removed. The process to remove these trees will take years and be a significant expense for land owners, including government agencies and municipalities. From a disaster perspective, the massive numbers of dead trees create an increased risk for property damage from high wind events. Dead and diseased trees are weak and more susceptible to wind damage than healthy trees. Along waterways, diseased trees also increase flood risk as they fall into and block streams, impeding water flow.

Hydrilla has been a major concern for local officials with the spread and negative impact to Mosquito Lake. Hundreds of thousands of dollars have been dedicated toward halting the spread of this invasive species over the last three years.

Other invasive species that are currently under quarantine in parts of Ohio include the Gypsy Moth, Walnut Twig Beetle, Asian Longhorned Beetle and the Spotted Lanternfly. Trumbull County is a Spotted Lanternfly quarantined county. This restricts the movement of some commodities, include raw wood products. Trees and nursery stock out of the county to limit the spread of the insect.

Some discussion included potential pine tree disease, elephant weed, garden crest, water crest, marestail, foxtail barley, and phragmites. They reported army worms killing lawns and grass in multiple areas. The general opinion was that some insects are coming in rail cars from other parts of the United States, transplanting new species when the cars sit waiting to be unloaded, or the infested cargo is shipped to receiving parties.

Most of the county has experienced some effect from the EAB infestation. As diseased trees along rivers and streams have died, they have fallen into waterways, impacting drainage and the flow of water. Although many of these have been removed, many remain and continue to cause impediments to waterflow. Diseased trees along the public right-of-way have also impacted infrastructure, as they are more likely to fall during a storm or high wind event. County and municipal street and road departments have aggressively removed diseased trees along the public right-of-way. This has been effective at reducing the impact on utility lines and other infrastructure but has been a significant financial burden for jurisdictions. Public agencies are also not able to remove trees from private property. Individual landowners are responsible for removing dead and diseased trees from their personal property. Because this does not always occur, there are still hundreds of dead and diseased trees that will continue to cause problems across the county. With the miles of waterways that go through personally owned property in the county, this was a high concern.

As the climate changes, if temperatures rise, humidity increases and rainfall hits new highs, insects and other invasive species may become more of a problem than they are now. Insects tend to thrive in hot weather, and weeds grow in the same. These changes exacerbate invasive species problems. If the food supply for nuisance wildlife is limited, their presence in residential and recreational lands will increase. It will become harder for them to find food, and the danger to pets and other small animals will grow. Insects and animals not indigenous to

Ohio may migrate into the area, adding to this problem in an area that is developing and growing considerably. This could become more serious as areas are created for recreation.

Invasive species are present in most counties, but become noticed when a product of value, a natural resource, or human-utilized areas are impacted. Incidents are noticed when plants or trees begin to die, crops are negatively affected, or residential areas are infested. At that point, identification of the invasive species is made and treatment programs begin to control or eradicate the pest or plant.

Residents use lawn care chemicals to control weeds and pests in lawns, landscaping, and gardens. Farmers use spraying systems to eliminate weeds and pests that negatively impact crops. Homeowners use chemicals to eliminate pests. These chemicals are often controlled substances. Farmers become certified to use pesticides and herbicides, homeowners must sign for certain chemicals or hire a licensed applicator to use them, and businesses are not allowed to use chemicals that would negatively affect customers and products for sale.

Sometimes the history of an event is marked by the compensating actions taken. For example, the management of mayflies along lake shorelines is to turn off the lights that draw the mayflies to land during their mating season, when they come onshore. At other times, the evidence of infestation is after a storm when debris must be cleaned up. Increased debris is often the consequence of an infestation, as it was during the EAB incident in Ohio.

Stakeholders expressed concerns about disease spread, and how it would impact farm crops and livestock, personal property including lawns and gardens, and aquatic loss in the lakes and waterways in the county. With so many parks and recreational areas, they expressed concern over what allergic reactions people may have, especially children. The were concerned for the safety of the many, many family pets who may react negatively to a bite or sting.

2.2.12 Land Subsidence, Erosion, and Landslide

Land subsidence is the gradual or sudden sinking of the Earth's surface caused by subsurface movement that develops over time. The primary causes are aquifer-system compaction, underground mining, drainage of organic soils, natural compaction, and thawing permafrost. It often looks like land deterioration that seems to have no obvious cause.

Land subsidence affects more than 17,000 square miles across the United States. This can result in foundation cracking or failure for structures, sudden development of sinkholes or land collapses in areas without buried water-moving pipes or sewer lines, or infrastructure failure like highway pavement collapse or road surface crumbling.

Land subsidence can be worsened and vulnerability increased by mine blasting and drilling. Abandoned mines cause a weakened integrity of land, and structures, infrastructure and other things built on top of the compromised area can be threatened. Abandoned mines of a sandstone, limestone, or other softer stones are severely damaged over time as water flows

through the mines and erodes the structures below the surface. Eventually the surface will collapse as the integrity is destroyed. When abandoned mines are pumped and the water is removed, the vulnerability is significantly reduced. When the mines are truly abandoned, and no pumping occurs, the constant flow of water erodes the soft stone.

Karst topography is one cause of land subsidence in Ohio. This kind of topography forms voids below the surface that collect and store water, and can create somewhat of a waterway system below the surface. These voids can be deep or shallow; the water that moves through the voids changes the form of the voids as it erodes the soft stone surfaces below and molds them. Collapse occurs when the substructure is insufficient to support the surface soils and rock. Trumbull County, and the counties adjacent to Trumbull County, have no mapped Karst area.

Erosion is the gradual movement of soils because of the forces of wind and water. Flash and surface flooding causes soil erosion when rapid flowing water with upstream force washes soils away, widens waterways on outside turns, and picks up sediment from the riverine expansion into fields, roadsides, and other properties that are not part of the waterway. In such a case, the soils taken up by water and wind are deposited in another area where the forces settle and water slows, or where there are turns to catch the soils and hold them. Erosion caused by rapidly flowing water ends up in a more concentrated form as sediment, found near obstructions, log jams, and other blockages in a waterway. Water that regularly builds up after heavy rain in a specific location and washes away, finding a lower spot of less resistance, can create strips of soils or bars of sediment downstream, illustrating where the force of flowing water is reduced and the soils are able to settle out of the water.

General erosion causes the loss of topsoil. Fields and farms are less productive, having lost the most nutrient-filled soils. Constant compaction of the soils can lead to more surface compaction, and less nutrient absorption and water percolation of rainfall into the lower layers of soils. Roads and other pavement can suffer from erosion, either because the foundational soils have been eroded away, starting from the edges, or because the surface of the pavement has also eroded away. Roads develop pot holes, crumbled edges, and cracks. Other infrastructure can eventually feel the same impact, and lose integrity and function. Sidewalks, driveways, and foundations can all feel the effects of erosion, increasing the instability and loss of use of these features.

Soils blown away from unprotected surfaces are not deposited in as concentrated a manner. Wind picks up topsoil and blows it away when fields are plowed, or soils are uncovered and unprotected. These particulates end up where the wind takes them; however, drop points can develop when wind currents are diverted by a significant, large object like a building, or by a set of buildings that break the force of the wind and allow the soil particles to drop.

Stream bank erosion is also possible in Trumbull County. When significant waterways, such as the Mahoning River or Pymatuning River, and the streams and ditches that flow to the rivers, flow through land, soils are eroded away. Streams gradually become wider and deeper as soils are eroded away, and each time heavy precipitation places a heavy load on waterways, soils are

eroded to some extent as the waterway naturally grows to meet its capacity needs. Fields or woodlands that lack ground cover will lose topsoil as the water drains quickly and abruptly. The more speed the drainage on land develops, the more topsoil the water takes with it. Due to rolling terrain and some open fields, some areas of Trumbull County are vulnerable to streambank erosion. If soils are dropped in the same area of a waterway repeatedly, there can be sediment build up that impedes the flow of the waterway. This can occur where there are obstructions, bends and turns, or other factors that cause the water flow to slow and drop the soil being carried by the water.

When large waterways flow fast and furious through turns and bends, the water on the outside of a curve travels faster and has more force than the water on the inside of the curve. The water will, upon repeated incidents, cut away the banks on the outside. As this happens, if the bank is high, the soils above the cutaway will drop and that land will drop into the waterway. If this occurs on the high bank of a waterway where there are homes, buildings or infrastructure, those structures can lose foundation integrity and be significantly damaged or destroyed. This situation is typically seen on a high bank of a river or stream that has widened to capacity already.

Landslide requires elevation that puts soils on the top levels at risk, both to water and wind, and must cause a downslope movement of land or earth's materials, such as rock and soils. These movements can be triggered by drilling, blasting and other human-initiated forces that cause land to gravitationally slide from higher to lower elevations. This can involve rock as well as soil, and if structures or equipment are in the way, it can be damaged or destroyed if there is enough force of velocity involved in the moving materials. More serious landslide issues are common where there is more mountainous topography.

There are three types of landslides.

- Rotational slump is when a mass of rock or sediment moves as a unit along a downward slope.
- Earthflow is caused by rock or sediment flowing downslope.
- Rockfall is cause when large blocks of rock slide downslope quickly. Ohio's sandstone and limestone, weakened by water that flows through it, is a common rockfall incident.

Land Subsidence, Erosion, and Landslide Risk Assessment

Trumbull County is moderately vulnerable to erosion, but vulnerability to land subsidence and landslide is low to very low.

With three robust watersheds and many acres of land, in addition to a relatively flat surface, erosion of topsoil after heavy rains is highly possible. As the waterways are inundated with draining precipitation, and they flow fast and furious, topsoil will drain with the storm water. When the waterway slows or the direction changes, sedimentation – or the dropping of soil particulates – will occur and sediment will build up in that area. However, the amount of topsoil that is taken from surface and displaced in the waterflow is minimized in some areas by the presence of ground cover vegetation and cover crops, the presence of trees in open areas,

and continually lessening tillage of farmland in crop production. All these practices provide protection for topsoil, and make both washing away and blowing away less likely. In areas where topsoil is plowed and exposed regularly, or areas where areal flooding remains for days at a time, the erosion of soils is more likely. There are also soils, like the sandier types, that erode more easily that heavier soils.

Erosion can occur through wind. When open topsoil is exposed to high winds, soils can literally blow away. Ground cover, windbreaks, and other obstructions help decrease the amount of soil that erodes through wind events. Fence rows, grassy swales, and vegetation serve to protect the soils from the forces of wind.

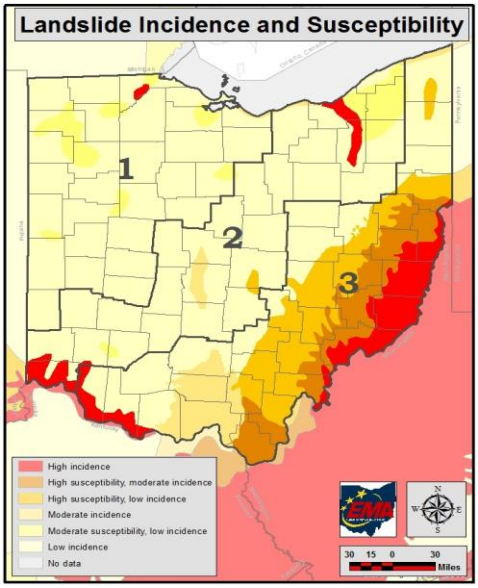
Land subsidence can occur in areas of the larger waterways where outside curves are deteriorated over time, and whatever land is above is damaged. High banks along rivers, especially on outside bends and turns, are vulnerable in the long-term. The slow pace with which this happens, and the fact that it occurs from the less-obvious riverbank upward, makes this damage easy to miss and difficult to repair upon discovery.

Land subsidence can also happen gradually in farmland or other non-built areas where every heavy rainstorm, every flooding incident, and every time the water rises causes the waterway to grow just a little bit. Waterways can grow in width or in depth, and wherever there is no opportunity for the waterway to dig a bit deeper, it will widen instead. This is especially present when the waterway bottom is rock; as rivers age, they lose the ability to go deeper, and can only widen. This gradual consumption of streambanks into the stream is only obvious over time. Again, without realization the problem is occurring, it is difficult to stop once discovered, and cannot be reversed.

Landslide is a very low risk. There is inadequate elevation and embankment grades to cause landslide. While erosion is highly likely, and occurs due to flooding and surface drainage, embankment infringement on fields, and general flash flooding, actual landslide is not prevalent in Trumbull County. There may be an area along a major waterway where soils erode from the bottom up as the river flows and turns through the area, and the soils on top are compromised because the foundation is eroded. This may appear as landslide, but may be more due to erosion, sedimentation, and rapid river flow.

According to the US Landslide Inventory and Susceptibility mapping tool, there is low vulnerability across the entire county.

Map 2:14: Landslide Susceptibility



Local Land Subsidence History

There was no local documented history of landslide, erosion, or land subsidence reported by stakeholders. However, about one third to half of the respondents felt that their area was impacted by land subsidence or erosion. They listed sinkhole development and infrastructure collapse as the main consequences. Somewhat less frequent or serious were loss of structural integrity; road, berm, and storm drain collapse; and water table contamination as concerns. Several stakeholders were concerned about ditch widening, and a few think about abandoned mines. Loss of cropland and property damage as consequences of land subsidence were submitted by a few individuals.

Regarding erosion, most stakeholders who expressed concern were thinking about sedimentation in waterways and the loss of farmable land to erosion or subsidence. They were not referring to high wind causing topsoil to blow away on plowed fields and open areas. Much of this risk is diminished due to common farm practices that use grassy strips, sod strips, fence rows, windbreaks, and cover crops to mitigate the wind-borne topsoil loss.

Concerns about landslide amounted to roadway safety issues, damage to utilities and infrastructure, and loss of use for roadways and property affected by landslide.

2.2.13 Severe Thunderstorms

A thunderstorm is a local storm produced by a cumulonimbus cloud accompanied by thunder, lightning, and/or hail. Lightning is a brief, naturally occurring electrical discharge that occurs between a cloud and another cloud or the ground. Hail is frozen rain pellets that can damage buildings, vehicles, and other structures as they fall. Hail forms in the higher clouds and accumulates size as it falls as precipitation. If temperatures close to the ground are warm, the hail can partially melt or become freezing rain. Most thunderstorms include heavy

precipitation and wind. These storms can produce hail, lightning, flash floods, tornadoes, and damaging winds that pose significant risk to people and property in the area. A thunderstorm that produces a tornado, winds of 58 mph or greater, and/or hail with a diameter of at least 1", is considered a severe thunderstorm. These storms typically develop as part of a larger storm front and are preceded and followed by regular thunderstorms.

Trumbull County experiences numerous thunderstorm events each year. The majority are mild or moderate in severity and include a combination of heavy precipitation, wind, and thunder. Hail and lightning are possible, but occur much less frequently than wind and heavy precipitation. Thunderstorms that include hail and lightning are much less frequent but are generally more severe. Thunderstorms are a countywide hazard and can affect all areas and jurisdictions. Lightning damages can occur countywide and have been recorded in the weather events data. There can be casualties due to lightning, especially if the storm hits suddenly and with little warning, or if the lightning is an isolated lone-standing weather event. These storms range from minor to severe, although the most are minor or moderate. Thunderstorms are relatively frequent but generally result in limited property damage.

It is not believed that development activities have had any effect on the countywide vulnerability to severe storms and thunderstorms, including rain, hail, lightning, and wind. Minor improvements in storm drains and other infrastructure may have resolved some issues in specific locations. Otherwise, there has been no significant change for any village or the county. If rain becomes heavier due to climate changes, the damages from hail, lightning and heavy rain may increase as a result. Many of these kinds of damages are covered by private insurance, so it is believed that the damage statistics and costs are under-expressed.

Local Severe Thunderstorm History

According to NCDC records dating back to 1950 Trumbull County has experienced 410 thunderstorm events with 148 days reporting property damage. The relatively low number of damages is affected by the lack of lightening and hail in these storms, as compared to other Ohio counties. These storms could also include high wind and tornadoes. Those components are assessed separately because most severe thunderstorms do not include tornadoes.

Table 2-45: Trumbull County Severe Thunderstorm History

Hazard	Total Incidents	Total Property Loss	Total Crop Loss	Total Deaths	Total Injuries	Average Loss/Incident
Thunderstorm/Wind	410	$6.511M	$0	2	4	$6.443K
Hail	179	$853.00K	$10.00K	0	2	$0
Lightning	2	$155.00K	0	0	0	$77.50K
Heavy Rain	1	$0	$0	0	0	$0

During the past five years, severe thunderstorms have occurred about 77 times, noting that 2022 and 2023 were somewhat quiet. In this timeframe, there have been damages from these storms totaling less than $1K in property damage and no crop damage.

Stakeholders listed many consequences from severe storm hazards. Utility outages rose to the top in their concerns, and surface/flash flooding was next. They listed concerns about damage to their homes, and injuries because of the storms. Hail and lightning were listed, and some pertaining to vehicle damages as well as home damage. They expressed concern about after-storm needs like sheltering, debris management, and home replacement/repairs as a significant concern.

2.2.14 Tornado and Windstorm

A tornado is an intense, rotating column of air that protrudes from a cumulonimbus cloud in the shape of a funnel or rope whose circulation is present on the ground. If the column of air does not touch the ground, it is referred to as a funnel cloud. This column of air circulates around an area of intense low pressure, almost always in a counterclockwise direction. Tornadoes usually range from 300 to 2,000 feet wide and form ahead of advancing cold fronts. They tend to move from southwest to northeast because they are most often driven by southwest winds.

A tornado's life progresses through several stages: dust-whirl, organizing, mature, shrinking, and decay. Once in the mature stage, the tornado generally stays in contact with the ground for the duration of its life cycle. When a single storm system produces more than one distinct funnel clouds, it is referred to as a tornado family or outbreak.

Tornado magnitude is measured using the Enhanced Fujita scale, abbreviated as EF. The rankings range from EF-0 to EF-5 and are based on damages caused by the tornado. Prior to 2012, the Fujita scale was used to measure tornado damage and was abbreviated F-1 to F-2, depending on the level of impact.

The following chart was taken from FEMA's website, and indicates the type of damages per Enhanced Fujita Scale tornado classification. Tornadoes in Trumbull County are usually below EF2. In 1985, there were two EF-5 rated tornadoes but since then, nothing has been stronger than an EF-1.

Table 2-46: Enhanced Fujita Scale for Tornado

EF-Scale	Wind Speed	Typical Damage
0	65 – 85 mph	Light damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over,
1	86 – 110 mph	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
2	111 – 135 mph	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground
3	136 – 165 mph	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.

4	166 – 200 mph	Devastating damage. Whole frame and well-constructed houses completely leveled; cars thrown and small missiles generated.
5	>200 mph	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly more than 100 meters; high-rise buildings have significant structural damage; incredible phenomena will occur
No rating	>5	Inconceivable damage. Should a tornado with the maximum wind speed more than EF-5 occur, the extent and types of damage may not be conceived. Several missiles such as iceboxes, water heaters, storage tanks, automobiles, etc. Will create serious secondary damage on structures.

Tornadoes are the most damaging of all atmospheric phenomena. While their frequency is low, the probability of significant damage is high. Because tornadoes occur as part of a storm system, they do not strike as independent incidents. Emerging out of a storm front or super cell, the tornado, especially when accompanied by heavy rain, straight-line wind, lightning, and hail, can be extremely damaging. Effects of a tornado include uprooted trees, damaged or destroyed buildings, and smashed vehicles. Twisting and flying debris turns into projectile weapons, which can cause injuries and fatalities.

Tornadoes in Trumbull County are generally rare, and do not grow to the width of the mega-tornadoes in the plain states. They stay on the ground for a few miles. While tornadoes do not occur frequently, they can cause moderate to severe damage. Tornadoes are a countywide hazard and can affect all areas and jurisdictions.

Should weather events become stronger under the premise of climate change, tornadoes in Ohio are anticipated to come in clusters and increase in speeds. Severity could rise by one or two categories. The formation of multiple funnels in one general front can strike multiple parts of the county simultaneously, challenging the capacity to respond and significantly increasing the damages to property, loss of property and even loss of life. The need to begin using wind-resistant building materials would help property on the periphery of the primarily damaged area, but would not save property that is directly hit. Tornadoes can come with rain, hail, lightning, and straight-line winds, so it would be reasonable to assume all those damages may increase as well. That would result in more damage to trees, endangering green space and destroying vegetation that would take decades to replace. In a county with little change in elevation, there would be less likelihood of inconsistent damages within neighborhoods, resulting in simply more damage over the entire county.

Stakeholders do not believe that vulnerability to tornadoes has changed in the past five years, nor has any development activity or goal changed the risk of the villages or the whole county to tornado damage. There has been recorded tornadoes with damages in 17 different years since 1956, indicating infrequent occurrence and impact.

Local Tornado History

Trumbull County has experienced 25 tornadoes listed in the storm events database. The worst tornado were two EF-5 tornadoes on May 31, 1985. One tornado traveled from the James A Garfield Training Center in Portage County through Newton Falls and Niles, and lifted just north of Hubbard. The other formed at the Hubbard city line near North Main Street and traveled directly east to the Ohio-Pennsylvania line. There is little other information available except that there were 250 injuries, 10 deaths, and $500M in property damages. Another tornado in that same storm traveled across Mesopotamia Township at the same time and injured 20 people, and di $2.5M in damage to property.

Table 2-47: Trumbull County Tornado History

Hazard	Total Incidents	Total Property Loss	Total Crop Loss	Total Deaths	Total Injuries	Average Loss/Incident
Tornado	25	$507.485M	0	10	270	$109.16K

Ohio ranks among the top states in injuries, fatalities, and property damage from tornado events. Recently, Ohio is one of the states with the most frequent, highest numbers of tornadoes in 2024. While it is believed that new and more effective detection is responsible for some increase in the number of recorded tornadoes, it is believed that there were significantly more tornadoes in 2024. There have also been more incidents with multiple tornadoes and funnel clouds in each area than in years past. Cluster activity usually begins in the northwest corner of the state, but it can move across the northern shore as it develops.

Windstorm

A windstorm is a weather event with very strong winds but little to no precipitation. Wind speed in this type of event typically reaches at least 34 mph but can be any speed that causes light or greater damage to trees and buildings. Damage can be caused by gusts, which are short bursts of high-speed wind, or longer periods of sustained wind.

A derecho is a specific type of windstorm that is widespread and fast moving. These storms can produce damaging straight-line winds over extremely large areas, sometimes spanning hundreds of miles long and more than 100 miles wide. To be defined as a derecho, the storm must produce damage over at least 240 miles, have wind gusts of at least 58 mph across most of the storm's length, and multiple gusts of 75 mph or greater. The destruction produced by a derecho can be very similar to that from a tornado. However, the damage from this type of storm generally occurs in one direction along a straight path.

Trumbull County's combination of flat and slightly rolling topography makes it vulnerable to damage from high winds unaccompanied by any kind of precipitation, making windstorms a countywide hazard. All areas and jurisdictions can be affected by severe wind. Where there is limited change in elevation or extensive wooded cover area to break up the effects of strong windstorms, the vulnerability increases. The wooded areas that have ground cover have little vulnerability. Although winds more than 50 miles per hour can occur independently, this is uncommon. Most of the time, severe winds are part of a larger storm system. The wind occurs

as precipitation and unstable air moves into the area. High winds are frequently accompanied by heavy rain, hail, ice, snow, or thunderstorms. In Trumbull County, wind-only incidents are rare.

Overall, climate change predictions to not anticipate much change in winds. Stakeholders said there is almost no damage from windstorms for the most part. Nothing in the past five years related to land use, development trends, infrastructure improvements, or regulation has changed the countywide or village vulnerability to windstorm damages.

Local Windstorm History

Trumbull County has had 43 high wind events since 1950. There have been only two injuries, but $8.085M in damages. Crop damages have amounted to $105K. There were two injuries but no deaths.

Although infrequent, high wind events can occur independent of other hazards. One of the most significant windstorms in Ohio, affecting western and central Ohio, occurred on September 14, 2008 when the remnants of Hurricane Ike moved across Ohio. Damage across Ohio exceeded $500,000,000, and Trumbull County had $5.0M in property damage from that storm. A derecho in June 2013 ripped across the southern and far western parts of Ohio, leaving communities in southeast and southern Ohio without power for weeks, and without the conveniences of electricity amid heavy debris and structural damages. Trumbull County was not affected by that storm, but had it moved northward, could easily have been affected.

Stakeholders listed injuries and death due to tornado and windstorm as their first concern. They also suggested utility damage and outages, general property damage, critical service interruptions, infrastructure damages and destruction, and home damages as likely outcomes and concerns. The expressed that managing the huge amounts of debris and sheltering many county residents would be challenging.

Table 2-48: Trumbull County Windstorm History

Hazard	Total Incidents	Total Property Loss	Total Crop Loss	Total Deaths	Total Injuries	Average Loss/Incident
Strong Winds	2	$10.00K	0	0	0	$5.00K
High Wind	43	$8.085M	$105K	0	2	$190.46K

2.2.15 Utility Failure

Utility Failure refers to the absence of a utility such as electric, water, or communications signals, as well as propane gas, natural gas, or other services. The service may be absent due to a lack of generation or supply, or due to quality issues that make the resource unusable, or a distribution problem due to breaks or disrepair of overhead lines, pipelines, or equipment. One of the most concerning issues with utilities is that the infrastructure to distribute the commodity is not easily replaced if damage is catastrophic. Long-term outages present totally different obstacles and issues than outages that are temporary, even if temporary means a week or so.

Electrical Power Outage

An electrical power outage is a short-term or long-term loss of electric power to a particular area. Power failures can be caused by natural events, such as damage to transmission lines caused by high winds, or non-natural events. Electro-magnetic pulses caused by severe solar storms can interfere with power transmission if the energy from flares on the sun reach local earth surfaces. Non-natural contributors to power system failures can include equipment failure, transformer failure, animals, vandalism, or intentional damage. Systems failures can range from a temporary outage of less than a few hours to long-term, multi-day outages. Short-term outages are inconvenient but generally not a significant risk to the community. Outages that last for several days, to months or more, however, can cause major disruption and harm to a community as compensatory capabilities are stretched beyond resources. Fuel sources for generators, the ability for generators to carry out all power-based critical services, and the stress of being power-deficient cause human suffering and extreme inconvenience that closes businesses and inhibits daily life activities.

While electrical system failures can occur because of a weather event or human-caused problem, breakdown of this critical utility can also occur independent of another hazard. When this happens, it is often the result of system overload or lack of improvements, updates, and maintenance to the system's infrastructure. Residents and businesses rely on electricity to support basic daily functions. When the system fails or service is interrupted, the effects are felt immediately. Populations with special needs, including children, the elderly, and those with serious medical conditions, suffer the most during electrical system failures.

Power failures do not generally cause significant structural damage, but power-based equipment and electronics can be damaged or ruined, depending upon how the outage occurred. The greatest risk for physical damage is from broken distribution lines, poles, and substations. The most significant impact is the hardship for the people and businesses affected by the outage, including the potential economic impact. If businesses are unable to operate for several days or longer until power is restored, the negative effect would quickly ripple across the community. Individual losses are generally limited to the loss of food that must be refrigerated, and perhaps medicines stored at home that require cooling. The loss of air conditioning for people with respiratory conditions can be life-threatening, and without a long-term capability to operate medical equipment, those with serious medical needs are at risk of dying.

A long-term outage, lasting months, potentially due to major disruption or destruction of the power grid, could be devastating. The activities of daily living are dependent upon electricity for most people, and only those able to survive in the most austere conditions would come through a long-term outage successfully.

People and businesses rely on electrical systems to support essential services and basic daily functions. Without power, telecommunications, utilities, public works, and other critical systems are non-functional. If backup power generation is available, some systems may be maintained, at least on a partial basis.

Power outages are a countywide hazard and can affect all areas and jurisdictions.

Power providers are listed in Table 2-16 on pages 2-24 and 2-25, and are again discussed in Energy Lifeline narrative in the same section. As stated in the lifeline section, outages are short in duration in Trumbull County. An unquantified number of residents have generators, and although some public generators need repairs and replacement due to age, there is a basic capability to provide essential services through generator power. Extended outages provide the greatest vulnerability because there would be difficulty in providing long-term, widespread shelters or warming/cooling stations across the county. Most shelters identified by Red Cross are not generator-equipped. Most of the public schools have some generator capacity, but tend to be more critical-component capable than overall total facility capable.

Vulnerability to a lack of power could increase with climate change as more demand is placed upon the power grid, and outages cause more discomfort. If temperatures rise in the summer to above 90 (F), especially in a heat wave of several days or weeks, people with medical problems will require air conditioning at an increasing rate. This will be a widespread issue, placing regions at risk for power failure or the need to "brown-out" power for conservation of generation capabilities. More severe storms may place more debris on power lines, interrupting service more unless additional measure to mitigation pole damages is implemented. Power companies may have to use damage-resistant poles, transformers and sub-stations at all locations should a significant change in storm characteristics take place. Buried power lines may be required in more places, adding cost to home and business construction.

Development could influence power outages as the demand for electricity increases. With an already-burdened power grid, the overall demand for more power could be detrimental unless there are regional plans to increase the capacity of the power grid. Charging electric vehicles, powering additional layers of technology, and providing power for an increasing number of homes and businesses could overwhelm the capacity to create energy. One of the biggest challenges many Ohio communities face today is the addition of large data centers to their area. These centers place extreme demands upon both electrical and water systems to power the facilities, and for water to use in cooling their equipment.

According to several websites and local input, the Bristolville 25 Lordstown Data Center is asking to build a large data center in Lordstown. In late October 2025, Lordstown Village Council received a letter from Bristolville 25 Developer LLC seeking to build a 1.65 million square foot facility on 133 acres that straddles the Trumbull-Mahoning County line. Since then, a moratorium on accepting applications from data center developers has passed Council, and the village is in a re-evaluation period to determine what is the best development for the community.

Local Power Failure History
Power outages are not common in Trumbull County, and when they do occur, they are short-lived. The typical cause of an outage is a vehicular accident that drops trees into lines or takes poles down. Occasionally there is a transformer problem. These outages are short in duration

and generally affect customers on a single feed. Most recounts of power outages were incidental, and stakeholders reported due to an equipment failure, temporary emergency, or a weather event.

That said, an equipment or weather event could change the reliability. It is not frequent for Ohio to have power outages due to generation problems or failure of the distribution system in the larger picture, but these incidents are possible. As the nation's power grid ages, the equipment will become worn and outages could likely increase.

Access to and use of generators is not widespread. While more jurisdictions have generators than five years ago, there is still a significant vulnerability to power outages. Many elderly and people who are dependent upon durable medical equipment do not have the financial ability to have a generator. Many jurisdictions need to at least add to their generator pool to be able to function well during an extended outage. Some generators are old, outdated or too small. Plans to have fuel for generators must be developed because some jurisdictions do not have this done, putting them at risk for not being able to use generators as needed.

Some areas in Trumbull County require the use of sump pumps to move storm water so it does not flood homes, businesses, and industrial areas. Some areas use pumps systems in their wastewater management to move storm water faster and more efficiently to protect homes and businesses. Some jurisdictions have enough of a need for significant power generation that a portable generating system is needed.

Stakeholders discussed the effect rising temperatures might have amid an out-of-shape electrical grid, and the burden that increased demand for electricity puts on the generation and distribution systems. Populations everywhere are more dependent than ever on electricity to not only meet their comfort and health needs, but also to be able to connect with caregivers, financial institutions, suppliers, and family members through digital resources and communication systems. Without functioning power, as a power grid failure or extended outage is considered, could be devastating. This contrasts with just several years ago when financial transactions were done more in person than online, and when accounts were managed through paper systems instead of electronic transfers. With an aging population that has more vulnerability to heat injury, dehydration, and malnutrition, the extended loss of electricity or alternate heating and cooling systems could be very damaging.

B. Water System Failure

Utilities include the systems that provide basic amenities and services to the public, such as water, wastewater, storm water, and natural gas systems. These systems can be maintained by a public entity, usually a jurisdiction or cooperative agency, or by private companies. Water, wastewater, and storm water utilities are generally operated by public entities, although privately owned water systems do serve all areas of Trumbull County. In rural areas, many homes receive these basic utilities through individual septic systems and water wells. Regardless of the type of delivery, utility systems provide critical services to the community.

These systems are vulnerable to failure caused by disaster conditions or independent from any hazard or storm.

Water System Risk Assessment
Utility infrastructure is vulnerable to failure caused by aging system components, general system failure, overuse, and/or poor maintenance. All utility systems, even those that are well maintained can fail. These systems are incredibly expensive to maintain and must be upgraded or replaced as time goes on. As communities grow and develop, systems must be expanded to meet increasing demand. Changes in regulations also require systems to be upgraded or modified. All of this is very costly. These costs are initially the responsibility of the jurisdiction or entity that manages the system but is eventually passed on to the user through fees.

Because of the overwhelming expense of maintaining and upgrading water and wastewater utility systems, many systems are not in good repair. Water lines are old and undersized. Wastewater and storm water systems that were combined when the system was originally built have not been fully separated despite regulations requiring this separation. Stormwater systems that were adequate when built 40 years ago are undersized to handle the amount of precipitation communities now receive. Infrastructure failure, specifically water, wastewater, and storm sewer systems, rated as a concerning hazard. Communities recognize how critical these systems are to the public and are working diligently to identify funding to upgrade and maintain their systems. These efforts include borrowing funds, applying for grants, and increasing user fees and any other funding opportunities they can identify. Because every community relies on utility infrastructure for critical services, infrastructure failure is a countywide hazard that can affect all jurisdictions and unincorporated areas of the county.

Water Quality Emergency Risk Assessment
Because a water quality emergency can occur in any source body of water, including aquifers, or water treatment facility, water quality is a countywide hazard that can affect all areas and jurisdictions. Water distribution systems are also vulnerable to water line breaks and delivery system failure, preventing treated water to be delivered to homes. When water service is compromised, risks to the community include public health and the economy. From a public health perspective, contaminated water can cause serious illness when consumed. Persons with special medical needs, compromised immune systems, the elderly, and children are most susceptible to this. Animals are also susceptible to illness from contaminated water. If the water supply is contaminated, residents lose access to drinking water in their homes and restaurants, grocery stores, and businesses that use water in their regular operations are forced to close until water service is restored. Failure of distribution systems has the same effect. The loss of revenue, even if only for a short duration, can have a significant economic impact. Any compromise in the water supply also affects the public's trust of government officials. If the public is concerned about the safety of the water supply and believes local officials are not fully communicating about the issue, they may question the information provided by local officials. A failure in the water system can affect county residents who do not use public water. Residents who have wells and cisterns used hauled water from the public water system to supplement their own systems, which are insufficient to meet their needs. They may not live

where public distribution is available, so they haul bulk water to satisfy their water needs. Farmers who do not have public water also haul water for both livestock and crop irrigation. When the public system fails, they are as vulnerable to the outage as the people who obtain water directly from the system.

To protect the community's water supply, jurisdictions must continually monitor, repair, and upgrade water treatment infrastructure and water delivery infrastructure. Because this is costly, jurisdictions must plan and budget for it. If the infrastructure is not well maintained and emergency work must be completed when an incident occurs, the economic cost is higher than completing work through ongoing maintenance and upgrades. In addition to the direct economic loss resulting from the emergency, the jurisdiction must immediately identify funds to make the repairs. These costs are often recouped through increases in the fees charged to consumers, ultimately costing residents more money through increases to water rates, user fees, and local taxes.

Local Water Emergency History

There is not a significant history of water issues. There have been some instances, like in many other parts of Ohio, where algal bloom has made water treatment difficult. Constant monitoring and treatment, along with testing daily, can become difficult and expensive. The water systems have improved their ability to test and treat the microsystin that are a result of algal bloom, and this issue is, currently, manageable.

The most significant water quality emergency in Ohio occurred on August 3, 2014. Trumbull County was not impacted by this event but it did bring significant attention to water quality issues in the entire state. On August 3, microcystin from a toxic algal bloom was detected in the water supply in Toledo, Ohio, causing the water to be declared unsafe to drink. The Toledo water system supplies municipal water to approximately 400,000 people in northwest Ohio. Local emergency management and government officials scrambled to provide drinking water to the affected communities. Within hours, stores across the region sold out of bottled water as residents rushed to purchase critical water supplies. Restaurants and food service businesses were forced to close until safe water could be provided and hospitals experienced a surge of patients who believed they were ill from consuming contaminated water. Within three days, Toledo's water was declared safe to drink but the economic and political ramifications lasted much longer. Without partnerships with food distribution companies and major retailers, residents would have waited 12 to 18 hours for water supplies once the local retail supply ran out early in the morning. This incident's root cause was microsystin contamination with an inability to detect and treat that problem. Since that time, most water plants can detect and treat this contaminant.

Trumbull County has not experienced a water crisis like the Toledo incident but the communities are concerned with protecting their water supply so the same kind of incident does not occur. Some expressed concerns involved brine contamination of aquifers and water supplies, and hazardous materials incidents that may affect ditches, streams, and lakes in the area. The inland lakes and reservoirs across the state have experienced toxic algal blooms and

other water quality issues, and the local reservoirs have experienced some algal bloom issues. Across Ohio, research is continually underway to determine the root cause of the increase in toxic algal blooms and identify actions that can be taken to reduce their occurrence. There is constant effort to reduce nitrogen and phosphorus runoff from agricultural production, landscaping treatments, and manufacturing waste. With Trumbull County's position at the headwaters of all three watersheds, the risk of chemicals from use in agricultural or commercial production seeping into the rivers is negligible. There is ongoing activity to identify and replace lead pipes that cause lead particulates to disburse into the drinking water through distribution. Reservoirs are continually monitored for corrective treatment. Compromise to the water tables through ground contamination of aquifers to road salts and other chemicals is maintained as much as possible, but unknown releases can cause exposure to harmful substances despite these efforts.

Communication Signal Failure

Today's society in Trumbull County is dependent upon communication signals. This includes internet signals and cellular signals to use computers, security systems, cellular and VOIP telephones. The ability to conduct business via the internet, to make purchases of staples and emergency goods with credit cards, and the ability to communicate warnings, notifications and personal messages is all dependent upon being able to use communication signals.

While devices may fail, and specific providers may have outages relative to their equipment and supplies, an outage of communication networks in the signal transmission phase of the process could be devastating, especially if it lasted for more than a day.

Communication Failure

Trumbull County has no history of communication signal failure; however, potential EMG forces and solar storms could make this occur. This is also a system that can be targeted by terrorists. Many communication devices like cell phones and internet are provided by commercial providers; these outages are not tracked in the public sector. It is unknown what the history of privately owned commercial communication failure is in Trumbull County.

Stakeholders provided their concerns about utility failures. Most of their concerns, because only some of the infrastructure is publicly owned, revolved around the negative impacts on residents, as well as the life-threatening situations that may occur. Medical vulnerability, loss of foodstuff in homes, and inability to warn and notify residents of imminent threats were their top three concerns. Also expressed were loss of personal services, injury, and/or life-threatening situations for disabled, elderly and young children, and the loss of public services like law enforcement and firefighting. Some stakeholders expressed concerns about business and retail service continuity and farm operations, especially when livestock would be affected.

2.2.16 Winter Storm and Blizzard

A winter storm is a weather event that includes several winter weather hazards, such as extremely cold temperatures, wind, snowfall, sleet, ice, or freezing rain. These storms can develop anytime between late fall and early spring.

An ice storm is a specific type of winter weather event. An ice storm occurs when temperatures fluctuate as precipitation falls and rainfall becomes freezing rain or sleet as temperatures drop. This can cause ice to form on trees, utility lines, roadways, and other surfaces and lead to power outages, downed trees, and hazardous road conditions.

A blizzard is the most serious type of winter storm; it is characterized by sustained winds or frequent gusts of 35 mph or greater and falling or blowing snow that reduces visibility to less than ¼ mile. Both conditions must be present for at least three hours for the event to be considered a blizzard.

Extremely cold temperatures can also be a winter weather hazard, with or without the presence of snowfall, ice, or other hazards. While there is no exact definition for "extreme cold", these incidents are characterized by extended, multi-day periods of air temperatures or wind chills well below freezing. In Trumbull County, the coldest month, January, has an average low temperature of 20 degrees Fahrenheit and an average high of 33 degrees Fahrenheit. An extreme cold event would be temperatures at or below this level for an extended period.

Severe winter storms are frequent in Ohio, and the specific components of each storm is dependent upon the weather conditions at the time. Winter temperatures can be mild and relatively warm (above freezing), or they can fall below zero and stay there for several days. A season may include several fluctuations between cold and warm spells, or a winter may be relatively constant.

A non-blizzard winter storm event often begins with warmer air followed by very cold temperatures and heavy precipitation. Because weather systems move into Ohio from the south and west, initially warm air can cause temperatures to hover at the freezing mark, causing ¼ "to ½" ice (or more) to form on roads, trees, electrical lines, gutters and roofs, and vegetation as precipitation starts out as freezing rain and/or sleet. As the temperatures drop, precipitation becomes snow that adheres to the ice and forms heavy clumps of wet snow that brings power lines, trees, vegetation, and roof gutters down. As fronts move through and winds kick up, while temperatures drop, the heavy falling snow drifts across roads, ice damages trees and buildings, and travel is seriously difficult. This type storm drops 4-6 inches of heavy, wet snow over the county.

An alternate but very common front pathway causes Trumbull County to experience "lake effect snow", a significantly higher amount of snowfall due to the amount of moisture the front picks up when it crosses the lake. When storm fronts come down from the northwest – Michigan, Wisconsin, Minnesota and that upper Midwest region – the storm crosses Lake Erie before it arrives in Trumbull County. When the stormfront crosses Lake Erie, it picks up moisture from the water, especially if there is a great deal of open water that has not yet frozen. This moisture then drops as snow when the front makes landfall. Even though Trumbull County is not within the area that is traditionally considered the snow belt, the county

can experience this storm characteristic if conditions are right. Lake effect can double or triple the amount of snowfall.

An alternate version of an Ohio severe winter storm begins with extremely cold weather (below 10 degrees Fahrenheit) and heavy snowfall, high winds, and extreme cold. A severe storm of this nature would likely pack sustained winds of 15-25 miles per hour, over ten inches of snow, and temperatures below ten degrees Fahrenheit for more than 24 hours. This kind of storm can easily dump excessive snow on Trumbull County and disrupt daily activities for several days. Because the ice is not part of this kind of storm, damages are generally less as power lines are not destroyed and structural damage is not severe. However, the amount of snow is challenging considering the extreme low temperatures. The snow tends to be fluffy and creates deep snow drifts and blocks roads.

The greatest risk associated with winter storms is the loss of utilities. The elderly and young children are most at risk. When medications, health equipment, and food supplies cannot reach destinations, these populations endure the greatest hardship. Winter storms of this magnitude are relatively rare. Most winter storms are a temporary inconvenience that makes residents uncomfortable. It is extremely rare for casualties to occur, except for traffic accidents that result from dangerous road conditions.

Blizzards and winter storms that close county roads and make ingress and egress impossible for more than a few hours can be costly for the livestock farmers in the county. Livestock, such as beef cattle, pigs, and poultry, require feed to be delivered to the farms frequently. Closed roads and inaccessible barns can cause animals to die for lack of fresh food. Utility outages stop automatic feeders and other electrical equipment on the farms, further extending the damages related to blizzards. Livestock can freeze to death, die of dehydration when water supplies are frozen, and starve when food is not accessible.

Severe winter weather is a risk across Ohio. All areas of the state are susceptible to winter storms that bring heavy snow, high winds, and/or ice. These storms range from short, mild bursts of snow and ice to cold snaps with significant snowfall that last several days. In Trumbull County, winter storms are a countywide hazard and can affect all areas and jurisdictions. The most common winter storms include a combination of multiple winter weather hazards, such as ice and snowfall. The ice begins to accumulate as temperatures fall before turning to snow, creating a layer of ice under the snowfall. Sleet and ice make roadways slick and dangerous, increasing the potential for vehicular accidents. Road crews are challenged to clear snow and ice from roadways and maintain safe transportation routes for residents.

Ice storms can occur independent of other winter weather hazards but this is not common. If temperatures hover near the freezing point, precipitation can freeze and accumulate on trees and power lines. This can lead to power outages when the branches and lines can break. Extremely cold temperatures can occur without other accompanying winter weather hazards but this is relatively rare. When it does occur, the incident is generally of a short duration and is

an inconvenience to residents and businesses. Little physical damage generally occurs to buildings or infrastructure.

Trumbull County typically experiences several winter weather events every year, although stakeholders felt that the frequency and severity of winter storms is diminishing. These incidents are rarely severe enough to cause property damage, but they do cause inconvenience, school, and business closures, and interrupted personal schedules.

Because climate change predictions call for warmer temperatures, Ohio is anticipating less snow and ice. The diminishing severity of winter would potentially affect the growing season, extending it slightly before and after traditional times. The warmer, wetter, winters may initially result in higher farm yields and new crops to northern Ohio, but eventual increases in temperatures beyond comfort zones may negate that effect. The hibernation habits of some wildlife may lead to changes in those populations and a negative impact on nuisance damages they cause or their unwelcome presence in communities when fewer die during long, hard winters.

The past five years' vulnerability to winter storms and blizzards has not changed. Considering any development, land use changes, regulations, or infrastructure changes, none have affected the likelihood or degree of damages experienced due to winter storms.

Local Winter Storm History

Most winter events in Trumbull County involve moderate snowfall but when combined with winds, it results in blowing and drifting snow. Plowing roads keeps crews busy all day and night long, and most injuries are associated with plowing, blowing, or shoveling snow to clear sidewalks and private properties. Vehicular accidents are more frequent on icy and snowy roads, especially on interstate highways where various types of vehicles use the same roadway and have differing capabilities to navigate their vehicles given the hazards. Sometimes narrow, county roads can be blocked and hard to navigate in a different way. On occasion there may be a flat roof that is damaged by snow load, especially when the storm occurs in warmer winter conditions and the snow is heavy and wet. Many times, the costs of the storm are measured in inconvenience and discomfort, and occasionally, by deaths or injuries.

For much of Ohio, the most significant historical winter weather event is the Blizzard of 1978. Southeast Ohio was one of the most severely impacted areas by this storm. On January 26, 1978, two low-pressure systems combined over Ohio to produce record-breaking snowfall, winds of up to 70 mph, and extremely low temperatures. In the Dayton area, for example, slightly over a foot of snow fell on top of the twelve inches already on the ground from a previous snowfall. The high winds caused blowing and drifting so severe that roads were impassable and buildings were buried. Roads were impassable for almost a week, forcing businesses and schools to close until roads could be cleared. Throughout the region, residents opened their homes to stranded motorists and neighbors helped one another dig out from the blizzard. To date, this remains the worst winter weather event on record in Ohio, resulting in 51 deaths across the state and the call-out of 5,000 Ohio National Guardsmen to assist

communities. According to the Zanesville Times Recorder, southeast Ohio was one of the hardest hit areas, needing assistance from 115 National Guardsmen to clear 22 inches of snow from the hilly roads and highways in Muskingum County. Three hundred residents were evacuated from homes due to lack of heat in the frigid temperatures and high winds.

The Blizzard of "78 affected Trumbull County. As the people who remember the incident become less, the first-hand accounts of the worst blizzard to hit Ohio are diminishing. The storm that began as rain, sleet, and ice, causing thundersnow and lightning during the night as barometric pressure dropped lower than most hurricanes and temperatures plummeted by 30 degrees or more, is fading from memory in many households.

Stakeholders considered loss of power or utilities, inability to pay for adequate heating fuels, road, school and business closures, and transportation difficulty the worst consequences of winter storms. Snow management, debris collection and disposal, and public safety access ranked among their concerns. They did note that while blizzard conditions, in general, seem to be decreasing, extreme temperatures and heavy snow are not becoming less frequent. There seem to be more extreme drops and dramatic storms, as opposed to consistent winter weather.

Most stakeholders felt that recent winters have been milder than in the past. Snow amounts have seemed lower, and the cold snaps have been shorter and less severe. They cited loss of power as a high concern, and road closures as difficult. Extreme cold was cited as a problem, and causes school closures because of transportation issues, students who walk to school, and other inconveniences that result from extreme cold.

Local Winter Storm History
Trumbull County has no documented history of blizzard.

There are recorded incidents in the lake-effect snow category. This phenomenon occurs when fronts travel across Lake Erie and due to low amounts of frozen water, pick up large amounts of moisture. When the front comes back over land, the moisture falls as heavy snow. Lake effect snow in Ohio can produce, easily, a foot or more snow on the ground. Trumball County is vulnerable to this when fronts come in from the north and move southeast, crossing Trumbull County.

In 1996 and 1997, cold/wind chill is recorded in Trumbull County each year. In the first, temperatures below zero combined with 25 mph winds to make outside unbearable. One fatality was reported in Cleveland as an elderly man froze in his home.

In 1999, temperatures became so cold that wind chill dipped to a minus thirty. There were unmeasured falls on ice. Sidewalks and driveways went unplowed and snow-covered for days because it was just too cold to go outside. There was a salt shortage, and many businesses, schools, and government offices closed.

In 2012, a late April storm dropped temperatures to lower 20's, not essentially considered extreme cold, but given the fruit trees were budding and other vegetable crops were growing, this destroyed many crops in northeast Ohio. It was highly untimely for Ohio to have these low temperatures. Damages are listed not as crop damage, but as property damage of $200,000.

The twenty-two heavy snow incidents dumped anywhere from six to twenty inches of snow on the area. There were no building collapses or other specific damages listed in any reports for Trumbull County.

Ice storm incidents generally began as freezing rain, turned to ice, and took down power lines that resulted in extensive power outages. There were no deaths or injuries.

Lake-effect snow incidents brought about 20 inches of snow to Trumbull County each time they occurred. The northern half of the county is more vulnerable to this than the southern part. In December 2012, lake-effect snow dumped 29.5 inches of snow on Kinsman in the far northeast part of the county, but the airport by Warren recorded just 14.5 inches. The townships and residential areas in the north part of the county seem to experience this more than any other area.

Table 2-49: Trumbull County Winter Storm History

Hazard	Total Incidents	Total Property Loss	Total Crop Loss	Total Deaths	Total Injuries	Average Loss/Incident
Blizzard	0	0	0	0	0	0
Cold/Wind Chill	2	$65K	0	0	0	$32.5K
Extreme Cold & Wind Chill	9	$200K	0	0	0	$22.2K
Heavy Snow	22	$2.575M	0	0	2	$117K
Ice Storm	3	$950.0K	0	0	0	$317K
Lake Effect Snow	8	$825K	0	0	0	$103.1K
Sleet	0	0	0	0	0	0
Winter Storm	35	$8.687M	0	0	2	$248.2K
Winter Weather	3	0	0	0	0	0

Much of the cost for all winter events is attributed to snow plowing of roads and streets on a 24/7 basis, clearing of parking lots and sidewalks, damage to trees and vegetation by freezing rain and ice, and then by wind as the ice-laden trees fall or branches snap. Injuries can be attributed to falls and cardiac events during shoveling, and deaths are frequently an issue of insufficient heat or inability to afford heating.

Thes winter type hazards are equally threatening across the county, and no one jurisdiction is more susceptible than another. All share vulnerability.

2.3 VULNERABILITY ASSESSMENT

While the committee developed a countywide prioritization that includes hazard consequences in the unincorporated areas of the county (townships and neighborhoods) as well as the including the municipalities in their conclusions, the municipalities considered only their individual jurisdictional perspective on each hazard. Therefore, county mitigation strategies were based on the vulnerabilities of the entire county as well as those associated with the unincorporated areas like townships and rural neighborhoods. The municipal strategies were based upon the municipality only.

Social Vulnerability Assessment

Trumbull County is susceptible to social losses and resiliency challenges. Identification of those who need extra help in the wake of disasters can be difficult in rural communities because of resistance to asking for help, strong desires for independence, and less obvious external signs of need. Many people simply do not want to ask for help, even if they need it badly. Those who endure residential instability or borderline homelessness, a lack of dependable transportation, or the need for extensive healthcare and treatment are often silent populations in Trumbull County. With an aging population common to most rural areas in the state, and underserved and disabled populations who would need extra help, Trumbull County social services and advocacy groups could be overwhelmed by a large-scale incident although people across the county willingly step up and help one another. Because the county has a larger population than many other counties, some social programs and public services are delivered by multiple agencies that serve the region. Mental health boards, disability boards, and community action commissions are typically multi-county organizations in smaller counties, but in Trumbull County, they are frequently single-county boards. In Trumbull County, much of the healthcare is provided in Warren, although other practitioners are located across the county. It is also relatively convenient for county residents to travel to Youngstown for care or assistance.

Threats, even when addressed individually, can place an extreme burden on local resources. Because incidents like tornadoes and blizzards, both common in Trumbull County, can be intense at times, the destruction can be significant. Damage can be widespread or concentrated in one area, or even sporadic across the county. The demands on first responders to rescue, extricate, neutralize, and rectify the consequences can be astounding. However, most threats do not come as a singular impact. Tornadoes are part of storm fronts that include heavy rain, hail, lightning, straight line wind, and multiple tornadoes. Power goes out, water plants are overworked, and communication signals are interrupted. Heavy rain can impact roadways at the same time tornado damage destroys homes in an area responders cannot reach.

As critical infrastructure fails under these impacts, other systems critical to effective response can fail. Telecommunications, warning systems, electricity, and other utilities can fail because of the severe conditions. Power outages can last long after the storms pass, creating difficult circumstances for those trying to respond and recover from the impact of weather events or other disasters. Supply chain logistics are interrupted when ingress and egress are impeded. Healthcare and other services are not accessible when roadways are blocked, debris prevents

passage, and electricity is interrupted. In conditions such as these, the overall impact to the communities is far greater than the sum of the individual parts, and the situation can reach catastrophic levels without additional fanfare, making response and recovery extremely challenging.

Catastrophic incident planning may address changes in procedures and protocols, and simplification of responder tactics to maintain a base level of life-saving service. Use of the mitigation planning information in the development of emergency operations planning can help pre-determine conditions that may result in significant, incident-necessitated modifications of protocols and standard operating procedures under extreme emergency conditions.

In these situations, the release of accurate, well-expressed, and complete information to the public is critical. When the responder departments are fully engaged in response to save lives and property, the dissemination of critical information can take a back seat. However, from the perspective of the public, this information can be all they have to use in helping themselves, their neighbors, and their families. While Trumbull County is large enough to have significant internal resources to address response, the comprehensive capacity to deliver accurate, actionable, and understandable public messages could be compromised. The capacity to implement countywide command and control over perhaps dozens of individual incidents or multiple responding departments, or the ability to envision the overall assessment for countywide coordination efforts, could be extremely difficult. With concentrated populations and potentially increased vulnerability in the more-populated south half of the county, it would be easy to expect attention and efforts of responders to focus on the crisis in front of them, and an overall, countywide assessment of circumstances and needs to be delayed.

After-action assessments may not reveal these issues because the extent of chaos can override the ability to synthesize the widespread and dire circumstances. The adage that says it is hard to plug the hole when the boat is sinking and occupants are all bailing water could apply to any county in a catastrophic, cascading incident. Trumbull County's vulnerability to this circumstance is great because of its relatively high population, location of the potential flooding that would be part of many weather-related disasters, and its number of different response organizations that would immediately mobilize to respond.

Although the culture of Ohio populations is one of significant self-reliance and self-sufficiency, Trumbull County may still not have sufficient resources during a high demand, widespread situation. If a large portion of the population is negatively affected by a widespread disaster, there will be a shortage of volunteers to staff the response, and organizations like Red Cross may set up shelters and services in centralized areas instead of in individual communities. The fact that Trumbull County municipalities have some resources, even though they may not be adequate, sets them up to be considered self-sufficient even when they are not. When the helpers are also victims, it reduces the amount of work and assistance they can give, and that fact is often not obvious to the ones sending in external aid. Service centers would most likely be established in Youngstown, requiring transportation for intake and services, something

residents may struggle to do under extreme circumstances. Some services may be provided as far away as Akron or Cleveland.

Trumbull County is likely to experience resource gaps in any large-scale disaster, just as any other Ohio county would experience. Even though Trumbull is a county with significant population, first responders are sometimes volunteers who have limited availability and equipment. Especially when an extremely high demand for personnel and equipment was present, the departments would likely struggle to meet countywide severe needs for help. Depending upon the time of day when a disaster strikes, many volunteers may not be available because they are at their fulltime jobs, perhaps outside Trumbull County. While many volunteer firefighters, EMTs and other responders work inside the county, their daytime obligation is to their employer. They sometimes wear emergency response hats at that full-time employer's location, and therefore cannot, even with special laws supporting volunteerism in Ohio, leave their jobs to respond. Special response resources and additional crews accessed through mutual aid may not be close by when needed, or may be tied up responding to other areas. Youngstown, Canton, Akron and Cleveland have higher and denser populations that would command attention before Trumbull County. Unless an incident is limited in impact to a few counties, they are unlikely to command a remarkable response from higher levels of government. They could easily find the county alone in serving its own catastrophic needs.

Stakeholders felt that improved software and digital systems could help them respond to re-entry and reoccupation faster, and be able to complete a multi-layered inspection process for people to return to their homes and businesses to open again. Currently, the Building Inspection Department holds all data for commercial and residentially inspected properties in a platform with mobile access; however, that platform is not available to all levels of inspectors and approving agencies or jurisdictions. If that system could be merged into one platform, to which all had access, the recovery could be significantly enhanced, and the recovery pace could be markedly hastened.

Trumbull County is filled with community-minded active individuals who often wear multiple hats, especially in the northern, less-populated townships. The church volunteer may also be the township trustee who also works for the county highway department. The district fire chief or mayor may also work out of town, and when home, fill various roles as school volunteer, church leader, and be the parent of several children with a spouse who also works out of the county. This places an extreme burden on volunteer capacity, first responder capacity, and overall ability to be self-sufficient in times of need.

The schools and churches of Trumbull County are a major support system and may be tasked with assisting county residents in many types of disasters. The church buildings range in size from very small to large, and would easily be used as shelters and community centers. Schools are some of the larger buildings, and they have restrooms, showers, and often generators to facilitate storm-ready operations and the ability to house people overnight. These churches and schools are located across the county, in every city, village and township. The unincorporated neighborhoods often have a school or a church, and they could very logically

serve that immediate area when transportation would be difficult, and travel might be nearly impossible. They often have the capacity to prepare meals, and to provide personnel to assist those in need. Most schools have multiple buildings and could accommodate many overnight residents or day-time visitors.

Photograph of Warren G. Harding High School, taken from the school website

The vulnerabilities in Trumbull County are nearly the same today as in past years. Although there have been changes in industry and manufacturing, land use, regulations that affect the individual, the basic threats have remained steady. The county is decreasing slightly in population, and although there are a few new businesses, those often use structures that housed a business that ceased to operate. The development trends and goals are not ones that will likely increase vulnerability significantly. New data centers potentially pose a problem with utility resources. However, creating affordable housing, increasing broadband access, identifying sustainable agricultural practices, improving infrastructure, filling transportation gaps, and improving regulations are actions that will lessen vulnerability and improve resiliency.

All this considered, Trumbull County is highly resilient. Their work ethic and self-sufficiency are significant, and they are generally highly participatory in meeting their own needs. They have a strong tendency to take care of their neighbors. Their community is resourceful and willing to help neighbors, as are populations in the municipalities. They have the ability and desire to make the most of the resources they have, and to provide the leadership and inspiration for their own recovery.

2.3.1 Underserved Populations and Social Vulnerability Considerations

According to Headwaters Economics, Trumbull County median value of housing in 2024 was $131,943 which is a decrease of $15,452 compared to 2023. When housing markets were sometimes doubling in value in 2019 and 2020 elsewhere in the United States, Trumbull County homeowners saw the value of their property rise less abruptly than in other metropolitan areas. The home ownership rate in Trumbull County is 69.7%, compared to an Ohio average of 68.0% and a national average of 64.8%. In the same dataset, 28.5% of the population rents their home, and 4.1% of the population lives in a mobile home. Both of those percentages are lower than the national average. Applying that information, it is reasonable to assume that more people own their home in Trumbull County than the national average. Homeowners tend

to take better care of their homes and have less disaster damage than landlords, so an extrapolation of that data could conclude that home damage might be slightly less in Trumbull County than in other areas of the nation or state.

The percentage of residents living below the poverty line is 12.6%, slightly higher than the national average of 8.7%. Families with children in poverty also exceeds the national average, rated at 9.0% in Trumbull County, but 6.2% nationally. Single mother families in poverty are also higher, comparing 5.9% locally to 3.7% nationally. That potential conclusion would assume that assistance programs in Trumbull County would need to be more robust than other areas to meet the needs of a higher percentage of poverty-stricken households who would need more help.

Approximately 6.9% of the county's residents have no health insurance, which is below the 8.6% national average. (Note that this number may change significantly in 2026 due to changes in the availability of health insurance.) This circumstance would likely mean hospitals would treat a higher number of non-paying patients, or would receive reduced payments for treatments. The same would apply to private practitioners who accept non-insured patients. With one hospital already closing due to financial difficulties, local officials could see this as a difficult situation.

Discussions included identification of services that assist persons with emotional, mental and addiction needs. While services are available, mental health coverage is less robust than physical health, and therefore there may be a shortage of services. That situation is not uncommon in Ohio. The Trumbull County Board of Mental Health and Recovery Services oversees and funds some mental health services in Trumbull County. They can identify providers, services, and facilities for county residents. There are crisis counseling and service providers, therapists for behavioral, mental, and emotional conditions, and addiction services. There are multiple support groups for various situations. Some services are provided within Trumbull County, but others are delivered online or at locations in Mahoning County.

Elderly populations tend to need more assistance after disasters, and statistics in general show that they recover more slowly and to a lower degree. They have a lower survivability rate than younger adults. Anecdotally, they need more help clearing snow, cleaning up debris, and repairing their homes. They are less likely to travel alone in inclement weather, and may have difficulty self-evacuating without assistance. Residents over 65 and living alone sits at 16.2% of the population, well above the national average of 11.6%. Of the total population, people over 65 years old make up 22% of Trumbull County. There are 4,986, or 2.5%, of the population who are over the age of 80. There are multiple agencies that help the elderly, a population very vulnerable to disaster injury and death. Axess Family Services provides primary care and social support. The Help Network of Northeast Ohio is an information and referral services for a tri-county area, accessed through 211. The Trumbull County Office of Elderly Affairs provides assistance and referrals. Some of the cities, including at least Hubbard and Warren, have senior citizen programs. Trumbull County provides transportation services, and a long list of private entities serve the elderly community. Trumbull County Veterans Service Commission provides

referrals and assistance through local organizations for veterans of the United States Armed Forces.

The Trumbull County Board of Developmental Disabilities provides assistance for children and adults with disabilities. These include early intervention, autism and sensory resources, community education and outreach, and service and support assistance. They provide a full scope of services that includes academic, vocational, social, physical, and emotional support. Trumbull County has 17.4% of its population that has a disability. Disabled individuals and families with a disabled member tend to need additional help in a disaster. They may need more medications and medical services, and they may have a very difficult time self-evacuating. While these families tend to be very resilient and capable, disaster conditions can pose challenges that are insurmountable without extra help.

2.3.2 Demographic Risk Assessment Tools

Recently created by the federal government, various tools exist online to assist is assessment of risks and vulnerabilities in the United States. Tools that were used for information include the National Risk Index and Neighborhoods at Risk developed by Headwaters Economics, among others.

Census Tract to Political Jurisdiction Comparison

Many online assessment tools utilize census tracts rather than political jurisdictions because statistics are collected by the US Census Bureau and categorized into census tracts. While census tracts sometimes include an entire township or municipality, most times they are not consistent with those boundaries. In Trumbull County, census areas appear to follow township lines. When a city, such as Warren, is part of two townships, the census areas change at the township's boundary.

Census tracts are used to identify characteristics of similarly populated areas. Each census area in Trumbull County has been assessed for the following general characteristics, as shown in the table below. There are only forty-eight census tracts in Trumbull County.

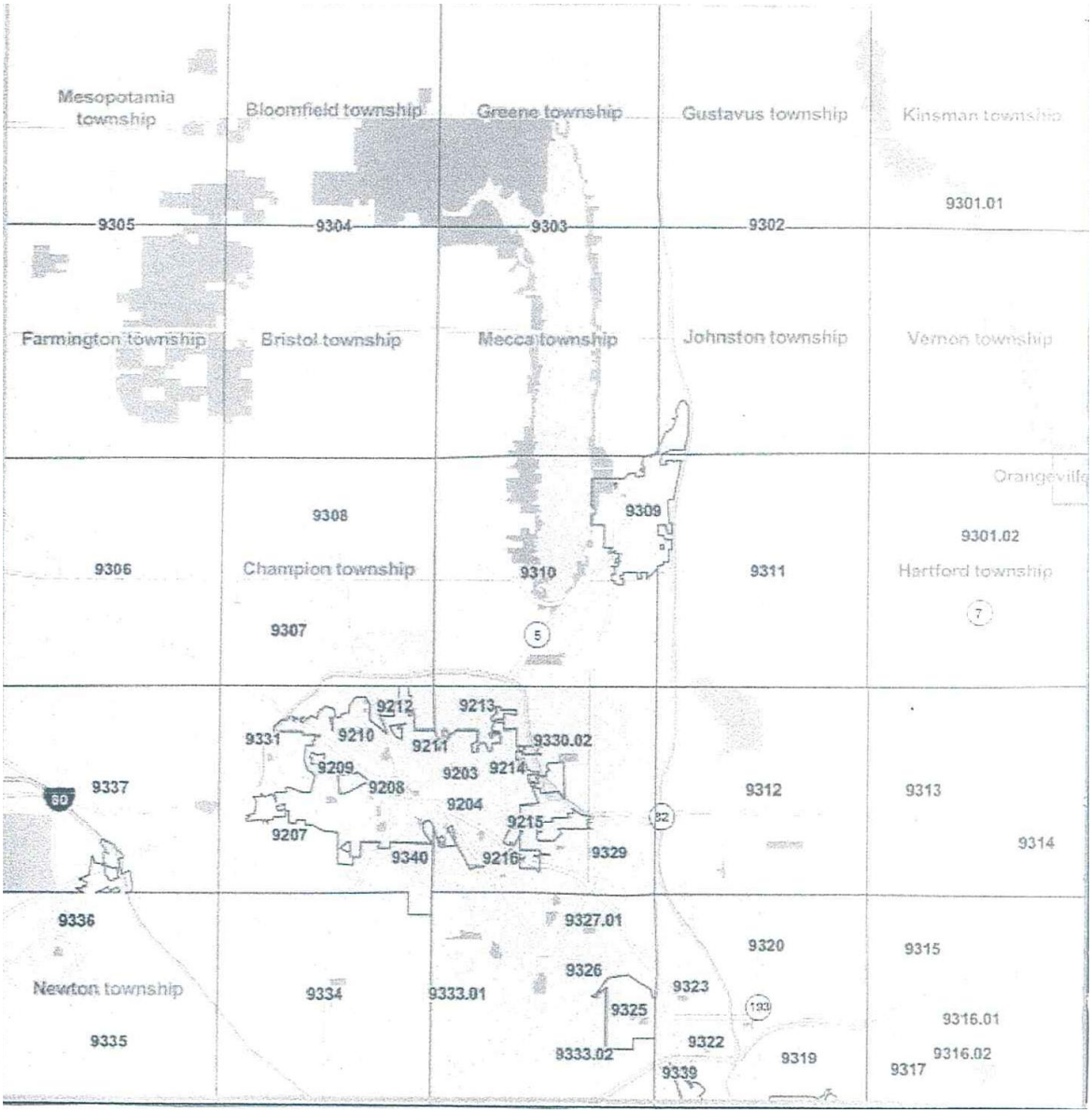
Census area designations are not used at a local level except for demographic segregation of characteristics for community planning purposes, and for voter issues in conducting and analyzing the outcomes of elections. Representation in state and federal houses of government is based upon census areas. Demographics established by the United States Census Bureau is usually expressed both by census area and political subdivision.

The National Risk Index vulnerability tables, referred to as Estimated Annual Loss, are grouped by census tract. Some of the demographic information is available in both census tract format and political subdivision format. For ease of use locally, when political subdivision categories are available, it is much easier to governance groups to use that information.

Table 2-50: Trumbull County Census Tract Descriptions

Census Tract Number	Included Political Jurisdictions
9203	Warren City, Howland Township
9204	Warren City, Howland Township
9207	Warren Township
9208	Warren City, Warren Township
9209	Warraen City, Warren Township
9210	Warren City, Warren Township
9211	Warren City, Warren Township
9212	Warren City, Warren Township
9213	Warren City, Howland Township
9214	Warren City, Howland Township
9215	Warren City, Howland Township
9216	Warren City, Howland Township
9301.01	Kinsman and Vernon Townships
9301.02	Hartford Township and Orangeville
9302	Gustavus Township and Johnston Township
9303	Green Township and Mecca Township
9304	Bloomfield Township and Bristol Township
9305	Mesopotamia Township and Farmington Township, Village of West Farmington
9306	Southington Township
9307	Southern part of Champion Township
9308	Northern part of Champion Township
9309	City of Cortland
9310	Bazetta Township
9311	Fowler Township
9312	Vienna Township
9313	Brookfield Township – Northwest half
9314	Brookfield Township – Southeast half
9315	Hubbard Township
9315.01	City of Hubard – north section
9315.02	City of Hubbard – south section
9317	Hubbard Township
9319	Liberty Township
9320	Liberty Township – north
9322	City of Girard, Liberty Township
9323	Liberty Township – west
9325	Village of McDonald
9326	City of Niles
9327.01	City of Niles
9329	Howland Township
9330.02	Howland Township
9333.01	Weathersfield Township
9333.02	Weathersfield Township
9334	Lordstown
9335	Newton Township
9336	Village of Newton Falls
9337	Braceville Township
9339	City of Girard
9340	Warren Township

Map 2-15: Trumbull County Census Area Map



National Risk Index

The National Risk Index (NRI) was released in 2021 and significantly modified in 2025. The data for Trumbull County can be accessed in a spreadsheet of all county data across the United States and its territories. Information was taken from the spreadsheet in very general terms. It speaks to overall vulnerability to eighteen hazards, and assesses the generalized risk for each county.

The NRI also gives estimated annual losses due to an incident from the affirmed hazards for a specific county. Those values are listed with the vulnerability for each hazard, and were

supplied to Trumbull County by the Ohio EMA. Those numbers fluctuate with property valuation changes, so may be considered a fluid estimation of potential losses.

This tool did not include avalanche, coastal flooding, tsunami, or volcanic activity in the risks for Trumbull County's census tracts. It did include cold wave, earthquake, hail, heat wave, hurricane, ice storm, inland flooding, landslide, lightning, strong wind, tornado, wildfire, and winter weather as applicable hazards. It listed drought as a relevant hazard, but there was no data or analysis of risk available.

The emergency management professionals qualified that hurricane is relevant to Trumbull County only in a very narrow situation. They argued that should the remnants of a hurricane reach Trumbull County, it has neither the magnitude nor the severity it has when classified as a hurricane or a tropical depression, and therefore becomes heavy rain, high winds, or thunderstorms when it reaches Ohio.

The census tracts in Trumbull County were assessed on the NRI as generally "relatively moderate" overall with reference to natural hazard vulnerability. This data is expressed in the national context, comparing the local community to the national averages. Additionally, compared to the rest of the country, Trumbull County's anticipated annual loss is relatively moderate, social vulnerability is rated at relatively high, and community resilience is rated as relatively high.

While this data gives a very broad picture of how Trumbull County compares to other counties, especially in a national context, there were disagreements with some of the overall conclusions. The NRI assessment of social vulnerability was seen as overstated and community resilience as understated. This is likely due to the generally decreasing population as compared to greater metropolitan areas and highly concentrated populated areas in the national perspective. The exodus of the auto industry and steel facilities in past decades, and the modest replacement of those with Fortune 500 corporations, but rather with smaller businesses, may have also skewed the rating. Some of the area business have their headquarters in Youngstown, which is Mahoning County despite being only a few miles away, and that also skews numbers. Since many services to the population are delivered with an office base in another city outside Trumbull County, the statistical perception is that those services are not available and do not exist. That is inaccurate.

Speaking in the context of the county and its management of disaster consequences, stakeholders felt that their localized perspectives were more accurate, and more in sync with local capabilities to respond and serve survivors. However, the exposure and expected annual loss numbers were evaluated to be accurate and relevant. A summary of countywide data is expressed in 05 NRI Exposure and Expected annual Loss Tables appendices. This Information is also discussed and/or referenced in various parts of the narratives associated with vulnerability.

Neighborhoods at Risk by Headwaters Economics

This tool provides census tract information about vulnerable people and neighborhoods, and provides projections regarding climate change. This will allow identification of underserved populations and persons with special or extra needs by census tract within the county. This includes elderly, elderly living alone, medically disabled of any age, single-parent families with children, people living in poverty, and an array of other circumstances, permanent or temporary. Significant and applicable findings that cause groups to be more vulnerable to disaster loss are shown in the following table. These may not include some who need help.

Table 2-51: Special Populations

Characteristic	Population	US Average
Families in Poverty	12.6%	8.7%
Families with Children in poverty	9.0%	6.2%
Single mother families in poverty	5.9%	3.7%
Income below SNAP threshold	n/a	n/a
Occupied Rental Homes	28.5%	35.0%
Occupied Mobile Homes	4.1%	5.1%
Minority Non-White Population	14.0%	19.0%
Lack English speaking fluency	0.4%	4.2%
Over 65 years old	22.0%	16.8%
Over 80 years old	2.5%	1.9%
Under 5 years old	5.3%	5.7%
No High School Diploma	10.0%	10.6%
Over 65 y/o living alone	16.2%	11.6%
Single female + children	7.6%	7.4%
No Car households	8.9%	8.3%
Persons with disabilities	17.4%	13.0%
Persons without health insurance	6.9%	8.6%
Population without a smartphone	17.06%	10.2%

Resilience Analysis and Planning Tool (RAPT)

This portal allows the user to obtain detailed resource information about the community, and to identify places and services that would be helpful after a disaster. Users can obtain specific information, like addresses, of the identified resources.

Table 2-52: RAPT Analysis of Population

Resource or Facility	Number
Fire Stations	44
Law Enforcement Stations	25
Mobile Home Parks	30
Public & Private School Buildings	25
Colleges & Universities & Vocational Schools	5
SNAP Authorized Retailers	>100
Hospitals (General)	1
Long Term Care Facilities	43
Pharmacies	>30
Wastewater Treatment Plants	7

This tool will allow emergency managers to instantly spot resources and identify the address of various important sites. The demographic data will enable decision-makers to determine the methods of warnings and notifications, shelters, and other special services for underserved populations.

Summary
These various pieces of data are mostly consistent from one tool to another, and most find their foundational information in the 2020 US Census. There was some discussion about the accuracy of the conclusions, mostly as it related to the actual vulnerability and resilience of the areas. While overall information has been listed in this section, specific community-based data will appear in each community's vulnerability statement because every community is slightly different. Overall, these tools provide a solid method for Trumbull County to identify likely locations of urgent need based upon demographic information, and can quickly identify underserved populations that need extra effort and critical resources rapidly when a serious incident occurs.

2.3.3 Comprehensive Social Vulnerability and Capability Assessment

Social vulnerability was rated as "relatively high" for Trumbull County. Stakeholders did not agree with this rating. To determine why the NRI rated the county as having high social vulnerability, several statistics stood out. The percent of households without a smartphone stands at 17.05%, which is higher than many other areas in Ohio. If smartphones are considered the primary way people receive weather warnings, this could contribute to higher damages. There was no discernable reason why this statistic is what it is, and in general, it was believed to be incorrect. Social and civic organization numbers were low, and the NRI indicates that over half of the county residents have no religious affiliation. This could be due to local organizations that are independent and not affiliated with national organizations, churches that are independent or nondenominational, and the proximity to Youngstown-based support systems that do not tabulate back to Trumbull County because Youngstown is considered part of Mahoning County.

Stakeholders felt that Trumbull County is a family-based, friendly community where neighbors care for neighbors. While there may not be as many organized collaborations, when the snow falls or the rains come, people step up to help one another.

The NIR rated the county's community resilience as "very high", and stakeholders agreed with that assessment.

Trumbull County, and the municipalities in the county, provide a wide array of social services. During and after any significant disaster event, local stakeholders believe that a full spectrum of needed assistance would be readily available. A community wide response to a catastrophic incident would require support of the lifelines that provide food, water, and shelter as well as household items and personal items. The health and medical lifeline would probably need to provide additional services, including both physical and behavioral health resources. As is true in any rural neighborhood, the repairs and replacement of structures and equipment after a

destructive event would be significant. The structures in these areas would likely be more vulnerable to fire, wind, and water damage, rendering the structures uninhabitable to a greater degree than other locations. However, the likelihood of residents repairing and replacing damaged structures is high.

Sheltering for residents when displaced from their homes is a significant vulnerability for all of Trumbull County, as a countywide problem. For those families that live in mobile homes, and due to a generalized shortage of adequate housing, it would be difficult to house great numbers of residents. There are not a lot of buildings that exist with the capacity to provide long-term residential services for large numbers of people. If schools were not in session, the public schools would be the logical and ready choice for sheltering. A need for this during the school year, when school was able to be in session, would add to the difficulties. Finding long-term housing solutions would be a challenge, and building new structures would likely take too much time. Without an array of temporary housing options, Trumbull County could easily struggle to maintain the shelter lifeline in a catastrophic event.

Historically Red Cross has provided sheltering capabilities using local churches and other public facilities. However, churches across the state may not have generators, rendering them unable to be used when power is compromised. The liability for facilities has increased, and provides a strong disincentive to congregations to open their doors to shelter people. Historically, churches have also fed the masses, and they have funded utility bills and rent deposits and provided other financial and household support for disaster victims. With many residents likely to not have a strong church affiliation, that reduces the connection between disaster survivors and church resources. Red Cross is suffering from a lack of volunteers, just like other organizations, and they are sometimes hard pressed to operate shelters in rural communities. This is especially relevant in counties like Trumbull that are served by chapters outside their local community. The void in capability includes not only a lack of facilities that are suitable, with shower, feeding and sleeping areas as well as generator power, but also includes the supplies and volunteers to operate shelters. There are schools that are well-equipped and likely to be available, but there are no supplies or trained volunteers to run them without Red Cross involvement. EMAs are not sufficiently funded for them to pick up the costs of a mass care operation, although they could likely muster up the expertise and ability to operate a shelter if need be.

Stakeholders discussed non-English speaking workers who are located many Ohio counties through various employment programs. Trumbull County is not highly populated by temporary or permanent foreign workers, or by migrant laborers who reside permanently in other states. Although communication with some truckers can be challenging because they come from a base far away from any Ohio county, the stakeholders did not feel language provides much of a barrier locally. Most individuals with English language difficulty would probably be travelers on the Ohio Turnpike.

Local schools and county Job and Family Services work with homeless and economically disadvantaged residents. All schools have a designated person who works with homeless

students and children. All have intervention specialists who work with students that have special needs or social vulnerability.

Group homes that house individuals with disabilities are not easily identified and located. There was no estimated number of these homes shared in meetings, nor was any number of clients shared. Recovery houses are sponsored and serviced by licensed organizations, and are more easily located, when necessary, through the local mental health board and the disabilities board. Relocation for the individuals is problematic due to individual needs as well as a lack of transportation. Despite providing robust senior services and assistance programs, elder abuse and neglect numbers are on the rise, and this is another situation that would not be improved or lessened in the wake of a disaster.

Stakeholders summarized populations at most risk as first, the elderly. All agencies that serve the elderly reported an increase in services provided and requests for even more services. While these agencies meet regularly and network daily, it is impossible to meet all needs and service requests. They see consistently increasing isolation and hardship in elderly individuals, couples, and families. While an informal network of residents looks out for each other in a community like this, and younger ones check in on older ones, keeping up is getting harder every day. In a disaster, this could be overwhelming. Even though Trumbull County is a very resilient area because neighbors help neighbors, the egress of younger generations is negatively impacting this at a rate slower than neighboring counties. Some homes and farmsteads are being purchased or rented by people moving in from other areas who are not as friendly and familiar as they used to be.

Children, especially those with special needs, fill the second group of special concerns because finding the services to help them is difficult and sometimes dependent upon agencies based outside the county. Healthcare stakeholders reported that the number of grandparents raising small children is notable, and this is increasing every day. Some families with children do not own their own home, and the rental numbers make those residents at risk for deteriorating and deficient housing, adding to their disadvantage. The health department provides vaccinations for all children and provides local clinics in many communities to help, but there are many other areas of need for the children in the county. Abuse and neglect statistics are on the rise in general, and this will only get worse in a disaster.

The economically impoverished have challenges in obtaining necessary life-sustaining services too. The population has no healthcare coverage and are expected to self-pay for care. These are often those who can least afford to do that, so they go without healthcare. Social services staff reported that more families are giving up health insurance to be able to pay for necessities. With many families falling under the SNAP benefit threshold level, that is easy to understand. Reduced benefits for behavioral healthcare impacts this as well, and prevents many people with emotional and mental health problems or addictions from requesting and obtaining care. None of those issues improve under the stress of disasters, and stakeholders anticipate this being a problem area should there be a large-scale incident.

In summary, stakeholders reported that social needs are stable in Trumbull County. While providers felt they are "keeping up," they said that federal funding for underserved and disadvantaged populations needs to keep increasing for them to continue adequate services. In the event of a disaster, these needs will all be amplified, and they doubt that current funding will begin to meet the actual needs.

Disaster sheltering is a concern should there be a widespread, regional need for overnight shelter operations. Red Cross is far less active in Trumbull County than in years past, and has very limited numbers of local volunteers. A regional disaster would be difficult for them to staff. Should a widespread incident like a power outage cause mass evacuations and sheltering, the county would have to rely upon churches and schools to provide neighborhood shelter locations, but the equipment for shelters would be a challenge without enough Red Cross resources. Collaboration between ARC and the EMA would be critical.

Fire and EMS service in Trumbull County is provided by robust set of paid, combination, and volunteer departments. While many areas are having difficulty staffing fire departments, the various stations in Trumbull County are adequately staffed with highly trained and experienced personnel. Most departments provide round-the-clock service from stations, and can respond quickly to handle emergencies.

Providing special rescue services is handled through cooperation and collaboration, utilizing mutual aid contracts when necessary to meet unusual needs of technical rescue. Key individuals do have specialized capabilities. While departments sometimes struggle to pay for technical training in hazardous materials, structural rescue, confined space and trench rescue, swift water rescue, and others, they make maximum use of the resources they have and achieve their goals creatively. The leadership of the municipalities, townships, and districts have thus far been able to keep up with the demand for specialized equipment and apparatus, but budgets are tight and there are concerns about future expenditures. There is concern about hazardous materials response, structural firefighting apparatus, and specialized equipment capabilities to maintain current, state of the art equipment. There is concern over water rescue capabilities with robust flood situations like they could experience on the rivers and larger streams, as well as on the large lakes and reservoirs. Woodland and field fires in the county can be quickly fed by high winds and large expanses of uninterrupted forest, and quickly grow out of control. Having adequate personnel and special equipment to handle wildland firefighting is a challenge. The bottom line is that there is not enough funding for adequate staff, equipment, and supplies. Large ticket items like field trucks, rescue boats, and hazmat trailers are difficult to come by for these departments.

EMS Services experience the same difficulties as fire service, and struggle to fund training and equipment just like their counterparts in fire departments. Because multiple EMS calls at one time could overwhelm county resources, they have aggressively developed and utilized mutual aid agreements with surrounding counties. They use the statewide mutual aid programs as well, and rely upon regional specialty resources for unique or high-tech needs. They use the

structural rescue teams from Cleveland, Akron, or Youngstown. Local departments work together well, and joint operations are generally smooth and effective.

There are basic commercial building regulations in Trumbull County consistent with those required by the State of Ohio. Residential codes have been adopted for residential development, and commercial code compliance is inspected and enforced by the local inspectors, supported as needed by the State Fire Marshal. All commercial property is required to meet State of Ohio building codes. The county has a comprehensive and progressive set of building codes to guide post-disaster clean up and rebuilding. Yet, it would be difficult to manage widespread entrance of many contractors after a significant event to limit the opportunity for low quality work and scam providers.

Located a drivable distance from several cities, Trumbull County has many resources for supplies in disasters. Locally there is access to several building supply distributors that could provide adequately for the county. There are multiple distribution centers within driving distance for major retailers in Akron, Youngstown, and Cleveland, and those are utilized to provide life-sustaining supplies and equipment when local resources are not enough. Various warehouses and distribution centers are also located in the central part of Ohio.

Medical resources for resilience come mostly from the Youngstown and Akron area, and perhaps from Cleveland. Medical helicopters are widely available. Ground transport services are in place to assist with patient movement. Multiple providers of durable medical equipment and medical supplies are available, and many in proximity to Trumbull County, making service during disasters feasible. The healthcare coalition would be a key resource in finding and utilizing medical resources.

The county has generators on hand for extended power outages, but some are perhaps worn enough that stressful use may cause them to fail. The number of generators is adequate so long as they operate without repairs or replacement so long as everything works when plugged in. Amateur radio volunteers can assist with communications when towers are down, or when power is out. Local fuel supplies are redundant, including diesel fuel and gasoline. The county keeps its own supply of fuel for emergencies. Replacement and repair of old generators is a concern, especially in the townships and smaller villages.

To summarize, Trumbull County can maintain Health and Medical and Communication Lifelines through existing resources and regular external providers. Energy Lifelines may be impeded by forces beyond the county's control if power generation fails or if distribution lines are destroyed in mass. While providing food and water would likely be handled by the county, having the staff to provide organized shelters to a large portion of county residents would significantly tax the county's ability to meet needs, but Red Cross is a potential resource for them to do this. Extensive demands on fire service and emergency medical services would be difficult for the county, even though they have a robust system in place already. They suffer from some lack of staffing, just like most other Ohio counties. Transportation Lifelines could be a challenge due to the size of the county, unless the schools were able to step up and fill the

void even though there is capability within the regional transit program. Therefore, Safety and Security, Transportation, and Food, Water and Shelter Lifelines may cause some difficulty in meeting all needs. An extensive hazardous materials incident would require responders to fully mobilize quickly, and to obtain assistance from other county departments. Trumbull County could call in outside resources very readily, making the Hazardous Materials Lifeline less difficult to maintain. All in all, Trumbull County is robust in their intent to take care of themselves, and despite slightly limited resources, they believe in their resiliency and self-sufficiency. This characteristic will serve them well in any significant disaster.

2.3.4 Trumbull County Vulnerability – Townships, Unincorporated Areas, Census Areas

The Trumbull County section includes all townships, census designated areas, and unincorporated communities. The areas inside incorporated municipalities are described under those named sections.

Trumbull County is very different in the north half than the southern half. The northern half is mostly unincorporated farm land and woodlands north of SR 305. The fifteen townships provide basic government services, and the county provides services as well. The roadways are a combination of state, county, and township roads. This half of the county is rich in natural resources. It is part of three different watersheds (Grand River, Mahoning, and Pymatuning) and is home to Mosquito Lake and its designated nature areas, the Pymatuning River and Shenango Wildlife area, and the Grand River Wildlife Area. Cortland is located mostly in Bazetta Township, and the Villages of West Farmington and Orangeville lay within this part of the county. Twenty-five percent of Trumbull County's residents live in these townships.

The southern nine townships include all other municipalities and 75% of the county's population. The change from natural wooded areas to more densely populated manufacturing and metropolitan landscape is abrupt. The five cities are home to many manufacturing, industrial, service and retail businesses. Warren and Niles make up the retail and service center for the entire county and beyond. The Ohio Turnpike brings heavy traffic, coming into the county near Hubbard on the eastern border, dipping southward through Girard into Mahoning County, and then coming north around Newton Falls. Many of the state highways from other areas head into Warren and Niles on their pathway to Youngstown or Akron.

Flooding is the greatest concern to this area. The Mahoning River Watershed is the major drainage area, and the river receives water from a very large area. It passes through all the municipalities except Hubbard and Yankee Lake. In southern Niles, Meander Creek, and Mosquito Creek dump into the river, bringing large amounts of drainage water through the area. While the entire area is not within the riverine flooding flood plain, the entire area is vulnerable to surface flooding and areal flooding. The rural areas that lack storm management infrastructure are highly vulnerable to areal flooding. Low-lying bridges, culverts, and sections of road are gravitationally positioned to hold water for an extended time.

Among the most frequently listed damages from flooding, stakeholders listed road and street flooding; lack of ingress and egress due to flooded roads, bridges, and culverts; residential

flooding of living spaces, basements, and driveways; loss of residential mechanical systems; loss of business assets and residential possessions; crop and livestock damages; and the inability to move stormwater by pumping systems or drainage systems. Howland Township mentioned areas in the township that need storm sewer improvements to avoid problems with school activities, access to homes, and operation of businesses. Athletic events are sometimes negatively impacted by flooding, and drainage problems worsen the duration and severity of the flooding.

Severe thunderstorms were their second-highest concern. They cited damages to their homes from heavy rain, flooding, hail, and lightning; debris management and the cost of disposal; hail damage, especially to vehicles and siding; and concerns about sheltering should homes be unlivable. With heavy rain, concerns were the same as flooding concerns.

A utility outage, especially if for more than a couple hours in duration, was seen as their third highest concern. They cited the loss of food supplies, difficult in caring for livestock, and industrial or school closures as problems caused when power is out. They were also concerned about people with medical equipment dependent upon an energy source, or all special populations that suffer during a lack of heat or power. Water outages would leave fire departments less able to fight fires, and communication systems provide a basic infrastructure that allows people to do business, communicate with one another, and receive timely warnings and notifications.

Dam failure ranked fourth because it brings together the concerns about flooding in the areas that are within inundation zones and the threats associated with power outages if distribution systems are inundated. This threat is highest in Bazetta and Howland Townships located south of Mosquito Dam, and in Liberty and Hubbard Townships where small dams could worsen a situation if they failed on top of the two larger dams. There are also dozens of smaller dams in the townships that if they were to fail could cause localized problems in a smaller magnitude to the high-hazard dams. The fact that many of the dams that are evaluated are considered in "poor" condition, this becomes a reasonable concern.

The major concerns with dam failure were lack of ingress and egress, inundation zone flooding, loss of utilities, and extensive damage and need for repairs to the dam itself. Stakeholders were concerned about injuries during the response and evacuation difficulties.

Hazardous materials spills and releases were seen as a threat. Stakeholders indicated that these incidents can cause extensive, long-term damage. They listed potential damages for their areas to include road closures and detours, natural resource contamination, and injuries or death of victims or responders. They felt these incidents place extreme stress on responders and hospitals who need more funding for equipment, training, and supplies.

The moderately-rated threats by the unincorporated township areas included tornado and windstorms, severe winter storms and blizzard, complex coordinated events, fire or wildfire, and disease outbreaks.

Tornado damages that brought concern included infrastructure and public works damages and repairs, residential and commercial property damages and repairs, maintenance of critical services, worker safety during the response, and sheltering capabilities and capacity if many homes were not livable. While tornadoes are not extremely common and are often on the lower intensity scale, these damages are all very likely to occur when a tornado strikes.

Winter storm damages that stakeholders dread include injury and death from cold-related incidents, road and school closures, loss of power and other utilities, public safety access to emergency locations, demand levels on road maintenance crews and equipment, and vehicle crashes and injuries. All these consequences are common and occur frequently.

A complex coordinated event, like a mass shooting or an attack on a school, would concern this group mostly for the physical and mental health consequences for survivors and responders. The interruption to daily lives and the duration of recovery are concerning, as is the local capability to respond to such a complicated and dangerous situation. The resulting fear, no matter what the outcome, concerns this group of stakeholders.

Fire and wildfire brought concerns for not only residential and commercial fires, but also field fires that can spread instantaneously if there is drought, dryness, or wind. Personnel, equipment, and training sufficiency were the largest concern, along with the need for specialty capabilities that might be necessary. There was concern for mutual aid resources that might not be able to fill gaps in capabilities.

A disease outbreak brought back visions of the recent pandemic, and stakeholders expressed concern about supply chains, medication availability, surge capacities, and conflicting caregiver/parental responsibilities as an incident plays out. They were concerned about the impact of widespread work and school absences, as well as the ability of special needs populations to recover.

The countywide group's least concerning threats included land subsidence and erosion, for which they listed sinkhole development, drainage system damages, water table contamination, loss of farmable acreage, and increased danger from abandoned mines as consequences. They list problems from invasive species as nuisance concerns, allergic reactions, pet susceptibility to bites and reactions, livestock and crop losses or increased production costs, and natural resource vulnerability as concerns. Drought was seen as having an impact on domestic water supply that would negatively impact worker safety, firefighting capabilities, and lawn and landscaping at homes. Industrially it would decrease worker safety and impede some types of production if water were not readily available. Earthquake concerns centered on structural and infrastructure damages that would be long-term replacement projects and very expensive. There were long-term housing concerns, and well as communication system impact worries. Extreme temperatures were seen as a decrease in productivity, in general, and a threat to worker safety. The increased cost of utilities was viewed as problematic, especially for those living in poverty and young families or elderly,

The following table describes the hazard ranking for the county and rural areas.

Table 2-53: Township/Unincorporated Area Hazard Rank

Rank	Hazard
1	Flood
2	Severe Thunderstorm
3	Utility Outage
4	Dam Failure
5	Hazardous Materials Incident
6	Tornado & Windstorm
7	Severe Winter Storms
8	Complex Coordinated Event
9	Fire
10	Disease Outbreak
11	Land Subsidence, Erosion
12	Invasive Species
13	Drought
14	Earthquake
15	Extreme Temperatures

2.3.5 Jurisdiction Vulnerability – Municipalities

Trumbull County has many common factors across the county, but each municipality considered its own unique vulnerabilities based upon the characteristics of the jurisdiction. The cities and villages are diverse, combine residential and business properties, and are each unique in their characteristics.

The following section describes how each community ranked each hazard, with "1" being the most disruptive and concerning. The symbol "n/a" means that hazard is not applicable to that community. It is shown to illustrate the variance between communities and how this plan addresses each municipality's specific and personalize characteristics.

Cortland

Cortland is the only city not located in the southern half of the county. It is, instead, located near the middle of the county just to the east of Mosquito Creek Lake. The stakeholders rated severe storms and thunderstorms, flooding, and tornado and wind at the top of their hazard ranking, in that order. They cited flooding of structures, such as homes and outbuildings, as well as utility outages and debris management as their top problems. Home damage often involves the loss of mechanical systems like furnaces and water heaters. The damages to public works and infrastructure, contributing to or causing the outages, are hard to repair and sometimes take a long time for restoration. They also said that flooding closes roads and limits access to property, as well as impeding first responder ingress for calls. Utility outages fit into this mix and often take considerable time for repairs. Winter storms, next in line, causes school

and business closures which are not only costly, but disruptive. It also necessitates management of the snow to open roads, driveways, and sidewalks.

This community that sits amid a natural resource and recreational area at Mosquito Lake State park is concerned about fire or wildfires that destroy trees, vegetation, and recreational facilities right along with their personal property. Due to the topography around the lake and the forested area, fires can be hard to reach. Fire suppression crews can have difficulty moving around the fireground to most effectively fight the fires, once one starts. They are concerned about having the right equipment to engage in water rescue and the special kinds of tactics that are used in a lake setting to fight wildfires. They are concerned about having the personnel, equipment, and apparatus to handle these calls. Hazardous materials response followed fire, and shared the same concerns. Drought came in next, and is related to the fire-facilitating characteristics of low amounts of rain and dry forestation and crops, facilitating a fire when a simple spark can ignite many, many acres.

Having schools in the area as well as tourist attractions and gathering spaces brought a complex coordinated event to mind. With a wide variety of people being in the area, they feel somewhat vulnerable to an active shooter or some form of widespread aggressive acts. Their worries include the injuries it would cause, the mental health aftermath, and the potential for fatalities.

Drought is a concern because of the effect on crops and natural landscape. Invasive species are a concern because of all the woodland and park area, and the railroad that follows the lake for a short distance, potentially introducing an invasive species to the area. Cleaning up and handling debris would be a challenge for them. Disease outbreak, after the pandemic a few years ago, is a concern that will always be there. The consequences and memory of disruption and illness are still raw in their minds. They are concerned about healthcare capacity to treat people, and the effect on first responders. Extreme temperatures are more of an inconvenience than a consequence, and most of their concern is for people with medical conditions, elderly and disabled who struggle through these incidents. Earthquake is a minimal concern, and mostly due to infrastructure like pipes in the ground and the dam at Mosquito Lake. They have little concern over the dam because the inundation would go south, not toward the city.

Table 2-54: Cortland Hazard Rank

Rank	Hazard
1	Severe Thunderstorms
2	Flood
3	Tornado & Windstorm
4	Utility Failure
5	Severe Winter Storms & Blizzard
6	Fire or Wildfire
7	Hazardous Materials Incident
8	Complex Coordinated Event
9	Drought

10	Invasive Species
11	Disease Outbreak
12	Earthquake
13	Extreme Temperatures
n/a	Dam Failure
n/a	Land Subsidence and Erosion

Cortland pictures as illustrated online – August 2021 on You Tube – Photographer unknown

Girard

Girard is most concerned about flooding, first from storms and heavy rain, but also from dam failure if the Upper Girard Lake Dam were to breach. Basement flooding and the loss of mechanical systems, as well as lack of access to property is common during flooding. Roads and bridges are damaged, public works systems are challenged and can fail, and there is not sufficient pumping capacity in the city to manage the storm water. Structural repair to buildings and infrastructure are complex and expensive. Dam failure, ranked fifth, but they are concerned about many of the same things, and add to that loss of the dam, loss of emergency services access, and injuries or deaths.

A complex coordinated event is very concerning to Girard stakeholders. They are, of course, concerned about injuries, deaths, and mental health consequences after a shooting-type incident. They are also worried about the operational interruptions, restoration of trust and comfort in the community, and the time it would take to feel safe again. They do not feel the

city has any elevated vulnerability, but these incidents happen everywhere now, and they do not feel they are less vulnerable than anywhere else.

Severe thunderstorms and tornadoes and windstorms rank high on Girard stakeholders' list of concerns. Heavy rain, flooding, tornado and wind damage to homes, and power outages are typical situations they experience. Overall management of storm water is difficult to manage, and expensive to change. Ambiguities in the flow of storm water, and the drainage patterns before and after development are sometimes problematic, and more information would help the city more effectively deal with flooding and storm water. Damage to homes, including roof and siding damage to the extent of destruction is an outcome of these incidents. Lightning causes fires, roads and streets are closed due to debris and flooding, and trees are destroyed. It is difficult for first responders to work safely amid the aftermath of these strong storms, and it takes time to restore utilities and services. Living without utilities is difficult, especially for those who have special needs, medical equipment, and small children who are less able to live without utilities. Snow storms are generally like the other storms, but the greatest consequences are loss of utilities and extremely cold conditions. None of these are pleasant, but are difficult for Girard to manage.

There is some concern about hazardous material incidents, fire, and wildfire. The stakeholders spoke about special kinds of rescue needs, personnel needs, and how expensive apparatus is to purchase. They work well with other communities, but it seems as though when one community is hit hard, so are other communities. Having adequate personnel, apparatus, and supplies when they are needed, along with the special skills involved in technical rescue, is hard to do.

Disease outbreak brought up visions of the pandemic several years ago, and the disruptions to staffing, supply chains, and institutions. They worry about the ability for healthcare to manage the necessary resources, and for people to be able to work and pay their bills. They get concerned about things like extreme temperatures, drought, and earthquake not as high magnitude incidents, but as disruptions and additional cost to people and the city for a long time to come. While they do not have, in their opinion, a high potential loss from these kinds of hazards, they also do not have the personnel to assess the risk, plan for preparedness, and command a response should something happen.

Picture of Downtown Girard – Online phot with no attribution

Table 2-55: Girard Hazard Rank

Rank	Hazard
1	Flood
2	Complex Coordinated Event
3	Tornado & Windstorm
4	Severe Thunderstorms
5	Dam Failure
6	Utility Failure
7	Severe Winter Storms & Blizzard
8	Hazardous Materials Incident
9	Land Subsidence and Erosion
10	Fire or Wildfire
11	Disease Outbreak
12	Earthquake
13	Drought
14	Invasive Species
15	Extreme Temperatures

Hubbard

The city sits on the far southeast corner of the county, near Youngstown but still in Trumbull County. The State of Pennsylvania sits to its east. Like many of the municipalities, the top concern is flooding as they are part of the potentially swollen Mahoning River watershed. There are multiple ditches and streams that flow from the city to the river, but Mud Run flows right through the middle of the city. It can overflow, especially when rainfall is heavy or extended. Ice melt can worsen it. Flooding covers streets, enters basements and living spaces and damages mechanical systems. The debris cleanup is expensive for the city. This threat can develop quickly and suddenly become life-threatening. For this and other storm concerns, the city feels additional warning devices are needed to have adequate neighborhood and area penetration of sirens and other warnings.

Tylee Park in downtown Hubbard – online photo without attribution

Utility outages are high on the list of hazards for Hubbard too. When power is out, people with special needs, medical issues, or elderly have difficulty. Sheltering and providing space for comfort and wellbeing is difficult because agencies that do that work are no longer as active as they used to be. Transportation to shelters, volunteers to operate shelters, and funds to pay for cleanup and supplies are all problematic. There are not enough generators to serve the needs, and many of the churches that would host these shelters are not generator powered. Some of the generators in the city are old and need to be updated, but that is extremely expensive. Power outages, if lasting for a long time, provide extreme difficulty for Hubbard.

The storms – thunderstorms, tornadoes, windstorms, and winter storms – ranked next. They are expensive when it comes to road maintenance and property maintenance. Debris cleanup, snow plowing, road marking and detouring, and taking care of parking lots and sidewalks requires, sometimes, more staff and time than the city has available. Tree damage, damage to recreational areas and parks, and damage to city property is expensive and sometimes requires contracted assistance. This is expensive and difficult. Again, the lack of warning siren penetration is problematic as the ensure residents are aware of threatening severe storms.

Hazardous materials incidents, complex coordinated events (such as a mass shooting) and fire are similar concerns, ranking next, due to the resources they require. While Hubbard has fire and police protection, the level of personnel and equipment needed to provide specialty services like these incidents require is expensive and sometimes the personnel to work those jobs are in high demand. It is hard to maintain rosters. Hubbard worries about staffing, equipment, apparatus, and niche-level expertise to manage situations that do not happen frequently but require a robust, rapid response when they do.

Disease outbreak brings memories of the 2019 pandemic and short supplies, sick personnel and shortages in staff, supply chain problems, and healthcare demands. They hope a disease

outbreak can be caught and stopped before it reaches the levels it did in that incident, but there is no assurance. This is expensive, disruptive, and painful to experience.

The low-level concerns in Hubbard include land subsidence and erosion, mostly an outcome of flooding and rapid water drainage; earthquake that is not likely but would take out any infrastructure above or below the ground, and be incredibly expensive to replace; extreme temperatures and drought that bring personal suffering and dis comfort as well as unhealthy circumstances; and invasive species that cause loss of trees, vegetation, and possible allergic reactions. This also reduces the beauty of some of Hubbard's prettiest locations where landscaping and flowers provide enjoyment for residents.

Hubbard is very similar to the other cities in Trumbull County. They have a decent set of resources and manage well daily to keep their city looking and working extremely well. However, when severe storms leave behind an array of damages and destruction, they are hard pressed to have enough – enough money, enough equipment, and enough personnel to meet the needs in the time frame they prefer. They want to respond quickly, resolve problems rapidly, and return the community to normalcy. That requires help.

Table 2-56 Hubbard Hazard Rank

Rank	Hazard
1	Flood
2	Utility Failure
3	Tornado & Windstorm
4	Severe Thunderstorms
5	Severe Winter Storms & Blizzard
6	Hazardous Materials Incident
7	Complex Coordinated Event
8	Disease Outbreak
9	Land Subsidence and Erosion
10	Earthquake
11	Fire or Wildfire
12	Extreme Temperatures
13	Drought
14	Invasive Species
n/a	Dam Failure

Lordstown

Lordstown is a very geographically large village and makes up all of what used to be Lordstown Township. It is not densely populated, but covers the entire township area.

Photo of Lordstown Incorporation Sign

Stakeholders were most concerned about utility outages, flooding, and severe storms of all kinds. Life is good in Lordstown and residents have access to many amenities and services, but when power is out, people suffer. Those with medical needs or equipment, the very young and the very old, and people with disabilities have a harder than normal time of carrying on with daily activities. Sheltering, or providing comfort stations, would be difficult without the presence of many large buildings. Churches would be called upon to help, and many of those do not have generators. If a utility outage were to involve power, water, and communication systems, the outage could seem very long in Lordstown. If it took place during extremely hot or cold weather, it could be deadly for some. The village is concerned about having the resources to manage this and help its residents be safe.

Flooding is also a concern. This village is part of the Mahoning River watershed, and several creeks and streams run through the area on the way to the river. The waterways can leave their banks due to so much water, and homes can flood. Basements, driveways, yards, and living spaces can flood. Losses include water heaters, furnaces, and other mechanical systems, along with personal possessions and housewares. This is hard to clean up, the debris is extensive, and the costs are high.

Severe storms are difficult, whether they are thunderstorms, snow storms, wind, or tornadoes. All are very damaging to homes, including roof, siding, and window damage. Trees fall on homes and vehicles and are very expensive to manage. The village would be hard pressed to have enough equipment and personnel to clean the area up quickly since it is so large. This would require additional resources, and possibly more equipment and debris collection and disposal sites.

Fire, in the form of structural fires or field fires; hazardous materials spills and releases; and complex coordinated events like mass shootings all require plentiful and highly trained safety forces. While Lordstown has their own departments, a situation like this requires a massive response. They could lead the response, but would need assistance in investigations, crowd control, traffic control, and firefighting or EMS services. They simply do not have enough of anything to manage an incident like this on their own. They also worry about the aftermath and mental health concerns, or injuries to their own personnel or residents. These are situations that can be beyond their capacity if they are large, but can be well within their capacity when scaled to the community's size and abilities.

They felt that disease outbreak, drought, extreme temperatures, earthquake, and land subsidence or erosion were low-level threats so long as an incident were not of huge magnitude and scope. Should something serious occur in a regional scope, they would perhaps need assistance. Otherwise, they felt these were manageable threats on a regular basis.

Lordstown, in general, is very capable of handling the day-to-day incidents that take place. Additional generators, funding to support public safety services, and assistance with debris management and storm cleanup are the primary shortages they recognize.

Table 2-57: Lordstown Hazard Rank

Rank	Hazard
1	Utility Failure
2	Flood
3	Severe Thunderstorms
4	Severe Winter Storms & Blizzard
5	Tornado & Windstorm
6	Fire or Wildfire
7	Hazardous Materials Incident
8	Complex Coordinated Event
9	Disease Outbreak
10	Drought
11	Extreme Temperatures
12	Earthquake
13	Land Subsidence and Erosion
n/a	Dam Failure
n/a	Invasive Species

McDonald

Hazards at the top of McDonald's list include tornado and wind, flooding, and severe thunderstorms. These are all somewhat common in this village that sits on the Mahoning River just south of Niles and northwest of Girard. These top-listed threats bring flooding to some low-lying neighborhoods and streets, and can cause extensive debris, building damage, and infrastructure damage. If utility outages accompany them, sump pumps and other devices do not work, and floodwaters cannot be diverted. The village is hard pressed to remove and

dispose of the debris caused by both flooding and wind damage. Basement flooding, street flooding, and loss of access to certain areas is problematic, and interferes with daily business. Schools can close when streets are flooded, debris closes areas off, or weather is threatening.

A complex coordinated event is also concerning. The small village has police and fire personnel, and provides robust services for the community. There is nothing exceptional that puts the community at risk for a shooting or mass casualty event, but there is also nothing that prevents one. They are concerned about the injuries and potential deaths, but more concerned about the aftermath and mental health problems for all involved. This is a widespread concern for which they have plans, but they hope never actually happens.

Dam failure from any one of the five high-hazard dams could impact McDonald. Lying on the Mahoning, they are placed inside the inundation zone for any of the five dams. While it is not likely the dams would fail structurally, higher rain amounts that are predicted under climate modification models, and that are historically supported in recent years, could cause an overtopping incident. No matter which dam is involved, the water will flow to the Mahoning River and McDonald is built inside a large bend of the river. Flooding could be exacerbated since the area would already be under heavy rain and flooding from that. Dam failure would be a cascading event, rare in likelihood, but possibly devastating in impact.

McDonald works hard to provide all the work a municipality must do to provide for its residents. They have a fire department, police department, and streets and maintenance department. The snow removal from blizzards and winter storms is daily work for them. An exceptionally heavy amount of snow, a blizzard that required round-the-clock plowing, or a sotrm that damaged the village's facilities would bring a new level of challenge. Maintaining the array of equipment, from fire trucks and hazmat equipment to snow plows and back hoes, the village attempts to fulfill its commitments. As the cost of fire apparatus, hazmat equipment, protective gear for workers, and vehicles rises quickly, it is hard for villages to replace worn and out-of-date equipment. Personnel rosters must be maintained, and the training and education of workers is expensive. They are concerned about being able to do all of this. Field fires fed by wind and structure fires are concerning, as well as hazardous materials spills that contaminate the waterways are of special concern.

Photographs of McDonald Maintenance Building and Equipment taken from the village website

McDonald stakeholders felt that a disease outbreak would be very disruptive, and earthquake would be exceptionally damaging to infrastructure. Neither is very likely, but in the rare instance it happens, would be expensive, long-lasting, and difficult to repair. They recall the unanticipated consequences of the pandemic in 2020, and talk about supply chain problems, illness of workers and their families, and the extreme demands on healthcare providers. School and business closures were extremely expensive and harmful, and they hope it never happens.

They did not feel that drought, extreme temperatures, invasive species, or land subsidence and erosion were threats for the village.

Table 2-58: McDonald Hazard Rank

Rank	Hazard
1	Tornado & Windstorm
2	Flood
3	Severe Thunderstorms
4	Complex Coordinated Event
5	Dam Failure
6	Severe Winter Storms & Blizzard
7	Utility Failure
8	Hazardous Materials Incident
9	Fire or Wildfire
10	Disease Outbreak
11	Earthquake
n/a	Drought
n/a	Extreme Temperatures
n/a	Invasive Species
n/a	Land Subsidence and Erosion

Newton Falls

Newton Falls stakeholders were much like those from other cities in that flooding, severe storms, blizzards, tornadoes, dam failure, and utility outages concern them the most of all threats to their community. The infrastructure damage to roads, bridges, dams, and streets from heavy precipitation and resultant flooding was their top worry. These are quick to happen, hard to prevent, and expensive to repair once they happen.

With several state highways and key local roads coming together in Newton Falls, and the West Branch of the Mahoning River and its tributaries running through the city, there is plenty of opportunity for flooding to impede local travel. Heavy rains, extended days of rain, and/or snow melt can contribute to the river and streams overflowing their banks into the streets and properties in the city. When this comes along with high winds, tornadoes or heavy snow, debris and snow removal becomes critical. Infrastructure, such as stormwater systems and water treatment and distribution systems, can be bogged down in the flooding. These systems are difficult and expensive to repair. Bridges and culverts can be flooded and their foundations are damaged, again, causing expensive repairs. Private property that floods causes homeowners to lose the use of their property, and they must pay for replacement of furnaces, water heaters and other mechanical systems that were damaged. When living spaces flood, they lose more household possessions.

Severe storms and tornadoes or wind damage home roofs, siding, and sometimes the utility connections that serve the house. Commercial damage can be the same, including destruction of inventory or equipment in areas that flood. Trees fall on houses and businesses, ruining roofs and contents, or worse yet, buildings. Cleaning up the debris is expensive and time consuming for residents and business owners. The interruption of business, school, and personal activities is costly.

Winter storms do not typically damage homes, but they cause power outages, especially when ice is part of the storm. These storms cause constant shoveling and managing snow, a costly activity for jurisdictions. Medical emergencies are common when shoveling, and sometimes people are seriously hurt. School closures, business closures, and other interruptions cause not only inconvenience, but sometimes cost associated with a rescheduled or completely cancelled event.

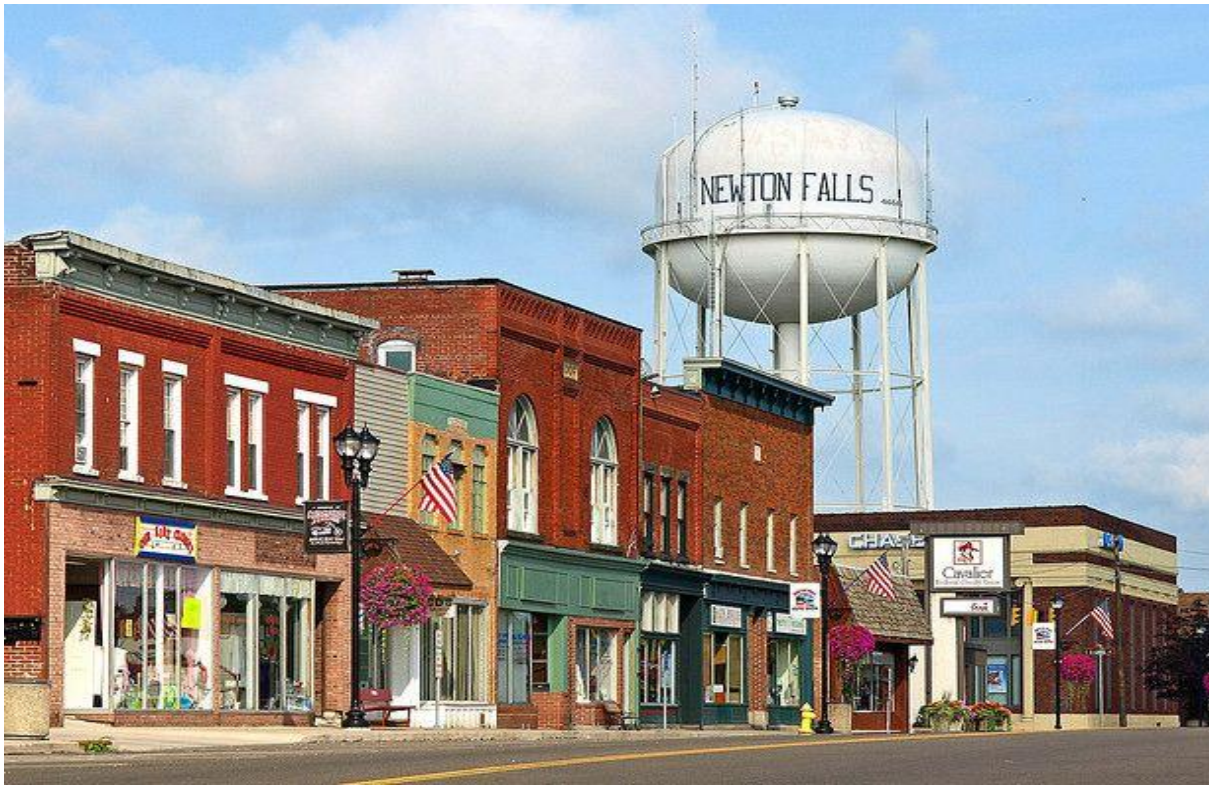
Utility failures are a higher concern as well. With elderly, children, and people with medical conditions, a lack of electricity becomes problematic. There are not enough generators to supply people with power, and this is concerning. Critical systems such as water treatment and distribution, and communication systems need electricity to operate in many cases. Without power, many community services and activities come to a halt. This concerns Newton Falls because they don't have enough generators or sheltering capacity to manage the entire city.

Newton Falls, home to their local school system, is concerned about school shootings and other incidents of similar nature. While there is no reason to believe the community is exceptionally vulnerable to this, every community is somewhat vulnerable. Should this kind of incident

occur, the mental anguish, the injuries and possible deaths, and the aftermath would be very difficult to deal with. They would need outside resources to help, and those resources would need to help for a long time. This causes concern, and they rated this as a mid-level threat.

Hazardous materials spills and fires is a mid-level concern. With a robust local department, Newton Falls mostly needs to keep up with personnel, equipment and apparatus needs and demands. As the cost of these items raises to levels beyond imagination, there is concern about being able to keep up, just like in many other communities. Special types of rescue funding are very difficult, but hazmat teams, structural rescue, swift water rescue, and others are critical for the local department to be able to protect its residents.

Low level threats include land subsidence and erosion that is caused by flooding and rapid drainage, and takes a toll on property, homes, and recreational areas. Extreme temperatures strain utility providers when it becomes extremely hot or extremely cold, leading to outages and fuel supply shortages. Memories of the pandemic and the supply chain problems, workforce shortages and absences, school closings and drain on the healthcare system cause Newton Falls stakeholders to be concerned about a disease outbreak. Drought, earthquake, and invasive species are not high concerns at all, but could cause the loss of crops, livestock, landscaping, recreational areas, and other assets. If temperatures rise in general, the list of insects and plant diseases could change to incorporate those that thrive in hotter climates, making a significant change for this northern Ohio community.



Downtown Newton Falls Photograph found online and attributed to booking.com

Newton Falls is like the other cities in how they ranked potential threats. While the ones that reached the top are the most frequent, mostly, they are also the ones that leave behind moderate to serious damages. The lowest-rated threats are infrequent or have not ever happen, but might be devastating if they were to occur.

Table 2-59: Newton Falls Hazard Rank

Rank	Hazard
1	Flood
2	Tornado & Windstorm
3	Severe Thunderstorms
4	Utility Failure
5	Dam Failure
6	Severe Winter Storms & Blizzard
7	Complex Coordinated Event
8	Hazardous Materials Incident
9	Fire or Wildfire
10	Land Subsidence and Erosion
11	Extreme Temperatures
12	Disease Outbreak
13	Drought
14	Earthquake
15	Invasive Species

Niles

Niles lies to the southeast of Warren, and shares some of the central commercial districts of Trumbull County. The northwest quadrant of the city has large shopping areas, hotels, and other commercial properties as State Route 82 winds its way around the two cities. State Route 11 tracks along the east side of the city and the Ohio Turnpike, while not inside the city, is to the south. Access to Niles is easy and quick.

Niles rated the major storms – thunderstorms, tornadoes, blizzards, and heavy rain that causes flooding as their major concerns. Like the City of Warren, there are many services and places of employment in the city. The daily population grows because of workforce presence. Outside the work day, they are the second largest area in the county. All of these would be affected by severe storm events, flooding, and wind.

Severe storms of all kinds cause extensive street and road clearing and maintenance. Whether it is debris from wind and tornado, or snow from blizzards, road crews must clear the many roads that cross Niles. Flooding is the first concern due to the amount of floodplain along the Mahoning River and Mosquito Creek. Mosquito Creek flows north to south through most of the city, the area that lies north of the Mahoning River. Residential and commercial zones lie close to floodplain areas, and streets and properties are likely to flood. Storm sewers and stormwater management systems would be challenged to manage heavy rains.

Mosquito Creek is a large waterway, and should a catastrophic dam failure occur at Mosquito Creek Dam in Bazetta Township to the north, the city lies within the inundation zone. The creek flows through multiple subdivisions and residential areas. Since a dam failure would most likely be overtopping due to an extreme amount of rainfall, the area would already have some flooding along the creek. The dam issue would make it worse.

City of Niles snow plow, as displayed on their Facebook page on January 23, 2026

Power outages are devastating in Niles if they last for an extended period. Losses are both personal and business related, considering the residents who rely upon medical equipment or communication devices, or the businesses that must shut down production lines when the power fails. Outages close service and retail establishments, and place heavy demands on generator power that is always insufficient for the needs at the time.

Table 2-60: Niles Hazard Rank

Rank	Hazard
1	Flood
2	Dam Failure
3	Severe Thunderstorms
4	Utility Failure
5	Severe Winter Storms & Blizzard
6	Tornado & Windstorm
7	Complex Coordinated Event
8	Disease Outbreak
9	Fire or Wildfire
10	Hazardous Materials Incident
11	Land Subsidence and Erosion
12	Drought
13	Earthquake
14	Extreme Temperatures
15	Invasive Species

Niles is concerned about a shooting or other mass casualty event. Their schools, events in the city, their government offices and other facilities could be victim to something like this, and they worry about the aftermath of such an event. Death and injury are at the top of the list, but the mental health recovery of their community is also a concern. Having the resources to deal with something like this is not common for a community the size of Niles, and they would have to rely upon some outside resources to assist. Considering that an incident like this would endure for a long time, they are worried that those outside critical resources could not be maintained for long enough to see recovery. While they do everything they can to identify, intercept, and dismantle any potential perpetrators, this kind of incident is increasing in frequency and severity, and affecting smaller communities all the time.

Niles has a robust fire department with hazardous materials capabilities, as well as fire suppression and management abilities. They are, however, concerned about maintaining those capabilities as well as increasing them to meet new demands and needs. With the cost of fire apparatus skyrocketing, and personnel becoming less available as retirements occur, the city is looking for ways to maintain their readiness. They are concerned about residential fires, evacuation and sheltering due to chemical spills, and injuries to emergency personnel. Special rescue capabilities are expensive to maintain, and firefighter continuing education and expanded tactical abilities challenge budgets and resource availabilities.

There is some concern about erosion, mostly after flooding or heavy rains. There is some concern about sinkhole development and damage to infrastructure when soils shift of get washed away. Invasive species could be worsened by a changing climate that ushers in new bugs and plant diseases. The pandemic of a few years ago has left visions of supply chain interruption, medication shortages, hospital surge, short stock in stores, and workforce shortages, as well as school and business closures due to illness. There is concern that drought would cause residential water supply problems, and the water supply in general could not be considered dependable. Farming, firefighting, and industrial processes could be impeded. Most concern about earthquake centered around damage to infrastructure and utilities both above and below ground.

Niles is a resilient, capable community, but an extreme situation could challenge its resources. Dependence upon one another between communities is exemplified by mutual aid agreements, but when a serious disaster strikes a region, or is statewide, those resources are overcome by their own needs. When the responders become the victims, it presents challenges any community would be pushed to address. Niles is not as concerned with the typical as the outlier incidents that do not follow norms.

Orangeville

This very small village is located on the Pymatuning Creek as it flows into Pennsylvania. There are two clusters of homes, one on each side of the creek along State Route 609.

The biggest concerns in Orangeville are severe storms and flooding. Clearing the village streets of snow, collecting, and disposing of large amounts of debris from storms, and cleaning up what

Mother Nature dumped in their village would be challenging for the small municipality. Repairing streets after flooding would be a disaster. Extreme temperatures that kept people from using the local venue and businesses would be harmful to their economy. The village lacks the budget to do many of these things, and depends upon its residents to help with those tasks.

Utility outages could make the village feel very isolated, and may take a long time to be restored. Out in the open as they are, the wind could whip trees and power poles, taking both down and doing damage to homes and other structures. Sheltering would be difficult, and providing generators and temporary food and housing would be hard.

As the last village in Ohio on the highway, no other municipality is close to them. They are closer to towns in PA that in Trumbull County.

Table 2-61: Orangeville Hazard Rank

Rank	Hazard
1	Fire or Wildfire
2	Severe Thunderstorms
3	Severe Winter Storms & Blizzard
4	Utility Failure
5	Tornado & Windstorm
6	Extreme Temperatures
n/a	Complex Coordinated Event
n/a	Dam Failure
n/a	Disease Outbreak
n/a	Drought
n/a	Earthquake
n/a	Flood
n/a	Hazardous Materials Incident
n/a	Invasive Species
n/a	Land Subsidence and Erosion

Warren

Warren is the county seat of Trumbull County, and the largest city in the county. Most government offices are in Warren, and it central to the commercial hub of the county, shared with Niles to its southeast. Many of the state highways flow into and out of Warren, providing access to supply chains, services for residents, and retail business access. Major healthcare providers are located here, and residents are accustomed to coming to Warren for a variety of goods and services. When Warren is incapacitated by disasters, the entire county is affected.

Photograph of Warren, OH from the Simple English Wikipedia online

Warren rated flooding as their top threat, citing home flooding in basements with loss of mechanical systems and structural damage as the dreaded consequences. Loss of access to property, loss of possessions due to floodwater, and the inability to live in a home without heat or water become serious impediments to daily operations. They also cited problems with sanitation and stormwater management due to overflowed sewers, pump problems, and lack of anywhere to send the floodwater when rains are extremely heavy or prolonged. Dam failure was rated #3 due to the potential for Mahoning River flooding should either the Mosquito Creek Lake Dam or the Mineral Ridge dam overtop or fail under extreme conditions, as the dam floodwaters would move up the Mahoning River and into areas of the city. Because this failure would most likely be caused by extreme amounts of rain, this backflow up the river would be in addition to already flooded streets and property. While this is truly a worse-case scenario, stakeholders chose to consider this seriously due to increasing rain amount statistics.

Severe storms, both thunderstorms and tornadoes, as well as winter storms, ranked #2, #4, and #7 respectively. Among top concerns, fed by recent failure of some major systems elsewhere, is the capability to warn and notify residents of imminent storms. Being more dependent today on technology for this critical communication makes perfect function of warning systems more important, and they are not sure systems overall are 100% reliable. This is not reflective of Trumbull County systems, but all systems everywhere, in general. All these storms also create debris and require the city to clear streets and properties in full force. They leave water standing, snow filling streets and parking lots, and debris from trees and vegetation everywhere. This all requires hard manual labor to collect and dispose of it properly. That

places an extreme burden on the city work crews. It also renders buildings, both city and county, unavailable for a time, and makes requesting and receiving services difficult for residents. Utility failure is included in those threats as #5 because the wind, ice, and snow associated with those events also takes down wires, poles, and transformers or substations. Power outages put those with medical needs, equipment needs, communication or technology demands, and heating or air conditioning requirements out of service. Extended power outages add significantly to the demands placed upon city departments to compensate and provide backup services for residents. Sheltering is a big concern, both in finding adequate space but also in having it available when and where it is necessary.

Because the city provides both fire service and hazardous materials response through Warren Fire Department, they are concerned about fires and chemical spills and releases. Having adequate personnel, supplies, and apparatus to manage these situations is sometimes difficult and always expensive. The proper training and education of those workers is also expensive. At a time when, in general, interest in filling those jobs seems to be waning, the city considers new means to maintain services through recruitment, retention, training, and compensation. A fire in a section of the city where buildings are close or connected, where fire walls have breaches or do not exist, or where chemicals are stored could be devastating. Occupied structural fires are always difficult and require many resources. When fires are fed by winds, common in northern Ohio, they grow even faster.

A complex coordinated event ranked #6. While Warren is not specifically concerned about any reason for an attack on their schools or public departments, or any other entity in the city, in general they feel the city is big enough to be very vulnerable to this kind of incident. They worry about fatalities and injuries, but also about the mental health of responders, and the recovery of the community once this happens.

They included drought because their water supply is dependent upon having adequate precipitation, and their food supply is as well. The city's homes and businesses will not function without adequate water, nor will the services that are provided by others operate properly. A disease outbreak can cause mayhem like it did in 2020 when the pandemic hit, affecting supply chains, workforce availability, and individual health. No matter how well a disease outbreak is managed, some people will die. Great demands will be placed on an already-stressed healthcare system, and schools will be negatively impacted.

Earthquake, if serious, would destroy infrastructure, including roads, highways, sewer systems, distribution systems in the ground and above ground, and communication both above ground and buried. While buildings may not topple in mass, foundations and support walls could easily be compromised, leading to the inability to occupy them. As the center of government services in the county, this could be disastrous.

Invasive species problems would cause debris issues as trees and plants died and had to be hauled to proper disposal. There was concern expressed about allergic reactions to non-native insects and organisms. Extreme temperatures could exacerbate this problem as invasive

species that typically cannot live in colder climates enter a newly warmer climate area. Residential areas could be infested with bugs that are not typical, requiring new extermination actions to rid the houses of the pests. Agricultural crops could be prone to damage by unusual infestations or disease. Extreme temperatures would also put new burdens on electrical power as air conditioning and heating systems operated to maximum capacity, causing additional expense, sometimes for people who cannot afford them now.

As the county seat, what affects Warren, affects the county. Many people who live in the townships work in the city. They travel through weather-stricken roads in the cold, heat, or storms. They care for their homes that are damaged by storms, and they take part in caring for their workplaces affected in the same way as their homes.

While Warren has the most resources to counter the impacts, they also have the most demand for functionality. The county expects them to be working, to be available, and to get the job done. That can be a daunting task after severe damages or extreme events.

Table 2-62: Warren Hazard Rank

Rank	Hazard
1	Flood
2	Severe Thunderstorms
3	Dam Failure
4	Tornado & Windstorm
5	Utility Failure
6	Complex Coordinated Event
7	Severe Winter Storms & Blizzard
8	Hazardous Materials Incident
9	Fire or Wildfire
10	Drought
11	Disease Outbreak
12	Earthquake
13	Invasive Species
14	Land Subsidence and Erosion
15	Extreme Temperatures

West Farmington

This village on the northwest side of Trumbull County sits on State Route 88 near Geauga County. Located in the rural area known as Farmington Township, severe storms, tornadoes, blizzards, and heavy rain can cause problems for the village. They operate a water and stormwater department, and these weather events can wreak havoc on infrastructure. Collecting, hauling, and disposing of huge amounts of debris would be very difficult. Storms could isolate the village by closing nearby roadways, cutting them off from needed supplies and other resources. While they are located on State Route 88 which is maintained by ODOT, they have village streets that they would struggle to maintain if roads were seriously blocked, flooded, or damaged.

Power and utility outages would be difficult. People with special needs would suffer, and there is not adequate access to generators. It would be difficult for the village to restore severe damage to its systems, or to shelter many people if homes were destroyed. Access to medical care and other critical services would be uncertain. Sheltering would be very difficult because finding a facility to house even a few families might be impossible. Widespread damage that made homes unlivable would be catastrophic.

West Farmington Water Tower, Online photograph attributed to Flickr.com

Disease outbreaks, drought, and extreme temperatures could cause their population to suffer. They may not have redundant suppliers for critical goods and services. Because they are close to a county border, their resources could be scattered, causing more coordination to receive assistance.

They are concerned about dam failure, not because of the high-hazard dams, but because of so many smaller dams in the township. Flooding could be worsened by failure of small dams, and there would be fewer resources to help owners fix them after they were damaged. They are concerned about soils that wash away in heavy rain, and about losing land to the ditches and streams that fill with water and wash away soil as they expand.

Fire is a concern because the wind fuels any fire out of control. With little windbreak, field fires can grow quickly, and engulf homes or other buildings quite quickly. By the time other departments would arrive to help, the wind could have grown the fire into an unmanageable

size. They are concerned about special rescue kinds of resources, keeping adequate personnel, and having the right apparatus and supplies to protect their community.

While they are a very small community, a complex coordinated event could occur, and should that happen, they worry about recovery, mental and physical health of the residents, and the aftermath of such a traumatic event.

Table 2-63: West Farmington Hazard Rank

Rank	Hazard
1	Severe Thunderstorms
2	Flood
3	Severe Winter Storms & Blizzard
4	Utility Failure
5	Tornado & Windstorm
6	Fire or Wildfire
7	Disease Outbreak
8	Drought
9	Extreme Temperatures
10	Hazardous Materials Incident
11	Land Subsidence and Erosion
12	Earthquake
13	Complex Coordinated Event
n/a	Dam Failure
n/a	Invasive Species

Yankee Lake

Yankee Lake is a very small community of about 75 people in Brookfield Township north of Hubbard. There is very little capacity to conduct mitigation activities, and they rely on Trumbull County and the City of Hubbard for many things. They are home to the Yankee Lake Inn and a venue for weddings and other gatherings. Their list of hazards was short because they have so little capacity to act through hazard mitigation efforts.

Severe storms, such as tornadoes, thunderstorms or blizzards are their greatest concern because they can end up stranded quite easily. Sitting on State Route 7, the main highway through town is plowed and maintained by the State of Ohio. If Yankee Run, the large waterway that winds around the outside of town, overflows, their streets can become sloshy and flooded, and access can be problematic even though they are in an elevated area. While the small village is very self-sufficient, a severe blizzard could challenge their ability to help themselves.

Utility failure is problematic for Yankee Lake residents. For anyone who has special needs requiring electricity, restoration of power can take time. Much of the income in the village comes from people who work in the village restaurant, store, and entertainment venue. When storms stop those activities, it has a negative impact on those who work there.

Fire is a high concern because of the venues and businesses. They are some distance from fire departments, and a wind-driven fast-moving fire could be devastating. A fire could shut the venue down for months, and the economic impact on the village would be horrible.

Yankee Lake Ballroom venue as posted on the Yankee Lake Facebook Page

Table 2-64: Yankee Lake Hazard Rank

Rank	Hazard
1	**Tornado & Windstorm**
2	**Flood**
3	**Severe Thunderstorms**
4	**Severe Winter Storms & Blizzard**
5	**Fire or Wildfire**
6	**Hazardous Materials Incident**
7	**Utility Failure**
n/a	Complex Coordinated Event
n/a	Dam Failure
n/a	Disease Outbreak
n/a	Drought
n/a	Earthquake
n/a	Extreme Temperatures
n/a	Invasive Species
n/a	Land Subsidence and Erosion

Risk-informed Approach to Vulnerability

Hazards were averaged to arrive at a county-wide vulnerability ranking. Hazard rating totals were added and divided by the number of jurisdictions that listed the hazard as valid. There was no effort to adjust the ratings according to population counts or property values. This was a rating intended to simply give the elected and appointed officials an indication of what hazards could be addressed collaboratively and how important each might be when looking at the entire county.

This approach and information will also facilitate cooperation between communities as they can, from this plan, identify those hazards that are particularly relevant to their community, but they can also see what is relevant to the entire county, joining forces in some cases to address a hazard collaboratively.

While each community would ideally address the most concerning hazards first, opportunities to address hazards do not always happen in that order. Oftentimes the chance to change or modify a risk factor comes after that hazard has impacted the community. Sometimes the most concerning hazards present no opportunities for change, or the mechanism of change is so expensive it is not realistic. Sometimes the hazards are not frequent, but the impact would cause such a severe consequence that change is highly desirable, but not necessarily likely. This plan allows communities to work together, to have information about what other communities are doing, and to use opportunity to its fullest in addressing mitigation efforts.

The following table shows the ranking of hazards by each municipality, and by Trumbull County's unincorporated areas. This ranking is relevant in that it is evidence of conversation and study that identified where the most damage is attributed, and which risks are dramatic but not costly or deadly. Consideration was given to special circumstances of a given risk.

Communities were asked to include those hazards that they felt, based upon findings and historical data, were a threat to the residents. They were instructed to consider how the threats might be mitigated, and those ideas and intentions appear in the next section of this plan, 03 Mitigation Strategies.

Table 2-65: Countywide Overall Average Vulnerability Prioritization

Jurisdiction	Complex Coordinated Event	Dam or Levee Failure	Disease Outbreak	Drought	Earthquake	Extreme Temperatures	Fire or Wildfire	Flood	Hazardous Materials Spill	Invasive Species	Land Subsidence & Erosion	Severe Storms & Thunderstorms	Severe Winter Storm & Blizzard	Tornado & Windstorm	Utility Failure
Trumbull County (Townships)	8	4	10	13	14	15	9	1	5	12	11	2	7	6	3
Cortland	8	n/a	11	9	12	13	6	2	7	10	n/a	1	5	3	4
Girard	2	5	11	13	12	15	10	1	8	14	9	4	7	3	6
Hubbard	7	n/a	8	13	10	12	11	1	6	14	9	4	5	3	2
Lordstown	8	n/a	9	10	12	11	6	2	7	n/a	13	3	4	5	1
McDonald	4	5	10	n/a	11	n/a	9	2	8	n/a	n/a	3	6	1	7
Newton Falls	7	5	12	13	14	11	9	1	8	15	10	3	6	2	4
Niles	7	2	8	12	13	14	9	1	10	15	11	3	5	6	4
Orangeville	n/a	n/a	n/a	n/a	n/a	n/a	6	1	n/a	n/a	n/a	2	3	5	4
Warren	6	3	11	10	12	15	9	1	8	13	14	2	7	4	5
West Farmington	13	n/a	7	8	12	9	6	2	10	n/a	11	1	3	5	4
Yankee Lake	n/a	n/a	n/a	n/a	n/a	n/a	5	2	6	n/a	n/a	3	4	1	7
Mahoning Valley Sanitary District	n/a	2	n/a	n/a	1	n/a	n/a	3	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Total Raw Score	70	26	97	101	123	115	95	20	83	93	88	31	62	44	51
Divisor	10	7	10	9	10	9	12	12	11	7	8	12	12	12	12
Adjusted Score	7.0	3.71	9.7	11.2	12.3	12.8	7.92	1.66	7.55	13.3	11.0	2.58	5.17	3.67	4.25
FINAL COUNTYWIDE RANK	**7**	**4**	**10**	**12**	**13**	**14**	**9**	**1**	**8**	**15**	**11**	**2**	**6**	**3**	**5**

2.3.6 National Risk Index Vulnerability Assessment

The National Risk Index compares the fourteen census tracts by hazard and establishes a vulnerability assessment for each area. Map 2-14 shows the census areas and illustrates how the incorporated jurisdictions relate to the census tracts. This plan uses both census area and jurisdictional information. Census tracts are described and mapped on pages 2-131 and 2-132 of this section.

The Vulnerability Tables are included are taken from the National Risk Assessment tool. This assessment establishes the county's vulnerability by census tract and broken into individual hazard categories. It includes the exposures as well as expected annual losses for various hazards. They are included as appendix 06 NRI Exposure and Expected Annual Loss Tables. Each table is referenced, where applicable, at the end of each hazard vulnerability narrative.

2.4 RISK ANALYSIS

To estimate disaster losses, a damage profile that considers the potential impact and loss from each hazard is developed. In this section, loss estimates from floods, earthquakes, winter storms, tornadoes, thunderstorms, windstorms, and drought are examined. While the losses from these incidents are often more of a temporary and inconvenient nature, significant

disruption to business, some property damage, and loss of life is possible under extreme or unusual circumstances. This information was used to determine Trumbull County's risk for each specific hazard.

2.4.1 Complex Coordinated Event Damage Profile

The consequences from a mass shooting, a school aggressor situation, or a community event are highly individualized to each incident. The prevention of an event is the highest priority so the consequences never happen.

The most obvious vulnerability is the loss of life, damages of the highest severity. Injuries are also very likely as others flee, barricade, or engage with the aggressor. If an incident takes place in an institution, that organization encounters damages to their facilities as well as to their members, employees, and/or students. For those who do not incur physical damages, the burden of mental health injury is extreme. Some people never actually recover, and others only recover partially. Depending upon the weapon(s) used, the structural and capital damages vary widely.

There is no way to estimate the cost of a complex coordinated event. There is no exposure and estimated loss level established by the NRI.

2.4.2 Dam/Levee Failure Damage Profile

There are five high-hazard dams in Trumbull County, and there are over 100 other lower-hazard dams. One high hazard structure is owned by the United States Army Corps of Engineers, one is owned by the City of Girard, and another is owned by Meander Water, a stormwater district. Two smaller high-hazard dams are privately owned, of which one is currently trying to identify the specific owners. The first three have Emergency Action Plans in place; the latter two do not.

The dam owned by USACE drains into Mosquito Creek that flows through townships and cities on its way to the Mahoning River. The water district dam flows into Meander Creek that then dumps into the Mahoning River very close to where Mosquito Creek enters the Mahoning. Just a short distance downstream, Squaw Creek, the waterway that would drain Upper Girard Lake Dam, enters the Mahoning. In an extremely high rain event, should overtopping or release of significant amounts of damned water be necessary, the Mahoning could be challenged to handle the extra load. The emergency action plans do not specify the value of flood damages in this maximum flood scenario, but it is believed the losses could be extremely extensive, perhaps even catastrophic. The area along the Mahoning River that would be affected by this is already designated floodplain in much of the area, but it is unknown how that flooded area would expand. Areas that are residential and commercial properties that do not expect to flood, and do not lay in a floodplain, would likely be inundated. Those losses are not calculated.

The dams considered "significant hazard" by ODNR and USACE are built on a variety of rivers and waterways. While these dams, if they failed, could cause damage to property beyond that of the dam owner, they are not expected to cause fatalities. They could cause structural or

infrastructure damage beyond their own property line. At least two are on Yankee Run, which empties into the Pymatuning River Watershed that flows to the east, into Pennsylvania. At least one flows into the Grand River which ends up in Lake Erie. The remaining five are in Mahoning River drainage areas. While five of eight are rated in "poor" condition, these are not considered an imminent threat. The owners are working to improve or refurbish the structures to reduce the likelihood of failure. Several of these are owned by corporations and are used in the manufacturing or mining process. Two are owned by individuals and the bodies of water are recreational lakes. Only one is owned by a city, and there is consideration currently to remove it because it is a low head dam.

None of the 104 other lesser classified dams are expected to cause any damages if they were to fail except for damage to the owner's property. These dams appear on the ODNR dam locator but do not appear on the National Inventory of Dams. Most of them are a small dam on a waterway, intended to create a small recreational space for fishing, boating, or swimming.

There is no National Risk Index Exposure and Estimated Loss table for dam failure.

2.4.3 Disease Outbreak Damage Profile

There is no standardized damage profile for a disease outbreak. The best indication we have is the outcome of the COVID-19 Pandemic, at which time the consequences were found to reach further than anyone estimated.

The health consequences are sickness and suffering, and exposure to contagious illness by the family members and caregivers of the sick. The proper medical equipment, widespread access to needed medical supplies and protective gear, and hospital facility availability for the sick are high concerns. There are frequently long-term health effects for people who become very ill with a contagious disease, and the ongoing care for them is costly, disruptive, and painful.

The healthcare industry suffers although they have more patients. The uninsured are cared for even though they often have no way to pay for their care, and the healthcare system absorbs this cost. Healthcare workers get sick, lose time at work, increase their employer's cost of employing them, and suffer the consequences of the illness. Healthcare oftentimes must pay higher rates for equipment and supplies in high demand, and cannot recover that cost. They incur higher payroll costs as masses of employees become ill and require time off. Overtime, contractual, and alternate means of obtaining workers comes into play, and is tremendously expensive.

Like healthcare facilities, schools have high absentee rates. Children and adults wait for medical appointments because the physicians are very busy and wait times are longer. Businesses and schools close because they do not have workers. Parents stay home from work with sick children. The absence spiral spins out of control, and the costs mount daily.
There are no standardized calculations for the cost of a disease outbreak. During the pandemic in 2020 and on, Ohio received $5.4B in State Fiscal Recovery Funds and designated $5.3B for municipalities and counties. Overall, the State received over $26B from six different federal

programs as COVID relief money. The state lost 202,000 jobs in the first nine months through stay-home orders and shifts in commerce, according to the Center for Community Solutions.

Trumbull County received over $38M in ARPA funds, and utilized those funds to carry out programs outlined in the federal guidelines. These programs were intended to improve the county's resiliency and lessen vulnerability to contagious disease spread.

There is not NRI exposure and estimated annual loss projection for contagious disease outbreak.

2.4.4 Drought Damage Profile

Trumbull County can experience slight drought and occasionally experiences periods of decreased precipitation during the agriculture-growing season. The climate is moderate and does not turn arid at any time. There is not any significant history of an extended drought that would cause casualties or property damage more significant than a reduction in crop yields for a single growing season nor is there any history of extensive crop losses more than a single crop year; however, the last two late summer into fall seasons have been extremely dry, classified as mild drought. Precipitation patterns can contribute to a series of years with higher or lower average yields due to slight dryness and late planting or harvest because of excessive rainfall.

Many rural homes, depend upon wells for water in many cases. As rainfall becomes inconsistent, wells dry up or cisterns overflow. Aquifers can be depleted from drought, or from drainage due to aggressive quarrying activities. For those water systems that pull from the ground water supply or local waterway, less rainfall up the entire watershed would result in less available water for treatment and distribution. While the average rainfall may not change much, the way in which it falls and the spread of amounts over the year will have a huge impact on household use of water. Should high temperatures occur, many rural homes are not air conditioned, and workers who are outside do not have the ability to control an outdoor environment. The power grid would be stressed to handle such temperatures and heat index levels. Those who live with economic difficulties could find themselves unable to afford electricity at these levels. Older county residents with medical conditions may suffer due to these circumstances. Underserved and disadvantaged people may suffer more because they have so few resources, and may eventually migrate to the cities for environmental amenities. The cascading economic downturn for the county could be damaging to all county residents and businesses.

In a rural county with open fields and much wooded area, fire could become an issue. If water is not generously available to fight fires, the spread of field fires across hundreds of acres in the hot, dry summer weather could be significant. Dry or dead underbrush will fuel fires that start, and make them significantly larger and hotter. The fire spread could be significant due to drought conditions, and even worsened by wind. Not only would those losses affect agriculture and natural resources, but also would endanger the many small businesses, villages, residences, and schools built in the rural areas of Trumbull County. The CMRA wildfire projections support

this prediction. Chances of field fires is already relatively high; the fire weather index will increase by mid-century.

For loss estimates, only the major cash grain crops were considered because those crops constitute most of the production in Trumbull County. Production livestock can be sold despite drought; other cash crops such as cucumbers, tomatoes, and vegetables are heavily insured. While many farmers purchase crop insurance for all crops, including grain, data does not exist to determine the percentage of crops that are insured in Trumbull County. The loss of tree canopy is not quantified, but would have an environmental effect.

Refer to the Estimated Annual Loss tables in 06 Estimated Annual Loss Tables Appendix using both the "Coldwave" and "Heatwave" tables to see some of the exposure and expected annual loss for this hazard. While these are somewhat relevant, a better picture of the damage that would be caused by a drought can be found in the agriculture section in 2.2.10, Table 2.25 which gives a general idea of agricultural vulnerability.

2.4.5 Earthquake Damage Profile

Earthquakes are geologically possible and enjoy some frequency in the far northeast Ohio area, but are rare in Trumbull County. USGS rates the likelihood of an earthquake at 2.43% within 50km of the county in the next half century. The county has directly experienced minor earthquakes in the past but they have caused no known damage. As such, there is little data to support committing resources to earthquake-proofing structures.

Examination of the loss projections indicated that most damage would affect wood and unreinforced masonry structures, and a great majority of those would be residential or agricultural buildings. Single family homes would be more affected than other residential buildings. Mobile homes would be at high risk due to their lack of permanent foundations. Of critical facilities, schools would experience most of the damage due to masonry construction. Limited infrastructure is expected to be damaged, including bridges, and many electrical, communication and water lines. Electrical lines would take the longest to repair and replace.

Dam failure is a cascading threat concern in a serious earthquake. With most structures being earthen in nature, and a few being concrete, the shifting and movement below the surface would be destructive, and could easily compromise the integrity of the structures in a way that would not be easily assessed. The two largest dams are at highest risk for this to occur.

Because of the low risk and high cost of implementing mitigation strategies related to earthquake risk, the planning team did not identify aggressive actions. It was determined the best plan of action was to charge Trumbull County with most mitigation for this hazard. As they arrived at this decision, they considered earthquake damage projections in the National Risk Index EAL.

Please refer to the Earthquake Exposure and Estimated Loss table in 06 National Risk Index Exposure and Estimated Loss Tables appendix.

2.4.6 Extreme Temperatures Damage Profile

Extreme heat and cold are not typical of northern Ohio, but Trumbull County can experience both. Extreme heat is considered when there are multiple days with a high temperature above 90 degrees, and extreme cold is when there are multiple days with temperatures below zero during the winter. While at this time, many Ohioans will say that a "cold snap" or a "warm spell" is uncommon but not unheard of, there have been both extremes take place in the past few years.

Climate change, varied weather patterns, and weather trends could have a significant effect on Trumbull County, especially for agriculture, natural habitat, and woodlands, and the elderly or disadvantaged populations in the county. The CMRA tool indicates temperatures could easily rise several degrees by the middle of the century, which puts elderly and medically challenged individuals at higher risk, and makes incidents involving power loss or storm damage more serious.

The detail of those heat projections includes the number of days with a heat index that is problematic. In general, the days of higher temperatures in the summer months will likely become more plentiful, with runs of days above ninety degrees becoming longer, and periods between rain events longer as well. This will make the vulnerable even more so.

On the other hand, cold days are made worse by wind chill, fueled by Ohio's windy environment where the wind never seems to stop. This can drop how cold the air feels by ten to twenty degrees. The wind also makes it harder for the sun to warm buildings, roofs, and pipes.

Since schools are not generally in session during summer months when heat waves strike, there is minimal effect on the community. Stores do not close, businesses stay open, and people continue about their business. However, manufacturing, and other outdoor occupations can see extreme loss of productivity when the days are too hot to be outside or in confined spaces.

Cold weather, when it hits extremes, will close schools as children are not able to walk to school, or if combined with snowfall, sidewalks and streets cannot be plowed effectively. Pipes in homes freeze and break, causing extensive home repairs and inconvenience. During the most extreme cold snaps, those shoveling snow or working outside are at risk of freezing to death. Homeless persons, those without the financial ability to pay excess heating costs, and the elderly are at risk of cold exposure.

Because Trumbull County has some livestock producers, the effects of high temperatures could be devastating to those individual farms. There is limited ability to control the environment in livestock barns. Death, dehydration, and illness will be far more prevalent when temperatures soar for longer periods of time and to higher levels, or if they plummet for days on end. If

increasing temperatures are combined with less rainfall, or even longer periods of time during episodes of rainfall, the limited availability of water for animals will be difficult for farmers to manage. Most livestock water is provided by wells; if wells become dry, alternate sources of water will be through commercial providers. If the pipes and spigots that supply the water from wells freeze, it can take many days of warmer weather for them to thaw as the ground holds the cold for a long time. Livestock require hydration; the absence of adequate hydration negatively impacts growth, milk production, reproduction, and the health of the animals. The negative economic impact will be significant.

Farm crop production and trees and vegetation in the woodland areas may be negatively impacted by higher temperatures and changes in rainfall. If rain is scant after planting or during pollination seasons, germination and maturation will not occur. If rain is extremely light or heavy, yields will be negatively impacted. If rain is excessive during either planting or harvest season, the crops cannot get planted, they do not grow when they wash away, weeds grow profusely in wet, soggy ground, and plant disease thrives on very dry or very wet conditions. Less rainfall could adversely impact the underbrush and small vegetation in the woodlands, as well as the trees, eliminating food sources for wildlife and drawing them into inhabited areas for survival, or in facilitating their starvation.

Extreme cold can have different consequences. Timing of extreme cold, when during December, January and February has more immediate outcomes, like frozen and broken pipes, frozen water intakes for water systems, and extreme freezing of ice on sidewalks, streets, and roadways. The ice on major waterways freezes thicker, and thus takes longer to thaw and flow. Ice jams are more common when ice is thick, strong, and slow to melt. When extreme cold happens later in the season, in late winter and early spring, a highly unusual situation for Ohio, there can be damage to crops that are beginning to bud and other vegetation that is coming out of hibernation due to longer light periods.

Please refer to the Coldwave and Heatwave EAL Tables in 06 National Risk Index Exposure and Estimated Annual Loss Tables appendix.

2.4.7 Fire and Wildfire Damage Profile

All Trumbull County is vulnerable to fire and wildfire incidents and damages.

The most damaging fires are those that destroy buildings, both homes and businesses. Trumbull County's structural vulnerability consists of several factors. First, in downtown or commercial areas, some of the older buildings were not built in accordance with current fire codes, have no fire walls to separate areas of the buildings and stop fire spread, and were built using materials that were not fire resistant. There in an occasional unoccupied building, or an unoccupied section amid other businesses in strip-style structures. An unoccupied structure is more vulnerable to fire because it is not regularly observed, various kinds of combustible materials are stored or left there, and general deterioration can contribute to fire ignition.

There are many older homes in the county, and the more aged a home becomes, the more probable a fire can be due to deteriorating electrical or mechanical systems. Rental units are more likely to catch fire than owner-occupied homes, and there are many rentals. Mobile homes are very vulnerable to fire, and Trumbull County has a fair amount of them.

Once a fire starts, it grows quickly. With a robust roster of departments in the county, response times are very good. However, fires can double in size in just a few minutes, causing more damage and destroying more buildings in a rural area than occurs in metropolitan areas. The need to travel on rural roads, and the fact that most departments in the rural areas of the county are volunteer challenges response times. Rural structures are also more vulnerable because they are not observed as frequently as structures inside a municipality. An electrical fire that starts inside walls, or in an outlet, must burn extensively and have "smoke showing" to passersby if residents or occupants are not present to discover it early. Once a structure is visibly burning, it is very difficult to control the fire, especially when the fire department is several miles away.

Most of the county is vulnerable to woodland and field fires. With most of the county covered by either wooded areas or farm crops, it only takes a spark to start a fire, especially during times of dryness or crop maturity. In the past few years, dry spells have started in mid-summer, and that coincides with higher tourist traffic throughout the county. Campfires, tossed cigarettes, and accidental fires are more prevalent, in general, during these times. With the beautiful landscape and nature areas found in the county, many tourists visit in the warmer months. That activity brings with it a higher risk of fire in the wooded recreational areas. Many of the areas used for camping and tourist activities are remote and fires can go unnoticed until they are significant in size. Add wind to this, and it becomes a very difficult challenge for fire departments.

There is no exposure or estimated loss information in the NRI tables for fires, but there is a wildfire exposure and estimated annual loss table that is relevant to the wildfire and field fire portion of this hazard. The table is in Appendix 09 NRI EAL Tables.

2.4.8 Flood Damage Profile

Trumbull County is vulnerable to moderate or severe flood damage, from a combination of riverine flooding and flash flooding. The area most likely to sustain flood damage are those adjacent to or near the larger waterways, including some low-lying roadways and areas close to storm sewers that may be undersized or inadequate to handle runoff from heavy precipitation events. Areas along the three rivers – Grand River in the northwest, the Mahoning River in the center and south, and the Pymatuning River in the northeast and east - and other major tributaries across the county are part of the county's floodplain. These waterways can be wide and deep in some spots, but most long-term or serious flooding occurs along the waterways, especially in low lying areas. In many places, they wind through natural habitat and wetlands, but in other areas they are close to residential areas, highways, and other infrastructure.

In Trumbull County, damaging flooding is generally preceded by several days of heavy precipitation, and perhaps exacerbated by sudden melting of snow and ice or over-saturation of the soils prior to the start of rainfall. If water is unable to drain away as fast as it comes due to frozen soils or saturation, flash flooding occurs in the streets, roadways, and some low-lying properties. Most residential damage is limited to flooded basements and access issues in general. There are some areas in the floodplain where living spaces in homes are vulnerable to flooding. There are several repetitive loss properties in the county known to emergency managers. Those are listed earlier in this section.

Some residents feel that the rainfall is more intense and more frequent than it used to be. There is also concern that field fodder and debris from fallen trees washes into storm drains and clogs the storm sewers in some of the developed areas where they have storm sewers. There is a general opinion that when culverts and bridges are replaced, the new structures should be larger and have greater capacity. There are areas along the interstate highway that are prone to flooding. With the multi-lane highways elevated, flooding adjacent to major highways is not uncommon. There are other roads in the county that follow waterways, and these flood in low-lying vulnerable areas. Whatever the cause, flash flooding and the storm sewer capacity is more challenged than in the past, and this makes flash flooding more serious even though it is still a temporary condition.

Flood damage in Trumbull County can include damage and destruction of physical buildings, infrastructure, crops, and livestock. With livestock in the county, pastured animals could easily be trapped away from food and shelter, causing a serious threat to their well-being. Residential structural damages could include damage to single- and multi-family homes, as well as mobile homes. Mobile homes are of particular concern to local officials. Commercial and industrial structural damages could include buildings used for manufacturing, product handling, transportation, warehousing, retail, business, and industrial, and the capital equipment associated with those uses. Agricultural structures would include barns for livestock, equipment storage, and commodity storage, as well as the contents of those buildings, which constitute business assets such as production animals, equipment, and machinery. The force of water could damage grain bins, transfer legs, and elevator systems very easily. Government, nonprofit, and educational institutions include critical structures like fire stations, police stations, hospitals, offices, schools, and special facilities like garages and maintenance buildings, and the capital contents of those structures.

Actual structural damage could include flooding in residential basements and ground floors, compromise of the foundations and utility systems, and destruction of the contents of those structures. Mobile and manufactured homes can be pushed off their foundations by water, and water can compromise the integrity of the foundation even if it does not move the foundation. People are at risk from floodwater because household and industrial chemicals substances can contaminate floodwater and result in hazardous chemical exposure for rescuers, responders, and victims. Livestock could be significantly threatened by contaminated flood water and have no way to escape or the ability to protect themselves. This damage would result in large

amounts of debris to manage, including finish, structural, and foundation materials and animal carcasses and waste.

Roads can flood for short periods of time in Trumbull County, potentially closing businesses and institutions and crippling commerce for short periods of time. This period of business shutdown generally is confined to the floodplain and flash flooding areas and lasts for only a day or two once the rain stops. The most crippling factor is that the development in Trumbull County, in general, follows the waterways, placing the most vulnerable property in the most likely-affected areas.

Some areas exist where storm sewers are of insufficient size and capacity to handle rapid and heavy downfall. Depending on exactly where precipitation is heaviest, if the ground is frozen, saturated, or dry, and how full waterways are at the time of the event, significant flooding can occur on roads, streets, bridges, and neighborhoods. These flood-prone areas are not highly populated with residential or commercial structures all the time, but significant inconvenience can result when businesses close, access is cut off, and drainage systems are overwhelmed.

Stored farm chemicals are at risk of being absorbed into the floodwaters, distributed over flooded areas, or damaged an, depositing hazardous runoff in floodwater. In some areas, livestock in pastures may be at risk, depending on which waterways flood, and can become stranded or being injured before the floodwater recedes. Agricultural land that is heavily tiled drains quickly, facilitating rapid and significant amounts of runoff in ditches, streams, and rivers. This contributes to downstream flooding as the waterways attempt to drain the county.

Countywide flooding in Trumbull County would occur only under severe circumstances. As the county has very logical floodplain area along the major waterways, extremely heavy rainfall could flood a large part of the county, and extenuating circumstances like rapid ice thaw amid heavy rainfall and snowmelt could make it worse. Specifically, a multiple-day heavy rain event of more than 10 inches is suspected to be capable of widespread flooding, especially if it comes early in the spring and is combined with snowmelt and ice melting. There is some history that six inches of precipitation can cause major flood issues.

It is unlikely that loss of life would be attributable primarily due to moderate flooding, but extreme circumstances could cause deaths. A rapid onset of extreme amounts of water along the major state highways and Ohio Turnpike, and through the southern populated area of the county could be incredibly dangerous. Should overtopping of the any dams in that area occur, catastrophic flooding could impact the entire area. Power would likely be affected, and first response access could be severely compromised.

Please refer to the National Risk Index Exposure and Estimated Loss Tables in Appendix 06.

2.4.9 Hazardous Materials Incident Damage Profile

Hazardous materials incidents are highly individualized as far as the damages. The cost of the incident is entirely dependent upon how the release is controlled, what they danger level of the spilled chemical is, and where the incident takes place.

Evacuation is viewed as one of the most concerning consequences because it takes people from their homes, prevents access to personal property, endangers livestock and family pets, and causes businesses to close, schools to dismiss, and travel in the area to cease. The disruption to society, the ingress and egress that is interrupted, and the loss of business and wages can be extensive.

Injury and death to workers and responders is a high concern, and while most hazardous materials incidents do not cause fatalities, that is always possible. Injuries and exposure of workers is a high cost to employers and injured people for medical care, follow up, and long-term monitoring.

Contamination of natural resources is a high concern. Chemicals that leech into waterways, onto roadways, and over privately owned property can be expensive and difficult to clean up. The cost of a professional clean up company is high, and even though these companies tend to have the equipment needed to manage the situation, the cost for their services is high.

Spillers are generally required to pay the cost of an incident clean up. Responders can bill for their services, and jurisdictions can recover expenses. However, the cost to the business is extreme. The best example is the cost of the East Palestine – Norfolk Southern railroad accident that occurred in 2023. According to broadcasts from WKYC Television in Cleveland, Ohio, the cost stands at over $1.1B as of February 2026.The Intelligencer from the Wheeling News-Register published on February 13, 2026 that $836M was spent in environmental-related expenses, and $381M in community assistance and legal fees. Another $101M was picked up by insurance. Norfolk Southern was quoted as attributing a 7% layoff of managers to fallout from the derailment, and railroad profits are down by as much as half.

In 2025, PHMSA attributes $5,547,157 in damages to chemical spills in Ohio. One person was hospitalized and two were injured but not hospitalized. There were 1,496 incidents over that time frame, making a per-incident average cost $3,708 in Ohio for 2025. The average cost per incident for 2024 was $5,120.

According to the PHMSA website, the U.S. Department of Transportation claims there were 9,726 in-transit hazardous materials spills in the country in 2026, and 1,131 incidents of in-transit storage spills. There were 4,724 incidents while chemicals were being loaded for transport, and 11,760 incidents during unloading. Of these incidents, there were three deaths and twelve injuries, but the cost amounted to almost $72.5M. Incident numbers and costs were slightly down from 2024.

There is no NRI Exposure and Estimated Annual Loss table for hazardous materials incidents.

2.4.10 Invasive Species Damage Profile

Invasive species damages are often borne by the property owner where the infestation takes place. Infestations are common along railroad tracks and highways where non-native species are transported and invasive species are dropped or transferred. Losses are frequently in woodlands, landscaping, and nature areas.

The most dreaded damages from invasive species are the weakening and death of trees or other vegetation, and the death and potential extinction of wildlife and aquatic life. The Emerald Ash Borer killed and weakened ash trees that then fell on houses and vehicles in storms, lacking the strength to bear the winds. Zebra mussels clogged boat engines and water intakes, costing municipalities and counties in equipment repair and replacement as well as the need for redundant intakes. Asian carp have destroyed other aquatic fishes and species, and caused the quality of some raw water sources to fall. Invasive plants crawl through farmers' crops and suck the water needed by soybeans and grain crops, starving them during the very time the seeds are maturing for harvest.

USDA estimated the Emerald Ash Borer incident in Ohio cost between $1.8B and $7.6B. The losses they identify include landscape loss, tree removal expenses, and replacement of lost trees. They estimated in 2007 that the cost to be between $157,000 and $665,000 per 100 residents in Ohio.

There is no NRI Exposure and Estimated Annual Loss table for invasive species.

2.4.11 Severe Thunderstorm Damage Profile

Thunderstorms are relatively frequent but not always severe in Trumbull County. During summers when heat builds up in the afternoon, a muggy and hot day can easily end with thunderstorms that include hail, lightning and heavy rain, and/or wind. Microbursts often add strong straight-line winds that destroy standing crops ready for harvest. There has seemed to be an increase in night-time storms the past couple years, bringing heavy rain overnight. These storms can develop quickly, provide little advance warning to residents, and cause significant destruction and disruption.

Thunderstorms that include hail are generally spotty and inconsistent. The fluctuating temperatures in the atmosphere necessary for hail to form do not occur frequently in Ohio. When hail falls, damage most frequently occurs to vehicles, roofs, and siding on buildings, and depending upon the season and growth stage at the time, farm crops. Rarely is there a loss of life or significant bodily injury. Thunderstorm winds can damage standing crops and are most damaging when wheat, soybeans, and corn are ready for harvest. Corn is frequently at the pollination stage in July; at any point after stalks mature, hail and wind can shred and tear the leaves, flatten the stalks, and destroy the ears that are in the formative stages. This situation drops crop production to drastically low levels, causing an extreme loss to farmers for that year's crop. With only a third of the county's land in production, this outcome would be limited in its effect.

Thunderstorms are a frequent but low risk hazard in Trumbull County. The combination of hail, lightning, precipitation, and wind caused by thunderstorms can inflict damage in any area of the county. Thunderstorms are somewhat common but are typically minor and cause more inconvenience than actual damage. Lightning that directly strikes structures or objects is possible but infrequent. Moderate to severe damage from hail, lightning, and thunderstorm wind, including loss of life and property, is possible but statistics indicate the frequency is extremely low. Much of the damage caused by these storms is privately covered with insurance or property owner funds. Rarely is this kind of damage covered by public programs.

When severe thunderstorms are accompanied by tornadoes, damage from the tornadoes is likely to be more significant than that caused by the thunderstorm. Straight-line winds, the result of downbursts and microbursts, can be as destructive as tornado and cause damages like those described in the tornado EF scale. Because of slight elevation variations, Trumbull County has some natural protection against this kind of damage as homes and buildings sometimes have protection from the wind.

Please refer to Exposure and Estimated Loss Tables in Appendix 06 for Hail, Lightning, and Strong Winds. There is no EAL specifically for thunderstorms.

2.4.12 Tornado Damage Profile

Trumbull County is universally vulnerable to tornado damage. The county has some areas with generally flat terrain, but some slightly hilly parts would allow a tornado to slow down or break apart. Although tornado warnings are issued several times each year, tornadoes do not occur frequently in the county. They are most common in the spring although they can develop throughout the summer and fall, and most recently in Ohio, during nighttime hours. Historically, the magnitude of tornadoes in Trumbull County is between EF-0 and EF-2, with over eighty percent of the incidents on record involving and EF-0 or EF-1 tornado.

Trumbull County does have many mobile homes throughout the county. Most are lived in year-round. These structures are more vulnerable to wind damage because they are less secured to the ground than buildings with foundations, have no basement or sub-terrain level, and are lighter weight and made of less wind resistant material than traditionally constructed homes. Manufactured homes, common in Trumbull County, are more vulnerable than stick-built structures, especially when installed on a concrete slab instead of a basement.

Most residential structures in the county are constructed from wood, concrete, brick, and stone. Many homes are older and were constructed using wooden materials; these homes are built on traditional foundations with basements or crawl spaces. Some newer homes are concrete slab construction without basements or crawl spaces, but many are built on a basement and a standard foundation. These homes are vulnerable to superficial damage, roof damage, and falling trees during tornadoes and severe windstorms.

Many farms and rural homesteads have outbuildings that house business assets, including equipment, supplies and goods, and livestock. These buildings may be traditional stick-built wooden structures with tresses and heavy beams, or may be newer pole buildings with varying steel structure. Many of the newer buildings are single-story structures with wide roof spans, and are therefore very vulnerable to wind and tornado. Some of these buildings house livestock and others house equipment. There are some farms with grain systems, all very vulnerable to wind damage.

Commercial buildings are constructed of concrete, brick, concrete block, stone, and wood. These structures are generally built on concrete slabs with structural support trusses and pitched roof construction to facilitate snow and ice melt and runoff. Flat roof buildings, such as shopping centers and big-box type retail stores, are susceptible to heavy snow in blizzard conditions; there is no identifiable history of roof collapse incidents due to snow or ice.

Property damage from tornadoes in Trumbull County most frequently includes damaged roofs, gutters, downspouts, trees, and, occasionally, an entire building. Mobile homes are damaged or destroyed in the most serious incidents. Outbuildings, barns, and storage buildings can be damaged because these structures are less resistant to wind damage and are frequently built on concrete slabs or dirt foundations.

Refer to the Tornado Exposure and Estimated Loss Table in Appendix 06 for loss estimates.

2.4.13 Wind Storm Damage Profile

Wind incidents are frequent across Ohio, including in Trumbull County. The county has experienced some high wind events in recent years. While not as damaging in Trumbull County as they have been in others, these events typically damage trees, which lead to obstructed roadways and downed power lines. Much of the damage done within woodland area is likely not assessed, but remains damage nonetheless. Crop damage and destruction is also a concern. When high winds damage young and maturing crops, yields can be significantly reduced, which negatively impacts the county's economy. Structural damage to roofs, downspouts, and siding is not uncommon.

Refer to the Strong Wind Exposure and Estimated Loss Table in Appendix 06 for loss estimates.

2.4.14 Winter Storm Damage Profile

Winter storm damages can potentially affect homes, businesses, and properties across Trumbull County. No singular area is vulnerable to snowfall or winter weather conditions than another. The terrain provides some opportunity for water or snow to accumulate in low-lying areas, or on narrower, lower parts of roads and bridges. The lightly varying elevations allow drifting and blowing snow to create low visibility conditions on roadways across the county, especially if drivers are not highly familiar with the roadway. Livestock operations in the county are particularly vulnerable to blizzards, ice, snow, and other winter weather hazards as they incur difficulty in managing pastured animals, feeding in remote barns, or watering animals when water supply lines are frozen. Even in adverse weather conditions, the animals must be

fed, cows must be milked, manure must be removed from barns, and operations must continue. This requires daily ingress and egress to these farms, bringing in food and supplies, and hauling out raw product and waste. Winter storms threaten and restrict access to these properties, making winter weather a concern for this part of the economy.

Power outages can occur anywhere in the county during blizzards or snow storms that include significant ice, wind, or heavy amounts of snow. Residential electric lines are mostly above ground and vulnerable to wind and ice, although the power companies have improved their distribution systems in recent years. Almost no areas of residential properties have buried electric lines. Major supply lines are above ground as they enter Trumbull County from the generation plants; therefore, power to the substations is vulnerable to wind and heavy snow and ice even if the residential lines are not. Icing is one of the most dangerous and most impacting components of winter storms. Power outages are probable, frequent, and can be widespread. Farms with livestock operations are much more vulnerable to significant loss; the feeding systems, milking and collection systems, and other critical operations are all based upon an electrical supply to run mechanized equipment. Without electricity, animals are not fed, eggs are not collected, and cows are not milked. Product is wasted, and farms lose income.

The loss estimates for winter storms are relatively low despite the recent and memorable winter seasons. There is no identifiable history of property loss due to snow pack, ice, or other winter storm-related causes. Reasonably anticipated losses from winter storms would include content loss such as food and perishables due to power interruptions. Losses in anything but an unusual, unpredictable incident would not include structures or infrastructure.

Please refer to the Exposure and Estimated Loss Tables in Appendix 06 for Coldwave, ice storm, and winter weather.

2.4.15 Utility Outage Damage Profile

Utility outage damages can be widely varied, and are dependent upon the weather at the time they strike. If electricity is out in the more moderate seasons of the year, the damages are far less than when they occur during extreme heat or extreme cold.

Extreme cold brings the threat of frostbite or death due to low temperatures for an extended time frame. The elderly, the very young, and those with chronic health conditions can freeze to death at temperatures as high as 60 degrees. Based upon that, it does not take extremely low temperatures to pose a life threat to the very young and very old, or those who are ill. When heat goes out in homes, or when heating fuels are unaffordable, this can be a very realistic hazard. When winds are significant, the wind chill can drop what it feels like to below freezing temperatures in a short period of time. Skin exposure leads to injury, not only for the groups identified above, but for all people who work outside for extended periods of time, or those who engage in recreational activities out-of-doors.

Extreme heat and the absence of air conditioning is also dangerous for the same groups as identified above. Their bodies can moderate the heat and cool organs for only so long. A

person in excellent health and not elderly or a child can regulate hot temperatures fairly well, so long as they consume adequate fluids. If water is shut off, or unavailable, their tolerance will diminish quickly.

Lack of utilities in homes first affects their food supply. Without refrigeration, foods that are kept cold or frozen are ruined. Extended outages allow pipes to freeze and break, and plumbing fixtures to crack. When pipes freeze, there is no functioning water service. Outside buried lines can freeze as well in extended sub-zero temperatures, and natural gas pressures in lines can cause problems. This expands the utility outage to include gas-fired furnaces as well as electric heat. Propane lines can also freeze.

Electrical outages quiet medical equipment and deprive those on home oxygen, concentrators, CPAP machines, and other durable medical equipment from their life-saving treatments. Once communication devices like cellular phones and tablets are depleted of battery charge, they cannot re-charge them until there is power. This is often the only communication households have, and the need to re-charge batteries can be a life-threatening situation if they have an emergency or need assistance.

There is no damage profile on the NRI for utility outage.

2.4.9 Countywide Risk Analysis

Based on the available hazard and vulnerability information, Trumbull County has risk for damage from a variety of disasters. To determine the county's level of risk, each hazard was evaluated and scored based on common criteria. The criteria included frequency, response duration, speed of onset, magnitude, and impact on businesses, people, and property.

Table 2-66 describes the scale used to score each hazard. Table 2-67 provides details on the scale used to measure magnitude. The composite scores are identified in table 2-68.

Table 2-66: Vulnerability Assessment Scale

Score	Frequency	Response Duration	Speed of Onset	Magnitude	Business Impact	Human Impact	Property Impact
1	None	< ½ Day	> 24 Hours	Localized	< 24 Hours	Minimum	< 10%
2	Low	< 1 Day	12-24 Hours	Limited	1 Week	Low	10-25%
3	Medium	< 1 Week	6-12 Hours	Critical	2 Weeks	Medium	25-50%
4	High	< 1 Month	< 6 Hours	Catastrophic	> 30 Days	High	> 50%
5	Excessive	> 1 Month	< 1 Hour	Catastrophic	> 1 year	Ext. High	>75%

Frequency

Hazard events that occur regularly are a higher risk than those that occur infrequently.

- 1 = None/Once in 100 years
- 2 = Low/Once in 50 years

- 3 = Medium/Once in 25 years
- 4 = High/Once in 1-3 years
- 5 = Excessive/More than annual

Response Duration
Response duration is defined as the amount time the response is anticipated to last.

- 1 = Less than ½ day
- 2 = Less than 1 day
- 3 = Less than 1 week
- 4 = Less than 1 month
- 5 = More than 1 month

Speed of Onset addresses the amount of warning a community has before impact occurs.

- 1 = More than 24 hours
- 2 = 12-24 hours
- 3 = 6-12 hours
- 4 = Less than 6 hours

Magnitude
Magnitude is rated using standard damage scales such as the Enhanced Fujita Scale, or through development of a local comparative scale that outlines and assesses potential damages at consistent levels using the established damage scales. Some scales from other geographic regions, such as the North East Snow Index Scale, were used as models to develop a comparative tool for local use. Some of the findings in this area are based upon subjective opinions of stakeholders and provided in the context of local institutional memory of certain types of incidents. This is vulnerable to error because community memory is dependent upon the stakeholders participating, and some may not have a personal memory of past events.

Table 2-67: Magnitude Assessment Scale

Score	Tornado	Windstorm	Flood	Earthquake	Drought	Winter Storm
1	EF-0/1	<65 mph	Minor	<5.9	D-0 Very Dry D-1 Moderate	<8” snow
2	EF-2	65-75 mph	Moderate	6.0-6.9	D-2 Severe	8-12” snow
3	EF-3	76-85 mph	Significant	7.0-7.9	D-3 Extreme	12-16” snow
4	EF-4/5	>86 mph	Major	>8.0	D-4 Exceptional	>16” snow

Business Impact refers to the economic impact on a community and business closure times.

- 1 = Less than 24 hours
- 2 = 1 week
- 3 = At least 2 weeks
- 4 = More than 30 days

Human Impact is defined as the number of lives potentially lost for a particular hazard.

- 1 = Minimum/Minor injuries
- 2 = Low/Some injuries
- 3 = Medium/Multiple severe injuries
- 4 = High/Multiple fatalities

Property Impact is defined as the percentage of parcels potentially affected in each event.

- 1 = Less than 10% damaged
- 2 = 10-25% damaged
- 3 = 25-50% damaged
- 4 = More than 50% damaged

The factors identified above were assigned values as described, and rated against anecdotal analysis based upon history and severity. The scoring was done considering all communities equally. Adjustments were not made for population levels, historical experiences, vulnerability to future development, or any other factors. The supply of resources to address post-incident needs was a heavy consideration for Trumbull County jurisdictions. The Trumbull County stakeholders took a very practical approach to their considerations, bearing in mind the specific conditions and circumstances they would be faced with during each kind of disaster, and their answers were in consideration of those factors.

The county's comprehensive rating of hazards based on the risk analysis completed follows. It ranks the individual hazards based upon the conditions and characteristics listed above. The hazards are listed in order based upon most-threatening first.

Table 2-68: Comprehensive Countywide Risk Analysis

Hazard	Frequency	Response Duration	Speed of Onset	Magnitude	Business Impact	Human Impact	Property Impact	Score	Rank
Flood	5	4	3	3	3	3	3	24	1
Severe Thunderstorms	5	2	3	3	2	3	3	22	2
Tornado & Windstorm	3	3	4	3	2	2	4	21	3
Dam Failure	1	5	2	2	2	4	3	19	4
Utility Failure	3	3	4	1	2	3	2	18	5
Severe Winter Storms & Blizzard	4	3	2	2	2	2	2	17	6
Complex Coordinated Event	2	2	4	1	1	4	2	16	7
Hazardous Materials	3	2	4	1	1	1	2	14	8
Fire & Wildfire	4	1	3	1	1	1	2	13	9
Disease Outbreak	1	3	2	1	2	2	1	12	10
Land Subsidence & Erosion	2	2	1	1	2	1	2	11	11
Drought	1	2	1	1	1	2	2	10	12
Earthquake	1	1	2	1	1	2	1	9	13
Extreme Temperatures	1	1	1	1	1	2	1	8	14
Invasive Species	1	1	1	1	1	1	1	7	15

3.0 MITIGATION STRATEGIES

As Trumbull County's mitigation planning team and stakeholders from the broad community developed mitigation goals and strategies for the county, their goal was to address the specific risks and vulnerabilities of each jurisdiction. While many strategies are similar from jurisdiction to jurisdiction, each community's stakeholders expressed their unique circumstances and crafted strategies to address their specific issues. The result is a set of comprehensive and customized mitigation goals and strategies that address the needs of each jurisdiction.

By using consistent expression in writing the strategies, it will enable the various jurisdictions to work together to achieve goals. The detailed uniqueness of implementing each strategy from community to community can be accomplished without compromising the integrity of the collaboration between communities.

Strategies have been developed for the unincorporated parts of the county, and are listed as "Trumbull County." The specific area covered by this section includes all the townships, or rural areas that are primarily used as woodlands, farms, or rural residential homes. This also includes the census designated areas and neighborhoods outside the municipalities in rural areas that have no governing structure. There are some small businesses spattered about the rural areas, and sections where individual homes have been built. There are areas used as natural recreational areas and natural habitat, as well as significant area that is covered by woodlands. Most of the small businesses serve the residents who live in Trumbull County or nearby; some are larger industries. There are government-based services like the Ohio Department of Transportation facilities and energy company locations owned by private industries and cooperatives.

Villages are all listed individually in each strategy. These incorporated communities include the Cities of Hubbard, Hubbard, Hubbard, Newton Falls, Niles, and Warren, and the villages of Lordstown, McDonald, Orangeville, West Farmington, and Yankee Lake. These municipalities are similar yet unique in disaster vulnerability, and very like one another in many mitigation needs; therefore, many strategies include all of them. Sometimes, due to a unique characteristic or quality, a village or two are not included on specific strategies. Likewise, a need may be unique and only include one or two municipalities. One of the biggest differences is that some communities are not inside floodplains and sit at relatively high elevations compared to the others. They, therefore, have limited flooding concerns while others have many.

Most of the villages all have limited capability to engage in major mitigation projects because they do not have sufficient financial capability to support many projects. They provide few services and have limited responsibilities to being with because of their size, making the addition of expense-generating mitigation projects unrealistic. They lack sufficient staff to pursue grant programs and then administer the project once a grant would be awarded. A less assertive approach to mitigation has been taken in those villages to right-size their mitigation

efforts to their capabilities. They rely upon the county to assist with efforts beyond their municipal capacity. Each of the municipalities and Trumbull County will formally adopt the mitigation plan, and their chief official or administrator, if they have one, will act as the champion of strategy promotion and annual review. The cities have the most capacity to administer projects. The population of some of the villages is under 500 residents, and therefore, they do not have adequate paid staff to implement complex projects.

3.1 STATUS OF PAST MITIGATION EFFORTS

The immediately preceding Trumbull County Hazard Mitigation Plan was in 2003, and updated with new facts and figures for the approval periods since then. Recently, the county decided the plan needed to be a totally new plan to capture contemporary issues and concerns, and to fully involve the public in developing the plan sections.

This plan is a totally new plan, and the mitigation strategies from the previous plan were replaced.

The over-riding objective in selecting and establishing all new strategies was to create strategies that addressed the identified problems and went on to assign the work of the strategy to the official or employee who held responsibility for that activity in that jurisdiction. A great deal of conversation covered the roles and responsibilities of individual role-players in Trumbull County and its communities, and who would realistically be tasked with the strategy.

Bearing in mind the variety of size and nature of the eleven municipalities, the plan needed to address various unique characteristics. Whether the community has no paid staff, very little discretionary budget, and few resources to use in executing mitigation strategies, or if they were fully funded, fully staffed, and fully capable of execution, the plan needed to tell their story. This methodology automatically places the work on Trumbull County and municipal officials, departments, and employees, as is the case with emergency management planning, mitigation implementation, and prevention and protection actions.

The Trumbull County EMA engages the entire community in their work, including all municipal residents, as well as those residents who live in townships and census designated areas. The county places management of the LEPC in the EMA office as well as emergency management duties. Development and business creation is a collaborative effort that includes non-traditional county offices as well as regional partners that serve multiple counties, and the EMA engages those parties in their work as well. The Trumbull County Planning Commission, including regulation and floodplain management, was a key player in mitigation planning.

Strategies from the past mitigation plan were discussed by key officials. Participants included elected, appointed, paid and volunteer jurisdiction officials who would be most aware of any activities over the past five years. Some of them were also involved in the development of strategies for this hazard mitigation plan. As appropriate, other officials in administration, engineering, utilities and public works, and public safety were involved in completing the mitigation strategy surveys.

Each strategy from the previous plan was considered for inclusion in the 2025 hazard mitigation plan. Some actions from the 2020 plan were re-worded or revised, and others were combined when that made the potential action more realistic.

3.2 RISK PRIORITIES

The HIRA (Section 02 of this plan) explains in detail the assessment and analysis of natural hazards in Trumbull County. The HIRA considers the total list of hazards possible in the county, the frequency (probability) with which each occurs, the severity (magnitude) that each hazard displays upon impact in the county, and the outcomes (impact and damages) caused by the incidents. The potential for harm to underserved and disadvantaged populations was assessed in this plan, and involved new partners and stakeholders in the discussions. Those factors are all explained in the HIRA, as well as descriptions of the hazards and how each would impact various locations and populations in the county.

Each community rated and ranked the hazards from most concerning (1) to least concerning, but some hazards were not considered a risk by some jurisdictions. For example, since the high-hazard dams are only part of some jurisdictions, only those jurisdictions included dam/levee failure as a hazard.

The jurisdictional ratings were then combined into a countywide numerical score, adjusted for the jurisdictions not concerned about that hazard, and a countywide, comprehensive hazard rank was established. This comprehensive ranking will be utilized for countywide planning efforts, including those described in the plan.

The individual jurisdictions will utilize their individualized rankings for prioritization of the mitigation strategies, for the purpose of most accurately and appropriately applying the hazards to their community. While there were similarities from community to community, this allows for individualization of work priorities.

Overall, the county ranked flooding, severe storms, and utility outages as their highest concerns. Just like five years ago, rain continues to come at a greater magnitude with longer dry periods in between storms. Rain storms and snow switch back and forth regularly during the colder months, more than in the past, pelting communities with cold rain in winter as much as snow. While rain and snow both falling in all seasons could cause a combination of severe thunderstorms, tornadoes, and winter storms to be merged into a single “severe storm” category, Trumbull County participants felt it was best to consider them separately. Clearing roads of tree and vegetation debris in February uses the same resources as clearing snow, but the likelihood and details of those situations are different. The mitigation measures are similar but it was decided that the combination of those hazards would be less effective in the consideration of mitigation efforts.

Utility and dam failure were the second group of concerning risks. These all involve very critical services or structures that, when they fail, wreak havoc on the lives that are affected. With

elderly and ill populations on the rise, utilities are even more important than they have been in the past because residents have medical equipment and electronics that are dependent upon a power source in their homes. The failure of utilities simply makes work and life activities nearly impossible. Dam failure risk is not present in all communities, but if a major failure were to occur, it was felt the whole portion of the county along several major waterways may feel the consequences because most development is along the waterways that would be inundated by floodwater from the dams. This catastrophic cascading of hazards was considered in strategy development.

Communities rated drought and extreme heat higher than in 2020 because of the cascading threat of extreme heat and fire-risk that goes along with drought. The fact that a large portion of the county is covered by woodlands was a major factor in this prioritization. The amount of recreational space and wetlands contributed to this decision. The increase in fires combined with a shortage of personnel also impacts the county, and makes them rely upon mutual aid more than ever, even considering that when very limited resources are all short, mutual aid will be equally short. When wind combines with fire, the spread is much faster, making the hazard even more difficult. Participants noted a big difference in fire risk from dry conditions to not particularly dry, and therefore the fire risk included in the mitigation plan is that which is an outcome of tinder-dry fields and vegetation or crop debris. The fire risk to tens of thousands of acres of woodlands, as well as dry farm crops like wheat, hay, and other grains, combined with typical fire-start risks, rated much higher today than five years ago.

Hazardous materials incidents were a moderate-level risk countywide. While there are many secondary state highways, there is the Ohio Turnpike (I-80) that runs from east to west in the county. The traffic on I-80 can be heavy with hazardous materials transporters. While incident occurrences are relatively low, the consequences of a serious spill could be significant. I-80 travels through the southern part of the county where the great majority of the population lives and businesses are located. The impact on people, commerce and lifestyles of residents could be significant. Most fire departments are well trained, at least minimally equipped, and available to those areas, so the hazard was considered moderate.

Bringing up the least concerning risks were those events that occur very infrequently, or that have never occurred, like earthquake or complex coordinated event. Trumbull County has no history of a serious, above 5.0 rated earthquake. There is no history of a complex coordinated event or domestic terrorism. Participants did recognize that a serious quake could have disastrous consequences because the utilities that are buried and those above on poles would be destroyed. Invasive species are not common and there is no history of anything catastrophic, and land movement kinds of incidents are not common. These are possible, and the conditions for their occurrence exist, so they were included but, for the most case, not prioritized highly.

Social vulnerability and community resilience were addressed in strategies that support existing services and plans in place to use those services. The Trumbull County Emergency Management Agency has established and maintains an Emergency Operations Plan (EOP) that

identifies agencies and departments to act in disasters, and assigns specific roles and responsibilities to each one. This plan ensures that community lifelines are maintained, and core capabilities are established with each agency or department. This mitigation plan works in concert with the EOP whereby underserved and disadvantaged populations are supported after disasters, and by whom. These standards were addressed in this manner to remain consistent and supportive of other statutory responsibilities of county officials and departments, and to maintain attention to these issues in a single area for effective management and consideration. Trumbull County's EOP is regularly updated, both based upon schedules and specific incidents.

There was added attention given to other county plans that might benefit by considering the mitigation efforts. The development and resource planning done by the Planning Commission, the area chamber, the Eastgate Regional Council of Governments, and others as well are part of ongoing strategic planning. Planning done by the local planning commissions combine to maintain a forward-focused eye to tomorrow, next year and the next decade in Trumbull County. Since no one organization can practically and effectively lead the entire effort, the effort is executed by many. The EMA maintains a hazardous materials commodity study and response plan that ties very closely to this mitigation plan in risk assessment, and ties to development plans in making modifications to accommodate new homes, businesses, and risks. Plans from the public health department can potentially use the hazard mitigation plan for risk information as well as strategic approaches to risks and vulnerabilities.

The strategies in this plan are intended to provide general options to lessen the vulnerabilities in Trumbull County. During the planning process, the planning team and stakeholders determined what hazards strike most frequently, which cause the most disruption, and which consequences feasibly can be prevented or lessened. With limited money and staff available to conduct mitigation projects, the planning team weighed every potential effort by measuring the benefit against the resources realistically available to conduct the activity. The planning team endeavored to prioritize strategies that could realistically be accomplished and result in actual reduction in potential and real losses.

As strategies were developed, the capacity of the jurisdiction to execute the action was considered very important; without the staff or volunteers to initiate, manage, administer, and complete a project, the action would not likely be successful. Therefore, priority was given to those issues within communities that had caused documented damage or difficulty in the past, and then the cost of that consequence. This practical and feasibility-based decision-making process was intended to set communities up for success in mitigating proven damages and helping people with documented needs.

Considerations of cost, identifiable funding to support the strategy, actual benefit to the community, prevention of loss of life, and overall feasibility were all discussed. Strategies were rated against one another and ranked from most to least important. While it is impossible to plan for or foresee every potential hazard, Trumbull County attempted to identify the incidents that might realistically impact their community. These goals and strategies are an outcome of that assessment.

3.3 MITIGATION GOALS AND STRATEGIES

Planning Team members and stakeholders from the county and each jurisdiction worked collaboratively to develop fitting mitigation goals and strategies. Key officials given a list of current strategies to suggest which would continue into the new plan, as well as an extensive list of additional strategies that would address new plan requirements. These new potential strategies addressed, generally, community and economic development, community collaboration, social vulnerability, public safety services, and community resiliency. The Contractor drafted strategies based on the input provided by these stakeholders. The draft strategies were presented to the planning team and community for public review and comment, and modified accordingly. This section identifies the mitigation goals and strategies for each jurisdiction and the priority level, action type lead agency, timeline, and potential funding source assigned to each action. Strategies for specific municipalities vary from the countywide in priority of the problem and the potential solution.

3.3.1 Trumbull County and Municipalities

Trumbull County jurisdiction mitigation strategies are intended to reduce vulnerability to damage from flooding, severe storms, utility outages, dam failure, drought and extreme heat, fire, hazardous materials spills and releases, complex coordinated events, land subsidence and erosion, and earthquake. The “Trumbull County” identified goals and strategies include all non-incorporated areas of the county, such as twenty-four townships and census areas or neighborhoods, and those strategies that only the county has resources to implement on behalf of the communities. The strategies labeled with a municipal name include that incorporated area under the initiative of that municipality.

All these strategies will be considered as economic development and growth is guided, as regulations are written and revised, and as codes and guidance is enforced and approved. The Trumbull County Regional Planning office and other organizations active in community and economic development were a robust part of the planning team, and understand the mitigation issues at hand. While the EMA Director helped in coordinating this entire process, he was also a participating member of the planning team, considering his role in collaborative and cooperative roles in mitigation amid development. The county’s first responders and chiefs were actively engaged in these efforts as well. The Trumbull County Commissioners, as the overall leadership of all departments and individuals, played a tremendously robust and positive role by participating in meetings, and working behind the scenes to support and encourage engagement and implementation. They, along with the Trumbull County Engineer and Auditor, filled out surveys, met with planning teams, assisted the EMA Director in gathering information and feedback, and completed surveys themselves. These strategies will be reflected as local regulation is considered, zoning rules are enforced, land use regulations are enforced, economic development goals and strategies are planned and achieved, capital improvement plans are created, and budgets are managed because of that robust involvement. Projects will be conducted as funding is available, and daily practices will be adjusted to include modifications of work that include these strategies.

The three villages that lack the budget to implement many mitigation or public works projects may be, at some time, dependent upon county resources to help them. They have volunteer officials and part time or no paid staff. They would depend upon the county officials to support them in any implementation or grant application or administration. However, they participated in the process to the fullest of their ability. Many of them were very active players in this planning activity. On the other hand, the six cities and two other villages have adequate staff, currently, to engage a project and carry it out to completion.

As the Trumbull County Commissioners represent the townships in mitigation efforts, they will communicate with the township trustees whose jurisdictions are affected. This is typically the way township issues are addressed. As the county acts on behalf of the townships when it comes to mitigation efforts, as it does with other federal and state programs, the townships will fulfill their responsibility to enforce and comply with land use regulations and building codes. The county officials will work with township trustees to ensure that smart development takes place to create sustainable communities in these rural sections of the county, and to serve the long-term residents of those communities. Several townships are very populated, and those townships may choose to act as an independent entity for mitigation purposes.

This tiered partnership between levels of local government is not new and stems from statutory procedures. Trumbull County and townships have worked together in this way for many years. For example, they work together now to clean up from significant storms, to cover all areas of the county in public safety, and to keep all rural and village areas safe and secure. Because township trustees are often volunteer officials, county commissioners take official action to benefit the townships as a cooperative effort with the trustees, especially where federal grants or requirements are concerned. Today's effort to include hazard mitigation in rural community development is an effort of collaboration.

The following table lists the mitigation actions determined to be needed in stakeholder meetings. The jurisdictions listed in each strategy, or action, are those that determined the need to take that particular action. Not all jurisdictions selected all mitigation actions, and some are relevant only to the county because of its role in the tiered system of governance. If a jurisdiction is not listed under an action, that particular action is not relevant to that jurisdiction. All jurisdictions have at least one mitigation strategy for every hazard they selected as relevant to their jurisdiction. Some actions are Trumbull County only actions and others include only select municipalities where that strategy has the potential to be implemented. All strategies are relevant to the full validity period of this mitigation plan.

Ranking was assigned in accordance with the hazard ranking developed in each individual community as the probability, frequency and magnitude of a threat are directly linked to the cost, displacement, disruption, and damage caused by it. Hazards were prioritized in the various communities based upon how the hazard typically occurs, and how it impacts both personal and business lives within the community. How an incident isolates the remote community from needed resources, how responders can assist people in need, and how long the impact lasts within the community were all considerations for the ranking of hazards.

Mitigation strategies were prioritized according to hazard ranking; since the communities currently engage in many of the strategies with local financial support, and because they do not know until notifications are made what grant programs will be available to them for large, costly activities, they considered all strategies equal in likelihood of being implemented. Based upon fluctuating personnel and finances, communities constantly look for opportunities for financing like grants and loan programs.

Trumbull County choose to develop a completely new mitigation plan considering extensively new mitigation standards. However, the mitigation actions from the current plan were assessed for action as discussion took place, and each jurisdiction completed a worksheet that indicated what had been done. The Contractor used this information in developing the new mitigation actions for the county and its jurisdictions, and supplemented it with findings from the in-person and online meetings that were held. Discussions were summarized into a set of potential new mitigation actions, and each community was asked to select those they felt were appropriate for their community. The table listing the strategies was organized as one table with each participating community listed to enable them to see what other communities intended to address, and to facilitate working together on issues that involved multiple areas.

Table 3.1: Mitigation Goals and Strategies

Goal						
Mitigation Action						
Jurisdictions	**Rank**	**Action Type**	**Lead Agency/Person**	**Start Date**	**End Date**	**Funding Source**
GOAL 1: THE JURISDICTION WILL REDUCE ITS VULNERABILITY TO COMPLEX COORDINATED EVENTS.						
Hazard: Complex Coordinated Event, Cyber-attack (county developing hazard)						
Mitigation Action 1.1 The jurisdiction will advocate for and require, as applicable, active aggressor training and exercises for public school and government employees and public officials.						
TRUMBULL COUNTY	71	Response Enhancement	EMA Director & ESC Superintendent	5-6-2026	5-5-2031	OSSC
HOWLAND TOWNSHIP	37	Response Enhancement	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	38	Response Enhancement	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	24	Response Enhancement	School Superintendents	5-6-2026	5-5-2031	
GIRARD	11	Response Enhancement	School Superintendents	5-6-2026	5-5-2031	
HUBBARD	29	Response Enhancement	School Superintendents	5-6-2026	5-5-2031	
LORDSTOWN	23	Response Enhancement	School Superintendents	5-6-2026	5-5-2031	
MCDONALD	18	Response Enhancement	School Superintendents	5-6-2026	5-5-2031	
NEWTON FALLS	28	Response Enhancement	School Superintendents	5-6-2026	5-5-2031	
NILES	29	Response Enhancement	School Superintendents	5-6-2026	5-5-2031	
WARREN	32	Response Enhancement	School Superintendents	5-6-2026	5-5-2031	
WEST FARMINGTON	30	Response Enhancement	School Superintendents	5-6-2026	5-5-2031	

Mitigation Action 1.2 The jurisdiction will advocate for, support, and assist in finding funding for, as appropriate and available, detection devices, surveillance equipment, alarm systems, visitor management systems, communication tools, anonymous reporting systems, and protective equipment for public offices, local government buildings, schools, and other areas at risk of aggressive attack.						
TRUMBULL COUNTY	72	Protection	EMA Director & ESC Superintendent	5-6-2026	5-5-2031	OSSC
HOWLAND TOWNSHIP	38	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	39	Protection	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	25	Protection	Police Chief & School Superintendent	5-6-2026	5-5-2031	
GIRARD	12	Protection	Police Chief & School Superintendent	5-6-2026	5-5-2031	
HUBBARD	30	Protection	Police Chief & School Superintendent	5-6-2026	5-5-2031	
LORDSTOWN	24	Protection	Police Chief & School Superintendent	5-6-2026	5-5-2031	
MCDONALD	19	Protection	Police Chief & School Superintendent	5-6-2026	5-5-2031	
NEWTON FALLS	29	Protection	Police Chief & School Superintendent	5-6-2026	5-5-2031	
NILES	30	Protection	Police Chief & School Superintendent	5-6-2026	5-5-2031	
WARREN	33	Protection	Police Chief & School Superintendent	5-6-2026	5-5-2031	
WEST FARMINGTON	31	Protection	Police Chief & School Superintendent	5-6-2026	5-5-2031	
Mitigation Action 1.3 The jurisdiction will advocate for and support the development of redundant paper or device-based backup systems to ensure continuity of business after an aggressive attack or cyberattack.						
TRUMBULL COUNTY	73	Community Resilience	EMA Director	5-6-2026	5-5-2031	EMPG
HOWLAND TOWNSHIP	39	Community Resilience	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	40	Community Resilience	Township Administrator	5-6-2026	5-5-2031	
Mitigation Action 1.4 The jurisdiction will advocate for and support the development of policies and procedures to improve security and protection of public buildings, offices, schools, and other public locations where residents typically do business.						
TRUMBULL COUNTY	74	Property Protection	Sheriff	5-6-2026	5-5-2031	OSSC Other
HOWLAND TOWNSHIP	40	Property Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	41	Property Protection	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	26	Property Protection	Police Chief	5-6-2026	5-5-2031	
GIRARD	13	Property Protection	Police Chief	5-6-2026	5-5-2031	
HUBBARD	31	Property Protection	Police Chief	5-6-2026	5-5-2031	
LORDSTOWN	25	Property Protection	Police Chief	5-6-2026	5-5-2031	
MCDONALD	20	Property Protection	Police Chief	5-6-2026	5-5-2031	
NEWTON FALLS	30	Property Protection	Police Chief	5-6-2026	5-5-2031	
NILES	31	Property Protection	Police Chief	5-6-2026	5-5-2031	
WARREN	24	Property Protection	Police Chief	5-6-2026	5-5-2031	
WEST FARMINGTON	32	Property Protection	Police Chief	5-6-2026	5-5-2031	
Mitigation Action 1.5 The Jurisdiction will support and assist, as needed, with school district compliance with Ohio laws that require the development of in-school threat assessment, safety planning, and mental health services; and will support the use of grant programs, as available, to fund those efforts.						
TRUMBULL COUNTY	75	Response Enhancement	EMA Director	5-6-2026	5-5-2031	OSSC Other
HOWLAND TOWNSHIP	41	Response Enhancement	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	42	Response Enhancement	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	27	Response Enhancement	Police Chief & Superintendent	5-6-2026	5-5-2031	
GIRARD	14	Response Enhancement	Police Chief & Superintendent	5-6-2026	5-5-2031	
HUBBARD	32	Response Enhancement	Police Chief & Superintendent	5-6-2026	5-5-2031	
LORDSTOWN	26	Response Enhancement	Police Chief & Superintendent	5-6-2026	5-5-2031	
MCDONALD	21	Response Enhancement	Police Chief & Superintendent	5-6-2026	5-5-2031	
NEWTON FALLS	31	Response Enhancement	Police Chief & Superintendent	5-6-2026	5-5-2031	
NILES	32	Response Enhancement	Police Chief & Superintendent	5-6-2026	5-5-2031	

WARREN	35	Response Enhancement	Police Chief & Superintendent	5-6-2026	5-5-2031	
WEST FARMINGTON	33	Response Enhancement	Police Chief & Superintendent	5-6-2026	5-5-2031	
GOAL 2: THE JURISDICTION WILL REDUCE THE VULNERABILITY TO LOSS OF LIFE AND PROPERTY DUE TO DAM FAILURE AND INUNDATION.						
Hazard: Dam and Levee Failure						
Mitigation Action 2.1 The jurisdiction will work with dam owners and operators to create, maintain, and/or update emergency action plans and all associated procedures where dams could affect the jurisdiction, with special focus on identification of inundation zones and projected flood times, warning and notification procedures, evacuation capabilities, and responsibilities of jurisdiction officials.						
TRUMBULL COUNTY	61	Response Enhancement Critical Information	EMA Director	5-6-2026	5-5-2031	LOC USACE Other
HOWLAND TOWNSHIP	29	Response Enhancement Critical Information	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	30	Response Enhancement Critical Information	Township Administrator	5-6-2026	5-5-2031	
GIRARD	23	Response Enhancement Critical Information	Fire Chief & Police Chief	5-6-2026	5-5-2031	
MCDONALD	22	Response Enhancement Critical Information	Fire Chief & Police Chief	5-6-2026	5-5-2031	
NEWTON FALLS	23	Response Enhancement Critical Information	Fire Chief & Police Chief	5-6-2026	5-5-2031	
NILES	10	Response Enhancement Critical Information	Fire Chief & Police Chief	5-6-2026	5-5-2031	
WARREN	20	Response Enhancement Critical Information	Fire Chief & Police Chief	5-6-2026	5-5-2031	
MAHONING VALLEY SANITARY DISTRICT	4	Response Enhancement Critical Information	Superintendent of Purification	5-6-2026	5-5-2031	
Mitigation Action 2.2 The jurisdiction will work with the dam owner to ensure that first responders in whose jurisdiction the dam is located are familiar with the emergency action plan and have proper apparatus, equipment, and procedures in place to manage an incident that could occur, and that clear lines of emergency communication are identified and shared with all appropriate parties prior to any emergency.						
TRUMBULL COUNTY	62	Response Enhancement	EMA Director	5-6-2026	5-5-2031	LOC
HOWLAND TOWNSHIP	30	Response Enhancement	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	31	Response Enhancement	Township Administrator	5-6-2026	5-5-2031	
GIRARD	24	Response Enhancement	Fire Chief & Police Chief	5-6-2026	5-5-2031	
MCDONALD	23	Response Enhancement	Fire Chief & Police Chief	5-6-2026	5-5-2031	
NEWTON FALLS	24	Response Enhancement	Fire Chief & Police Chief	5-6-2026	5-5-2031	
NILES	11	Response Enhancement	Fire Chief & Police Chief	5-6-2026	5-5-2031	
WARREN	21	Response Enhancement	Fire Chief & Police Chief	5-6-2026	5-5-2031	
MAHONING VALLEY SANITARY DISTRICT	5	Response Enhancement	Superintendent of Purification	5-6-2026	5-5-2031	

Mitigation Action 2.3 The jurisdiction will support, facilitate, and advocate for dam owners in the repair and refurbishment of any high hazard dam that poses a danger to the nearby community due to ill repair, damage, or structural insufficiency, as well as debris damages to nearby properties should the structure fail.						
TRUMBULL COUNTY	63	Engineered Solution	County Engineer	5-6-2026	5-5-2031	LOC
HOWLAND TOWNSHIP	31	Engineered Solution	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	32	Engineered Solution	Township Administrator	5-6-2026	5-5-2031	
GIRARD	25	Engineered Solution	Jurisdiction Engineer	5-6-2026	5-5-2031	
MCDONALD	24	Engineered Solution	Jurisdiction Engineer	5-6-2026	5-5-2031	
NEWTON FALLS	25	Engineered Solution	Jurisdiction Engineer	5-6-2026	5-5-2031	
NILES	12	Engineered Solution	Jurisdiction Engineer	5-6-2026	5-5-2031	
WARREN	22	Engineered Solution	Jurisdiction Engineer	5-6-2026	5-5-2031	
MAHONING VALLEY SANITARY DISTRICT	6	Engineered Solution	Superintendent of Purification	5-6-2026	5-5-2031	
Mitigation Action 2.4 The jurisdiction, when they own the dam, will identify damage and deterioration to their dams, make improvements to strengthen, harden, and protect the structures from storm, water, or other damages as well as general wear and tear to the dam, spillway, and all appurtenances.						
HOWLAND TOWNSHIP	32	Protection	Township Administrator	5-6-2026	5-5-2031	HHDGP LOC Other
LIBERTY TOWNSHIP	33	Protection	Township Administrator	5-6-2026	5-5-2031	
GIRARD	26	Protection	City Engineer	5-6-2026	5-5-2031	
NEWTON FALLS	26	Protection	City Engineer	5-6-2026	5-5-2031	
NILES	13	Protection	City Engineer	5-6-2026	5-5-2031	
WARREN	23	Protection	City Engineer	5-6-2026	5-5-2031	
MAHONING VALLEY SANITARY DISTRICT	7	Protection	Superintendent of Purification	5-6-2026	5-5-2031	
Mitigation Action 2.5 The jurisdiction will ensure that the dam owner/operator has established communication protocols to communicate threats, warnings, situation updates, and protective actions to first responders and the public, with a focus on those families or businesses within the inundation zone.						
TRUMBULL COUNTY	64	Critical Information	EMA Director	5-6-2026	5-5-2031	LOC
HOWLAND TOWNSHIP	33	Critical Information	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	34	Critical Information	Township Administrator	5-6-2026	5-5-2031	
GIRARD	27	Critical Information	Fire Chief & Police Chief	5-6-2026	5-5-2031	
MCDONALD	25	Critical Information	Fire Chief & Police Chief	5-6-2026	5-5-2031	
NEWTON FALLS	27	Critical Information	Fire Chief & Police Chief	5-6-2026	5-5-2031	
NILES	14	Critical Information	Fire Chief & Police Chief	5-6-2026	5-5-2031	
WARREN	24	Critical Information	Fire Chief & Police Chief	5-6-2026	5-5-2031	
MAHONING VALLEY SANITARY DISTRICT	8	Critical Information	Superintendent of Purification	5-6-2026	5-5-2031	
Mitigation Action 2.6 The jurisdiction will identify and document the ownership and primary contacts for all high hazard dams in the county, with special emphasis upon determining the ownership of the Pleasant Valley Lake Dam.						
TRUMBULL COUNTY	65	Critical Information	EMA Director; Auditor	5-6-2026	5-5-2031	LOC
HOWLAND TOWNSHIP	34	Critical Information	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	35	Critical Information	Township Administrator	5-6-2026	5-5-2031	
GOAL 3: THE JURISDICTION WILL REDUCE ITS VULNERABILITY TO AND INCREASE ITS CAPACITY TO RESPOND TO DISEASE OUTBREAKS, INVASIVE SPECIES INFESTATIONS, AND OTHER BIOLOGICAL AND ZOOLOGICAL THREATS.						
Hazards: Disease outbreak, Invasive species						
Mitigation Action 3.1: The jurisdiction will communicate with residents about the status of any communicable disease or invasive species that is negatively affecting the jurisdiction, and identify common health, social, and agricultural impacts.						
TRUMBULL COUNTY	76	Protection	Health Commissioner, EMA Director, SWCD Director	5-6-2026	5-5-2031	LOC Other
HOWLAND TOWNSHIP	42		Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	43		Township Administrator	5-6-2026	5-5-2031	
CORTLAND	30	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
GIRARD	38	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
HUBBARD	33	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
LORDSTOWN	27	Protection	Village Administrator	5-6-2026	5-5-2031	
MCDONALD	34	Protection	Village Administrator	5-6-2026	5-5-2031	

NEWTON FALLS	35	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
NILES	33	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
WARREN	40	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
WEST FARMINGTON	24	Protection	Village Administrator	5-6-2026	5-5-2031	
Mitigation Action 3.2 Establish plans that outline the roles and responsibilities of government and institutional entities and owners responding to a communicable disease or an invasive species that endangers the public wellbeing or property.						
TRUMBULL COUNTY	77	Protection	EMA Director, Health Commissioner, SWCD Director	5-6-2026	5-5-2031	LOC
Mitigation Action 3.3 Develop and communicate with the public how to identify the communicable disease or infestation, what treatments are effective, and how they may go about obtaining treatment.						
TRUMBULL COUNTY	78	Critical Information	Health Commissioner, SWCD Director	5-6-2026	5-5-2031	LOC
Mitigation Action 3.4 Release critical information about communicable disease that is present in the community, and inform the public about signs and symptoms, treatment, and management of the illness regarding work and school practices, and safety implications.						
TRUMBULL COUNTY	79	Critical Information	Health Commissioner, SWCD Director	5-6-2026	5-5-2031	LOC
Mitigation Action 3.5 Establish an inventory process to be used for protective gear, medication, availability, treatment centers, and other resources for use during a widespread outbreak of a specific illness.						
TRUMBULL COUNTY	80	Protection	Health Commissioner, EMA Director	5-6-2026	5-5-2031	LOC
GOAL 4: THE JURISDICTION WILL REDUCE THE VULNERABILITY TO DROUGHT AND EXTREME HEAT.						
Hazard: Drought, Extreme Temperatures; Fire and Field/Woodland Fire, Utility Failure						
Mitigation Action 4.1 The jurisdiction will identify resources to provide potable water to residents during drought with or without extreme heat, during a lengthy water service outage due to drought or fire use of water resources, or when the water treatment or distribution system fails.						
TRUMBULL COUNTY	85	Prevention	EMA Director	5-6-2026	5-5-2031	LOC
HOWLAND TOWNSHIP	44	Prevention	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	45	Prevention	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	28	Prevention	City Manager	5-6-2026	5-5-2031	
GIRARD	41	Prevention	City Manager	5-6-2026	5-5-2031	
HUBBARD	37	Prevention	City Manager	5-6-2026	5-5-2031	
LORDSTOWN	28	Prevention	Village Administrator	5-6-2026	5-5-2031	
NEWTON FALLS	36	Prevention	City Manager	5-6-2026	5-5-2031	
NILES	37	Prevention	City Manager	5-6-2026	5-5-2031	
WARREN	38	Prevention	City Manager	5-6-2026	5-5-2031	
WEST FARMINGTON	25	Prevention	Village Administrator	5-6-2026	5-5-2031	
Mitigation Action 4.2 Encourage individual households to establish and maintain an adequate supply (at least three days) of emergency bottled water for household use, including water needed by animals in the home, and to rotate supplies so they are always ready to use.						
TRUMBULL COUNTY	86	Critical Information	EMA Director	5-6-2026	5-5-2031	LOC
HOWLAND TOWNSHIP	45	Critical Information	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	46	Critical Information	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	29	Critical Information	City Manager	5-6-2026	5-5-2031	
GIRARD	42	Critical Information	Critical Information	5-6-2026	5-5-2031	
HUBBARD	38	Critical Information	Critical Information	5-6-2026	5-5-2031	
LORDSTOWN	29	Critical Information	Village Administrator	5-6-2026	5-5-2031	
NEWTON FALLS	37	Critical Information	Critical Information	5-6-2026	5-5-2031	
NILES	38	Critical Information	Critical Information	5-6-2026	5-5-2031	
WARREN	39	Critical Information	Critical Information	5-6-2026	5-5-2031	
WEST FARMINGTON	26	Critical Information	Village Administrator	5-6-2026	5-5-2031	
Mitigation Strategy 4.3 The jurisdiction will help residents and business owners prepare for extreme temperature conditions by suggesting and supporting acquisition of bottled water supplies, cooling fans, alternate heating devices, the use of smart building materials to withstand extreme temperatures or to resist excess warmth or cold, and to encourage redundancy for HVAC systems at facilities that house vulnerable populations.						
TRUMBULL COUNTY	87	Protection	EMA Director	5-6-2026	5-5-2031	LOC
Mitigation Action 4.4 The jurisdiction will implement a program of dry hydrant installation in ponds throughout the area to aid in supplying water to fire departments during drought, times of extreme water use, or during a water supply outage.						

TRUMBULL COUNTY	88	Response Enhancement	EMA Director & Fire Chief Assn.	5-6-2026	5-5-2031	LOC
Mitigation Action 4.5 Organize outreach to assist and support vulnerable populations during severe drought, extreme heat, or when an extensive fire might threaten their area.						
TRUMBULL COUNTY	89	Social Vulnerability Reduction	EMA Director	5-6-2026	5-5-2031	LOC
GOAL 5: THE JURISDICTION WILL REDUCE VULNERABILITY TO DAMAGES CAUSED BY EARTHQUAKE.						
Hazard: Earthquake						
Mitigation Action 5.1 The jurisdiction will identify and quantify vulnerable property, people, and potential damages and costs from a 5.0 earthquake within 20 miles.						
TRUMBULL COUNTY	90	Protection	County Engineer & CBO	5-6-2026	5-5-2031	LOC
HOWLAND TOWNSHIP	46	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	47	Protection	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	31	Protection	Fire Chief	5-6-2026	5-5-2031	
GIRARD	39	Protection	Fire Chief	5-6-2026	5-5-2031	
HUBBARD	35	Protection	Fire Chief	5-6-2026	5-5-2031	
LORDSTOWN	30	Protection	Fire Chief	5-6-2026	5-5-2031	
MCDONALD	35	Protection	Fire Chief	5-6-2026	5-5-2031	
NEWTON FALLS	38	Protection	Fire Chief	5-6-2026	5-5-2031	
NILES	39	Protection	Fire Chief	5-6-2026	5-5-2031	
WARREN	41	Protection	Fire Chief	5-6-2026	5-5-2031	
WEST FARMINGTON	28	Protection	Fire Chief	5-6-2026	5-5-2031	
MAHONING VALLEY SANITARY DISTRICT	1	Protection	Superintendent of Purification	5-6-2026	5-5-2031	
Mitigation Action 5.2 The jurisdiction will identify future development and current management practices that will reduce vulnerability to a less-expected strong earthquake within 25 miles of any part of the jurisdiction.						
TRUMBULL COUNTY	91	Protection	EMA Director	5-6-2026	5-5-2031	LOC
MAHONING VALLEY SANITARY DISTRICT	2	Protection	Superintendent of Purification	5-6-2026	5-5-2031	
Mitigation Action 5.3 The jurisdiction will identify resources, suppliers, equipment, and facilities necessary to provide for the eight community lifelines after an earthquake, including the sheltering and caring for residents.						
TRUMBULL COUNTY	92	Response Enhancement	EMA Director	5-6-2026	5-5-2031	LOC
HOWLAND TOWNSHIP	47	Response Enhancement	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	48	Response Enhancement	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	32	Response Enhancement	City Manager	5-6-2026	5-5-2031	
GIRARD	40	Response Enhancement	City Manager	5-6-2026	5-5-2031	
HUBBARD	36	Response Enhancement	City Manager	5-6-2026	5-5-2031	
LORDSTOWN	31	Response Enhancement	Village Administrator	5-6-2026	5-5-2031	
MCDONALD	36	Response Enhancement	Village Administrator	5-6-2026	5-5-2031	
NEWTON FALLS	39	Response Enhancement	City Manager	5-6-2026	5-5-2031	
NILES	40	Response Enhancement	City Manager	5-6-2026	5-5-2031	
WARREN	42	Response Enhancement	City Manager	5-6-2026	5-5-2031	
WEST FARMINGTON	29	Response Enhancement	Village Administrator	5-6-2026	5-5-2031	
MAHONING VALLEY SANITARY DISTRICT	3	Response Enhancement	Superintendent of Purification	5-6-2026	5-5-2031	
Goal 6: The jurisdiction will reduce vulnerability to and loss from all consequences of flooding.						
Hazard: Pluvial flooding (surface, flash, areal); Fluvial flooding (riverine); Storm-water back up; Land Subsidence and Erosion, Dam failure						

Mitigation Action 6.1 The jurisdiction will clear ditches, streams, creeks, and road ditches of debris, crop fodder, obstructions, and fallen trees to facilitate adequate drainage due to heavy rains, flat terrain, and old drainage systems when the waterway is part of the county ditch maintenance program, and will advocate for other appropriate waterways to become part of the ditch maintenance system through the proper process.						
TRUMBULL COUNTY	1	Protection Prevention	Soil Conservation Director	5-6-2026	5-5-2031	LOC
HOWLAND TOWNSHIP	1	Protection Prevention	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	1	Protection Prevention	Township Administrator	5-6-2026	5-5-2031	
Mitigation Action 6.2 The jurisdiction will maintain, or establish, NFIP participation, and will support flood loss reduction through regular review and update of floodplain regulations, and will actively participate in the development and adoption of new flood risk maps as that process occurs, and will consider CRS participation.						
TRUMBULL COUNTY	2	Protection	County Floodplain Manager	5-6-2026	5-5-2031	LOC
CORTLAND	7	Protection	Local Floodplain Manager	5-6-2026	5-5-2031	
GIRARD	1	Protection	Local Floodplain Manager	5-6-2026	5-5-2031	
HUBBARD	1	Protection	Local Floodplain Manager	5-6-2026	5-5-2031	
LORDSTOWN	7	Protection	Local Floodplain Manager	5-6-2026	5-5-2031	
MCDONALD	9	Protection	Local Floodplain Manager	5-6-2026	5-5-2031	
NEWTON FALLS	1	Protection	Local Floodplain Manager	5-6-2026	5-5-2031	
NILES	1	Protection	Local Floodplain Manager	5-6-2026	5-5-2031	
ORANGEVILLE	1	Protection	Local Floodplain Manager	5-6-2026	5-5-2031	
WARREN	1	Protection	Local Floodplain Manager	5-6-2026	5-5-2031	
WEST FARMINGTON	9	Protection	Local Floodplain Manager	5-6-2026	5-5-2031	
YANKEE LAKE	9	Protection	Local Floodplain Manager	5-6-2026	5-5-2031	
Mitigation Action 6.3 The jurisdiction will review, update, apply and enforce existing land use regulations, zoning rules, commercial building codes, and other permit processes as development tools, especially in areas with high flood vulnerability or in high development areas to support construction practices that mitigate damages due to flooding.						
TRUMBULL COUNTY	3	Prevention	Floodplain Manager, CBO	5-6-2026	5-5-2031	LOC ICC Plus-Up
HOWLAND TOWNSHIP	2	Prevention	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIO	2	Prevention	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	10	Prevention	Floodplain Manager	5-6-2026	5-5-2031	
GIRARD	2	Prevention	Floodplain Manager	5-6-2026	5-5-2031	
HUBBARD	2	Prevention	Floodplain Manager	5-6-2026	5-5-2031	
LORDSTOWN	8	Prevention	Floodplain Manager	5-6-2026	5-5-2031	
MCDONALD	10	Prevention	Floodplain Manager	5-6-2026	5-5-2031	
NEWTON FALLS	2	Prevention	Floodplain Manager	5-6-2026	5-5-2031	
NILES	2	Prevention	Floodplain Manager	5-6-2026	5-5-2031	
ORANGEVILLE	2	Prevention	Floodplain Manager	5-6-2026	5-5-2031	
WARREN	2	Prevention	Floodplain Manager	5-6-2026	5-5-2031	
WEST FARMINGTON	10	Prevention	Floodplain Manager	5-6-2026	5-5-2031	
YANKEE LAKE	10	Prevention	Floodplain Manager	5-6-2026	5-5-2031	
Mitigation Action 6.4 The jurisdiction will utilize acquisition and relocation programs, or retrofit options, when property owners elect to relocate after repeated or extremely severe damage from flooding, and when their properties qualify for such programs.						
TRUMBULL COUNTY +Youngstown Property	4	Prevention	EMA Director, Floodplain Manager	5-6-2026	5-5-2031	FMA HMGP BRIC
HOWLAND TOWNSHIP	3	Prevention	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	3	Prevention	Township Administrator	5-6-2026	5-5-2031	
HUBBARD	3	Prevention	City Manager, Floodplain Manager	5-6-2026	5-5-2031	
MCDONALD	11	Prevention	Village Administrator, Floodplain Manager	5-6-2026	5-5-2031	
WARREN	3	Prevention	City Manager, Floodplain Manager	5-6-2026	5-5-2031	
Mitigation Action 6.5 The jurisdiction will utilize structurally engineered water control structures like storm sewers, reservoirs, retention and detention ponds, dams, levees, dikes, floodwalls, and others not listed to control flooding in commercially and residentially developed areas and properties.						
TRUMBULL COUNTY	5	Engineered Solution	County Engineer, Floodplain Manager	5-6-2026	5-5-2031	
HOWLAND TOWNSHIP	4	Engineered Solution	Township Administrator	5-6-2026	5-5-2031	

LIBERTY TOWNSHIP	4	Engineered Solution	Township Administrator	5-6-2026	5-5-2031	HMGP
CORTLAND	11	Engineered Solution	City Engineer, Floodplain Manager	5-6-2026	5-5-2031	BRIC
GIRARD	3	Engineered Solution	City Engineer, Floodplain Manager	5-6-2026	5-5-2031	FMA
HUBBARD	4	Engineered Solution	City Engineer, Floodplain Manager	5-6-2026	5-5-2031	CDBG
LORDSTOWN	9	Engineered Solution	Village Administrator, Floodplain Mgr.	5-6-2026	5-5-2031	OWDA
MCDONALD	12	Engineered Solution	Village Administrator, Floodplain Mgr.	5-6-2026	5-5-2031	Ohio EPA
NEWTON FALLS	3	Engineered Solution	City Engineer, Floodplain Manager	5-6-2026	5-5-2031	ICC
NILES	3	Engineered Solution	City Engineer, Floodplain Manager	5-6-2026	5-5-2031	ST
ORANGEVILLE	3	Engineered Solution	Village Administrator, Floodplain Mgr.	5-6-2026	5-5-2031	
WARREN	4	Engineered Solution	City Engineer, Floodplain Manager	5-6-2026	5-5-2031	
WEST FARMINGTON	11	Engineered Solution	Village Administrator, Floodplain Mgr.	5-6-2026	5-5-2031	
YANKEE LAKE	11	Engineered Solution	Village Administrator, Floodplain Mgr.	5-6-2026	5-5-2031	
MAHONING VALLEY SANITARY DISTRICT	9	Engineered Solution	Superintendent of Purification	5-6-2026	5-5-2031	
Mitigation Action 6.6 The jurisdiction will encourage management of surface runoff and chemical residue through techniques such as installation of grassy waterways, creation of infiltration basins and trenches, porous pavement installation, filtration techniques like us of catch basin inserts, sand and organic filters, rain gardens, and vegetated filter strips.						
TRUMBULL COUNTY	6	Resource Protection	SWCD Director	5-6-2026	5-5-2031	Other
Mitigation Action 6.7 The jurisdiction will protect topsoil by advocating for crop rotation, crop residue management, contour farming and strip-cropping, use of cover crops, rotation grazing, establishment of grassy waterways, grade stabilization structures, water and sediment control basins, terracing, manure storage, and runoff control, well abandonment, riparian buffers, windbreaks, woodlot management, and tree planting.						
TRUMBULL COUNTY	7	Resource Protection	SWCD Director	5-6-2026	5-5-2031	USDA
Mitigation Action 6.8 The jurisdiction will use stream bank protection measures such as installing dormant woody stakes and posts, planting trees, shrubs and grasses along banks and berms, using gabion revetments, riprap revetments, crib walls, using deflectors to prevent deterioration or other similar methods to protect the banks and berms.						
TRUMBULL COUNTY	8	Protection	SWCD Director	5-6-2026	5-5-2031	Other
Mitigation Action 6.9 The jurisdiction will manage stream flow through channel modification, sedimentation, debris and obstruction and stream ecology management practices.						
TRUMBULL COUNTY	9	Resource Protection	SWCD Director	5-6-2026	5-5-2031	LOC
Mitigation action 6.10 The jurisdiction will utilize biotechnical methods (placement of willow posts, hardwood tree plantings, fascines, brush layering, evergreen revetments, log revetments, tree kickers, lunker structures, or placed rocks as examples) to minimize the deterioration or destruction of stream banks due to excessive flow.						
TRUMBULL COUNTY	10	Resource Protection	SWCD Director	5-6-2026	5-5-2031	LOC
Mitigation Action 6.11 The jurisdiction will work with organizations that have an interest in flood prevention and control as well as waterway maintenance to study countywide water drainage, to identify areas where natural bottlenecks occur, and to manage upstream surface flooding to lessen flooding and damages.						
TRUMBULL COUNTY	11	Protection	Floodplain Manager, EMA Director	5-6-2026	5-5-2031	LOC
Mitigation Action 6.12 The jurisdiction will maintain and enforce floodplain, zoning, and building regulations to manage development in flood-prone areas.						
TRUMBULL COUNTY	12	Protection	Floodplain Manager, Planning Commission Director	5-6-2026	5-5-2031	
HOWLAND TOWNSHIP	5	Protection	Township Administrator	5-6-2026	5-5-2031	LOC
LIBERTY TOWNSHIP	5	Protection	Township Administrator	5-6-2026	5-5-2031	ICC
CORTLAND	12	Protection	Floodplain Manager, Zoning Inspector	5-6-2026	5-5-2031	
GIRARD	4	Protection	Floodplain Manager, Zoning Inspector	5-6-2026	5-5-2031	
HUBBARD	5	Protection	Floodplain Manager, Zoning Inspector	5-6-2026	5-5-2031	
LORDSTOWN	10	Protection	Floodplain Manager, Zoning Inspector	5-6-2026	5-5-2031	
MCDONALD	13	Protection	Floodplain Manager, Zoning Inspector	5-6-2026	5-5-2031	
NEWTON FALLS	4	Protection	Floodplain Manager, Zoning Inspector	5-6-2026	5-5-2031	
NILES	4	Protection	Floodplain Manager, Zoning Inspector	5-6-2026	5-5-2031	
ORANGEVILLE	4	Protection	Floodplain Manager, Zoning Inspector	5-6-2026	5-5-2031	
WARREN	5	Protection	Floodplain Manager, Zoning Inspector	5-6-2026	5-5-2031	
WEST FARMINGTON	12	Protection	Floodplain Manager, Zoning Inspector	5-6-2026	5-5-2031	
YANKEE LAKE	12	Protection	Floodplain Manager, Zoning Inspector	5-6-2026	5-5-2031	

Mitigation Action 6.13 The jurisdiction will maintain, repair, upgrade, replace, or add storm sewers and related systems and increase culvert sizes and bridge spans as necessary to reduce flooding, and will improve and repair roadways and berms damaged by rapid runoff and heavy precipitation. They will acquire and utilize adequate rapidly deployable signage for flooded roadways to prevent excess damage through improper use.						
TRUMBULL COUNTY	13	Protection	County Engineer, Sheriff	5-6-2026	5-5-2031	BRIC HMGP
HOWLAND TOWNSHIP	6	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	6	Protection	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	13	Protection	City Engineer	5-6-2026	5-5-2031	
GIRARD	5	Protection	City Engineer	5-6-2026	5-5-2031	
HUBBARD	6	Protection	City Engineer	5-6-2026	5-5-2031	
NEWTON FALLS	5	Protection	City Engineer	5-6-2026	5-5-2031	
NILES	5	Protection	City Engineer	5-6-2026	5-5-2031	
WARREN	6	Protection	City Engineer	5-6-2026	5-5-2031	
Mitigation Action 6.14 The jurisdiction will conduct an awareness campaign for individual flood insurance.						
TRUMBULL COUNTY	14	Protection	Floodplain Manager	5-6-2026	5-5-2031	LOC
Mitigation Action 6.15 The jurisdiction will elevate structures and infrastructure (buildings, roadways, bridges, culverts, etc.) to prevent flooding of streets, under passes and bridges or culverts.						
TRUMBULL COUNTY	15	Protection	County Engineer, Floodplain Manager	5-6-2026	5-5-2031	LOC HMGP BRIC
HOWLAND TOWNSHIP	7	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	7	Protection	Township Administrator	5-6-2026	5-5-2031	
GIRARD	6	Protection	City Engineer, Floodplain Manager	5-6-2026	5-5-2031	
MCDONALD	14	Protection	Village Administrator, Floodplain Mgr.	5-6-2026	5-5-2031	
NILES	6	Protection	City Engineer, Floodplain Manager	5-6-2026	5-5-2031	
WARREN	7	Protection	City Engineer, Floodplain Manager	5-6-2026	5-5-2031	
Mitigation Action 6.16 The jurisdiction will improve and repair roads, streets, bridges, culverts, sidewalks, and berms damaged by rapid runoff and heavy precipitation.						
TRUMBULL COUNTY	16	Protection	County Engineer	5-6-2026	5-5-2031	LOC HMGP BRIC
HOWLAND TOWNSHIP	8	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	8	Protection	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	14	Protection	City Engineer	5-6-2026	5-5-2031	
GIRARD	7	Protection	City Engineer	5-6-2026	5-5-2031	
HUBBARD	7	Protection	City Engineer	5-6-2026	5-5-2031	
LORDSTOWN	11	Protection	Street Superintendent	5-6-2026	5-5-2031	
MCDONALD	15	Protection	Street Superintendent	5-6-2026	5-5-2031	
NEWTON FALLS	6	Protection	City Engineer	5-6-2026	5-5-2031	
NILES	7	Protection	City Engineer	5-6-2026	5-5-2031	
ORANGEVILLE	5	Protection	Street Superintendent	5-6-2026	5-5-2031	
WARREN	8	Protection	City Engineer	5-6-2026	5-5-2031	
WEST FARMINGTON	13	Protection	Street Superintendent	5-6-2026	5-5-2031	
YANKEE LAKE	13	Protection	Street Superintendent	5-6-2026	5-5-2031	
Mitigation Action 6.17 The jurisdiction will maintain and add an adequate supply of rapidly deployable signs to mark flooded roadways in rural areas quickly and effectively.						
TRUMBULL COUNTY	17	Property Protection	County Engineer, Sheriff	5-6-2026	5-5-2031	LOC
Mitigation Action 6.18 The jurisdiction will utilize channel diversion or channel modification (deepening or widening) to re-route water or increase capacity and reduce flooding.						
TRUMBULL COUNTY	18	Engineered Solution	County Engineer, SWCD Director	5-6-2026	5-5-2031	BRIC FMA HMGP
HOWLAND TOWNSHIP	9	Engineered Solution	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	9	Engineered Solution	Township Administrator	5-6-2026	5-5-2031	
GIRARD	8	Engineered Solution	City Engineer	5-6-2026	5-5-2031	
NILES	8	Engineered Solution	City Engineer	5-6-2026	5-5-2031	
WARREN	9	Engineered Solution	City Engineer	5-6-2026	5-5-2031	
Mitigation Action 6.19 The jurisdiction will clear debris, fallen trees, excess sediment, crop debris, and other impediments to water movement from waterways to improve flow, including dredging as an option for silt and sediment.						
TRUMBULL COUNTY	19	Protection	County Engineer	5-6-2026	5-5-2031	LOC
HOWLAND TOWNSHIP	10	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	10	Protection	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	15	Protection	Utility Superintendent	5-6-2026	5-5-2031	
GIRARD	9	Protection	Utility Superintendent	5-6-2026	5-5-2031	

HUBBARD	8	Protection	Utility Superintendent	5-6-2026	5-5-2031	Other
LORDSTOWN	12	Protection	Street Superintendent	5-6-2026	5-5-2031	
MCDONALD	16	Protection	Street Superintendent	5-6-2026	5-5-2031	
NEWTON FALLS	7	Protection	Utility Superintendent	5-6-2026	5-5-2031	
NILES	9	Protection	Utility Superintendent	5-6-2026	5-5-2031	
ORANGEVILLE	6	Protection	Street Superintendent	5-6-2026	5-5-2031	
WARREN	10	Protection	Utility Superintendent	5-6-2026	5-5-2031	
WEST FARMINGTON	14	Protection	Street Superintendent	5-6-2026	5-5-2031	
YANKEE LAKE	14	Protection	Street Superintendent	5-6-2026	5-5-2031	
Mitigation Strategy 6.20 Identify repetitive loss and severe repetitive loss structures in the jurisdiction, and advocate for mitigation actions regarding these properties.						
TRUMBULL COUNTY	20	Prevention	EMA Director, Floodplain Manager	5-6-2026	5-5-2031	BRIC HMGP FMA
HOWLAND TOWNSHIP	11	Prevention	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	11	Prevention	Township Administrator	5-6-2026	5-5-2031	
HUBBARD	9	Prevention	City Manager, Safety Service Director	5-6-2026	5-5-2031	
MCDONALD	17	Prevention	Village Administrator	5-6-2026	5-5-2031	
WARREN	11	Prevention	City Manager, Safety Service Director	5-6-2026	5-5-2031	
Mitigation Strategy 6.21 The jurisdiction will conduct a Sanitary Sewer Evaluation Survey (SSES), a Flood Study and Survey, or a full Stormwater Study to provide information about drainage, impediments to drainage, and engineering information to be used in the design of flood mitigation activities.						
LIBERTY TOWNSHIP	12	Property Protection	Village Administrator	5-6-2026	5-5-2031	BRIC HMGP FMA
GIRARD	10	Property Protection	City Manager/City Engineer	5-6-2026	5-5-2031	
GOAL 7: THE JURISDICTION WILL REDUCE VULNERABILITY TO DAMAGES FROM FIRES, FIELD AND WOODLAND FIRES, AND HAZARDOUS MATERIALS SPILLS AND RELEASES.						
Hazard: Hazardous materials spills and releases, fires, woodland fires, and wildfires						
Mitigation Action 7.1 The jurisdiction will seek funding for and provide training and special equipment to all first responders, including EMS, in areas of technical and special rescue applicable to local needs, and will identify best practices for local technical rescue teams to best organize and manage local resources, especially where hazardous materials are involved in incidents on highways, rail, airports and fixed facilities.						
TRUMBULL COUNTY	66	Response Enhancement	EMA Director	5-6-2026	5-5-2031	LOC AFG HMEP HMGP
HOWLAND TOWNSHIP	35	Response Enhancement	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	36	Response Enhancement	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	22	Response Enhancement	Fire Chief	5-6-2026	5-5-2031	
GIRARD	35	Response Enhancement	Fire Chief	5-6-2026	5-5-2031	
HUBBARD	27	Response Enhancement	Fire Chief	5-6-2026	5-5-2031	
LORDSTOWN	21	Response Enhancement	Fire Chief	5-6-2026	5-5-2031	
MCDONALD	32	Response Enhancement	Fire Chief	5-6-2026	5-5-2031	
NEWTON FALLS	32	Response Enhancement	Fire Chief	5-6-2026	5-5-2031	
NILES	34	Response Enhancement	Fire Chief	5-6-2026	5-5-2031	
ORANGEVILLE	21	Response Enhancement	Fire Chief	5-6-2026	5-5-2031	
WARREN	36	Response Enhancement	Fire Chief	5-6-2026	5-5-2031	
WEST FARMINGTON	22	Response Enhancement	Fire Chief	5-6-2026	5-5-2031	
YANKEE LAKE	15	Response Enhancement	Fire Chief	5-6-2026	5-5-2031	
Mitigation Action 7.2 The jurisdiction will work to ensure that road signage is clear and visible to hazardous materials carriers for navigational purposes, and to help limit the use of county and township roads by heavy						

trucks and hazardous materials haulers to lessen road damage, wear and tear, and deterioration due to excess load weights.						
TRUMBULL COUNTY	67	Protection	County Engineer	5-6-2026	5-5-2031	LOC
Mitigation Action 7.3 The jurisdiction will work with business owners, pipelines, manufacturers, haulers, educational institutions, agriculture, and others, to ensure that entities that they support training first responders, including EMS, about how to respond to emergencies in their facilities or with their equipment, and to ensure that proper disclosure of contents takes place.						
TRUMBULL COUNTY	68	Response Enhancement	LEPC Coordinator	5-6-2026	5-5-2031	LOC
Mitigation Action 7.4 Work with ODOT to establish detour routes and signage to lessen inappropriate commercial traffic on county and township roads that have insufficient load limits or surfaces to handle that kind of commercial truck traffic.						
TRUMBULL COUNTY	69	Protection	County Engineer	5-6-2026	5-5-2031	LOC
Mitigation action 7.5 The jurisdiction will ensure capable response to hazardous materials incidents by maintaining adequate personnel, supplies, equipment, and training in preparation for hazardous materials emergency calls, as well as field and woodland fires in all departments providing first responders.						
TRUMBULL COUNTY	70	Protection	LEPC Coordinator	5-6-2026	5-5-2031	AFG Other LOC
HOWLAND TOWNSHIP	36	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	37	Protection	Township Administrator	5-6-2026	5-5-2031	
CORLAND	23	Protection	Fire Chief	5-6-2026	5-5-2031	
GIRARD	36	Protection	Fire Chief	5-6-2026	5-5-2031	
HUBBARD	28	Protection	Fire Chief	5-6-2026	5-5-2031	
LORDSTOWN	22	Protection	Fire Chief	5-6-2026	5-5-2031	
MCDONALD	33	Protection	Fire Chief	5-6-2026	5-5-2031	
NEWTON FALLS	33	Protection	Fire Chief	5-6-2026	5-5-2031	
NILES	35	Protection	Fire Chief	5-6-2026	5-5-2031	
ORANGEVILLE	22	Protection	Fire Chief	5-6-2026	5-5-2031	
WARREN	37	Protection	Fire Chief	5-6-2026	5-5-2031	
WEST FARMINGTON	23	Protection	Fire Chief	5-6-2026	5-5-2031	
YANKEE LAKE	16	Protection	Fire Chief	5-6-2026	5-5-2031	
Goal 8: The jurisdiction will reduce vulnerability to utility outages and failure of critical infrastructure.						
Hazard: Power failure, water emergency, communications failure, and road/highway failure.						
Mitigation Action 8.1 The jurisdiction will repair, replace, upgrade, and add storm sewer systems, or separate sanitary and storm water systems, where needed, to more quickly and efficiently manage the movement of storm water after heavy precipitation and/or during flooding, to better control back flow, and add pumps, generators, and other means to harden services for during inclement weather conditions.						
TRUMBULL COUNTY	53	Engineered Solution	County Engineer	5-6-2026	5-5-2031	BRIC HMGP CDBG OWA Other
HOWLAND TOWNSHIP	22	Engineered Solution	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	23	Engineered Solution	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	16	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
GIRARD	28	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
HUBBARD	10	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
LORDSTOWN	1	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
MCDONALD	26	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
NEWTON FALLS	16	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
NILES	22	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
ORANGEVILLE	15	Engineered Solution	Village Administrator	5-6-2026	5-5-2031	
WARREN	25	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
WEST FARMINGTON	15	Engineered Solution	Village Administrator	5-6-2026	5-5-2031	
YANKEE LAKE	17	Engineered Solution	Village Administrator	5-6-2026	5-5-2031	
Mitigation Action 8.2 The jurisdiction will develop a sanitary sewer improvement plan to be implemented as funding is available that will match capacity to current need under conditions of heavy and long-lasting precipitation to lessen sanitary sewer backup and basement flooding in homes and businesses.						
TRUMBULL COUNTY	54	Engineered Solution	County Engineer	5-6-2026	5-5-2031	BRIC
HOWLAND TOWNSHIP	23	Engineered Solution	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	24	Engineered Solution	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	17	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
GIRARD	29	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	

HUBBARD	11	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	HMGP EPA CDBG
LORDSTOWN	2	Engineered Solution	Village Administrator	5-6-2026	5-5-2031	
MCDONALD	27	Engineered Solution	Village Administrator	5-6-2026	5-5-2031	
NEWTON FALLS	17	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
NILES	23	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
ORANGEVILLE	16	Engineered Solution	Village Administrator	5-6-2026	5-5-2031	
WARREN	26	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
WEST FARMINGTON	16	Engineered Solution	Village Administrator	5-6-2026	5-5-2031	
YANKEE LAKE	18	Engineered Solution	Village Administrator	5-6-2026	5-5-2031	
Mitigation Action 8.3 The jurisdiction will work with utility providers to harden above-ground electrical and cellular service by installing wind-resistant poles and distribution lines, and by providing generators for use during outages to operate pump stations, relay stations, repeater towers, transmitters, receivers, charging stations, and other critical components.						
TRUMBULL COUNTY	55	Protection	County Engineer	5-6-2026	5-5-2031	LOC Other BRIC
HOWLAND TOWNSHIP	24	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	25	Protection	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	18	Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
GIRARD	30	Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
HUBBARD	12	Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
LORDSTOWN	3	Protection	Village Administrator	5-6-2026	5-5-2031	
MCDONALD	28	Protection	Village Administrator	5-6-2026	5-5-2031	
NEWTON FALLS	18	Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
NILES	24	Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
ORANGEVILLE	17	Protection	Village Administrator	5-6-2026	5-5-2031	
WARREN	27	Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
WEST FARMINGTON	17	Protection	Village Administrator	5-6-2026	5-5-2031	
YANKEE LAKE	19	Protection	Village Administrator	5-6-2026	5-5-2031	
Mitigation Action 8.4 The jurisdiction will repair, replace, reinforce, or strengthen roads, streets, alleys, berms, sidewalks, and other infrastructure components like treatment plants and pump stations to prevent, delay or limit damages from severe storms and flooding.						
TRUMBULL COUNTY	56	Engineered Solution	County Engineer	5-6-2026	5-5-2031	BRIC HMGP EPA, CDBG
HOWLAND TOWNSHIP	25	Engineered Solution	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	26	Engineered Solution	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	19	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
GIRARD	31	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
HUBBARD	13	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
LORDSTOWN	4	Engineered Solution	Village Administrator	5-6-2026	5-5-2031	
MCDONALD	29	Engineered Solution	Village Administrator	5-6-2026	5-5-2031	
NEWTON FALLS	19	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
NILES	25	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
ORANGEVILLE	18	Engineered Solution	Village Administrator	5-6-2026	5-5-2031	
WARREN	28	Engineered Solution	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
WEST FARMINGTON	18	Engineered Solution	Village Administrator	5-6-2026	5-5-2031	
YANKEE LAKE	20	Engineered Solution	Village Administrator	5-6-2026	5-5-2031	
Mitigation Action 8.5 The jurisdiction will assess the status and condition of all available generators, and fuel supplies for the generators, including establishing priority fuel status for critical facilities, and perform the necessary repairs, purchases, and replacements to ensure an operational alternate power supply exists when it is needed.						
TRUMBULL COUNTY	57	Protection	County Engineer	5-6-2026	5-5-2031	LOC BRIC
HOWLAND TOWNSHIP	26	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	27	Protection	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	20	Protection	City Manager/Safety Service Dir.	5-6-2026	5-5-2031	
GIRARD	32	Protection	City Manager/Safety Service Dir.	5-6-2026	5-5-2031	
HUBBARD	14	Protection	City Manager/Safety Service Dir.	5-6-2026	5-5-2031	
LORDSTOWN	5	Protection	Village Administrator	5-6-2026	5-5-2031	
MCDONALD	30	Protection	Village Administrator	5-6-2026	5-5-2031	
NEWTON FALLS	20	Protection	City Manager/Safety Service Dir.	5-6-2026	5-5-2031	
NILES	26	Protection	City Manager/Safety Service Dir.	5-6-2026	5-5-2031	
ORANGEVILLE	19	Protection	Village Administrator	5-6-2026	5-5-2031	
WARREN	29	Protection	City Manager/Safety Service Dir.	5-6-2026	5-5-2031	

WEST FARMINGTON	19	Protection	Village Administrator	5-6-2026	5-5-2031	
YANKEE LAKE	21	Protection	Village Administrator	5-6-2026	5-5-2031	
Mitigation Action 8.6 The jurisdiction will establish guidelines for residents to properly utilize alternate power sources during power outages, including a list of generator suppliers and rental resources, the use of wind turbines and solar systems on private property, and will make this information available to the public for use during outages caused by severe storms, flooding, and other outages.						
TRUMBULL COUNTY	58	Protection	County Engineer, EMA Director	5-6-2026	5-5-2031	LOC
Mitigation Action 8.7 The jurisdiction will participate in developing a countywide plan for utility mutual aid, redundancy, and assistance to provide for areas with few alternate options during a utility outage of any type.						
TRUMBULL COUNTY	59	Protection	EMA Director	5-6-2026	5-5-2031	LOC
Mitigation Action 8.8 The jurisdiction will work to determine vulnerability of raw water supplies in the county to contamination, especially where risks like mining or fracking operations exist, there is industrial use of high hazard chemicals, or upstream contamination is present and/or likely.						
HOWLAND TOWNSHIP	27	Resource Protection	Township Administrator	5-6-2026	5-5-2031	LOC ICC CWA OWA
LIBERTY TOWNSHIP	28	Resource Protection	Township Administrator	5-6-2026	5-5-2031	
GIRARD	33	Resource Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
HUBBARD	15	Resource Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
NEWTON FALLS	21	Resource Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
NILES	27	Resource Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
WARREN	30	Resource Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
WEST FARMINGTON	20	Resource Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
Mitigation Action 8.9 The jurisdiction will advocate for improvement to water treatment plants, distribution systems, dams, reservoirs, testing and monitoring systems, and treatment capabilities to improve resiliency.						
TRUMBULL COUNTY	60	Protection	County Engineer	5-6-2026	5-5-2031	BRIC HMPG CDBG ICC USACE
HOWLAND TOWNSHIP	28	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	29	Protection	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	21	Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
GIRARD	34	Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
HUBBARD	16	Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
LORDSTOWN	6	Protection	Village Administrator	5-6-2026	5-5-2031	
MCDONALD	31	Protection	Village Administrator	5-6-2026	5-5-2031	
NEWTON FALLS	22	Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
NILES	28	Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
ORANGEVILLE	20	Protection	Village Administrator	5-6-2026	5-5-2031	
WARREN	31	Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
WEST FARMINGTON	21	Protection	Engineer/Utility Superintendent	5-6-2026	5-5-2031	
YANKEE LAKE	22	Protection	Village Administrator	5-6-2026	5-5-2031	
Goal 9: The jurisdiction will reduce vulnerability to land subsidence, erosion, and other degradation of soils and embankments.						
Hazard: Land subsidence, erosion, embankment collapse, and sinkhole development						
Mitigation Action 9.1 The jurisdiction will support and conduct programs that reduce erosion and sedimentation along riverbanks, ditch banks, road berms, and areas that wash away after heavy or prolonged precipitation to protect property, structures, and other assets.						
TRUMBULL COUNTY	81	Resource Protection	SWCD Director, EMA Director, County Engineer, NRCS Director	5-6-2026	5-5-2031	LOC Other
HOWLAND TOWNSHIP	43	Resource Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	44	Resource Protection	Township Administrator	5-6-2026	5-5-2031	
GIRARD	37	Resource Protection	City Engineer	3-9-26	5-5-2031	
HUBBARD	34	Resource Protection	Engineer/Utility Superintendent	3-9-26	5-5-2031	
LORDSTOWN	32	Resource Protection	Village Administrator	3-9-26	5-5-2031	
NEWTON FALLS	34	Resource Protection	Engineer/Utility Superintendent	3-9-26	5-5-2031	
NILES	36	Resource Protection	Engineer/Utility Superintendent	3-9-26	5-5-2031	
WARREN	43	Resource Protection	Engineer/Utility Superintendent	3-9-26	5-5-2031	
WEST FARMINGTON	27	Resource Protection	Engineer/Utility Superintendent	3-9-26	5-5-2031	
Mitigation Action 9.2 The jurisdiction will develop an inventory system for properties to be listed when signs of erosion or movement is present, and documents mitigation measures suggested or employed; this inventory should be kept at one single point of contact in Trumbull County.						
TRUMBULL COUNTY	82	Resource Protection	EMA Director, County Engineer	5-6-2026	5-5-2031	LOC

Mitigation Action 9.3 The jurisdiction will advocate for, support and implement slope protection actions along waterways and other vulnerable areas where natural causes endanger property, structures, or other vulnerabilities exist.						
TRUMBULL COUNTY	83	Resource Protection	SWCD Director	5-6-2026	5-5-2031	HMGP BRIC
Mitigation Action 9.4 The jurisdiction will encourage property owners and developers to submit historic abandoned mine maps to ODNR.						
TRUMBULL COUNTY	84	Resource Protection	EMA Director	5-6-2026	5-5-2031	LOC
Goal 10: The jurisdiction will reduce vulnerability to severe storms, including thunderstorms, tornadoes, windstorms and winter storms, extreme cold and cold waves, and all other components of those storms.						
Hazard: Severe thunderstorms, hail, lightning, thundersnow, tornado, high winds, blizzard or heavy snow, blowing and drifting snow, extreme cold, ice, microbursts, heavy rain, extreme cold, and other forms of severe storms, including invasive species concerns.						
Mitigation Action 10.1 The jurisdiction will establish, maintain, improve, and/or promote public warning and notification systems (reverse 911, opt-in systems, digital systems, outdoor warning sirens, weather radios, etc.), and will identify and fill gaps in these systems as they exist.						
TRUMBULL COUNTY	21	Protection Critical Information	EMA Director	5-6-2026	5-5-2031	BRIC HMGP
HUBBARD	17	Protection Critical Information	City Manager/Safety Service Director	5-6-2026	5-5-2031	
Mitigation Action10.2: The jurisdiction will advocate for and support the construction of safe rooms in single and multi-family homes and neighborhoods, especially those without basements, mobile home parks or manufactured home neighborhoods, or other properties to create shelter from life-threatening storms, provided by property owners. (applies also to invasive species concerns)						
TRUMBULL COUNTY	22	Protection	EMA Director	5-6-2026	5-5-2031	HMGP BRIC FMA LOC
HOWLAND TOWNSHIP	12	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	13	Protection	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	1	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
GIRARD	15	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
HUBBARD	18	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
LORDSTOWN	13	Protection	Village Administrator	5-6-2026	5-5-2031	
MCDONALD	1	Protection	Village Administrator	5-6-2026	5-5-2031	
NEWTON FALLS	8	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
NILES	15	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
ORANGEVILLE	7	Protection	Village Administrator	5-6-2026	5-5-2031	
WARREN	12	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
WEST FARMINGTON	1	Protection	Village Administrator	5-6-2026	5-5-2031	
YANKEE LAKE	1	Protection	Village Administrator	5-6-2026	5-5-2031	
Mitigation Action 10.3: The jurisdiction will work with mobile home park owners, multi-family rental unit owners, and manufactured housing subdivision owners to establish safe rooms and shelters for their residents to be used in severe and threatening weather.						
TRUMBULL COUNTY	23	Protection	EMA Director	5-6-2026	5-5-2031	HMPG
HOWLAND TOWNSHIP	13	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	14	Protection	Township Administrator	5-6-2026	5-5-2031	
Mitigation Action10.4: The jurisdiction will identify, coordinate with owners, and prepare facilities, including public schools and/or churches, to be used as safe areas, overnight shelters, community information centers, service centers, and comfort stations when severe storms or other conditions necessitate evacuation or sheltering services, or the delivery of other critical assistance, and ensure that facilities are equipped with generators to meet basic needs.						
TRUMBULL COUNTY	24	Protection Community Resilience	EMA Director	5-6-2026	5-5-2031	LOC
HOWLAND TOWNSHIP	14	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	15	Community Resilience	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	2	Protection Community Resilience	City Manager/Safety Service Director	5-6-2026	5-5-2031	
GIRARD	16	Protection Community Resilience	City Manager/Safety Service Director	5-6-2026	5-5-2031	
HUBBARD	19	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	

		Community Resilience				ICC
LORDSTOWN	14	Protection Community Resilience	Village Administrator	5-6-2026	5-5-2031	HMGP BRIC
MCDONALD	2	Protection Community Resilience	Village Administrator	5-6-2026	5-5-2031	
NEWTON FALLS	9	Protection Community Resilience	City Manager/Safety Service Director	5-6-2026	5-5-2031	
NILES	16	Protection Community Resilience	City Manager/Safety Service Director	5-6-2026	5-5-2031	
ORANGEVILLE	8	Protection Community Resilience	Village Administrator	5-6-2026	5-5-2031	
WARREN	13	Protection Community Resilience	City Manager/Safety Service Director	5-6-2026	5-5-2031	
WEST FARMINGTON	2	Protection Community Resilience	Village Administrator	5-6-2026	5-5-2031	
YANKEE LAKE	2	Protection Community Resilience	Village Administrator	5-6-2026	5-5-2031	
Mitigation Action 10.5: The jurisdiction will work with school districts and post-secondary institutions across the county to establish agreements and procedures to use their facilities, equipment, transportation vehicles, and possibly personnel, if needed and if available, during and after disasters, for the good of the community.						
Trumbull County	25	Protection Response Enhancement	EMA Director, ESC Superintendent	5-6-2026	5-5-2031	LOC
Mitigation Action 10.6: The jurisdiction will remove dead and diseased trees and other vegetation to limit potential debris after storms. (applies also to invasive species concerns)						
TRUMBULL COUNTY	26	Prevention	County Engineer	5-6-2026	5-5-2031	
HOWLAND TOWNSHIP	15	Prevention	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	16	Prevention	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	3	Prevention	City Manager/Safety Service Director	5-6-2026	5-5-2031	LOC
GIRARD	17	Prevention	City Manager/Safety Service Director	5-6-2026	5-5-2031	
HUBBARD	20	Prevention	City Manager/Safety Service Director	5-6-2026	5-5-2031	
LORDSTOWN	15	Prevention	Village Administrator	5-6-2026	5-5-2031	
MCDONALD	3	Prevention	Village Administrator	5-6-2026	5-5-2031	
NEWTON FALLS	10	Prevention	City Manager/Safety Service Director	5-6-2026	5-5-2031	
NILES	17	Prevention	City Manager/Safety Service Director	5-6-2026	5-5-2031	
ORANGEVILLE	9	Prevention	Village Administrator	5-6-2026	5-5-2031	
WARREN	14	Prevention	City Manager/Safety Service Director	5-6-2026	5-5-2031	
WEST FARMINGTON	13	Prevention	Village Administrator	5-6-2026	5-5-2031	
YANKEE LAKE	3	Prevention	Village Administrator	5-6-2026	5-5-2031	
Mitigation Action 10.7: The jurisdiction will provide community education to jurisdictions and individuals about protective actions, evacuation procedures, preparedness information, and basic insurance coverage needs for residents to protect themselves from losses caused by severe storms.						
TRUMBULL COUNTY	27	Community Resilience	EMA Director	5-6-2026	5-5-2031	LOC
Mitigation Action 10.8: The jurisdiction will develop local, affordable, and functional countywide communication systems, in cooperation with municipalities, townships, and other departments, with the capability for multi-discipline and multi-jurisdictional communication.						
TRUMBULL COUNTY	28	Protection Response Enhancement	EMA Director Sheriff	5-6-2026	5-5-2031	AFG HSGP CDBG
Mitigation action 10.9: The jurisdiction will develop storm-response redundancy through the availability of permanent and portable generators, alternate communication systems, mobile command centers, and redundant suppliers of critical goods, services, and fuel.						
TRUMBULL COUNTY	29	Protection	EMA Director	5-6-2026	5-5-2031	HMGP EMPG
Mitigation Action 10.10: The jurisdiction will install uninterruptible power supplies on critical equipment in public facilities and offices.						
TRUMBULL COUNTY	30	Protection	EMA Director	5-6-2026	5-5-2031	
HOWLAND TOWNSHIP	16	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	17	Protection	Township Administrator	5-6-2026	5-5-2031	EMPG
CORTLAND	4	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	LOC

GIRARD	18	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
HUBBARD	21	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
LORDSTOWN	16	Protection	Village Administrator	5-6-2026	5-5-2031	
MCDONALD	4	Protection	Village Administrator	5-6-2026	5-5-2031	
NEWTON FALLS	11	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
NILES	18	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
ORANGEVILLE	10	Protection	Village Administrator	5-6-2026	5-5-2031	
WARREN	15	Protection	City Manager/Safety Service Director	5-6-2026	5-5-2031	
WEST FARMINGTON	4	Protection	Village Administrator	5-6-2026	5-5-2031	
YANKEE LAKE	4	Protection	Village Administrator	5-6-2026	5-5-2031	
Mitigation Action 10.11: The jurisdiction will install lightning detectors on public buildings and gathering places.						
TRUMBULL COUNTY	31	Protection	County Engineer	5-6-2026	5-5-2031	
HOWLAND TOWNSHIP	17	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	18	Protection	Township Administrator	5-6-2026	5-5-2031	EMPG
CORTLAND	5	Protection	City Manager/Utility Superintendent	5-6-2026	5-5-2031	LOC
GIRARD	19	Protection	City Manager/Utility Superintendent	5-6-2026	5-5-2031	
HUBBARD	22	Protection	City Manager/Utility Superintendent	5-6-2026	5-5-2031	
LORDSTOWN	17	Protection	Village Administrator	5-6-2026	5-5-2031	
MCDONALD	5	Protection	Village Administrator	5-6-2026	5-5-2031	
NEWTON FALLS	12	Protection	City Manager/Utility Superintendent	5-6-2026	5-5-2031	
NILES	19	Protection	City Manager/Utility Superintendent	5-6-2026	5-5-2031	
ORANGEVILLE	11	Protection	Village Administrator	5-6-2026	5-5-2031	
WARREN	16	Protection	City Manager/Utility Superintendent	5-6-2026	5-5-2031	
WEST FARMINGTON	5	Protection	Village Administrator	5-6-2026	5-5-2031	
YANKEE LAKE	5	Protection	Village Administrator	5-6-2026	5-5-2031	
Mitigation Action 10.12: The jurisdiction will encourage the use of storm and wind resistance materials like roof shingles that resist uplifting winds, siding that withstands hail, and other materials that are storm resistant.						
TRUMBULL COUNTY	32	Protection	CBO, Planning Commission Director	5-6-2026	5-5-2031	
HOWLAND TOWNSHIP	18	Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	19	Protection	Township Administrator	5-6-2026	5-5-2031	EMPG
CORTLAND	6	Protection	City Manager/Building Inspection	5-6-2026	5-5-2031	LOC
GIRARD	20	Protection	City Manager/Building Inspection	5-6-2026	5-5-2031	
HUBBARD	23	Protection	City Manager/Building Inspection	5-6-2026	5-5-2031	
LORDSTOWN	18	Protection	Village Administrator	5-6-2026	5-5-2031	
MCDONALD	6	Protection	Village Administrator	5-6-2026	5-5-2031	
NEWTON FALLS	13	Protection	City Manager/Building Inspection	5-6-2026	5-5-2031	
NILES	20	Protection	City Manager/Building Inspection	5-6-2026	5-5-2031	
ORANGEVILLE	12	Protection	Village Administrator	5-6-2026	5-5-2031	
WARREN	17	Protection	City Manager/Building Inspection	5-6-2026	5-5-2031	
WEST FARMINGTON	6	Protection	Village Administrator	5-6-2026	5-5-2031	
YANKEE LAKE	6	Protection	Village Administrator	5-6-2026	5-5-2031	
Mitigation Action 10.13: The jurisdiction will encourage buildings constructed on temporary foundations to install permanent foundations and anchor the building to that foundation.						
TRUMBULL COUNTY	33	Property Protection	Auditor, Planning Commission Director, EMA Director	5-6-2026	5-5-2031	LOC
HOWLAND TOWNSHIP	19	Property Protection	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	20	Property Protection	Township Administrator	5-6-2026	5-5-2031	
Mitigation Action 10.14: The jurisdiction will lead local efforts to develop and/or sustain sources of volunteer assistance for elderly, disabled and others unable to remove debris, shovel snow, or otherwise clean up their properties after storms.						
TRUMBULL COUNTY	34	Protection Community Resilience	EMA Director	5-6-2026	5-5-2031	LOC HMGP
Mitigation Action 10.16: The jurisdiction will identify when and where the use of road salt to maintain roads during winter storms is damaging or could contaminate water supplies, and will use alternate substances to melt ice and snow when at all feasible.						
TRUMBULL COUNTY	35	Resource Protection	County Engineer	5-6-2026	5-5-2031	LOC
Mitigation Action 10.17: The jurisdiction will work with providers who have vehicles that could help mobility challenged individuals in disasters, include four-wheeled drive, multi-passenger, wheelchair accessible, and buses to create transportation strike teams for disaster response, when necessary.						

TRUMBULL COUNTY	36	Social Vulnerability Reduction	EMA Director, DJFS Director	5-6-2026	5-5-2031	LOC
Mitigation Action 10.18: The jurisdiction will establish an accessible, available, and affordable debris disposal program for debris after severe storms.						
TRUMBULL COUNTY	37	Response Enhancement	County Engineer, EMA Director	5-6-2026	5-5-2031	
HOWLAND TOWNSHIP	20	Response Enhancement	Township Administrator	5-6-2026	5-5-2031	LOC
LIBERTY TOWNSHIP	21	Response Enhancement	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	7	Response Enhancement	City Engineer/Utility Superintendent	5-6-2026	5-5-2031	
GIRARD	21	Response Enhancement	City Engineer/Utility Superintendent	5-6-2026	5-5-2031	
HUBBARD	24	Response Enhancement	City Engineer/Utility Superintendent	5-6-2026	5-5-2031	
LORDSTOWN	19	Response Enhancement	Village Administrator	5-6-2026	5-5-2031	
MCDONALD	7	Response Enhancement	Village Administrator	5-6-2026	5-5-2031	
NEWTON FALLS	14	Response Enhancement	City Engineer/Utility Superintendent	5-6-2026	5-5-2031	
NILES	21	Response Enhancement	City Engineer/Utility Superintendent	5-6-2026	5-5-2031	
ORANGEVILLE	13	Response Enhancement	Village Administrator	5-6-2026	5-5-2031	
WARREN	18	Response Enhancement	City Engineer/Utility Superintendent	5-6-2026	5-5-2031	
WEST FARMINGTON	7	Response Enhancement	Village Administrator	5-6-2026	5-5-2031	
YANKEE LAKE	7	Response Enhancement	Village Administrator	5-6-2026	5-5-2031	
Mitigation Action 10.19: The jurisdiction will establish a county-wide evacuation assessment for special residential facilities that indicates which facilities are self-sufficient, which would need external help, the type help they would need, and which ones would need to shelter in place due to situations that would make evacuation extremely difficult or impossible.						
TRUMBULL COUNTY	38	Community Resilience	EMA Director, MHRB Director, MRDD Director	5-6-2026	5-5-2031	LOC
Mitigation Action 10.20: The jurisdiction will identify transient or temporary groups, such as tourists, campers, or other visitors, who may have limited communication to receive weather warnings or ask for help, a lack of familiarity with the area, and could require special assistance for protective action during life-threatening weather events.						
TRUMBULL COUNTY	39	Community Resilience	EMA Director, Chamber of Commerce Director	5-6-2026	5-5-2031	LOC
Goal 11: The jurisdiction will engage in mitigation actions that enable the public to obtain and use disaster information to save lives and preserve property, and to have adequate disaster services to help all residents recover from disasters that occur.						
Hazard: Applicable to all hazards; special emphasis upon fire-related damages and readiness						
Mitigation Action 11.1 The jurisdiction will improve public warning and notification capability through additional and/or upgraded outdoor warning sirens, improvements to warning software, wireless notification systems, weather radios, or public outreach.						
TRUMBULL COUNTY	40	Community Resilience	EMA Director, Sheriff	5-6-2026	5-5-2031	ICC
HUBBARD	25	Community Resilience	City Manager	5-6-2026	5-5-2031	BRIC HMGP
Mitigation Action 11.2 The jurisdiction will work to improve and expand public safety services, with an emphasis upon volunteer recruitment, training and retention for fire and EMS services, and effective mutual aid programs for gaps in response capabilities so that emergency needs can be met under both daily and extreme or long-term conditions by working with the State of Ohio, neighboring departments, and professional organizations to achieve this goal.						

TRUMBULL COUNTY	41	Response Enhancement	EMA Director, Fire Chief's Assn.	5-6-2026	5-5-2031	LOC ICC ST AFG Other
HOWLAND TOWNSHIP	21	Response Enhancement	Township Administrator	5-6-2026	5-5-2031	
LIBERTY TOWNSHIP	22	Response Enhancement	Township Administrator	5-6-2026	5-5-2031	
CORTLAND	8	Response Enhancement	Fire Chief, Mayor	5-6-2026	5-5-2031	
GIRARD	22	Response Enhancement	Fire Chief, Mayor	5-6-2026	5-5-2031	
HUBBARD	26	Response Enhancement	Fire Chief, Mayor	5-6-2026	5-5-2031	
4LORDSTOWN	20	Response Enhancement	Fire Chief, Mayor	5-6-2026	5-5-2031	
M4CDONALD	8	Response Enhancement	Fire Chief, Mayor	5-6-2026	5-5-2031	
NEWTON FALLS	15	Response Enhancement	Fire Chief, Mayor	5-6-2026	5-5-2031	
NILES	41	Response Enhancement	Fire Chief, Mayor	5-6-2026	5-5-2031	
ORANGEVILLE	14	Response Enhancement	Fire Chief, Mayor	5-6-2026	5-5-2031	
WARREN	19	Response Enhancement	Fire Chief, Mayor	5-6-2026	5-5-2031	
WEST FARMINGTON	8	Response Enhancement	Fire Chief, Mayor	5-6-2026	5-5-2031	
YANKEE LAKE	8	Response Enhancement	Fire Chief, Mayor	5-6-2026	5-5-2031	
Mitigation Action 11.3: The jurisdiction will review, update, and improve the Emergency Operations Plan so that special needs, disabled, and disadvantaged populations are able to survive disasters without a gap in the services they require daily, and place special emphasis upon protective actions for highly vulnerable locations and populations.						
TRUMBULL COUNTY	42	Social Vulnerability Reduction	EMA Director, DJFS Director	5-6-2026	5-5-2031	EMPG
Mitigation Action 11.4 The jurisdictions will work together to advocate for adequate and pro-active behavioral health services in a similar manner to those regarding physical health so that underserved and disadvantaged populations can successfully obtain comprehensive treatment without a gap in existing services due to disasters.						
TRUMBULL COUNTY	43	Social Vulnerability Reduction	EMA Director, MHRB Director	5-6-2026	5-5-2031	LOC
Mitigation Action 11.5 The jurisdiction will work with municipalities and other districts, organizations, or agencies to incorporate mitigation measures into emergency operations plans, comprehensive plans, economic and community development plans, resource guides, and other community growth and operation documents to facilitate the accomplishment of mitigation goals.						
TRUMBULL COUNTY	44	Social Vulnerability Reduction	EMA Director, Planning Commission Director	5-6-2026	5-5-2031	LOC Other
Mitigation action 11.6 The jurisdiction will assess the adequacy of existing special rescue equipment (structural, extrication, water rescue, trench, or confined space, etc.), identify gaps in equipment and supplies, and develop and implement a way to obtain that equipment for local use in response during emergencies.						
TRUMBULL COUNTY	45	Response Enhancement	Fire Chief's Association, LEPC Coordinator, EMA Director	5-6-2026	5-5-2031	AFG, LOC Other
Mitigation Action 11.7 The jurisdiction will establish post-disaster recovery messages to assist people with specific needs, such as medical assistance, transportation, children's services, sensory devices, assistant with mental or emotional health or financial assistance.						
TRUMBULL COUNTY	46	Critical Information	EMA Director, Sheriff	5-6-2026	5-5-2031	LOC
Mitigation Action 11.8 The jurisdiction will update general evacuation guidance to address procedures for flood, severe storm, utility failure, environmental contamination, and other reasons for widespread protective evacuation in the county.						
TRUMBULL COUNTY	47	Protection	EMA Director	5-6-2026	5-5-2031	LOC

Mitigation Action 11.9 The jurisdiction will begin efforts to include cybersecurity threats in emergency operations, mitigation, and continuity planning by identifying and assigning the appropriate official with expertise to address this threat, and will then establish an initial plan to create a cybersecurity plan for Trumbull County with options for municipalities and townships to participate.						
TRUMBULL COUNTY	48	Prevention Protection	EMA Director	5-6-2026	5-5-2031	LOC
Mitigation Action 11.10 The jurisdiction will work with other jurisdictions, including school districts, to maintain a rolling list of critical facilities in the county, including school buildings, other public buildings, and buildings that house governance bodies, for the purpose of emergency operations planning.						
TRUMBULL COUNTY	49	Critical Information	EMA Director	5-6-2026	5-5-2031	LOC
Mitigation Action 11.11 The jurisdiction will establish a working group of first responders to address mutual aid, critical resources, and response redundancy needs that will provide the basis for development and maintenance of local and redundant response resources not dependent upon external entities.						
TRUMBULL COUNTY	50	Protection	EMA Director	5-6-2026	5-5-2031	LOC
Mitigation Action 11.12 The jurisdiction will work with the county departments and the municipalities to improve digital transparency and availability of local regulatory standards, inspection and approval contacts, and other key pieces of information that are necessary when acquiring, improving, or disposing of property.						
TRUMBULL COUNTY	51	Protection	Planning Commission Director	5-6-2026	5-5-2031	LOC
Mitigation Action 11.13 The jurisdiction will design, develop, purchase, and implement the use of software and/or digital applications to streamline, accelerate, and facilitate timely post-disaster regulatory inspection of properties during response and recovery periods.						
TRUMBULL COUNTY	52	Protection Response Enhancement	Chief Building Official EMA Director	5-6-2026	5-5-2031	BRIC HMGP Other

Each strategy developed is assigned a priority, action type, lead agency, timeline, and potential funding source. These elements are described below. While specific information in this chart may change prior to the implementation of a strategy, the exercise of assigning time lines required stakeholders to evaluate current resources and support programs to determine how to best reduce the effects of disaster. They had to bear in mind that many of the villages are small so they have few resources, financial and otherwise. Officials from Trumbull County had to consider throughout this process that county leaders generally hold the responsibility of multiple jobs, sometimes in multiple jurisdictions, as they do their work. Officials are both paid employee and volunteer in many cases. Public information campaigns, plan enhancements, and the establishment of emergency protective measures were the most likely capability and generally not significantly expensive. Upgrading notification/warning systems was second because the acquisition of equipment involves procurement and budget process, therefore taking at least one budget year. These systems are exceptionally important to small, rural communities. Collaboration with other groups and comprehensive actions, due to the need to build trust and association between groups, would take longer to accomplish goals because it involved a two-phase action plan. Last on the completion list at times were structural projects due to design time requirements, budget needs, and dependence upon outside funding sources through applications. The priorities of life safety, incident containment, and property conservation combined with budget and procurement needs were major factors in determining the priority of goals and strategies.

Rank

Priority identifies the order of importance jurisdictions assigned to each strategy. Strategies might not be implemented in this exact order, depending on availability of funds and other circumstances.

Action Type
Action type describes the kind of activity described in the strategy.

- **Prevention** – Avoid hazard related consequences, or stop an impact from happening or progressing
- **Protection** – Protect people and structures by modifying or strengthening buildings and other property to withstand impact, or strengthen the ability to respond to stop negative impacts from continuing
- **Resource Protection** – Reduce the impacts of natural hazard by preserving or restoring natural resources
- **Critical Information** – Advise the public and/or responders about hazards, hazardous areas, and mitigation techniques to protect people and property
- **Engineered Solution** – Lessen the impact of a hazard by modifying the environment or progression of the hazard event through designed and engineered projects
- **Response Enhancement** – Provide additional equipment, supplies, or training to cause a more-effective response
- **Community Resilience** – Increase the ability to withstand and recover from damages
- **Social Vulnerability Reduction** – Increases the ability to serve community members to the extent that all people have resources to recover from a disaster

Lead Agency
The lead agency is the entity or entities charged with championing the strategy and ensuring that jurisdiction officials consider opportunities to implement the strategy over the five-year planning cycle. This agency may not have the authority or power to make a strategy into a project, nor would they necessarily be responsible for project oversight or completion should the strategy develop into an actionable and funded project. Rather, the lead agency is responsible for coordinating the overall effort, plays a key role in championing the project, or, by default, is the entity most appropriate to lead project development at the initial stage. There were some cases where stakeholders felt more than one agency should fill this role, and those are stated as such. When the strategy becomes a feasible project, the listed agency is not the only entity that would be involved in its execution, nor is it the only entity involved in keeping the strategy on the jurisdiction's radar. For accountability purposes, the strategy is assigned to a single entity when possible. When the strategy becomes a project, the jurisdiction would identify a project manager who may or may not represent the lead agency assigned in this plan.

Timeline
The timeline identifies the time frame in which a mitigation strategy could realistically be implemented. The actual time frame may vary from what is described in this plan, depending on funding, grant opportunities, or changes in priorities as other critical activities are adjusted

to meet evolving community needs. At the time of plan development, these timelines fit logically within each jurisdiction's resources and support programs. As Trumbull County reviews this mitigation plan annually, the timelines will be reviewed, adjusted, and modified as appropriate.

Funding Sources

Funding sources change regularly as priorities and incidents drive them. All jurisdictions were advised, and discussed, the value in outlining their most important projects ahead of time, and being ready to respond to notices of available funding quickly and accurately. Having several projects that have been well-considered and evaluated, and researched for likely cost and variables, on the shelf and ready to complete a pre-application is highly recommended.

Mitigation strategies can be funded through a wide variety of sources. Depending on the type and cost of the project, different funding sources will be available and appropriate. Sources are taken from FEMA Mitigation Funding Sources online information. This information may change on a regular basis, and it was understood that the current federal administration has not yet provided guidance for any specific grant programs, or made decisions on the availability moving forward.

- BRIC – Building Resilient Infrastructure in Communities Program
- FMA – Flood Mitigation Assistance Grant
- HMGP – Hazard Mitigation Grant Program
- Plus-Up – FEMA Building Code Plus-Up Program
- AFG – Assistance to Firefighters Grant
- COG – Clean Ohio Grant
- CDBG – Community Development Block Grants
- ICC – Increased Cost of Compliance (including rate increases or premiums)
- LOC – Local Funds
- ST – State Funds
- OTHER – Other (including private funds and non-governmental agency funding)
- OSSC – Ohio School Safety Center Funding
- CWA – Clean Water Act Section 319 Grants
- WDG – Wetland Development Grants
- CAPP – Community Assistance and Protection Program for education and outreach
- USDA DA – USDA programs for technical assistance to farmers
- USDA NRCS – Various programs to relieve hazards related to flooding and conservation
- USACE – Planning Assistance, Floodplain Management, and Environmental Laboratory grants for the US Army Corps of Engineers
- USGS – United States Geological services grant programs
- H2OH – H2Ohio Agricultural Program
- COG – Clean Ohio Grant
- BRP – Brownfield Remediation Program

3.4 IMPLEMENTATION

The identified mitigation strategies are general actions that could be taken to reduce the negative impact of disasters and large-scale emergencies. For any given strategy to become an actionable item, it must be converted to a specific project with funding, action steps, timelines, and project goals. For example, if a property is to be acquired and demolished and the property owner relocated, that project must begin with the identification of the specific property to be acquired and the funding to be utilized for the project. The property owner must agree to accept the buy-out and use the money to purchase another home. The jurisdiction must accept its share of cost, planning responsibility, and project management roles. Only then can the actual project be executed. A similar process must be followed for any of the strategies identified here to become projects that reduce disaster loss in Trumbull County.

The EMA will monitor the implementation of these strategies through ongoing communication with officials and stakeholders, but other agencies may be selected to take the lead role in executing the project. When grant opportunities arise, reasonable efforts will be made to secure funding. For strategies that must be funded through local budgets, jurisdictions will work diligently to identify local funding sources that can be used to address disaster vulnerability. When funding is secured, a detailed project timeline will be developed and actionable steps taken to complete the project. Upon completion, effectiveness will be evaluated by the jurisdiction and findings shared with the EMA and planning team for consideration in developing future projects.

Many communities anticipate challenges in their ability to implement strategies, as discussed in section 2.1.11 Community Growth and Development Trends and Table 2-19 Jurisdictional Capabilities. Their capabilities may fluctuate depending upon the individuals who are elected and appointed to key roles and positions in Trumbull County's jurisdictions. In the coming five years, the grants that are available and the supporting funds that can be used for match, administration, and other project necessities will have a marked impact upon what actions are implemented and which are tabled or eliminated. Because Trumbull County is putting extensive effort in growth and development, and because the business world and economy are in a constant state of change, Trumbull County officials feel they must be adaptable and take advantage of opportunities as they arise, acting quickly based upon the growth goals they have established.

Because of this state of change and growth, this plan was written to be flexible and adaptable, allowing Trumbull County to take advantage of opportunities as they occur. In the coming months, as newly elected officials join those already in office, Trumbull County is set to move forward with both growth and mitigation efforts.

Officials expressed the desire to implement more mitigation actions in the coming five years than they were able to in the past five years. They hope that grant availability will improve, and the changes they have made in administrative issues will enable them to be able to apply for, receive and use grants where possible. They look optimistically to the future as they strive to

make Trumbull County safer and more resilient, and home to more residents and businesses soon.

The greatest value in these strategies is the process, knowledge, and reasoning stakeholders utilized during their development. The mitigation planning process required stakeholders to collaborate to evaluate hazards and risks in their community. New mitigation standards caused a new set of social agencies and service providers to come to the planning table, forging new relationships and associations. Many new perspectives and considerations were shared across the room as various parties expressed their opinions. They were required to examine the local community, predict where and under what conditions damages would occur, and identify how to reduce or eliminate potential damages after they identified who would be affected. The solutions, in the form of mitigation goals and actions that will ultimately develop into projects, had to be developed to maximize benefit to the community while minimizing cost. This process required whole community involvement so that the community was appropriately represented in the planning process.

Ultimately, Trumbull County developed a set of comprehensive, thoroughly considered, relevant, and effective solutions to problems that are likely to arise. As stakeholders considered how to solve potential problems, they utilized a collaborative spirit to address community-wide problems. These strategies were original thoughts to reduce disaster vulnerability and loss at the local level.

Given the availability of funding, personnel, and support, Trumbull County and its jurisdictions are positioned to move forward and implement these strategies to the best of their ability to accomplish their goals. Whatever mitigation activities are achieved will be well thought out, logical, and reasonable because of the community-wide all-inclusive hazard mitigation planning process.

4.0 PLAN ADOPTION

To complete the mitigation planning process, Trumbull County followed the formal process for state and federal plan review and local adoption. This section describes that process and includes all dates relevant to plan approval, adoption, and expiration. Adoption resolutions from all jurisdictions are also included.

4.1 FEDERAL AND STATE PLAN APPROVAL

After extensive review by stakeholders and the community, the Trumbull County Hazard Mitigation Plan was submitted to the Ohio Emergency Management Agency Mitigation Branch on <insert date>. The Ohio EMA completed their review of the plan on <insert date>. The Contractor and EMA incorporated Ohio EMA's recommended revisions and prepared the plan for final submission. FEMA issued a final letter of approval on <insert date>. Trumbull County and its villages adopted the plan as recorded in Table 4-1 Jurisdictional Approval below.

4.2 LOCAL ADOPTION

The local plan adoption process began upon submission of the plan for review from FEMA. Sample legislation was provided to each jurisdiction to assist in this process. A complete list of plan adoptions by jurisdiction is provided in table 4-1. Adoption resolutions were emailed to the Ohio EMA as received.

Table 4-1: Jurisdiction Adoption

Jurisdiction	Date of Adoption
Trumbull County	11-26-2025
City of Cortland	
City of Girard	
City of Hubbard	
Village of Lordstown	
Village of McDonald	
Village of Newton Falls	
City of Niles	
Village of Orangeville	
City of Warren	
Village of West Farmington	
Village of Yankee Lake	

4.3 PLAN EXPIRATION

The Trumbull County Hazard Mitigation Plan was assigned an expiration date of <insert date>. The process to maintain the plan will be ongoing throughout the five-year period, as explained in section 1.0 The Planning Process.

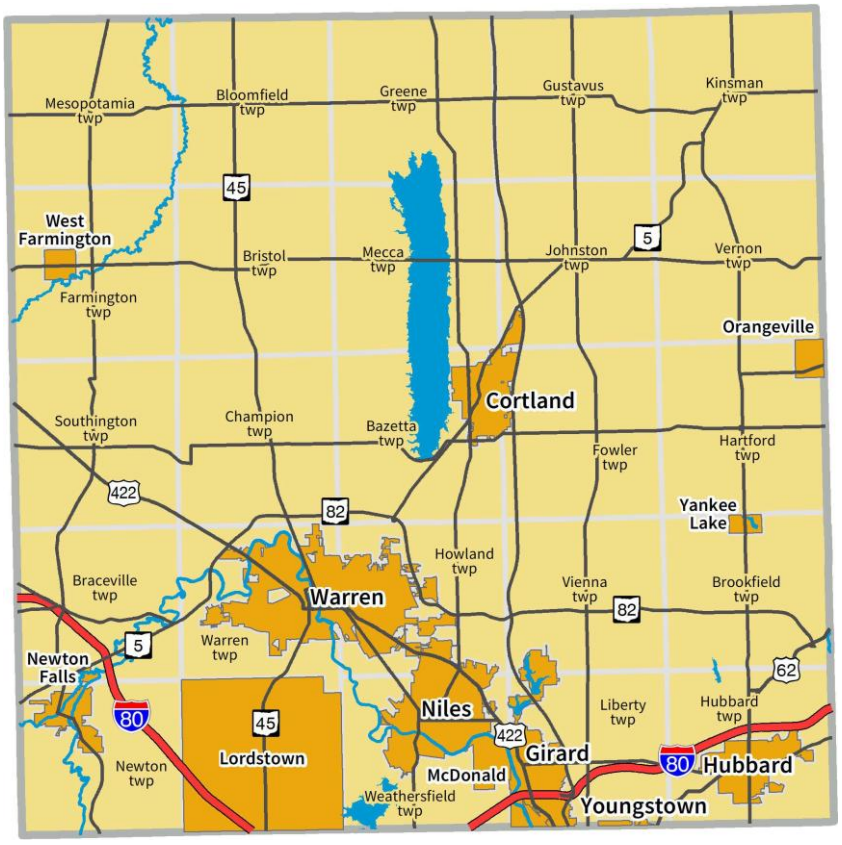
Ohio County Profiles

Prepared by the Office of Research **2025 Edition**

Ohio Department of Development

Trumbull County

Established: Proclamation - July 10, 1800
2024 Population: 200,300
Land Area: 615.8 square miles
County Seat: Warren City
Named for: Jonathan Trumbull, Connecticut Governor



Taxes

Taxable value of real property	$4,561,166,290
Residential	$3,392,794,660
Agriculture	$369,862,540
Industrial	$187,059,800
Commercial	$609,315,110
Mineral	$2,134,180
Ohio income tax liability	$94,950,127
Average per return	$999.75

Land Use/Land Cover

	Percent
Developed, Lower Intensity	18.60%
Developed, Higher Intensity	4.22%
Barren (strip mines, gravel pits, etc.)	0.13%
Forest	33.06%
Shrub/Scrub and Grasslands	0.81%
Pasture/Hay	16.18%
Cultivated Crops	14.51%
Wetlands	10.25%
Open Water	2.23%

Largest Places

	2024	2020
Warren city	38,683	39,164
Niles city	18,238	18,419
Howland twp UB	17,085	17,180
Liberty twp UB	11,884	11,940
Girard city	9,454	9,574
Champion twp	9,322	9,378
Brookfield twp UB	8,321	8,357
Weathersfield twp UB	8,019	8,023
Hubbard city	7,565	7,619
Cortland city	7,069	7,095

UB: Unincorporated balance

Total Population

Census

1800	1,302	1910	52,766
1810	8,671	1920	83,920
1820	15,546	1930	123,063
1830	26,153	1940	132,315
1840	38,107	1950	158,915
1850	30,490	1960	208,526
1860	30,656	1970	232,579
1870	38,659	1980	241,863
1880	44,880	1990	227,813
1890	42,373	2000	225,116
1900	46,591	2010	210,312

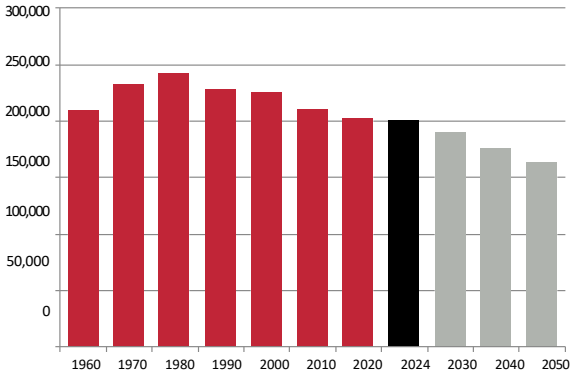
2020	201,977

Estimate

2024	200,300

Projection

2030	189,508
2040	175,155
2050	162,180



Ohio County Profiles

Trumbull County

Population by Race

	Number	Percent
ACS Total Population	201,367	100.0%
White	173,084	86.0%
African-American	16,140	8.0%
Native American	149	0.1%
Asian	1,136	0.6%
Pacific Islander	141	0.1%
Other	765	0.4%
Two or More Races	9,952	4.9%
Hispanic (may be of any race)	4,382	2.2%
Total Minority	30,014	14.9%

Educational Attainment

	Number	Percent
Persons 25 years and over	144,401	100.0%
No high school diploma	14,407	10.0%
High school graduate	62,093	43.0%
Some college, no degree	26,835	18.6%
Associate degree	11,762	8.1%
Bachelor's degree	19,491	13.5%
Master's degree or higher	9,813	6.8%

Family Type by Employment Status

	Number	Percent
Total Families	52,334	100.0%
Married couple, husband and wife in labor force	15,094	28.8%
Married couple, husband in labor force, wife not	7,451	14.2%
Married couple, wife in labor force, husband not	3,421	6.5%
Married couple, husband and wife not in labor force	10,195	19.5%
Male householder, in labor force	3,293	6.3%
Male householder, not in labor force	1,426	2.7%
Female householder, in labor force	7,159	13.7%
Female householder, not in labor force	4,295	8.2%

Household Income

	Number	Percent
Total Households	86,135	100.0%
Less than $10,000	5,310	6.2%
$10,000 to $19,999	8,869	10.3%
$20,000 to $29,999	8,124	9.4%
$30,000 to $39,999	8,591	10.0%
$40,000 to $49,999	8,070	9.4%
$50,000 to $59,999	7,209	8.4%
$60,000 to $74,999	9,147	10.6%
$75,000 to $99,999	10,920	12.7%
$100,000 to $149,999	12,199	14.2%
$150,000 to $199,999	4,055	4.7%
$200,000 or more	3,641	4.2%
Median household income	$55,088	

Percentages may not sum to 100% due to rounding.

Population by Age

	Number	Percent
ACS Total Population	201,367	100.0%
Under 5 years	10,582	5.3%
5 to 17 years	30,948	15.4%
18 to 24 years	15,436	7.7%
25 to 44 years	46,117	22.9%
45 to 64 years	53,921	26.8%
65 years and more	44,363	22.0%
Median Age	43.8	

Family Type by Presence of Own Children Under 18

	Number	Percent
Total Families	52,476	100.0%
Married-couple families with own children	10,969	20.9%
Male householder, no wife present, with own children	1,862	3.5%
Female householder, no husband present, with own children	5,690	10.8%
Families with no own children	33,955	64.7%

Poverty Status of Families By Family Type by Presence Of Related Children

	Number	Percent
Total Families	52,476	100.0%
Family income above poverty level	45,874	87.4%
Family income below poverty level	6,602	12.6%
Married couple, with related children	1,111	2.1%
Male householder, no wife present, with related children	520	1.0%
Female householder, no husband present, with related children	3,087	5.9%
Families with no related children	1,884	3.6%

Ratio of Income To Poverty Level

	Number	Percent
Population for whom poverty status is determined	197,357	100.0%
Below 50% of poverty level	14,600	7.4%
50% to 99% of poverty level	18,535	9.4%
100% to 124% of poverty level	9,130	4.6%
125% to 149% of poverty level	10,282	5.2%
150% to 184% of poverty level	13,849	7.0%
185% to 199% of poverty level	4,889	2.5%
200% of poverty level or more	126,072	63.9%

Geographical Mobility

	Number	Percent
Population aged 1 year and older	199,467	100.0%
Same house as previous year	182,789	91.6%
Different house, same county	9,143	4.6%
Different county, same state	4,451	2.2%
Different state	2,697	1.4%
Abroad	387	0.2%

Ohio County Profiles

Trumbull County

Travel Time To Work

	Number	Percent
Workers 16 years and over	79,852	100.0%
Less than 15 minutes	25,672	32.1%
15 to 29 minutes	32,291	40.4%
30 to 44 minutes	12,338	15.5%
45 to 59 minutes	3,884	4.9%
60 minutes or more	5,667	7.1%
Mean travel time	23.4 minutes	

Housing Units

	Number	Percent
Total housing units	94,510	100.0%
Occupied housing units	86,135	91.1%
Owner occupied	61,587	71.5%
Renter occupied	24,548	28.5%
Vacant housing units	8,375	8.9%

Year Structure Built

	Number	Percent
Total housing units	94,510	100.0%
Built 2020 or later	158	0.2%
Built 2010 to 2019	2,302	2.4%
Built 2000 to 2009	4,413	4.7%
Built 1990 to 1999	8,150	8.6%
Built 1980 to 1989	6,762	7.2%
Built 1970 to 1979	18,073	19.1%
Built 1960 to 1969	12,689	13.4%
Built 1950 to 1959	17,440	18.5%
Built 1940 to 1949	6,862	7.3%
Built 1939 or earlier	17,661	18.7%
Median year built	1964	

Value for Specified Owner-Occupied Housing Units

	Number	Percent
Specified owner-occupied housing units	61,587	100.0%
Less than $20,000	2,984	4.8%
$20,000 to $39,999	2,536	4.1%
$40,000 to $59,999	4,150	6.7%
$60,000 to $79,999	4,791	7.8%
$80,000 to $99,999	6,298	10.2%
$100,000 to $124,999	9,276	15.1%
$125,000 to $149,999	6,122	9.9%
$150,000 to $199,999	10,054	16.3%
$200,000 to $299,999	9,600	15.6%
$300,000 to $499,999	4,822	7.8%
$500,000 to $999,999	819	1.3%
$1,000,000 or more	135	0.2%
Median value	$128,100	

House Heating Fuel

	Number	Percent
Occupied housing units	86,135	100.0%
Utility gas	69,569	80.8%
Bottled, tank or LP gas	1,806	2.1%
Electricity	10,194	11.8%
Fuel oil, kerosene, etc	1,824	2.1%
Coal, coke or wood	1,816	2.1%
Solar energy or other fuel	543	0.6%
No fuel used	383	0.4%

Percentages may not sum to 100% due to rounding.

Gross Rent

	Number	Percent
Specified renter-occupied housing units	24,548	100.0%
Less than $100	231	0.9%
$100 to $199	199	0.8%
$200 to $299	785	3.2%
$300 to $399	749	3.1%
$400 to $499	940	3.8%
$500 to $599	2,031	8.3%
$600 to $699	3,270	13.3%
$700 to $799	3,869	15.8%
$800 to $899	3,162	12.9%
$900 to $999	2,587	10.5%
$1,000 to $1,499	4,433	18.1%
$1,500 or more	619	2.5%
No cash rent	1,673	6.8%
Median gross rent	$783	
Median gross rent as a percentage of household income	27.9	

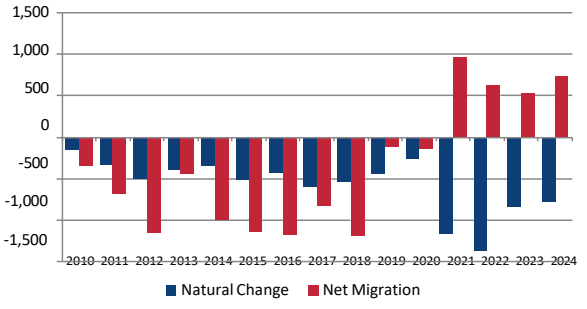
Selected Monthly Owner Costs for Specified Owner-Occupied Housing Units

	Number	Percent
Specified owner-occupied housing units with a mortgage	31,938	100.0%
Less than $400	324	1.0%
$400 to $599	1,492	4.7%
$600 to $799	4,310	13.5%
$800 to $999	5,778	18.1%
$1,000 to $1,249	7,896	24.7%
$1,250 to $1,499	5,211	16.3%
$1,500 to $1,999	4,240	13.3%
$2,000 to $2,999	2,318	7.3%
$3,000 or more	369	1.2%
[illegible]	[illegible]	
Median monthly owners cost as a percentage of household income	17.8	

Vital Statistics

	Number	Rate
Births / rate per 1,000 women aged 15 to 44	1,901	55.4
Teen births / rate per 1,000 females 15-19	101	18.0
Deaths / rate per 100,000 population	2,813	1,403.9

Components of Population Change



Ohio County Profiles

Trumbull County

Agriculture

Land in farms (acres)	113,107
Number of farms	945
Average size (acres)	120
Total cash receipts	$85,585,000
Per farm	$90,566
Receipts for crops	$56,922,000
Receipts for livestock/products	$28,663,000

Education

Traditional public schools buildings	63
Students	23,457
Teachers (Full Time Equivalent)	1,850.9
Expenditures per student	$12,368
Graduation rate	94.3
Community/charter schools buildings	4
Students	698
Teachers (Full Time Equivalent)	67.5
Expenditures per student	$10,002
Graduation rate	69.2
Private schools	6
Students	1,051
Public universites, 4-year	1
Public universities/colleges, 2-year	0
Public learning centers, less-than 2-year	1
Private universities and colleges	0
Public libraries (Districts / Facilities)	7 / 13

Transportation

Registered motor vehicles	245,284
Passenger cars	156,003
Noncommercial trucks	36,443
Total license revenue	$6,769,993.78
Permissive tax revenue	$1,662,185.00
Interstate highway miles	23.01
Turnpike miles	10.68
U.S. highway miles	32.09
State highway miles	303.62
County, township, and municipal road miles	1,565.08
Commercial airports	3

State Parks, Forests, Nature Preserves, Scenic Waterways, And Wildlife Areas

Areas/Facilities	9
Acreage	32,325

Finance

FDIC insured financial institutions (HQs)	1
Assets (000)	$149,809
Branch offices	38
Institutions represented	11

Sources of Income

Total personal income	$9,850,234,000
Net earnings	$5,225,403,000
Personal current transfer receipts	$3,112,382,000
Income maintenance benefits	$223,920,000
Unemployment insurance compensation	$13,880,000
Retirement and other	$2,874,582,000
Dividends, interest, and rent	$1,512,449,000
Dependency ratio (Percent of total personal income from transfer receipts)	31.6%

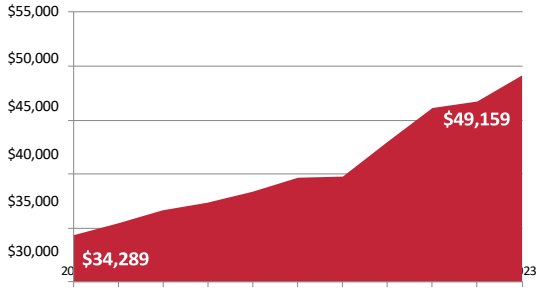
Voting

Number of registered voters	137,686
Voted in 2024 election	98,118
Percent turnout	71.3%

Health Care

Physicians	373
Registered hospitals	1
Number of beds	220
Licensed nursing homes	22
Number of beds	1,493
Licensed residential care	13
Number of beds	849
Persons with health insurance (Aged 0 to 64)	91.4%
Adults with insurance (Aged 18 to 64)	90.4%
Children with insurance (Aged Under 19)	94.2%

Per Capita Personal Income



Ohio County Profiles

Trumbull County

Civilian Labor Force

	2024	2023	2022	2021	2020
Civilian labor force	88,800	87,500	86,900	86,700	87,700
Employed	84,300	83,700	82,800	81,200	78,900
Unemployed	4,600	3,800	4,100	5,500	8,800
Unemployment rate	5.2	4.4	4.7	6.4	10.0

Establishments, Employment, and Wages by Sector: 2024

Industrial Sector	Number of Establishments	Average Employment	Total Wages	Average Weekly Wage
Private Sector	4,187	56,994	$2,904,761,220	$980
Goods-Producing	678	13,449	$1,010,527,088	$1,445
Natural Resources and Mining	32	210	$10,244,568	$937
Construction	426	2,989	$198,196,997	$1,275
Manufacturing	220	10,249	$802,085,523	$1,505
Service-Providing	3,509	43,545	$1,894,234,132	$837
Trade, Transportation and Utilities	1,020	15,530	$715,997,528	$887
Information	45	322	$20,204,564	$1,206
Financial Services	360	2,084	$134,468,760	$1,241
Professional and Business Services	640	4,606	$233,012,111	$973
Education and Health Services	589	10,874	$553,434,954	$979
Leisure and Hospitality	501	8,136	$158,697,884	$375
Other Services	349	1,989	$78,169,652	$756
Federal Government		493	$35,577,424	$1,387
State Government		694	$56,588,355	$1,568
Local Government		7,642	$412,678,748	$1,038

Private Sector total includes Unclassified establishments not shown.

Change Since 2017

Private Sector	4.3%	4.3%	35.8%	30.1%
Goods-Producing	8.1%	23.1%	50.7%	22.5%
Natural Resources and Mining	-3.0%	16.7%	40.7%	20.4%
Construction	16.1%	14.1%	48.5%	30.1%
Manufacturing	-3.1%	26.1%	51.4%	20.1%
Service-Producing	3.5%	-0.4%	29.0%	29.6%
Trade, Transportation and Utilities	2.5%	5.7%	35.4%	28.2%
Information	50.0%	-12.3%	16.0%	32.2%
Financial Services	-5.0%	-5.5%	26.7%	34.2%
Professional and Business Services	13.1%	-22.5%	9.9%	41.8%
Education and Health Services	-3.8%	1.6%	28.2%	26.2%
Leisure and Hospitality	7.1%	6.1%	44.9%	36.4%
Other Services	4.2%	-6.1%	25.5%	33.8%
Federal Government		-3.9%	21.8%	26.6%
State Government		-4.8%	24.9%	31.2%
Local Government		-4.6%	18.1%	23.7%

Residential Construction

	2024	2023	2022	2021	2020
Total units	127	98	106	120	105
Total valuation (000)	$33,705	$23,568	$19,517	$20,414	$17,839
Total single-unit bldgs	127	98	103	101	96
Average cost per unit	$265,394	$240,494	$185,789	$179,948	$175,237
Total multi-unit bldg units	0	0	3	19	9
Average cost per unit			$126,960	$117,836	$112,933

Major & Notable Employers

Aptiv PLC	Mfg
AVI Food Systems	Serv
Howmet Aerospace	Mfg
Mercy Health	Serv
Trumbull County Government	Govt
Trumbull Regional Medical	Serv
Ultium Cells	Mfg
Warren City Schools	Govt
Wal-Mart Stores Inc	Trade

2022 CENSUS OF AGRICULTURE *County Profile*

Trumbull County
Ohio

Total and Per Farm Overview, 2022 and change since 2017

	2022	% change since 2017
Number of farms	945	-9
Land in farms (acres)	113,107	-9
Average size of farm (acres)	120	0
Total	($)	
Market value of products sold	85,585,000	+53
Government payments	245,000	-82
Farm-related income	3,387,000	+51
Total farm production expenses	67,382,000	+33
Net cash farm income	21,835,000	+146
Per farm average	($)	
Market value of products sold	90,566	+67
Government payments [a]	5,319	-14
Farm-related income [a]	11,762	+69
Total farm production expenses	71,303	+46
Net cash farm income	23,106	+170

1 Percent of state agriculture sales

Share of Sales by Type (%)

Crops	67
Livestock, poultry, and products	33

Land in Farms by Use (acres)

Cropland	76,377
Pastureland	6,831
Woodland	22,724
Other	7,175

Acres irrigated: 117

(Z)% of land in farms

Land Use Practices (% of farms)

No till	12
Reduced till	18
Intensive till	20
Cover crop	9

Farms by Value of Sales

	Number	Percent of Total [b]
Less than $2,500	277	29
$2,500 to $4,999	107	11
$5,000 to $9,999	110	12
$10,000 to $24,999	166	18
$25,000 to $49,999	71	8
$50,000 to $99,999	104	11
$100,000 or more	110	12

Farms by Size

	Number	Percent of Total [b]
1 to 9 acres	116	12
10 to 49 acres	394	42
50 to 179 acres	310	33
180 to 499 acres	90	10
500 to 999 acres	22	2
1,000+ acres	13	1

2022 CENSUS OF AGRICULTURE *County Profile*

Market Value of Agricultural Products Sold

	Sales ($1,000)	Rank in State [c]	Counties Producing Item	Rank in U.S. [c]	Counties Producing Item
Total	**85,585**	**56**	**88**	**1,536**	**3,078**
Crops	**56,922**	**54**	**88**	**1,213**	**3,074**
Grains, oilseeds, dry beans, dry peas	49,361	50	88	930	2,917
Tobacco	-	-	5	-	267
Cotton and cottonseed	-	-	-	-	647
Vegetables, melons, potatoes, sweet potatoes	(D)	46	87	942	2,831
Fruits, tree nuts, berries	1,020	22	86	585	2,711
Nursery, greenhouse, floriculture, sod	3,522	30	87	557	2,660
Cultivated Christmas trees, short rotation woody crops	(D)	23	73	(D)	1,274
Other crops and hay	2,156	38	88	1,380	3,035
Livestock, poultry, and products	**28,663**	**44**	**88**	**1,515**	**3,076**
Poultry and eggs	(D)	31	88	(D)	3,027
Cattle and calves	6,376	43	88	1,553	3,047
Milk from cows	15,358	26	78	394	1,770
Hogs and pigs	(D)	(D)	88	(D)	2,814
Sheep, goats, wool, mohair, milk	232	44	88	816	2,967
Horses, ponies, mules, burros, donkeys	1,308	15	87	220	2,907
Aquaculture	-	-	44	-	1,190
Other animals and animal products	275	28	88	603	2,909

Producers [d] 1,667

Sex	
Male	1,095
Female	572
Age	
<35	179
35 – 64	907
65 and older	581
Race	
American Indian/Alaska Native	1
Asian	1
Black or African American	-
Native Hawaiian/Pacific Islander	-
White	1,660
More than one race	5
Other characteristics	
Hispanic, Latino, Spanish origin	16
With military service	148
New and beginning farmers	560

Percent of farms that:

Have internet access	68
Farm organically	1
Sell directly to consumers	11
Hire farm labor	19
Are family farms	94

Top Crops in Acres [e]

Soybeans for beans	31,223
Corn for grain	22,418
Forage (hay/haylage), all	11,689
Wheat for grain, all	3,084
Corn for silage/greenchop	1,700

Livestock Inventory (Dec 31, 2022)

Broilers and other meat-type chickens	1,192
Cattle and calves	10,346
Goats	815
Hogs and pigs	489
Horses and ponies	1,637
Layers	3,463
Pullets	326
Sheep and lambs	390
Turkeys	176

[a] Average per farm receiving. [b] May not add to 100% due to rounding. [c] Among counties whose rank can be displayed. [d] Data collected for a maximum of four producers per farm. [e] Crop commodity names may be shortened; see full names at www.nass.usda.gov/go/cropnames.pdf. [f] Position below the line does not indicate rank. (D) Withheld to avoid disclosing data for individual operations. (NA) Not available. (Z) Less than half of the unit shown. (-) Represents zero.

National Risk Index

Exposure & Estimated Annual Loss Tables – Trumbull County

COLDWAVE

Table of Exposure (Exp.) and Estimated Annual Loss (EAL) Data

Tract	Annual Frequency	Exp. Building	Exp. Population	Exp. Agriculture	EAL - Building	EAL - PE	EAL - Agriculture	EAL - Total
930900	368 %	$ 1,465,304,691	7,086	$ 253,691	$ 313	$ 13,608	$ 63	$ 13,984
930500	368 %	$ 1,089,995,823	6,397	$ 5,295,290	$ 233	$ 12,285	$ 1,321	$ 13,839
931000	368 %	$ 1,659,170,535	6,024	$ 1,265,455	$ 354	$ 11,569	$ 316	$ 12,238
931900	368 %	$ 1,560,885,371	6,001	$ 20,752	$ 333	$ 11,524	$ 5	$ 11,863
932000	368 %	$ 1,184,312,685	5,945	$ 431,368	$ 253	$ 11,417	$ 108	$ 11,777
933001	368 %	$ 1,532,824,394	5,852	$ 22,757	$ 327	$ 11,238	$ 6	$ 11,571
921500	368 %	$ 929,042,387	5,774	$ 955	$ 198	$ 11,088	$ 0	$ 11,287
932300	368 %	$ 875,482,415	5,681	$ 0	$ 187	$ 10,910	$ 0	$ 11,097
932701	368 %	$ 1,050,463,883	5,605	$ 261	$ 224	$ 10,764	$ 0	$ 10,988
921000	368 %	$ 740,678,169	5,341	$ 328	$ 158	$ 10,257	$ 0	$ 10,415
930800	368 %	$ 1,220,043,037	4,869	$ 1,364,027	$ 261	$ 9,350	$ 340	$ 9,951
930400	369 %	$ 889,230,991	3,953	$ 7,355,458	$ 190	$ 7,597	$ 1,836	$ 9,622
933600	368 %	$ 1,089,862,742	4,754	$ 47,527	$ 233	$ 9,130	$ 12	$ 9,374
931400	368 %	$ 956,601,185	4,477	$ 162,791	$ 204	$ 8,598	$ 41	$ 8,842
920700	368 %	$ 612,058,462	4,434	$ 700,378	$ 131	$ 8,515	$ 175	$ 8,820
933302	368 %	$ 918,196,928	4,408	$ 154,051	$ 196	$ 8,465	$ 38	$ 8,700
933500	368 %	$ 1,080,401,644	3,854	$ 3,472,662	$ 231	$ 7,401	$ 866	$ 8,498
931601	368 %	$ 722,506,732	4,338	$ 7,705	$ 154	$ 8,331	$ 2	$ 8,487
930300	368 %	$ 759,678,669	3,267	$ 7,522,429	$ 162	$ 6,275	$ 1,876	$ 8,313
934000	368 %	$ 1,976,783,122	4,073	$ 205,086	$ 422	$ 7,822	$ 51	$ 8,295
931300	368 %	$ 1,184,945,275	3,970	$ 1,620,649	$ 253	$ 7,624	$ 404	$ 8,281
933002	368 %	$ 829,248,981	4,209	$ 39,315	$ 177	$ 8,083	$ 10	$ 8,270
930200	368 %	$ 713,102,421	2,541	$ 12,965,732	$ 152	$ 4,880	$ 3,234	$ 8,266
931200	368 %	$ 1,203,742,515	3,978	$ 1,315,579	$ 257	$ 7,639	$ 328	$ 8,224

930700	368 %	$ 812,428,669	4,122	$ 490,549	$ 173	$ 7,916	$ 122	$ 8,212
930600	368 %	$ 916,324,205	3,731	$ 2,796,237	$ 196	$ 7,165	$ 697	$ 8,058
931500	368 %	$ 1,067,865,228	3,869	$ 1,030,475	$ 228	$ 7,430	$ 257	$ 7,915
930101	368 %	$ 741,373,812	2,783	$ 8,827,783	$ 158	$ 5,345	$ 2,202	$ 7,706
933400	368 %	$ 1,196,112,530	3,332	$ 3,137,888	$ 255	$ 6,399	$ 783	$ 7,437
921600	368 %	$ 748,209,969	3,764	$ 0	$ 160	$ 7,228	$ 0	$ 7,388
920900	368 %	$ 598,115,086	3,564	$ 1,822	$ 128	$ 6,844	$ 0	$ 6,972
921100	368 %	$ 754,715,814	3,443	$ 1,766	$ 161	$ 6,612	$ 0	$ 6,774
932802	368 %	$ 739,186,294	3,396	$ 39,364	$ 158	$ 6,522	$ 10	$ 6,689
932600	368 %	$ 673,241,289	3,403	$ 11,933	$ 144	$ 6,535	$ 3	$ 6,682
921400	368 %	$ 705,206,296	3,310	$ 174	$ 151	$ 6,357	$ 0	$ 6,507
932500	368 %	$ 648,219,054	3,172	$ 26,258	$ 138	$ 6,092	$ 7	$ 6,236
930102	368 %	$ 624,076,713	2,340	$ 4,777,367	$ 133	$ 4,494	$ 1,191	$ 5,818
931602	368 %	$ 572,340,322	2,890	$ 3,899	$ 122	$ 5,550	$ 1	$ 5,673
933301	368 %	$ 1,163,466,222	2,748	$ 234,194	$ 248	$ 5,277	$ 58	$ 5,584
931100	368 %	$ 554,419,937	2,293	$ 4,118,887	$ 118	$ 4,403	$ 1,027	$ 5,549
920300	368 %	$ 541,156,124	2,805	$ 0	$ 116	$ 5,387	$ 0	$ 5,502
932200	368 %	$ 418,090,757	2,780	$ 434	$ 89	$ 5,339	$ 0	$ 5,428
933700	368 %	$ 658,016,179	2,477	$ 2,021,797	$ 141	$ 4,757	$ 504	$ 5,402
932801	368 %	$ 443,777,220	2,669	$ 0	$ 95	$ 5,126	$ 0	$ 5,220
932900	368 %	$ 777,920,064	2,556	$ 59,585	$ 166	$ 4,909	$ 15	$ 5,090
932702	368 %	$ 356,149,237	2,580	$ 0	$ 76	$ 4,955	$ 0	$ 5,031
933800	368 %	$ 822,345,229	2,439	$ 0	$ 176	$ 4,684	$ 0	$ 4,859
921300	368 %	$ 1,605,362,957	2,343	$ 20,613	$ 343	$ 4,500	$ 5	$ 4,847
920400	368 %	$ 400,850,023	2,422	$ 0	$ 86	$ 4,651	$ 0	$ 4,737
933100	368 %	$ 405,462,456	2,255	$ 236,856	$ 87	$ 4,331	$ 59	$ 4,476
920800	368 %	$ 377,530,869	2,030	$ 0	$ 81	$ 3,898	$ 0	$ 3,979
921200	368 %	$ 563,702,526	1,883	$ 62,375	$ 120	$ 3,616	$ 16	$ 3,752
933900	368 %	$ 775,877,868	1,859	$ 23,884	$ 166	$ 3,570	$ 6	$ 3,742
931700	368 %	$ 278,559,559	1,872	$ 48,835	$ 59	$ 3,595	$ 12	$ 3,667

HEATWAVE

Table of Exposure (Exp.) and Estimated Annual Loss (EAL) Data

Tract	Annual Frequency	Exp. Building	Exp. Population	Exp. Agriculture	EAL - Building	EAL - PE	EAL - Agriculture	EAL - Total
930900	168 %	$ 1,465,304,691	7,086	$ 253,691	$ 191	$ 34,333	$ 0	$ 34,523
930500	168 %	$ 1,089,995,823	6,397	$ 5,295,290	$ 142	$ 30,995	$ 0	$ 31,137
931000	168 %	$ 1,659,170,535	6,024	$ 1,265,455	$ 216	$ 29,187	$ 0	$ 29,403
931900	168 %	$ 1,560,885,371	6,001	$ 20,752	$ 203	$ 29,076	$ 0	$ 29,279
932000	168 %	$ 1,184,312,685	5,945	$ 431,368	$ 154	$ 28,804	$ 0	$ 28,959
933001	168 %	$ 1,532,824,394	5,852	$ 22,757	$ 200	$ 28,354	$ 0	$ 28,553
921500	168 %	$ 929,042,387	5,774	$ 955	$ 121	$ 27,976	$ 0	$ 28,097
932300	168 %	$ 875,482,415	5,681	$ 0	$ 114	$ 27,525	$ 0	$ 27,639
932701	168 %	$ 1,050,463,883	5,605	$ 261	$ 137	$ 27,157	$ 0	$ 27,294
921000	168 %	$ 740,678,169	5,341	$ 328	$ 96	$ 25,878	$ 0	$ 25,974
930800	168 %	$ 1,220,043,037	4,869	$ 1,364,027	$ 159	$ 23,591	$ 0	$ 23,750
933600	168 %	$ 1,089,862,742	4,754	$ 47,527	$ 142	$ 23,034	$ 0	$ 23,176
931400	168 %	$ 956,601,185	4,477	$ 162,791	$ 125	$ 21,692	$ 0	$ 21,816
920700	168 %	$ 612,058,462	4,434	$ 700,378	$ 80	$ 21,483	$ 0	$ 21,563
933302	168 %	$ 918,196,928	4,408	$ 154,051	$ 120	$ 21,357	$ 0	$ 21,477
931601	168 %	$ 722,506,732	4,338	$ 7,705	$ 94	$ 21,018	$ 0	$ 21,112
933002	168 %	$ 829,248,981	4,209	$ 39,315	$ 108	$ 20,393	$ 0	$ 20,501
930700	168 %	$ 812,428,669	4,122	$ 490,549	$ 106	$ 19,972	$ 0	$ 20,077
934000	168 %	$ 1,976,783,122	4,073	$ 205,086	$ 257	$ 19,734	$ 0	$ 19,992
931200	168 %	$ 1,203,742,515	3,978	$ 1,315,579	$ 157	$ 19,274	$ 0	$ 19,431
931300	168 %	$ 1,184,945,275	3,970	$ 1,620,649	$ 154	$ 19,235	$ 0	$ 19,390
930400	169 %	$ 889,230,991	3,953	$ 7,355,458	$ 116	$ 19,165	$ 0	$ 19,281
931500	168 %	$ 1,067,865,228	3,869	$ 1,030,475	$ 139	$ 18,746	$ 0	$ 18,885
933500	168 %	$ 1,080,401,644	3,854	$ 3,472,662	$ 141	$ 18,673	$ 0	$ 18,814
921600	168 %	$ 748,209,969	3,764	$ 0	$ 97	$ 18,237	$ 0	$ 18,335
930600	168 %	$ 916,324,205	3,731	$ 2,796,237	$ 119	$ 18,077	$ 0	$ 18,197
920900	168 %	$ 598,115,086	3,564	$ 1,822	$ 78	$ 17,268	$ 0	$ 17,346
921100	168 %	$ 754,715,814	3,443	$ 1,766	$ 98	$ 16,682	$ 0	$ 16,780
932600	168 %	$ 673,241,289	3,403	$ 11,933	$ 88	$ 16,488	$ 0	$ 16,576
932802	168 %	$ 739,186,294	3,396	$ 39,364	$ 96	$ 16,454	$ 0	$ 16,550
933400	168 %	$ 1,196,112,530	3,332	$ 3,137,888	$ 156	$ 16,144	$ 0	$ 16,300
921400	168 %	$ 705,206,296	3,310	$ 174	$ 92	$ 16,037	$ 0	$ 16,129
930300	168 %	$ 759,678,669	3,267	$ 7,522,429	$ 99	$ 15,831	$ 0	$ 15,930
932500	168 %	$ 648,219,054	3,172	$ 26,258	$ 84	$ 15,369	$ 0	$ 15,453
931602	168 %	$ 572,340,322	2,890	$ 3,899	$ 75	$ 14,002	$ 0	$ 14,077
920300	168 %	$ 541,156,124	2,805	$ 0	$ 70	$ 13,591	$ 0	$ 13,661
930101	168 %	$ 741,373,812	2,783	$ 8,827,783	$ 97	$ 13,485	$ 0	$ 13,582
932200	168 %	$ 418,090,757	2,780	$ 434	$ 54	$ 13,469	$ 0	$ 13,524
933301	168 %	$ 1,163,466,222	2,748	$ 234,194	$ 152	$ 13,314	$ 0	$ 13,466
932801	168 %	$ 443,777,220	2,669	$ 0	$ 58	$ 12,932	$ 0	$ 12,989
932702	168 %	$ 356,149,237	2,580	$ 0	$ 46	$ 12,500	$ 0	$ 12,547
932900	168 %	$ 777,920,064	2,556	$ 59,585	$ 101	$ 12,384	$ 0	$ 12,485
930200	168 %	$ 713,102,421	2,541	$ 12,965,732	$ 93	$ 12,312	$ 0	$ 12,405
933700	168 %	$ 658,016,179	2,477	$ 2,021,797	$ 86	$ 12,001	$ 0	$ 12,087

933800	168 %	$ 822,345,229	2,439	$ 0	$ 107	$ 11,817	$ 0	$ 11,924
920400	168 %	$ 400,850,023	2,422	$ 0	$ 52	$ 11,735	$ 0	$ 11,787
921300	168 %	$ 1,605,362,957	2,343	$ 20,613	$ 209	$ 11,352	$ 0	$ 11,561
930102	168 %	$ 624,076,713	2,340	$ 4,777,367	$ 81	$ 11,338	$ 0	$ 11,419
931100	168 %	$ 554,419,937	2,293	$ 4,118,887	$ 72	$ 11,110	$ 0	$ 11,182
933100	168 %	$ 405,462,456	2,255	$ 236,856	$ 53	$ 10,926	$ 0	$ 10,979
920800	168 %	$ 377,530,869	2,030	$ 0	$ 49	$ 9,836	$ 0	$ 9,885
921200	168 %	$ 563,702,526	1,883	$ 62,375	$ 73	$ 9,123	$ 0	$ 9,197
933900	168 %	$ 775,877,868	1,859	$ 23,884	$ 101	$ 9,007	$ 0	$ 9,108
931700	168 %	$ 278,559,559	1,872	$ 48,835	$ 36	$ 9,070	$ 0	$ 9,106

INLAND FLOOD

Table of Exposure (Exp.) and Estimated Annual Loss (EAL) Data

Tract	Annual Frequency	Exp. Area	Exp. Building	Exp. Population	Exp. Agriculture	EAL - Building	EAL - PE	EAL - Agriculture	EAL - Toal
931400	214 %	1.51 Sq. Miles	$ 956,601,113	9	$ 11,437	$ 1,086,490	$ 2,404	$ 300	$ 1,089,194
933600	214 %	1.15 Sq. Miles	$ 1,086,524,142	11	$ 2,282	$ 1,071,654	$ 2,907	$ 60	$ 1,074,621
932701	214 %	1.27 Sq. Miles	$ 1,049,248,407	291	$ 0	$ 838,254	$ 77,057	$ 0	$ 915,311
931000	214 %	2.53 Sq. Miles	$ 1,657,408,900	20	$ 3,259	$ 902,545	$ 5,338	$ 86	$ 907,969
934000	214 %	1.63 Sq. Miles	$ 1,976,175,343	199	$ 7,592	$ 769,286	$ 52,593	$ 199	$ 822,078
933100	214 %	1.11 Sq. Miles	$ 404,101,395	555	$ 77,676	$ 671,020	$ 146,778	$ 2,038	$ 819,837
933500	214 %	2.41 Sq. Miles	$ 1,079,953,924	47	$ 281,081	$ 784,464	$ 12,340	$ 7,376	$ 804,180
933700	214 %	2.55 Sq. Miles	$ 656,934,273	352	$ 288,328	$ 668,686	$ 93,159	$ 7,566	$ 769,411
930900	214 %	1.87 Sq. Miles	$ 1,465,033,514	0	$ 0	$ 751,345	$ 0	$ 0	$ 751,345
930500	214 %	3.61 Sq. Miles	$ 1,089,129,048	146	$ 229,404	$ 679,380	$ 38,721	$ 6,020	$ 724,122
932801	214 %	0.52 Sq. Miles	$ 441,360,673	385	$ 0	$ 603,333	$ 101,761	$ 0	$ 705,093
921000	214 %	1.03 Sq. Miles	$ 740,377,243	132	$ 328	$ 663,622	$ 34,797	$ 9	$ 698,427
933001	214 %	1.84 Sq. Miles	$ 1,532,824,351	0	$ 0	$ 688,695	$ 0	$ 0	$ 688,695
932802	214 %	0.77 Sq. Miles	$ 738,537,518	28	$ 2,626	$ 675,847	$ 7,305	$ 69	$ 683,221
932000	214 %	2.15 Sq. Miles	$ 1,183,247,090	17	$ 2,805	$ 678,367	$ 4,573	$ 74	$ 683,014
931900	214 %	1.89 Sq. Miles	$ 1,559,684,887	0	$ 0	$ 627,592	$ 12	$ 0	$ 627,605
930800	214 %	2.09 Sq. Miles	$ 1,220,043,013	41	$ 16,442	$ 610,187	$ 10,758	$ 431	$ 621,376
933302	214 %	1.4 Sq. Miles	$ 916,748,284	22	$ 0	$ 597,488	$ 5,744	$ 0	$ 603,232
930400	214 %	2.65 Sq. Miles	$ 889,230,945	35	$ 121,343	$ 586,400	$ 9,167	$ 3,184	$ 598,751
932300	214 %	1.21 Sq. Miles	$ 875,482,364	1	$ 0	$ 586,656	$ 389	$ 0	$ 587,045
931300	214 %	1.95 Sq. Miles	$ 1,184,480,035	13	$ 8,484	$ 574,251	$ 3,340	$ 223	$ 577,813
930600	214 %	2.1 Sq. Miles	$ 916,324,173	27	$ 15,005	$ 554,530	$ 7,186	$ 394	$ 562,109
921500	214 %	1.22 Sq. Miles	$ 929,042,320	87	$ 178	$ 529,898	$ 23,002	$ 5	$ 552,905
932600	214 %	0.78 Sq. Miles	$ 672,973,781	13	$ 1,621	$ 548,484	$ 3,532	$ 43	$ 552,059
931200	214 %	2.13 Sq. Miles	$ 1,203,553,136	5	$ 1,957	$ 534,014	$ 1,355	$ 51	$ 535,420
933002	214 %	1.07 Sq. Miles	$ 828,296,748	195	$ 879	$ 480,313	$ 51,529	$ 23	$ 531,865
933900	214 %	0.71 Sq. Miles	$ 775,877,820	26	$ 2,729	$ 521,043	$ 6,799	$ 72	$ 527,914
933800	214 %	0.57 Sq. Miles	$ 822,345,187	0	$ 0	$ 523,935	$ 0	$ 0	$ 523,935
933400	214 %	2.41 Sq. Miles	$ 1,195,867,617	20	$ 88,134	$ 477,194	$ 5,294	$ 2,313	$ 484,801
920900	214 %	0.62 Sq. Miles	$ 597,908,748	72	$ 124	$ 447,559	$ 19,078	$ 3	$ 466,641
933301	214 %	1.21 Sq. Miles	$ 1,162,881,816	104	$ 9,152	$ 434,927	$ 27,532	$ 240	$ 462,699
931500	214 %	2.02 Sq. Miles	$ 1,067,427,810	7	$ 2,285	$ 458,092	$ 1,793	$ 60	$ 459,945
930101	214 %	2.25 Sq. Miles	$ 741,248,679	5	$ 179,779	$ 441,032	$ 1,363	$ 4,718	$ 447,113
932702	214 %	0.43 Sq. Miles	$ 355,965,290	43	$ 0	$ 421,216	$ 11,242	$ 0	$ 432,458
930200	214 %	1.99 Sq. Miles	$ 713,062,355	3	$ 114,562	$ 411,253	$ 733	$ 3,006	$ 414,992
921300	214 %	1.12 Sq. Miles	$ 1,605,362,915	3	$ 0	$ 410,135	$ 873	$ 0	$ 411,008
920800	214 %	0.41 Sq. Miles	$ 376,474,432	166	$ 0	$ 363,438	$ 43,810	$ 0	$ 407,248
931601	214 %	0.93 Sq. Miles	$ 722,374,378	5	$ 0	$ 401,264	$ 1,318	$ 0	$ 402,582
930102	214 %	1.51 Sq. Miles	$ 624,045,134	0	$ 1,665	$ 396,184	$ 0	$ 44	$ 396,228
930300	214 %	2.13 Sq. Miles	$ 759,264,537	3	$ 52,660	$ 378,261	$ 751	$ 1,382	$ 380,394
931100	214 %	1.43 Sq. Miles	$ 554,389,635	0	$ 0	$ 372,104	$ 0	$ 0	$ 372,104
932500	214 %	0.68 Sq. Miles	$ 648,107,294	0	$ 2,415	$ 366,843	$ 0	$ 63	$ 366,906
921100	214 %	0.76 Sq. Miles	$ 754,639,087	16	$ 467	$ 361,525	$ 4,158	$ 12	$ 365,695
921400	214 %	0.87 Sq. Miles	$ 705,206,256	64	$ 0	$ 345,626	$ 16,989	$ 0	$ 362,615
930700	214 %	1.35 Sq. Miles	$ 812,428,643	22	$ 15,814	$ 324,027	$ 5,792	$ 415	$ 330,234
920700	214 %	1.56 Sq. Miles	$ 612,058,402	78	$ 209,154	$ 280,591	$ 20,701	$ 5,488	$ 306,781
932900	214 %	1.1 Sq. Miles	$ 777,147,414	9	$ 0	$ 283,055	$ 2,290	$ 0	$ 285,344
932200	214 %	0.47 Sq. Miles	$ 418,090,724	0	$ 0	$ 271,040	$ 85	$ 0	$ 271,125

921600	214 %	0.98 Sq. Miles	$ 748,209,906	0	$ 0	$ 261,130	$ 0	$ 0	$ 261,130
931602	214 %	0.66 Sq. Miles	$ 572,340,297	5	$ 0	$ 237,259	$ 1,445	$ 0	$ 238,704
921200	214 %	0.72 Sq. Miles	$ 563,626,141	9	$ 329	$ 208,377	$ 2,267	$ 9	$ 210,653
920300	214 %	0.56 Sq. Miles	$ 541,156,093	0	$ 0	$ 199,037	$ 0	$ 0	$ 199,037
920400	214 %	0.41 Sq. Miles	$ 400,849,995	5	$ 0	$ 154,308	$ 1,399	$ 0	$ 155,707
931700	214 %	0.7 Sq. Miles	$ 278,559,528	0	$ 0	$ 126,977	$ 0	$ 0	$ 126,977

HAIL

Table of Exposure (Exp.) and Estimated Annual Loss (EAL) Data

Tract	Annual Frequency	Exp. Building	Exp. Population	Exp. Agriculture	EAL - Building	EAL - PE	EAL - Agriculture	EAL - Total
934000	416 %	$ 1,976,783,122	4,073	$ 205,086	$ 74,501	$ 1,637	$ 104	$ 76,241
931000	416 %	$ 1,659,170,535	6,024	$ 1,265,455	$ 62,531	$ 2,421	$ 640	$ 65,591
921300	416 %	$ 1,605,362,957	2,343	$ 20,613	$ 60,503	$ 942	$ 10	$ 61,455
931900	411 %	$ 1,560,885,371	6,001	$ 20,752	$ 58,558	$ 2,398	$ 10	$ 60,967
933001	416 %	$ 1,532,824,394	5,852	$ 22,757	$ 57,769	$ 2,352	$ 12	$ 60,132
930900	416 %	$ 1,465,304,691	7,086	$ 253,691	$ 55,224	$ 2,848	$ 128	$ 58,200
930800	416 %	$ 1,220,043,037	4,869	$ 1,364,027	$ 45,981	$ 1,957	$ 690	$ 48,627
933400	416 %	$ 1,196,112,530	3,332	$ 3,137,888	$ 45,079	$ 1,339	$ 1,587	$ 48,005
931200	415 %	$ 1,203,742,515	3,978	$ 1,315,579	$ 45,358	$ 1,598	$ 665	$ 47,621
932000	414 %	$ 1,184,312,685	5,945	$ 431,368	$ 44,527	$ 2,384	$ 217	$ 47,128
930500	416 %	$ 1,089,995,823	6,397	$ 5,295,290	$ 41,080	$ 2,571	$ 2,678	$ 46,329
931300	399 %	$ 1,184,945,275	3,970	$ 1,620,649	$ 42,799	$ 1,530	$ 786	$ 45,115
933301	416 %	$ 1,163,466,222	2,748	$ 234,194	$ 43,849	$ 1,104	$ 118	$ 45,071
933500	416 %	$ 1,080,401,644	3,854	$ 3,472,662	$ 40,718	$ 1,549	$ 1,756	$ 44,023
933600	416 %	$ 1,089,862,742	4,754	$ 47,527	$ 41,075	$ 1,910	$ 24	$ 43,009
932701	416 %	$ 1,050,463,883	5,605	$ 261	$ 39,590	$ 2,252	$ 0	$ 41,842
931500	398 %	$ 1,067,865,228	3,869	$ 1,030,475	$ 38,508	$ 1,488	$ 499	$ 40,495
930400	416 %	$ 889,230,991	3,953	$ 7,355,458	$ 33,513	$ 1,589	$ 3,720	$ 38,822
930600	416 %	$ 916,324,205	3,731	$ 2,796,237	$ 34,534	$ 1,499	$ 1,414	$ 37,448
921500	416 %	$ 929,042,387	5,774	$ 955	$ 35,014	$ 2,320	$ 0	$ 37,334
933302	416 %	$ 918,196,928	4,408	$ 154,051	$ 34,605	$ 1,771	$ 78	$ 36,454
931400	398 %	$ 956,601,185	4,477	$ 162,791	$ 34,496	$ 1,721	$ 79	$ 36,296
932300	416 %	$ 875,482,415	5,681	$ 0	$ 32,995	$ 2,283	$ 0	$ 35,278
930200	407 %	$ 713,102,421	2,541	$ 12,965,732	$ 26,660	$ 1,014	$ 6,401	$ 34,075
930300	414 %	$ 759,678,669	3,267	$ 7,522,429	$ 28,505	$ 1,309	$ 3,796	$ 33,609
933002	416 %	$ 829,248,981	4,209	$ 39,315	$ 31,253	$ 1,691	$ 20	$ 32,964
930700	416 %	$ 812,428,669	4,122	$ 490,549	$ 30,619	$ 1,656	$ 248	$ 32,523
933800	416 %	$ 822,345,229	2,439	$ 0	$ 30,992	$ 980	$ 0	$ 31,973
930101	385 %	$ 741,373,812	2,783	$ 8,827,783	$ 26,473	$ 1,065	$ 4,086	$ 31,624
932900	416 %	$ 777,920,064	2,556	$ 59,585	$ 29,318	$ 1,027	$ 30	$ 30,375
921000	416 %	$ 740,678,169	5,341	$ 328	$ 27,915	$ 2,146	$ 0	$ 30,061
933900	416 %	$ 775,877,868	1,859	$ 23,884	$ 29,241	$ 747	$ 12	$ 30,000
921100	416 %	$ 754,715,814	3,443	$ 1,766	$ 28,444	$ 1,384	$ 1	$ 29,828
921600	416 %	$ 748,209,969	3,764	$ 0	$ 28,198	$ 1,513	$ 0	$ 29,711
932802	416 %	$ 739,186,294	3,396	$ 39,364	$ 27,858	$ 1,365	$ 20	$ 29,243
921400	416 %	$ 705,206,296	3,310	$ 174	$ 26,578	$ 1,330	$ 0	$ 27,908
931601	398 %	$ 722,506,732	4,338	$ 7,705	$ 26,054	$ 1,668	$ 4	$ 27,726
933700	416 %	$ 658,016,179	2,477	$ 2,021,797	$ 24,799	$ 995	$ 1,023	$ 26,817
932600	416 %	$ 673,241,289	3,403	$ 11,933	$ 25,373	$ 1,367	$ 6	$ 26,747
930102	401 %	$ 624,076,713	2,340	$ 4,777,367	$ 22,604	$ 905	$ 2,332	$ 25,840
932500	416 %	$ 648,219,054	3,172	$ 26,258	$ 24,430	$ 1,275	$ 13	$ 25,718
920700	416 %	$ 612,058,462	4,434	$ 700,378	$ 23,067	$ 1,782	$ 354	$ 25,203
920900	416 %	$ 598,115,086	3,564	$ 1,822	$ 22,542	$ 1,432	$ 1	$ 23,975
931100	416 %	$ 554,419,937	2,293	$ 4,118,887	$ 20,895	$ 921	$ 2,083	$ 23,900
921200	416 %	$ 563,702,526	1,883	$ 62,375	$ 21,245	$ 757	$ 32	$ 22,033
931602	398 %	$ 572,340,322	2,890	$ 3,899	$ 20,639	$ 1,111	$ 2	$ 21,752
920300	416 %	$ 541,156,124	2,805	$ 0	$ 20,395	$ 1,127	$ 0	$ 21,522
932801	416 %	$ 443,777,220	2,669	$ 0	$ 16,725	$ 1,073	$ 0	$ 17,798

932200	416 %	$ 418,090,757	2,780	$ 434	$ 15,757	$ 1,117	$ 0	$ 16,874
933100	416 %	$ 405,462,456	2,255	$ 236,856	$ 15,281	$ 906	$ 120	$ 16,307
920400	416 %	$ 400,850,023	2,422	$ 0	$ 15,107	$ 973	$ 0	$ 16,080
920800	416 %	$ 377,530,869	2,030	$ 0	$ 14,228	$ 816	$ 0	$ 15,044
932702	416 %	$ 356,149,237	2,580	$ 0	$ 13,423	$ 1,037	$ 0	$ 14,459
931700	398 %	$ 278,559,559	1,872	$ 48,835	$ 10,045	$ 720	$ 24	$ 10,789

ICE STORM

Table of Exposure (Exp.) and Estimated Annual Loss (EAL) Data

Tract	Annual Frequency	Exp. Building	Exp. Population	EAL - Building	EAL - PE	EAL - Total
930900	94 %	$ 1,465,304,691	7,086	$ 7,013	$ 6,368	$ 13,382
931000	94 %	$ 1,659,170,535	6,024	$ 7,941	$ 5,414	$ 13,355
934000	94 %	$ 1,976,783,122	4,073	$ 9,461	$ 3,660	$ 13,122
933001	94 %	$ 1,532,824,394	5,852	$ 7,337	$ 5,259	$ 12,596
931900	77 %	$ 1,560,885,371	6,001	$ 6,945	$ 4,943	$ 11,888
930500	94 %	$ 1,089,995,823	6,397	$ 5,217	$ 5,749	$ 10,966
932000	87 %	$ 1,184,312,685	5,945	$ 5,459	$ 5,171	$ 10,630
930800	94 %	$ 1,220,043,037	4,869	$ 5,839	$ 4,376	$ 10,215
932701	94 %	$ 1,050,463,883	5,605	$ 5,028	$ 5,037	$ 10,065
921300	94 %	$ 1,605,362,957	2,343	$ 7,684	$ 2,106	$ 9,789
921500	94 %	$ 928,918,363	5,771	$ 4,446	$ 5,187	$ 9,633
933600	94 %	$ 1,089,862,742	4,754	$ 5,216	$ 4,272	$ 9,489
931200	93 %	$ 1,203,742,515	3,978	$ 5,745	$ 3,561	$ 9,306
932300	94 %	$ 875,482,415	5,681	$ 4,190	$ 5,106	$ 9,296
933400	94 %	$ 1,196,112,530	3,332	$ 5,725	$ 2,994	$ 8,719
933500	94 %	$ 1,080,401,644	3,854	$ 5,171	$ 3,464	$ 8,635
933302	94 %	$ 918,196,928	4,408	$ 4,395	$ 3,961	$ 8,356
921000	94 %	$ 740,678,169	5,341	$ 3,545	$ 4,800	$ 8,345
933301	94 %	$ 1,163,466,222	2,748	$ 5,569	$ 2,470	$ 8,038
930400	94 %	$ 889,230,991	3,953	$ 4,256	$ 3,553	$ 7,809
933002	94 %	$ 829,248,981	4,209	$ 3,969	$ 3,783	$ 7,752
930600	94 %	$ 916,324,205	3,731	$ 4,386	$ 3,353	$ 7,739
930700	94 %	$ 812,428,669	4,122	$ 3,889	$ 3,704	$ 7,593
921600	94 %	$ 748,209,969	3,764	$ 3,581	$ 3,383	$ 6,964
920700	94 %	$ 612,058,462	4,434	$ 2,929	$ 3,985	$ 6,914
921100	94 %	$ 754,715,814	3,443	$ 3,612	$ 3,094	$ 6,707
930300	94 %	$ 759,678,669	3,267	$ 3,654	$ 2,947	$ 6,601
932802	94 %	$ 738,577,852	3,390	$ 3,535	$ 3,046	$ 6,581
921400	94 %	$ 705,206,296	3,310	$ 3,375	$ 2,975	$ 6,350
932600	94 %	$ 673,241,289	3,403	$ 3,222	$ 3,058	$ 6,281
933800	94 %	$ 822,345,229	2,439	$ 3,936	$ 2,192	$ 6,128
920900	94 %	$ 598,115,086	3,564	$ 2,863	$ 3,203	$ 6,066
932900	94 %	$ 777,920,064	2,556	$ 3,723	$ 2,297	$ 6,020
932500	94 %	$ 648,219,054	3,172	$ 3,103	$ 2,851	$ 5,953
930200	96 %	$ 713,102,421	2,541	$ 3,444	$ 2,303	$ 5,747
933900	94 %	$ 775,877,868	1,859	$ 3,714	$ 1,671	$ 5,384
933700	94 %	$ 658,016,179	2,477	$ 3,149	$ 2,226	$ 5,376
930101	76 %	$ 741,373,812	2,783	$ 3,148	$ 2,101	$ 5,249
920300	94 %	$ 541,156,124	2,805	$ 2,590	$ 2,521	$ 5,111
931100	94 %	$ 554,419,937	2,293	$ 2,654	$ 2,061	$ 4,714
932801	94 %	$ 443,777,220	2,669	$ 2,124	$ 2,399	$ 4,523
932200	94 %	$ 418,090,757	2,780	$ 2,001	$ 2,498	$ 4,499
921200	94 %	$ 563,702,526	1,883	$ 2,698	$ 1,692	$ 4,390
920400	94 %	$ 400,768,565	2,421	$ 1,918	$ 2,176	$ 4,094
932702	94 %	$ 356,149,237	2,580	$ 1,705	$ 2,319	$ 4,023
933100	94 %	$ 404,378,222	2,251	$ 1,935	$ 2,023	$ 3,959
920800	94 %	$ 377,530,869	2,030	$ 1,807	$ 1,824	$ 3,631
931300	35 %	$ 1,184,945,275	3,970	$ 2,025	$ 1,313	$ 3,338

931400	31 %	$ 956,601,185	4,477	$ 1,526	$ 1,341	$ 2,867
931500	31 %	$ 1,067,865,228	3,869	$ 1,704	$ 1,159	$ 2,863
931601	31 %	$ 722,506,732	4,338	$ 1,153	$ 1,300	$ 2,452
930102	42 %	$ 624,076,713	2,340	$ 1,190	$ 874	$ 2,064
931602	31 %	$ 572,340,322	2,890	$ 913	$ 866	$ 1,779
931700	31 %	$ 278,559,559	1,872	$ 444	$ 561	$ 1,005

LIGHTNING

Tract	Annual Frequency	Exp. Building	Exp. Population	EAL - Building	EAL - PE	EAL - Total
930900	4064 %	$ 1,465,304,691	7,086	$ 474	$ 25,971	$ 26,446
930500	4018 %	$ 1,089,995,823	6,397	$ 348	$ 23,134	$ 23,482
931900	4073 %	$ 1,560,885,371	6,001	$ 506	$ 22,000	$ 22,506
931000	4011 %	$ 1,659,170,535	6,024	$ 530	$ 21,795	$ 22,324
932000	4073 %	$ 1,184,312,685	5,945	$ 384	$ 21,795	$ 22,179
933001	4073 %	$ 1,532,824,394	5,852	$ 496	$ 21,454	$ 21,951
932300	4073 %	$ 875,482,415	5,681	$ 284	$ 20,827	$ 21,111
921500	4014 %	$ 929,042,387	5,774	$ 296	$ 20,805	$ 21,101
932701	4073 %	$ 1,050,463,883	5,605	$ 340	$ 20,549	$ 20,889
921000	3968 %	$ 740,678,169	5,341	$ 234	$ 19,078	$ 19,312
930800	3968 %	$ 1,220,043,037	4,869	$ 385	$ 17,392	$ 17,777
933600	3968 %	$ 1,089,862,742	4,754	$ 344	$ 16,981	$ 17,325
931400	4073 %	$ 956,601,185	4,477	$ 310	$ 16,413	$ 16,723
933302	4073 %	$ 918,196,928	4,408	$ 297	$ 16,160	$ 16,458
931601	4073 %	$ 722,506,732	4,338	$ 234	$ 15,904	$ 16,138
920700	3968 %	$ 612,058,462	4,434	$ 193	$ 15,838	$ 16,031
933002	4039 %	$ 829,248,981	4,209	$ 268	$ 15,378	$ 15,646
934000	3969 %	$ 1,976,783,122	4,073	$ 624	$ 14,553	$ 15,177
930700	3968 %	$ 812,428,669	4,122	$ 256	$ 14,724	$ 14,980
931200	4073 %	$ 1,203,742,515	3,978	$ 390	$ 14,584	$ 14,974
931300	4073 %	$ 1,184,945,275	3,970	$ 384	$ 14,555	$ 14,938
930400	4023 %	$ 889,230,991	3,953	$ 284	$ 14,305	$ 14,589
931500	4073 %	$ 1,067,865,228	3,869	$ 346	$ 14,184	$ 14,530
933500	3968 %	$ 1,080,401,644	3,854	$ 341	$ 13,766	$ 14,107
921600	4004 %	$ 748,209,969	3,764	$ 238	$ 13,549	$ 13,787
930600	3968 %	$ 916,324,205	3,731	$ 289	$ 13,327	$ 13,616
920900	3968 %	$ 598,115,086	3,564	$ 189	$ 12,731	$ 12,919
932600	4073 %	$ 673,241,289	3,403	$ 218	$ 12,476	$ 12,694
932802	4044 %	$ 739,186,294	3,396	$ 238	$ 12,367	$ 12,605
921100	3968 %	$ 754,715,814	3,443	$ 238	$ 12,298	$ 12,536
933400	3968 %	$ 1,196,112,530	3,332	$ 377	$ 11,902	$ 12,279
921400	3995 %	$ 705,206,296	3,310	$ 224	$ 11,876	$ 12,100
930300	3994 %	$ 759,678,669	3,267	$ 241	$ 11,713	$ 11,954
932500	4073 %	$ 648,219,054	3,172	$ 210	$ 11,629	$ 11,839
931602	4073 %	$ 572,340,322	2,890	$ 185	$ 10,595	$ 10,780
932200	4073 %	$ 418,090,757	2,780	$ 135	$ 10,192	$ 10,327
933301	4013 %	$ 1,163,466,222	2,748	$ 372	$ 9,943	$ 10,316
920300	3968 %	$ 541,156,124	2,805	$ 171	$ 10,019	$ 10,190
930101	3938 %	$ 741,373,812	2,783	$ 232	$ 9,868	$ 10,100
932801	4071 %	$ 443,777,220	2,669	$ 144	$ 9,784	$ 9,928
932900	4073 %	$ 777,920,064	2,556	$ 252	$ 9,371	$ 9,623
932702	4073 %	$ 356,149,237	2,580	$ 115	$ 9,459	$ 9,574
930200	3949 %	$ 713,102,421	2,541	$ 224	$ 9,047	$ 9,271
933700	3968 %	$ 658,016,179	2,477	$ 208	$ 8,848	$ 9,055
933800	3968 %	$ 822,345,229	2,439	$ 259	$ 8,712	$ 8,972
921300	3973 %	$ 1,605,362,957	2,343	$ 507	$ 8,384	$ 8,891
920400	3968 %	$ 400,850,023	2,422	$ 126	$ 8,651	$ 8,778
930102	4031 %	$ 624,076,713	2,340	$ 200	$ 8,496	$ 8,696

931100	4067 %	$ 554,419,937	2,293	$ 179	$ 8,397	$ 8,577
933100	3968 %	$ 405,462,456	2,255	$ 128	$ 8,055	$ 8,183
920800	3968 %	$ 377,530,869	2,030	$ 119	$ 7,251	$ 7,370
933900	4073 %	$ 775,877,868	1,859	$ 251	$ 6,815	$ 7,067
931700	4073 %	$ 278,559,559	1,872	$ 90	$ 6,863	$ 6,953
921200	3968 %	$ 563,702,526	1,883	$ 178	$ 6,726	$ 6,904

WINTER WEATHER

Table of Exposure (Exp.) and Estimated Annual Loss (EAL) Data

Tract	Annual Frequency	Exp. Building	Exp. Population	Exp. Agriculture	EAL - Building	EAL - PE	EAL - Agriculture	EAL - Total
934000	1574 %	$ 1,976,783,122	4,073	$ 205,086	$ 9,235	$ 1,003	$ 1	$ 10,239
931000	1574 %	$ 1,659,170,535	6,024	$ 1,265,455	$ 7,751	$ 1,484	$ 7	$ 9,241
931900	1574 %	$ 1,560,885,371	6,001	$ 20,752	$ 7,292	$ 1,478	$ 0	$ 8,770
933001	1574 %	$ 1,532,824,394	5,852	$ 22,757	$ 7,161	$ 1,441	$ 0	$ 8,602
930900	1574 %	$ 1,465,304,691	7,086	$ 253,691	$ 6,846	$ 1,745	$ 1	$ 8,592
921300	1574 %	$ 1,605,362,957	2,343	$ 20,613	$ 7,500	$ 577	$ 0	$ 8,077
932000	1574 %	$ 1,184,312,685	5,945	$ 431,368	$ 5,533	$ 1,464	$ 2	$ 6,999
930800	1574 %	$ 1,220,043,037	4,869	$ 1,364,027	$ 5,700	$ 1,199	$ 7	$ 6,906
930500	1574 %	$ 1,089,995,823	6,397	$ 5,295,290	$ 5,092	$ 1,576	$ 27	$ 6,695
931200	1574 %	$ 1,203,742,515	3,978	$ 1,315,579	$ 5,624	$ 980	$ 7	$ 6,610
931300	1574 %	$ 1,184,945,275	3,970	$ 1,620,649	$ 5,536	$ 978	$ 8	$ 6,522
933400	1574 %	$ 1,196,112,530	3,332	$ 3,137,888	$ 5,588	$ 821	$ 16	$ 6,425
932701	1574 %	$ 1,050,463,883	5,605	$ 261	$ 4,908	$ 1,380	$ 0	$ 6,288
933600	1574 %	$ 1,089,862,742	4,754	$ 47,527	$ 5,092	$ 1,171	$ 0	$ 6,263
933301	1574 %	$ 1,163,466,222	2,748	$ 234,194	$ 5,435	$ 677	$ 1	$ 6,113
933500	1574 %	$ 1,080,401,644	3,854	$ 3,472,662	$ 5,047	$ 949	$ 18	$ 6,015
931500	1574 %	$ 1,067,865,228	3,869	$ 1,030,475	$ 4,989	$ 953	$ 5	$ 5,947
921500	1574 %	$ 929,042,387	5,774	$ 955	$ 4,340	$ 1,422	$ 0	$ 5,762
931400	1574 %	$ 956,601,185	4,477	$ 162,791	$ 4,469	$ 1,103	$ 1	$ 5,572
932300	1574 %	$ 875,482,415	5,681	$ 0	$ 4,090	$ 1,399	$ 0	$ 5,489
933302	1574 %	$ 918,196,928	4,408	$ 154,051	$ 4,290	$ 1,086	$ 1	$ 5,376
930600	1574 %	$ 916,324,205	3,731	$ 2,796,237	$ 4,281	$ 919	$ 14	$ 5,214
930400	1575 %	$ 889,230,991	3,953	$ 7,355,458	$ 4,158	$ 975	$ 38	$ 5,171
933002	1574 %	$ 829,248,981	4,209	$ 39,315	$ 3,874	$ 1,037	$ 0	$ 4,911
930700	1574 %	$ 812,428,669	4,122	$ 490,549	$ 3,795	$ 1,015	$ 3	$ 4,813
921000	1574 %	$ 740,678,169	5,341	$ 328	$ 3,460	$ 1,315	$ 0	$ 4,776
931601	1574 %	$ 722,506,732	4,338	$ 7,705	$ 3,375	$ 1,068	$ 0	$ 4,444
933800	1574 %	$ 822,345,229	2,439	$ 0	$ 3,842	$ 601	$ 0	$ 4,442
921600	1574 %	$ 748,209,969	3,764	$ 0	$ 3,495	$ 927	$ 0	$ 4,422
930300	1574 %	$ 759,678,669	3,267	$ 7,522,429	$ 3,550	$ 805	$ 39	$ 4,394
921100	1574 %	$ 754,715,814	3,443	$ 1,766	$ 3,526	$ 848	$ 0	$ 4,374
932802	1574 %	$ 739,186,294	3,396	$ 39,364	$ 3,453	$ 836	$ 0	$ 4,290
932900	1574 %	$ 777,920,064	2,556	$ 59,585	$ 3,634	$ 629	$ 0	$ 4,264
930101	1574 %	$ 741,373,812	2,783	$ 8,827,783	$ 3,464	$ 686	$ 46	$ 4,196
921400	1574 %	$ 705,206,296	3,310	$ 174	$ 3,295	$ 815	$ 0	$ 4,110
933900	1574 %	$ 775,877,868	1,859	$ 23,884	$ 3,625	$ 458	$ 0	$ 4,083
930200	1574 %	$ 713,102,421	2,541	$ 12,965,732	$ 3,332	$ 626	$ 67	$ 4,025
932600	1574 %	$ 673,241,289	3,403	$ 11,933	$ 3,145	$ 838	$ 0	$ 3,983
920700	1574 %	$ 612,058,462	4,434	$ 700,378	$ 2,859	$ 1,092	$ 4	$ 3,955
932500	1574 %	$ 648,219,054	3,172	$ 26,258	$ 3,028	$ 781	$ 0	$ 3,810
933700	1574 %	$ 658,016,179	2,477	$ 2,021,797	$ 3,074	$ 610	$ 10	$ 3,695
920900	1574 %	$ 598,115,086	3,564	$ 1,822	$ 2,794	$ 878	$ 0	$ 3,672
930102	1574 %	$ 624,076,713	2,340	$ 4,777,367	$ 2,916	$ 576	$ 25	$ 3,517
931602	1574 %	$ 572,340,322	2,890	$ 3,899	$ 2,674	$ 712	$ 0	$ 3,386
920300	1574 %	$ 541,156,124	2,805	$ 0	$ 2,528	$ 691	$ 0	$ 3,219
931100	1574 %	$ 554,419,937	2,293	$ 4,118,887	$ 2,590	$ 565	$ 21	$ 3,176
921200	1574 %	$ 563,702,526	1,883	$ 62,375	$ 2,633	$ 464	$ 0	$ 3,098
932801	1574 %	$ 443,777,220	2,669	$ 0	$ 2,073	$ 657	$ 0	$ 2,731

932200	1574 %	$ 418,090,757	2,780	$ 434	$ 1,953	$ 685	$ 0	$ 2,638
920400	1574 %	$ 400,850,023	2,422	$ 0	$ 1,873	$ 596	$ 0	$ 2,469
933100	1574 %	$ 405,462,456	2,255	$ 236,856	$ 1,894	$ 555	$ 1	$ 2,451
932702	1574 %	$ 356,149,237	2,580	$ 0	$ 1,664	$ 635	$ 0	$ 2,299
920800	1574 %	$ 377,530,869	2,030	$ 0	$ 1,764	$ 500	$ 0	$ 2,264
931700	1574 %	$ 278,559,559	1,872	$ 48,835	$ 1,301	$ 461	$ 0	$ 1,763

TORNADO

Table of Exposure (Exp.) and Estimated Annual Loss (EAL) Data

Tract	Annual Frequency	Exp. Building	Exp. Population	Exp. Agriculture	EAL - Building	EAL - PE	EAL - Agriculture	EAL - Total
930900	0 %	$ 1,465,304,691	7,086	$ 253,691	$ 88,903	$ 125,675	$ 4	$ 214,582
931000	1 %	$ 1,659,170,535	6,024	$ 1,265,455	$ 100,665	$ 106,840	$ 23	$ 207,528
931900	0 %	$ 1,560,885,371	6,001	$ 20,752	$ 93,772	$ 104,734	$ 0	$ 198,506
933001	0 %	$ 1,532,824,394	5,852	$ 22,757	$ 92,999	$ 103,789	$ 0	$ 196,789
934000	0 %	$ 1,976,783,122	4,073	$ 205,086	$ 119,935	$ 72,237	$ 3	$ 192,176
930500	2 %	$ 1,089,995,823	6,397	$ 5,295,290	$ 66,132	$ 113,455	$ 93	$ 179,680
932000	1 %	$ 1,184,312,685	5,945	$ 431,368	$ 71,484	$ 104,790	$ 8	$ 176,282
932701	0 %	$ 1,050,463,883	5,605	$ 261	$ 63,734	$ 99,409	$ 0	$ 163,142
930800	1 %	$ 1,220,043,037	4,869	$ 1,364,027	$ 74,022	$ 86,355	$ 25	$ 160,402
921500	0 %	$ 929,042,387	5,774	$ 955	$ 56,367	$ 102,406	$ 0	$ 158,773
932300	0 %	$ 875,482,415	5,681	$ 0	$ 53,117	$ 100,756	$ 0	$ 153,874
933600	0 %	$ 1,089,862,742	4,754	$ 47,527	$ 66,124	$ 84,315	$ 1	$ 150,440
931200	1 %	$ 1,203,742,515	3,978	$ 1,315,579	$ 73,004	$ 70,503	$ 25	$ 143,533
921000	0 %	$ 740,678,169	5,341	$ 328	$ 44,938	$ 94,726	$ 0	$ 139,665
921300	0 %	$ 1,605,362,957	2,343	$ 20,613	$ 97,400	$ 41,555	$ 0	$ 138,955
933500	1 %	$ 1,080,401,644	3,854	$ 3,472,662	$ 65,550	$ 68,355	$ 59	$ 133,964
933302	0 %	$ 918,196,928	4,408	$ 154,051	$ 55,712	$ 78,183	$ 3	$ 133,898
933400	1 %	$ 1,196,112,530	3,332	$ 3,137,888	$ 72,570	$ 59,095	$ 54	$ 131,720
931300	1 %	$ 1,184,945,275	3,970	$ 1,620,649	$ 65,444	$ 61,911	$ 28	$ 127,383
933002	0 %	$ 829,248,981	4,209	$ 39,315	$ 50,312	$ 74,650	$ 1	$ 124,962
930400	2 %	$ 889,230,991	3,953	$ 7,355,458	$ 53,951	$ 70,109	$ 129	$ 124,190
930700	0 %	$ 812,428,669	4,122	$ 490,549	$ 49,292	$ 73,107	$ 9	$ 122,407
931400	0 %	$ 956,601,185	4,477	$ 162,791	$ 52,641	$ 69,292	$ 3	$ 121,935
930600	1 %	$ 916,324,205	3,731	$ 2,796,237	$ 55,596	$ 66,173	$ 49	$ 121,817
933301	0 %	$ 1,163,466,222	2,748	$ 234,194	$ 70,590	$ 48,738	$ 4	$ 119,331
931500	1 %	$ 1,067,865,228	3,869	$ 1,030,475	$ 58,764	$ 59,882	$ 18	$ 118,663
920700	0 %	$ 612,058,462	4,434	$ 700,378	$ 37,135	$ 78,640	$ 12	$ 115,787
921600	0 %	$ 748,209,969	3,764	$ 0	$ 45,395	$ 66,757	$ 0	$ 112,152
931601	0 %	$ 722,506,732	4,338	$ 7,705	$ 39,759	$ 67,141	$ 0	$ 106,899
921100	0 %	$ 754,715,814	3,443	$ 1,766	$ 45,790	$ 61,064	$ 0	$ 106,854
932802	0 %	$ 739,186,294	3,396	$ 39,364	$ 44,848	$ 60,230	$ 1	$ 105,079
930300	2 %	$ 759,678,669	3,267	$ 7,522,429	$ 46,050	$ 57,929	$ 130	$ 104,108
921400	0 %	$ 705,206,296	3,310	$ 174	$ 42,786	$ 58,705	$ 0	$ 101,491
932600	0 %	$ 673,241,289	3,403	$ 11,933	$ 40,847	$ 60,355	$ 0	$ 101,202
920900	0 %	$ 598,115,086	3,564	$ 1,822	$ 36,289	$ 63,210	$ 0	$ 99,499
932500	0 %	$ 648,219,054	3,172	$ 26,258	$ 39,329	$ 56,258	$ 0	$ 95,587
933800	0 %	$ 822,345,229	2,439	$ 0	$ 49,893	$ 43,257	$ 0	$ 93,151
932900	0 %	$ 777,920,064	2,556	$ 59,585	$ 47,198	$ 45,332	$ 1	$ 92,531
930101	2 %	$ 741,373,812	2,783	$ 8,827,783	$ 43,489	$ 47,127	$ 146	$ 90,762
930200	2 %	$ 713,102,421	2,541	$ 12,965,732	$ 43,195	$ 45,041	$ 213	$ 88,449
933700	1 %	$ 658,016,179	2,477	$ 2,021,797	$ 39,924	$ 43,933	$ 35	$ 83,891
920300	0 %	$ 541,156,124	2,805	$ 0	$ 32,833	$ 49,749	$ 0	$ 82,582
933900	0 %	$ 775,877,868	1,859	$ 23,884	$ 47,074	$ 32,971	$ 0	$ 80,045
931602	0 %	$ 572,340,322	2,890	$ 3,899	$ 31,495	$ 44,729	$ 0	$ 76,225
932200	0 %	$ 418,090,757	2,780	$ 434	$ 25,366	$ 49,305	$ 0	$ 74,672
931100	1 %	$ 554,419,937	2,293	$ 4,118,887	$ 33,638	$ 40,668	$ 71	$ 74,377
932801	0 %	$ 443,777,220	2,669	$ 0	$ 26,925	$ 47,337	$ 0	$ 74,261
930102	1 %	$ 624,076,713	2,340	$ 4,777,367	$ 34,685	$ 36,870	$ 83	$ 71,638

921200	0 %	$ 563,702,526	1,883	$ 62,375	$ 34,201	$ 33,396	$ 1	$ 67,598
932702	0 %	$ 356,149,237	2,580	$ 0	$ 21,608	$ 45,758	$ 0	$ 67,366
920400	0 %	$ 400,850,023	2,422	$ 0	$ 24,320	$ 42,956	$ 0	$ 67,276
933100	0 %	$ 405,462,456	2,255	$ 236,856	$ 24,600	$ 39,994	$ 4	$ 64,598
920800	0 %	$ 377,530,869	2,030	$ 0	$ 22,905	$ 36,003	$ 0	$ 58,909
931700	0 %	$ 278,559,559	1,872	$ 48,835	$ 15,329	$ 28,974	$ 1	$ 44,303

STRONG WIND

Table of Exposure (Exp.) and Estimated Annual Loss (EAL) Data

Tract	Annual Frequency	Exp. Building	Exp. Population	Exp. Agriculture	EAL - Building	EAL - PE	EAL - Agriculture	EAL - Total
930900	230 %	$ 1,465,304,691	7,086	$ 253,691	$ 33,430	$ 73,636	$ 39	$ 107,104
931000	230 %	$ 1,659,170,535	6,024	$ 1,265,455	$ 37,853	$ 62,600	$ 195	$ 100,647
931900	232 %	$ 1,560,885,371	6,001	$ 20,752	$ 35,702	$ 62,552	$ 3	$ 98,258
933001	230 %	$ 1,532,824,394	5,852	$ 22,757	$ 34,970	$ 60,812	$ 3	$ 95,786
930500	230 %	$ 1,089,995,823	6,397	$ 5,295,290	$ 24,867	$ 66,476	$ 814	$ 92,157
932000	231 %	$ 1,184,312,685	5,945	$ 431,368	$ 27,056	$ 61,852	$ 67	$ 88,974
934000	230 %	$ 1,976,783,122	4,073	$ 205,086	$ 45,099	$ 42,325	$ 32	$ 87,456
932701	230 %	$ 1,050,463,883	5,605	$ 261	$ 23,965	$ 58,246	$ 0	$ 82,211
921500	230 %	$ 929,042,387	5,774	$ 955	$ 21,195	$ 60,002	$ 0	$ 81,197
932300	230 %	$ 875,482,415	5,681	$ 0	$ 19,973	$ 59,035	$ 0	$ 79,009
930800	230 %	$ 1,220,043,037	4,869	$ 1,364,027	$ 27,834	$ 50,597	$ 210	$ 78,641
933600	230 %	$ 1,089,862,742	4,754	$ 47,527	$ 24,864	$ 49,402	$ 7	$ 74,274
921000	230 %	$ 740,678,169	5,341	$ 328	$ 16,898	$ 55,502	$ 0	$ 72,400
931300	236 %	$ 1,184,945,275	3,970	$ 1,620,649	$ 27,673	$ 42,215	$ 255	$ 70,143
931400	236 %	$ 956,601,185	4,477	$ 162,791	$ 22,359	$ 47,665	$ 26	$ 70,050
931200	230 %	$ 1,203,742,515	3,978	$ 1,315,579	$ 27,465	$ 41,344	$ 202	$ 69,012
933302	230 %	$ 918,196,928	4,408	$ 154,051	$ 20,948	$ 45,807	$ 24	$ 66,778
931500	236 %	$ 1,067,865,228	3,869	$ 1,030,475	$ 24,960	$ 41,192	$ 162	$ 66,314
933500	230 %	$ 1,080,401,644	3,854	$ 3,472,662	$ 24,648	$ 40,050	$ 534	$ 65,232
931601	236 %	$ 722,506,732	4,338	$ 7,705	$ 16,888	$ 46,185	$ 1	$ 63,074
933002	230 %	$ 829,248,981	4,209	$ 39,315	$ 18,919	$ 43,739	$ 6	$ 62,663
930400	230 %	$ 889,230,991	3,953	$ 7,355,458	$ 20,287	$ 41,078	$ 1,131	$ 62,496
933400	230 %	$ 1,196,112,530	3,332	$ 3,137,888	$ 27,288	$ 34,625	$ 482	$ 62,396
930700	230 %	$ 812,428,669	4,122	$ 490,549	$ 18,535	$ 42,835	$ 75	$ 61,445
921300	230 %	$ 1,605,362,957	2,343	$ 20,613	$ 36,625	$ 24,348	$ 3	$ 60,976
920700	230 %	$ 612,058,462	4,434	$ 700,378	$ 13,964	$ 46,077	$ 108	$ 60,148
930600	230 %	$ 916,324,205	3,731	$ 2,796,237	$ 20,905	$ 38,772	$ 430	$ 60,107
921600	230 %	$ 748,209,969	3,764	$ 0	$ 17,070	$ 39,114	$ 0	$ 56,184
933301	230 %	$ 1,163,466,222	2,748	$ 234,194	$ 26,543	$ 28,556	$ 36	$ 55,136
921100	230 %	$ 754,715,814	3,443	$ 1,766	$ 17,218	$ 35,779	$ 0	$ 52,997
930300	229 %	$ 759,678,669	3,267	$ 7,522,429	$ 17,250	$ 33,835	$ 1,154	$ 52,239
932802	230 %	$ 739,186,294	3,396	$ 39,364	$ 16,864	$ 35,290	$ 6	$ 52,160
932600	230 %	$ 673,241,289	3,403	$ 11,933	$ 15,359	$ 35,363	$ 2	$ 50,724
920900	230 %	$ 598,115,086	3,564	$ 1,822	$ 13,645	$ 37,036	$ 0	$ 50,682
921400	230 %	$ 705,206,296	3,310	$ 174	$ 16,089	$ 34,397	$ 0	$ 50,485
932500	230 %	$ 648,219,054	3,172	$ 26,258	$ 14,789	$ 32,963	$ 4	$ 47,755
930101	221 %	$ 741,373,812	2,783	$ 8,827,783	$ 16,380	$ 28,246	$ 1,289	$ 45,915
932900	230 %	$ 777,920,064	2,556	$ 59,585	$ 17,748	$ 26,561	$ 9	$ 44,318
930200	225 %	$ 713,102,421	2,541	$ 12,965,732	$ 16,130	$ 26,200	$ 1,943	$ 44,273
931602	236 %	$ 572,340,322	2,890	$ 3,899	$ 13,378	$ 30,769	$ 1	$ 44,147
933800	230 %	$ 822,345,229	2,439	$ 0	$ 18,761	$ 25,345	$ 0	$ 44,107
920300	230 %	$ 541,156,124	2,805	$ 0	$ 12,346	$ 29,149	$ 0	$ 41,495
933700	230 %	$ 658,016,179	2,477	$ 2,021,797	$ 15,012	$ 25,740	$ 311	$ 41,063
930102	235 %	$ 624,076,713	2,340	$ 4,777,367	$ 14,553	$ 24,839	$ 749	$ 40,141
932200	230 %	$ 418,090,757	2,780	$ 434	$ 9,538	$ 28,889	$ 0	$ 38,427
932801	230 %	$ 443,777,220	2,669	$ 0	$ 10,124	$ 27,736	$ 0	$ 37,860
931100	230 %	$ 554,419,937	2,293	$ 4,118,887	$ 12,649	$ 23,828	$ 633	$ 37,110
933900	230 %	$ 775,877,868	1,859	$ 23,884	$ 17,701	$ 19,318	$ 4	$ 37,023

932702	230 %	$ 356,149,237	2,580	$ 0	$ 8,125	$ 26,811	$ 0	$ 34,936
920400	230 %	$ 400,850,023	2,422	$ 0	$ 9,145	$ 25,169	$ 0	$ 34,314
933100	230 %	$ 405,462,456	2,255	$ 236,856	$ 9,250	$ 23,433	$ 36	$ 32,720
921200	230 %	$ 563,702,526	1,883	$ 62,375	$ 12,860	$ 19,568	$ 10	$ 32,438
920800	230 %	$ 377,530,869	2,030	$ 0	$ 8,613	$ 21,095	$ 0	$ 29,708
931700	236 %	$ 278,559,559	1,872	$ 48,835	$ 6,511	$ 19,931	$ 8	$ 26,449

HURRICANE

Table of Exposure (Exp.) and Estimated Annual Loss (EAL) Data

Tract	Annual Frequency	Exp. Building	Exp. Population	Exp. Agriculture	EAL - Building	EAL - PE	EAL - Agriculture	EAL -Total
934000	3 %	$ 1,976,783,122	4,073	$ 205,086	$ 18,130	$ 331	$ 67	$ 18,528
931000	3 %	$ 1,659,170,535	6,024	$ 1,265,455	$ 15,217	$ 489	$ 415	$ 16,121
921300	3 %	$ 1,605,362,957	2,343	$ 20,613	$ 14,724	$ 190	$ 7	$ 14,920
933001	3 %	$ 1,532,824,394	5,852	$ 22,757	$ 14,058	$ 475	$ 7	$ 14,541
931900	3 %	$ 1,559,841,792	5,998	$ 20,752	$ 14,004	$ 475	$ 6	$ 14,485
930900	3 %	$ 1,465,304,691	7,086	$ 253,691	$ 13,439	$ 575	$ 83	$ 14,097
933400	3 %	$ 1,196,112,530	3,332	$ 3,137,888	$ 10,970	$ 270	$ 1,029	$ 12,270
930500	3 %	$ 1,089,995,823	6,397	$ 5,282,752	$ 9,997	$ 519	$ 1,732	$ 12,249
930800	3 %	$ 1,216,249,490	4,855	$ 1,338,629	$ 11,155	$ 394	$ 439	$ 11,988
931200	3 %	$ 1,203,699,408	3,977	$ 1,315,579	$ 11,030	$ 322	$ 431	$ 11,783
932000	3 %	$ 1,184,312,685	5,945	$ 431,368	$ 10,741	$ 478	$ 137	$ 11,356
933500	3 %	$ 1,069,083,358	3,797	$ 3,134,502	$ 9,805	$ 308	$ 1,028	$ 11,141
930200	3 %	$ 713,102,421	2,541	$ 12,965,732	$ 6,540	$ 206	$ 4,252	$ 10,999
933301	3 %	$ 1,163,466,222	2,748	$ 234,194	$ 10,671	$ 223	$ 77	$ 10,971
930400	3 %	$ 889,230,991	3,953	$ 7,355,340	$ 8,156	$ 321	$ 2,412	$ 10,889
933600	3 %	$ 1,089,862,742	4,754	$ 47,527	$ 9,996	$ 386	$ 16	$ 10,397
932701	3 %	$ 1,050,463,883	5,605	$ 261	$ 9,634	$ 455	$ 0	$ 10,089
930300	3 %	$ 759,678,669	3,267	$ 7,522,429	$ 6,967	$ 265	$ 2,467	$ 9,699
931300	2 %	$ 1,184,945,275	3,970	$ 1,620,649	$ 8,771	$ 261	$ 429	$ 9,462
930101	3 %	$ 741,373,812	2,783	$ 8,827,783	$ 6,471	$ 212	$ 2,673	$ 9,357
930600	3 %	$ 885,785,941	3,618	$ 2,697,950	$ 8,124	$ 294	$ 885	$ 9,302
921500	3 %	$ 927,628,300	5,755	$ 955	$ 8,508	$ 467	$ 0	$ 8,975
933302	3 %	$ 918,196,928	4,408	$ 154,051	$ 8,421	$ 358	$ 51	$ 8,830
932300	3 %	$ 875,482,415	5,681	$ 0	$ 8,029	$ 461	$ 0	$ 8,491
931500	2 %	$ 1,067,865,228	3,869	$ 1,030,475	$ 7,835	$ 251	$ 270	$ 8,357
933002	3 %	$ 829,248,981	4,209	$ 39,315	$ 7,605	$ 342	$ 13	$ 7,960
930700	3 %	$ 797,631,198	4,060	$ 490,549	$ 7,315	$ 329	$ 161	$ 7,806
933800	3 %	$ 815,210,314	2,427	$ 0	$ 7,477	$ 197	$ 0	$ 7,674
932900	3 %	$ 777,920,064	2,556	$ 59,585	$ 7,135	$ 207	$ 20	$ 7,362
931400	2 %	$ 956,601,185	4,477	$ 162,791	$ 7,019	$ 291	$ 43	$ 7,352
933900	3 %	$ 775,877,868	1,859	$ 23,884	$ 7,116	$ 151	$ 8	$ 7,275
921000	3 %	$ 740,678,169	5,341	$ 328	$ 6,793	$ 433	$ 0	$ 7,227
921600	3 %	$ 742,139,879	3,728	$ 0	$ 6,807	$ 303	$ 0	$ 7,109
932802	3 %	$ 739,186,294	3,396	$ 39,364	$ 6,779	$ 276	$ 13	$ 7,068
921100	3 %	$ 704,980,215	3,430	$ 1,766	$ 6,466	$ 278	$ 1	$ 6,745
921400	3 %	$ 705,206,296	3,310	$ 174	$ 6,468	$ 269	$ 0	$ 6,736
933700	3 %	$ 638,682,277	2,404	$ 1,752,639	$ 5,858	$ 195	$ 575	$ 6,628
931100	3 %	$ 554,419,937	2,293	$ 4,118,887	$ 5,085	$ 186	$ 1,351	$ 6,622
932600	3 %	$ 662,286,389	3,323	$ 11,933	$ 6,074	$ 270	$ 4	$ 6,348
920700	3 %	$ 612,058,462	4,434	$ 700,378	$ 5,613	$ 360	$ 230	$ 6,203
930102	2 %	$ 624,076,713	2,340	$ 4,777,367	$ 4,690	$ 157	$ 1,313	$ 6,160
932500	3 %	$ 641,457,925	3,134	$ 26,258	$ 5,883	$ 254	$ 9	$ 6,146
920900	3 %	$ 598,115,086	3,564	$ 1,822	$ 5,486	$ 289	$ 1	$ 5,775
931601	2 %	$ 722,506,732	4,338	$ 7,705	$ 5,301	$ 282	$ 2	$ 5,585
921200	3 %	$ 561,400,068	1,848	$ 62,375	$ 5,149	$ 150	$ 20	$ 5,319
920300	3 %	$ 538,055,310	2,778	$ 0	$ 4,935	$ 225	$ 0	$ 5,160
931602	2 %	$ 572,340,322	2,890	$ 3,899	$ 4,199	$ 188	$ 1	$ 4,388
932801	3 %	$ 441,520,247	2,646	$ 0	$ 4,049	$ 215	$ 0	$ 4,264

932200	3 %	$ 418,090,757	2,780	$ 434	$ 3,835	$ 226	$ 0	$ 4,060
933100	3 %	$ 405,462,456	2,255	$ 236,856	$ 3,719	$ 183	$ 78	$ 3,979
920400	3 %	$ 384,627,314	2,233	$ 0	$ 3,528	$ 181	$ 0	$ 3,709
920800	3 %	$ 377,530,869	2,030	$ 0	$ 3,463	$ 165	$ 0	$ 3,627
932702	3 %	$ 343,280,247	2,472	$ 0	$ 3,148	$ 201	$ 0	$ 3,349
931700	2 %	$ 278,559,559	1,872	$ 48,835	$ 2,044	$ 122	$ 13	$ 2,178

EARTHQUAKE

Table of Exposure (Exp.) and Estimated Annual Loss (EAL) Data

Tract	Annual Frequency	Exp. Building	Exp. Population	EAL - Building	EAL - PE	EAL - Total
934000	0.09 %	$ 4,382,937,664	4,073	$ 36,104	$ 5,233	$ 41,337
930800	0.08 %	$ 2,080,714,431	4,869	$ 17,380	$ 7,721	$ 25,102
933600	0.08 %	$ 1,931,506,237	4,754	$ 17,975	$ 5,787	$ 23,762
921000	0.09 %	$ 1,268,241,587	5,341	$ 15,230	$ 6,494	$ 21,723
930400	0.09 %	$ 1,457,939,334	3,953	$ 13,692	$ 6,190	$ 19,882
933301	0.07 %	$ 2,571,565,364	2,754	$ 17,070	$ 2,665	$ 19,734
931000	0.08 %	$ 2,988,165,805	6,024	$ 16,498	$ 2,810	$ 19,307
933500	0.08 %	$ 1,863,959,664	3,854	$ 15,429	$ 3,632	$ 19,061
931900	0.05 %	$ 2,854,250,221	6,001	$ 13,462	$ 3,403	$ 16,865
933400	0.08 %	$ 2,221,971,546	3,332	$ 14,918	$ 1,902	$ 16,820
930700	0.09 %	$ 1,390,524,100	4,122	$ 12,292	$ 4,192	$ 16,484
920700	0.09 %	$ 1,105,529,017	4,434	$ 11,751	$ 4,714	$ 16,466
920900	0.09 %	$ 1,122,245,032	3,564	$ 13,245	$ 3,204	$ 16,450
931200	0.07 %	$ 2,279,923,614	3,978	$ 13,903	$ 2,487	$ 16,389
933001	0.06 %	$ 2,585,875,736	5,852	$ 12,738	$ 2,662	$ 15,400
921300	0.07 %	$ 3,525,570,349	2,343	$ 13,704	$ 1,148	$ 14,852
930500	0.08 %	$ 1,790,189,627	6,397	$ 10,081	$ 3,980	$ 14,061
930300	0.09 %	$ 1,236,382,262	3,269	$ 9,984	$ 3,562	$ 13,546
933100	0.09 %	$ 684,236,283	2,255	$ 7,853	$ 5,570	$ 13,424
930900	0.06 %	$ 2,434,549,274	7,086	$ 10,411	$ 2,670	$ 13,081
933700	0.09 %	$ 1,136,404,981	2,477	$ 9,345	$ 3,146	$ 12,490
932000	0.06 %	$ 1,989,929,780	5,945	$ 9,487	$ 2,541	$ 12,028
920800	0.09 %	$ 673,778,531	2,030	$ 8,227	$ 3,417	$ 11,643
921200	0.09 %	$ 1,180,189,242	1,883	$ 9,466	$ 1,511	$ 10,977
930600	0.09 %	$ 1,471,551,475	3,731	$ 8,624	$ 2,326	$ 10,950
932300	0.06 %	$ 1,427,292,372	5,681	$ 7,194	$ 3,096	$ 10,290
921600	0.07 %	$ 1,310,417,222	3,772	$ 7,413	$ 2,718	$ 10,132
921500	0.07 %	$ 1,598,885,500	5,774	$ 7,727	$ 2,400	$ 10,128
933900	0.06 %	$ 1,608,132,012	1,859	$ 8,661	$ 1,381	$ 10,041
933002	0.04 %	$ 1,439,207,205	4,209	$ 6,918	$ 2,670	$ 9,588
921100	0.09 %	$ 1,464,573,653	3,443	$ 7,170	$ 1,736	$ 8,906
933800	0.09 %	$ 1,581,694,643	2,439	$ 7,162	$ 1,611	$ 8,773
930101	0.07 %	$ 1,297,320,335	2,783	$ 6,349	$ 2,311	$ 8,660
931300	0.05 %	$ 2,267,311,672	3,970	$ 7,660	$ 997	$ 8,657
932802	0.07 %	$ 1,367,329,802	3,396	$ 5,982	$ 2,181	$ 8,163
931500	0.05 %	$ 1,993,525,334	3,869	$ 6,364	$ 1,233	$ 7,597
930200	0.07 %	$ 1,158,393,652	2,541	$ 5,598	$ 1,680	$ 7,277
921400	0.07 %	$ 1,176,161,503	3,310	$ 5,207	$ 1,955	$ 7,162
931601	0.05 %	$ 1,292,860,411	4,338	$ 4,829	$ 1,776	$ 6,605
931400	0.03 %	$ 1,693,053,541	4,477	$ 5,117	$ 1,355	$ 6,472
932500	0.06 %	$ 1,253,600,060	3,172	$ 4,768	$ 1,607	$ 6,375
931100	0.07 %	$ 893,149,982	2,293	$ 4,384	$ 1,544	$ 5,928
932200	0.04 %	$ 717,074,479	2,780	$ 3,645	$ 1,830	$ 5,475
920300	0.07 %	$ 1,001,866,378	2,805	$ 4,010	$ 1,296	$ 5,306
932600	0.06 %	$ 1,273,478,321	3,403	$ 4,060	$ 955	$ 5,015
932701	0.06 %	$ 1,757,868,931	5,605	$ 4,103	$ 881	$ 4,984
933302	0.05 %	$ 1,565,981,073	4,408	$ 3,856	$ 1,028	$ 4,883
920400	0.07 %	$ 726,968,707	2,422	$ 3,609	$ 1,101	$ 4,711

931602	0.05 %	$ 944,888,690	2,890	$ 3,386	$ 1,289	$ 4,675
932900	0.06 %	$ 1,360,336,264	2,556	$ 4,126	$ 473	$ 4,599
930102	0.06 %	$ 1,023,061,400	2,340	$ 3,184	$ 836	$ 4,019
932801	0.04 %	$ 795,975,729	2,669	$ 2,411	$ 937	$ 3,348
932702	0.04 %	$ 590,726,060	2,580	$ 1,763	$ 670	$ 2,433
931700	0.05 %	$ 470,421,495	1,872	$ 1,328	$ 493	$ 1,822

LANDSLIDE

Table of Exposure (Exp.) and Estimated Annual Loss (EAL) Data

Tract	Annual Frequency	Exp. Area	Exp. Building	Exp. Population	EAL - Building	EAL - PE	EAL - Total
930500	1 %	0.86 Sq. Miles	$ 11,835,794	76	$ 17	$ 31	$ 47
930101	1 %	0.36 Sq. Miles	$ 5,578,295	21	$ 6	$ 6	$ 12
931500	0 %	0.44 Sq. Miles	$ 8,468,678	29	$ 4	$ 4	$ 9
931400	0 %	0.53 Sq. Miles	$ 13,465,036	87	$ 3	$ 6	$ 9
931300	0 %	0.32 Sq. Miles	$ 5,966,446	23	$ 3	$ 3	$ 6
930400	1 %	0.22 Sq. Miles	$ 2,736,191	13	$ 3	$ 4	$ 6
931000	0 %	0.23 Sq. Miles	$ 5,860,061	20	$ 3	$ 3	$ 5
930102	1 %	0.19 Sq. Miles	$ 2,777,893	11	$ 2	$ 2	$ 5
933900	0 %	0.26 Sq. Miles	$ 12,215,270	19	$ 3	$ 1	$ 4
933301	0 %	0.24 Sq. Miles	$ 10,241,444	23	$ 3	$ 2	$ 4
931900	0 %	0.33 Sq. Miles	$ 8,565,623	32	$ 2	$ 2	$ 3
930300	1 %	0.12 Sq. Miles	$ 1,465,312	6	$ 1	$ 2	$ 3
932000	0 %	0.23 Sq. Miles	$ 4,628,054	20	$ 1	$ 2	$ 3
930200	1 %	0.12 Sq. Miles	$ 1,341,368	6	$ 1	$ 2	$ 3
930600	0 %	0.19 Sq. Miles	$ 2,474,860	10	$ 1	$ 2	$ 3
933302	0 %	0.24 Sq. Miles	$ 7,702,566	24	$ 1	$ 1	$ 3
933700	0 %	0.18 Sq. Miles	$ 2,690,724	9	$ 1	$ 1	$ 3
933500	0 %	0.16 Sq. Miles	$ 2,540,017	11	$ 1	$ 1	$ 3
931200	0 %	0.15 Sq. Miles	$ 2,713,534	8	$ 1	$ 1	$ 2
932600	0 %	0.16 Sq. Miles	$ 8,442,835	45	$ 1	$ 1	$ 2
934000	0 %	0.17 Sq. Miles	$ 11,837,344	8	$ 2	$ 0	$ 2
933400	0 %	0.14 Sq. Miles	$ 2,551,150	6	$ 1	$ 1	$ 2
933001	0 %	0.24 Sq. Miles	$ 7,200,957	24	$ 1	$ 1	$ 2
930800	0 %	0.09 Sq. Miles	$ 2,093,272	6	$ 1	$ 1	$ 1
933600	0 %	0.2 Sq. Miles	$ 6,653,772	21	$ 1	$ 1	$ 1
932900	0 %	0.18 Sq. Miles	$ 4,927,264	13	$ 0	$ 0	$ 1
930900	0 %	0.13 Sq. Miles	$ 3,876,051	12	$ 0	$ 0	$ 1
932802	0 %	0.14 Sq. Miles	$ 4,893,983	16	$ 0	$ 0	$ 1
932300	0 %	0.17 Sq. Miles	$ 4,451,554	24	$ 0	$ 0	$ 1
933100	0 %	0.13 Sq. Miles	$ 2,429,911	13	$ 0	$ 0	$ 1
931100	0 %	0.05 Sq. Miles	$ 525,513	2	$ 0	$ 0	$ 1
932500	0 %	0.11 Sq. Miles	$ 3,833,184	16	$ 0	$ 0	$ 1
920700	0 %	0.05 Sq. Miles	$ 1,367,700	5	$ 0	$ 0	$ 1
932701	0 %	0.15 Sq. Miles	$ 4,043,935	17	$ 0	$ 0	$ 0
931602	0 %	0.14 Sq. Miles	$ 4,259,902	19	$ 0	$ 0	$ 0
932200	0 %	0.08 Sq. Miles	$ 2,554,360	18	$ 0	$ 0	$ 0
921200	0 %	0.07 Sq. Miles	$ 2,370,722	6	$ 0	$ 0	$ 0
931601	0 %	0.11 Sq. Miles	$ 2,349,280	16	$ 0	$ 0	$ 0
921000	0 %	0.07 Sq. Miles	$ 2,350,567	11	$ 0	$ 0	$ 0
921300	0 %	0.06 Sq. Miles	$ 2,239,512	4	$ 0	$ 0	$ 0
920800	0 %	0.08 Sq. Miles	$ 3,957,866	19	$ 0	$ 0	$ 0
933002	0 %	0.05 Sq. Miles	$ 1,338,728	4	$ 0	$ 0	$ 0
930700	0 %	0.03 Sq. Miles	$ 672,651	2	$ 0	$ 0	$ 0
931700	0 %	0.05 Sq. Miles	$ 600,648	3	$ 0	$ 0	$ 0
921500	0 %	0.04 Sq. Miles	$ 1,135,427	3	$ 0	$ 0	$ 0
921600	0 %	0.04 Sq. Miles	$ 1,675,797	3	$ 0	$ 0	$ 0
921400	0 %	0.04 Sq. Miles	$ 940,419	4	$ 0	$ 0	$ 0
921100	0 %	0.04 Sq. Miles	$ 1,396,615	3	$ 0	$ 0	$ 0

920900	0 %	0.03 Sq. Miles	$ 658,559	6	$ 0	$ 0	$ 0
932801	0 %	0.03 Sq. Miles	$ 1,627,927	2	$ 0	$ 0	$ 0
932702	0 %	0.04 Sq. Miles	$ 892,294	6	$ 0	$ 0	$ 0
920400	0 %	0.04 Sq. Miles	$ 1,496,554	3	$ 0	$ 0	$ 0
920300	0 %	0.03 Sq. Miles	$ 1,149,663	3	$ 0	$ 0	$ 0
933800	0 %	0 Sq. Miles	$ 232,294	1	$ 0	$ 0	$ 0

WILDFIRE

Table of Exposure (Exp.) and Estimated Annual Loss (EAL) Data

			Building	Exp. Population	Exp. Agriculture	EAL - Building	EAL - PE	EAL - Agriculture	EAL - Total
931000	0 %	2.71 Sq. Miles	$ 630,891,173	2,486	$ 471,769	$ 1,641	$ 333	$ 0	$ 1,974
931500	0 %	2.67 Sq. Miles	$ 350,216,164	1,632	$ 518,330	$ 1,667	$ 207	$ 0	$ 1,874
930600	0 %	4.46 Sq. Miles	$ 406,794,235	1,663	$ 1,080,097	$ 1,441	$ 230	$ 1	$ 1,672
933400	0 %	3.13 Sq. Miles	$ 326,879,899	1,172	$ 960,421	$ 1,125	$ 225	$ 1	$ 1,351
930500	0 %	5.63 Sq. Miles	$ 260,322,287	1,880	$ 1,445,651	$ 932	$ 298	$ 1	$ 1,232
931200	0 %	2.76 Sq. Miles	$ 512,866,972	1,741	$ 568,153	$ 1,027	$ 198	$ 0	$ 1,225
930101	0 %	7.39 Sq. Miles	$ 321,582,088	1,304	$ 2,658,951	$ 1,044	$ 139	$ 1	$ 1,184
930102	0 %	4.52 Sq. Miles	$ 248,767,126	1,008	$ 1,448,339	$ 968	$ 130	$ 1	$ 1,099
930400	0 %	5.9 Sq. Miles	$ 254,128,818	1,269	$ 1,940,982	$ 904	$ 166	$ 1	$ 1,070
930800	0 %	2.29 Sq. Miles	$ 244,991,122	1,131	$ 493,707	$ 816	$ 177	$ 0	$ 993
931300	0 %	2.11 Sq. Miles	$ 413,284,521	1,457	$ 483,177	$ 794	$ 119	$ 0	$ 914
933700	0 %	3.73 Sq. Miles	$ 310,463,368	1,338	$ 907,165	$ 691	$ 192	$ 1	$ 883
933500	0 %	3.62 Sq. Miles	$ 445,318,170	1,698	$ 1,134,373	$ 677	$ 144	$ 1	$ 822
932000	0 %	1.63 Sq. Miles	$ 409,241,474	2,077	$ 226,305	$ 610	$ 179	$ 0	$ 789
933001	0 %	0.74 Sq. Miles	$ 564,359,766	2,213	$ 6,734	$ 701	$ 58	$ 0	$ 759
932900	0 %	0.68 Sq. Miles	$ 286,313,259	1,348	$ 46,060	$ 490	$ 265	$ 0	$ 755
930300	0 %	5.38 Sq. Miles	$ 263,398,619	1,206	$ 1,806,616	$ 602	$ 100	$ 1	$ 703
930200	0 %	7.54 Sq. Miles	$ 270,899,106	1,078	$ 3,006,233	$ 584	$ 78	$ 1	$ 662
931100	0 %	3.06 Sq. Miles	$ 188,251,960	804	$ 1,029,706	$ 566	$ 83	$ 0	$ 650
933301	0 %	0.76 Sq. Miles	$ 327,051,762	1,102	$ 127,591	$ 398	$ 146	$ 0	$ 544
931900	0 %	0.58 Sq. Miles	$ 380,123,744	1,750	$ 10,200	$ 389	$ 51	$ 0	$ 440
933302	0 %	0.98 Sq. Miles	$ 315,969,748	1,546	$ 115,481	$ 316	$ 63	$ 0	$ 379
921300	0 %	0.38 Sq. Miles	$ 317,467,620	825	$ 12,211	$ 317	$ 16	$ 0	$ 333
934000	0 %	0.52 Sq. Miles	$ 289,779,282	786	$ 64,368	$ 288	$ 36	$ 0	$ 324
932701	0 %	0.33 Sq. Miles	$ 259,580,036	1,409	$ 260	$ 260	$ 28	$ 0	$ 288
921200	0 %	0.38 Sq. Miles	$ 163,716,531	538	$ 44,704	$ 236	$ 21	$ 0	$ 257
921500	0 %	0.31 Sq. Miles	$ 232,702,316	1,372	$ 954	$ 227	$ 26	$ 0	$ 253
930700	0 %	0.65 Sq. Miles	$ 133,177,306	649	$ 132,939	$ 202	$ 37	$ 0	$ 239
921400	0 %	0.24 Sq. Miles	$ 217,863,586	774	$ 85	$ 218	$ 15	$ 0	$ 233
933600	0 %	0.32 Sq. Miles	$ 210,533,380	959	$ 21,248	$ 210	$ 19	$ 0	$ 229
933002	0 %	0.28 Sq. Miles	$ 207,590,912	1,173	$ 1	$ 203	$ 23	$ 0	$ 226
921000	0 %	0.25 Sq. Miles	$ 199,868,605	1,270	$ 0	$ 197	$ 24	$ 0	$ 221
930900	0 %	0.48 Sq. Miles	$ 186,654,462	1,054	$ 70,429	$ 190	$ 23	$ 0	$ 213
931400	0 %	0.6 Sq. Miles	$ 186,082,226	1,005	$ 72,717	$ 186	$ 22	$ 0	$ 208
932500	0 %	0.13 Sq. Miles	$ 91,710,309	508	$ 3,036	$ 194	$ 9	$ 0	$ 203
920700	0 %	0.83 Sq. Miles	$ 136,308,281	1,155	$ 200,287	$ 136	$ 64	$ 0	$ 200
931601	0 %	0.21 Sq. Miles	$ 150,840,969	794	$ 3,292	$ 151	$ 15	$ 0	$ 166
921600	0 %	0.24 Sq. Miles	$ 149,162,871	883	$ 0	$ 149	$ 17	$ 0	$ 166
932801	0 %	0.14 Sq. Miles	$ 127,154,666	638	$ 0	$ 121	$ 12	$ 0	$ 133
931700	0 %	0.3 Sq. Miles	$ 84,647,594	577	$ 24,557	$ 112	$ 19	$ 0	$ 131
933100	0 %	0.41 Sq. Miles	$ 89,437,285	690	$ 59,026	$ 86	$ 27	$ 0	$ 113
933900	0 %	0.15 Sq. Miles	$ 90,908,523	210	$ 12,656	$ 91	$ 11	$ 0	$ 102
932600	0 %	0.14 Sq. Miles	$ 90,949,668	591	$ 4,948	$ 88	$ 11	$ 0	$ 100
932802	0 %	0.15 Sq. Miles	$ 84,167,937	366	$ 11,292	$ 84	$ 7	$ 0	$ 91
931602	0 %	0.12 Sq. Miles	$ 82,099,893	536	$ 0	$ 81	$ 10	$ 0	$ 91
932300	0 %	0.12 Sq. Miles	$ 61,863,268	365	$ 0	$ 62	$ 7	$ 0	$ 69
921100	0 %	0.09 Sq. Miles	$ 57,287,586	393	$ 256	$ 56	$ 7	$ 0	$ 63
920900	0 %	0.07 Sq. Miles	$ 56,946,208	422	$ 169	$ 55	$ 8	$ 0	$ 63

920900	0 %	0.07 Sq. Miles	$ 56,946,208	422	$ 169	$ 55	$ 8	$ 0	$ 63
920300	0 %	0.05 Sq. Miles	$ 39,083,359	224	$ 0	$ 39	$ 4	$ 0	$ 43
932200	0 %	0.03 Sq. Miles	$ 22,537,160	175	$ 433	$ 23	$ 3	$ 0	$ 26
920400	0 %	0.02 Sq. Miles	$ 17,224,414	115	$ 0	$ 17	$ 2	$ 0	$ 19
932702	0 %	0.02 Sq. Miles	$ 15,481,552	75	$ 0	$ 15	$ 1	$ 0	$ 17
933800	0 %	0.01 Sq. Miles	$ 18,819,220	78	$ 0	$ 15	$ 1	$ 0	$ 16
920800	0 %	0 Sq. Miles	$ 2,074,729	4	$ 0	$ 2	$ 0	$ 0	$ 2

DROUGHT

Table of Exposure (Exp.) and Estimated Annual Loss (EAL) Data

Tract	Annual Frequency	Exp. Area	Exp. Agriculture	EAL - Agriculture	EAL - Total
932701	0 %	2.32 Sq. Miles	$ 0	$ 0	$ 0
932702	0 %	0.53 Sq. Miles	$ 0	$ 0	$ 0
932801	0 %	0.86 Sq. Miles	$ 0	$ 0	$ 0
932802	0 %	2.34 Sq. Miles	$ 0	$ 0	$ 0
932900	0 %	4.17 Sq. Miles	$ 0	$ 0	$ 0
933001	0 %	4.48 Sq. Miles	$ 0	$ 0	$ 0
933002	0 %	3.73 Sq. Miles	$ 0	$ 0	$ 0
933100	0 %	4.89 Sq. Miles	$ 0	$ 0	$ 0
933301	0 %	9.11 Sq. Miles	$ 0	$ 0	$ 0
933302	0 %	5.8 Sq. Miles	$ 0	$ 0	$ 0
933400	0 %	23.43 Sq. Miles	$ 0	$ 0	$ 0
933500	0 %	21.26 Sq. Miles	$ 0	$ 0	$ 0
933600	0 %	3.17 Sq. Miles	$ 0	$ 0	$ 0
933700	0 %	24.01 Sq. Miles	$ 0	$ 0	$ 0
933800	0 %	0.74 Sq. Miles	$ 0	$ 0	$ 0
933900	0 %	2.71 Sq. Miles	$ 0	$ 0	$ 0
934000	0 %	6.33 Sq. Miles	$ 0	$ 0	$ 0
920300	0 %	0.73 Sq. Miles	$ 0	$ 0	$ 0
920400	0 %	0.52 Sq. Miles	$ 0	$ 0	$ 0
920700	0 %	7.24 Sq. Miles	$ 0	$ 0	$ 0
920800	0 %	0.66 Sq. Miles	$ 0	$ 0	$ 0
920900	0 %	1.13 Sq. Miles	$ 0	$ 0	$ 0
921000	0 %	1.83 Sq. Miles	$ 0	$ 0	$ 0
921100	0 %	1.22 Sq. Miles	$ 0	$ 0	$ 0

921200	0 %	3.1 Sq. Miles	$ 0	$ 0	$ 0
921300	0 %	3.2 Sq. Miles	$ 0	$ 0	$ 0
921400	0 %	1.67 Sq. Miles	$ 0	$ 0	$ 0
921500	0 %	2.48 Sq. Miles	$ 0	$ 0	$ 0
921600	0 %	1.57 Sq. Miles	$ 0	$ 0	$ 0
930101	0 %	47.13 Sq. Miles	$ 0	$ 0	$ 0
930102	0 %	34.3 Sq. Miles	$ 0	$ 0	$ 0
930200	0 %	50.42 Sq. Miles	$ 0	$ 0	$ 0
930300	0 %	53.62 Sq. Miles	$ 0	$ 0	$ 0
930400	0 %	51.62 Sq. Miles	$ 0	$ 0	$ 0
930500	0 %	54.91 Sq. Miles	$ 0	$ 0	$ 0
930600	0 %	26.84 Sq. Miles	$ 0	$ 0	$ 0
930700	0 %	7.32 Sq. Miles	$ 0	$ 0	$ 0
930800	0 %	18.19 Sq. Miles	$ 0	$ 0	$ 0
930900	0 %	5.01 Sq. Miles	$ 0	$ 0	$ 0
931000	0 %	23.94 Sq. Miles	$ 0	$ 0	$ 0
931100	0 %	25.51 Sq. Miles	$ 0	$ 0	$ 0
931200	0 %	23.72 Sq. Miles	$ 0	$ 0	$ 0
931300	0 %	18.61 Sq. Miles	$ 0	$ 0	$ 0
931400	0 %	6.14 Sq. Miles	$ 0	$ 0	$ 0
931500	0 %	18.39 Sq. Miles	$ 0	$ 0	$ 0
931601	0 %	1.87 Sq. Miles	$ 0	$ 0	$ 0
931602	0 %	1.42 Sq. Miles	$ 0	$ 0	$ 0
931700	0 %	3.12 Sq. Miles	$ 0	$ 0	$ 0
931900	0 %	6.29 Sq. Miles	$ 0	$ 0	$ 0
932000	0 %	12.81 Sq. Miles	$ 0	$ 0	$ 0
932200	0 %	1.01 Sq. Miles	$ 0	$ 0	$ 0
932300	0 %	2.35 Sq. Miles	$ 0	$ 0	$ 0
932500	0 %	1.71 Sq. Miles	$ 0	$ 0	$ 0
932600	0 %	1.51 Sq. Miles	$ 0	$ 0	$ 0

Storm Events Database

Search Results for Trumbull County, Ohio

All Available Event Types

Due to changes in the methods used by the NWS to spatially locate Waterspouts, please query by state (FL, TX, VA, etc) for Jan 1996 through Sep 2001. Beginning October 2001, please query by Marine Zone (N. Atlantic, S Atlantic, Gulf of Mexico, S Pacific, N. Pacific, Alaskan Waters, Hawaiian Waters, Great Lakes, etc) using the drop-down box for "State/Area".

Trumbull county contains the following zones:
Trumbull

120 events were reported between 01/01/2020 and 12/30/2025 (2191 days)

Summary Info:

Number of County/Zone areas affected:	2
Number of Days with Event:	62
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	1
Number of Days with Event and Property Damage:	11
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	10

Column Definitions:
'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

*Click on **Location** below to display details.*
Available Event Types have changed over time. Please refer to the Database Details for more information.

Select: All Hail | All Tornadoes | All Wind Speeds — Sort By: Date/Time (Oldest)

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	1	820.50K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	01/12/2020	03:05	EST-5	High Wind	50 kts. EG	0	0	0.00K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	01/12/2020	03:08	EST-5	High Wind	53 kts. MG	0	0	0.00K	0.00K
BROOKFIELD	TRUMBULL CO.	OH	03/20/2020	11:50	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WARREN	TRUMBULL CO.	OH	04/07/2020	22:46	EST-5	Hail	1.00 in.	0	0	0.00K	0.00K
MC DONALD	TRUMBULL CO.	OH	04/07/2020	23:14	EST-5	Hail	1.00 in.	0	0	0.00K	0.00K
NEWTON FALLS	TRUMBULL CO.	OH	05/29/2020	13:12	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
YOUNGSTOWN MUNI ARPT	TRUMBULL CO.	OH	06/10/2020	20:25	EST-5	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
KINSMAN	TRUMBULL CO.	OH	06/10/2020	20:38	EST-5	Thunderstorm Wind	55 kts. EG	0	0	10.00K	0.00K
NEWTON FALLS	TRUMBULL CO.	OH	07/07/2020	14:45	EST-5	Flash Flood		0	0	0.00K	0.00K
MC DONALD	TRUMBULL CO.	OH	07/09/2020	15:14	EST-5	Thunderstorm Wind	55 kts. EG	0	1	0.00K	0.00K
(YNG)YOUNGSTOWN MUNI	TRUMBULL CO.	OH	07/10/2020	12:36	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
LEAVITTSBURG	TRUMBULL CO.	OH	07/10/2020	16:53	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WEST MECCA	TRUMBULL CO.	OH	07/10/2020	16:59	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
NEWTON FALLS	TRUMBULL CO.	OH	07/19/2020	17:26	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
HUBBARD	TRUMBULL CO.	OH	07/19/2020	17:47	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
(YNG)YOUNGSTOWN MUNI	TRUMBULL CO.	OH	08/27/2020	15:22	EST-5	Thunderstorm Wind	52 kts. MG	0	0	0.00K	0.00K
HOWLAND CORNERS	TRUMBULL CO.	OH	08/27/2020	15:25	EST-5	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
BROOKFIELD	TRUMBULL CO.	OH	08/27/2020	15:25	EST-5	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
WARREN	TRUMBULL CO.	OH	11/15/2020	14:00	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
HUBBARD	TRUMBULL CO.	OH	11/15/2020	14:12	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	11/30/2020	22:00	EST-5	Winter Weather		0	0	0.00K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	12/01/2020	00:00	EST-5	Winter Storm		0	0	50.00K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	12/24/2020	17:00	EST-5	Winter Storm		0	0	20.00K	0.00K

TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	02/15/2021	06:00	EST-5	Winter Weather		0	0	0.00K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	03/26/2021	05:59	EST-5	High Wind	53 kts. MG	0	0	0.00K	0.00K
JOHNSONS	TRUMBULL CO.	OH	06/20/2021	16:17	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
VIENNA	TRUMBULL CO.	OH	06/29/2021	18:33	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
VIENNA	TRUMBULL CO.	OH	06/29/2021	18:33	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CORTLAND	TRUMBULL CO.	OH	07/08/2021	14:53	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
NILES	TRUMBULL CO.	OH	07/13/2021	13:59	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
WARREN	TRUMBULL CO.	OH	07/13/2021	14:02	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
HOWLAND CORNERS	TRUMBULL CO.	OH	07/13/2021	14:05	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
BROOKFIELD	TRUMBULL CO.	OH	07/13/2021	14:10	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
BAZETTA	TRUMBULL CO.	OH	07/16/2021	12:30	EST-5	Flood		0	0	0.00K	0.00K
MESOPOTAMIA	TRUMBULL CO.	OH	08/11/2021	17:04	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
KINSMAN	TRUMBULL CO.	OH	08/11/2021	17:25	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
BROOKFIELD	TRUMBULL CO.	OH	08/11/2021	17:46	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
LOCKWOOD	TRUMBULL CO.	OH	08/12/2021	10:03	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MC DONALD	TRUMBULL CO.	OH	08/13/2021	19:44	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
NILES	TRUMBULL CO.	OH	08/19/2021	15:15	EST-5	Flash Flood		0	0	100.00K	0.00K
LEAVITTSBURG	TRUMBULL CO.	OH	08/25/2021	14:15	EST-5	Flash Flood		0	0	100.00K	0.00K
TRUMBULL CO.	TRUMBULL CO.	OH	10/21/2021	17:15	EST-5	Tornado	EF1	0	0	0.00K	0.00K
TRUMBULL CO.	TRUMBULL CO.	OH	10/21/2021	17:20	EST-5	Tornado	EF0	0	0	0.00K	0.00K
CORTLAND	TRUMBULL CO.	OH	12/11/2021	06:42	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.50K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	01/16/2022	16:00	EST-5	Winter Storm		0	0	0.00K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	02/03/2022	00:00	EST-5	Winter Storm		0	0	0.00K	0.00K
MINERAL RIDGE	TRUMBULL CO.	OH	02/17/2022	23:00	EST-5	Flood		0	0	250.00K	0.00K
HUBBARD	TRUMBULL CO.	OH	05/21/2022	18:48	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
KENILWORTH	TRUMBULL CO.	OH	06/01/2022	16:23	EST-5	Hail	1.00 in.	0	0	0.00K	0.00K
NEWTON FALLS	TRUMBULL CO.	OH	06/01/2022	17:16	EST-5	Thunderstorm Wind	61 kts. EG	0	0	0.00K	0.00K
BRACEVILLE	TRUMBULL CO.	OH	06/01/2022	17:18	EST-5	Thunderstorm Wind	61 kts. EG	0	0	0.00K	0.00K
WARREN	TRUMBULL CO.	OH	06/01/2022	17:30	EST-5	Thunderstorm Wind	61 kts. EG	0	0	0.00K	0.00K
MESOPOTAMIA	TRUMBULL CO.	OH	06/16/2022	15:10	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
KINSMAN	TRUMBULL CO.	OH	06/16/2022	15:36	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
LORDSTOWN	TRUMBULL CO.	OH	07/20/2022	20:50	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
MECCA	TRUMBULL CO.	OH	07/24/2022	23:50	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WARREN	TRUMBULL CO.	OH	07/25/2022	00:28	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	12/23/2022	04:00	EST-5	Winter Storm		0	0	0.00K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	12/23/2022	10:00	EST-5	Extreme Cold/wind Chill		0	0	0.00K	0.00K
WARREN	TRUMBULL CO.	OH	03/25/2023	13:25	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
NEWTON FALLS	TRUMBULL CO.	OH	03/25/2023	13:26	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
LEAVITTSBURG	TRUMBULL CO.	OH	03/25/2023	13:32	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
SOUTHINGTON	TRUMBULL CO.	OH	03/25/2023	13:32	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
CORTLAND	TRUMBULL CO.	OH	03/25/2023	13:40	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
YANKEE LAKE	TRUMBULL CO.	OH	03/25/2023	13:48	EST-5	Hail	0.75 in.	0	0	0.00K	0.00K
(YNG)YOUNGSTOWN MUNI	TRUMBULL CO.	OH	03/25/2023	13:54	EST-5	Thunderstorm Wind	53 kts. EG	0	0	0.00K	0.00K
GIRARD	TRUMBULL CO.	OH	04/01/2023	12:00	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
NEWTON FALLS	TRUMBULL CO.	OH	04/01/2023	12:02	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
LEAVITTSBURG	TRUMBULL CO.	OH	04/01/2023	12:06	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
HOWLAND CORNERS	TRUMBULL CO.	OH	07/20/2023	18:50	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
CHURCHILL	TRUMBULL CO.	OH	07/20/2023	19:00	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WARREN	TRUMBULL CO.	OH	08/17/2023	20:13	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
(YNG)YOUNGSTOWN MUNI	TRUMBULL CO.	OH	08/17/2023	20:24	EST-5	Thunderstorm Wind	51 kts. MG	0	0	0.00K	0.00K
BRISTOLVILLE ARPT	TRUMBULL CO.	OH	08/24/2023	23:35	EST-5	Tornado	EF0	0	0	35.00K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	01/09/2024	11:00	EST-5	High Wind	52 kts. MG	0	0	0.00K	0.00K
BRISTOLVILLE ARPT	TRUMBULL CO.	OH	04/14/2024	16:11	EST-5	Hail	1.50 in.	0	0	0.00K	0.00K
SOUTHINGTON	TRUMBULL CO.	OH	04/14/2024	16:20	EST-5	Hail	1.00 in.	0	0	0.00K	0.00K
CORTLAND	TRUMBULL CO.	OH	04/14/2024	16:25	EST-5	Hail	1.00 in.	0	0	0.00K	0.00K

FOWLER	TRUMBULL CO.	OH	04/14/2024	16:29	EST-5	Hail	1.00 in.	0	0	0.00K	0.00K
HOWLAND CORNERS	TRUMBULL CO.	OH	04/14/2024	16:29	EST-5	Hail	1.25 in.	0	0	0.00K	0.00K
LEAVITTSBURG	TRUMBULL CO.	OH	04/14/2024	16:34	EST-5	Hail	1.00 in.	0	0	0.00K	0.00K
LEAVITTSBURG	TRUMBULL CO.	OH	04/14/2024	16:34	EST-5	Hail	1.75 in.	0	0	0.00K	0.00K
(YNG)YOUNGSTOWN MUNI	TRUMBULL CO.	OH	04/14/2024	16:35	EST-5	Thunderstorm Wind	59 kts. MG	0	0	0.00K	0.00K
HUBBARD	TRUMBULL CO.	OH	04/14/2024	16:54	EST-5	Hail	1.00 in.	0	0	0.00K	0.00K
STATE RD	TRUMBULL CO.	OH	04/17/2024	18:01	EST-5	Tornado	EF0	0	0	100.00K	0.00K
YOUNGSTOWN MUNI ARPT	TRUMBULL CO.	OH	05/05/2024	13:37	EST-5	Thunderstorm Wind	64 kts. MG	0	0	0.00K	0.00K
LEAVITTSBURG	TRUMBULL CO.	OH	06/17/2024	13:49	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
CORTLAND	TRUMBULL CO.	OH	06/17/2024	14:08	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
GIRARD	TRUMBULL CO.	OH	06/17/2024	14:15	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
SOUTHWEST HUBBARD	TRUMBULL CO.	OH	06/17/2024	14:17	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
HUBBARD	TRUMBULL CO.	OH	06/17/2024	14:22	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
DOUGHTON	TRUMBULL CO.	OH	06/18/2024	13:00	EST-5	Flash Flood		0	0	100.00K	0.00K
DOUGHTON	TRUMBULL CO.	OH	06/18/2024	13:20	EST-5	Flash Flood		0	0	25.00K	0.00K
DOUGHTON	TRUMBULL CO.	OH	06/18/2024	14:00	EST-5	Flash Flood		0	0	0.00K	0.00K
GREENE CENTER	TRUMBULL CO.	OH	07/24/2024	14:23	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
MECCA	TRUMBULL CO.	OH	07/24/2024	14:42	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
KINSMAN	TRUMBULL CO.	OH	07/24/2024	14:47	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
NORTH WARREN	TRUMBULL CO.	OH	08/06/2024	15:57	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
HOWLAND CORNERS	TRUMBULL CO.	OH	08/06/2024	15:57	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
YOUNGSTOWN MUNI ARPT	TRUMBULL CO.	OH	08/06/2024	16:07	EST-5	Thunderstorm Wind	51 kts. MG	0	0	0.00K	0.00K
CHAMPION HGTS	TRUMBULL CO.	OH	08/06/2024	16:10	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
LOCKWOOD	TRUMBULL CO.	OH	08/06/2024	16:12	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
KENILWORTH	TRUMBULL CO.	OH	08/06/2024	16:19	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
MECCA	TRUMBULL CO.	OH	08/06/2024	16:24	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
GUSTAVUS	TRUMBULL CO.	OH	08/06/2024	16:25	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
FARMDALE	TRUMBULL CO.	OH	08/06/2024	16:31	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
KINSMAN	TRUMBULL CO.	OH	08/06/2024	16:32	EST-5	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
CORTLAND	TRUMBULL CO.	OH	08/30/2024	16:17	EST-5	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CORTLAND	TRUMBULL CO.	OH	08/30/2024	16:17	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	12/05/2024	01:00	EST-5	Lake-effect Snow		0	0	0.00K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	12/29/2024	20:00	EST-5	High Wind	51 kts. MG	0	0	0.00K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	01/03/2025	05:00	EST-5	Lake-effect Snow		0	0	0.00K	0.00K
STROUPS	TRUMBULL CO.	OH	04/25/2025	19:11	EST-5	Flash Flood		0	0	20.00K	0.00K
GIRARD	TRUMBULL CO.	OH	05/01/2025	16:59	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
(YNG)YOUNGSTOWN MUNI	TRUMBULL CO.	OH	06/18/2025	15:17	EST-5	Thunderstorm Wind	50 kts. MG	0	0	0.00K	0.00K
MASURY	TRUMBULL CO.	OH	07/07/2025	15:06	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
MASURY	TRUMBULL CO.	OH	07/07/2025	15:07	EST-5	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
MC DONALD	TRUMBULL CO.	OH	08/13/2025	19:40	EST-5	Flash Flood		0	0	0.00K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	11/09/2025	20:00	EST-5	Winter Weather		0	0	0.00K	0.00K
TRUMBULL (ZONE)	TRUMBULL (ZONE)	OH	11/27/2025	11:00	EST-5	Lake-effect Snow		0	0	0.00K	0.00K
Totals:								0	1	820.50K	0.00K

HEADWATERS ECONOMICS

Neighborhoods at Risk

Selected Tracts

Selected Location(s):

Trumbull County, OH

Comparison Location:

United States

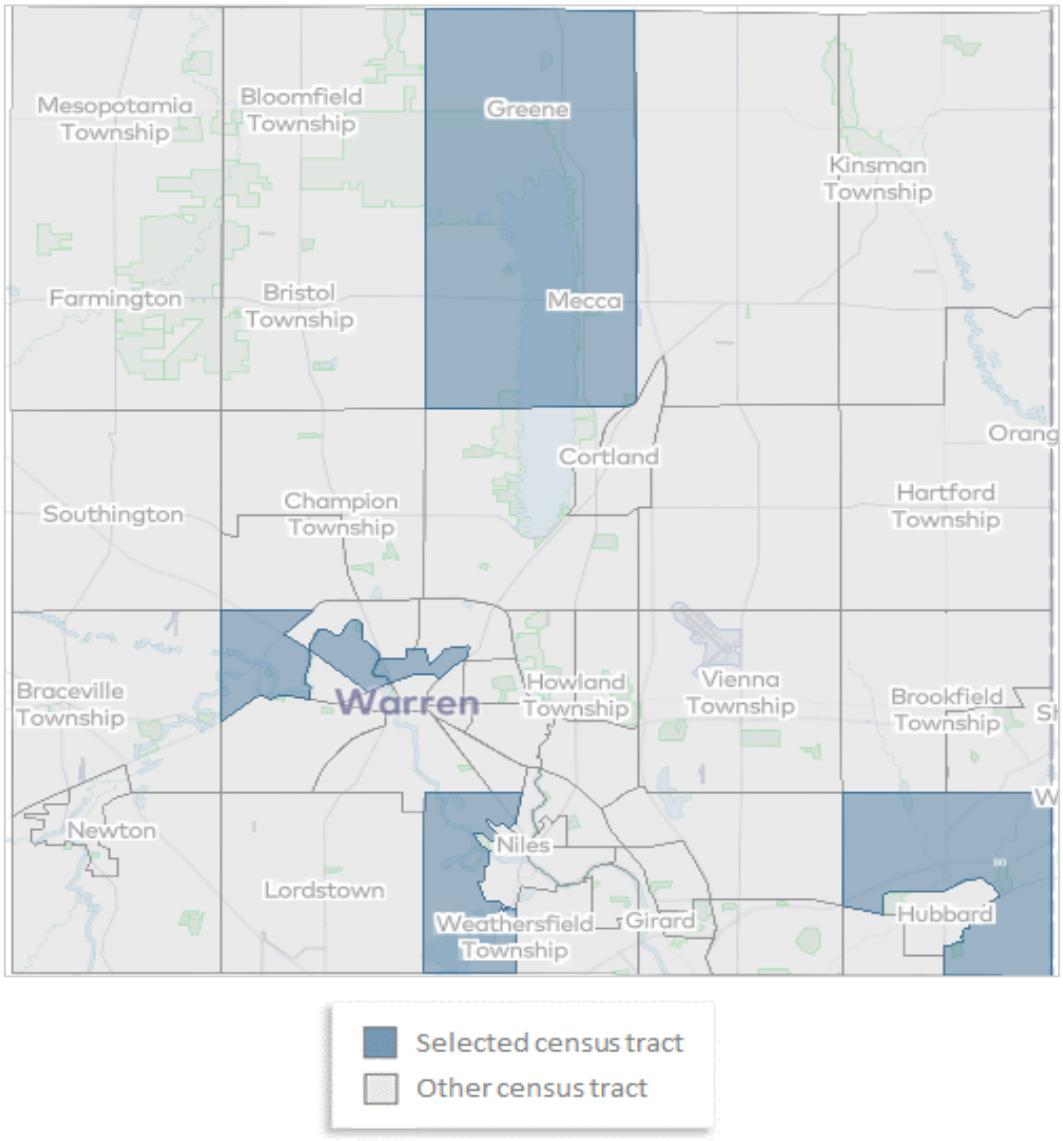
Produced by

Headwaters Economics'

Economic Profile System (EPS)

September 16, 2025

Area of Interest



Headwaters Economics

Headwaters Economics is an independent, nonprofit research group that works to improve community development and land management decisions: **headwaterseconomics.org**.

Neighborhoods at Risk

Neighborhoods at Risk is a free, web-based tool that provides cities with neighborhood-level information about at-risk populations and their vulnerability to the impacts of climate change.

Free and easy to use: Quickly create maps and reports of socioeconomic and climate data.

Available nationwide: Explore socioeconomic and climate data for any community or county in the nation.

Updated continuously: Make use of the latest available, published government data.

headwaterseconomics.org/apps/neighborhoods-at-risk

Neighborhoods at Risk

Selected Tracts

Table of Contents

Neighborhoods at Risk

Selected Tracts

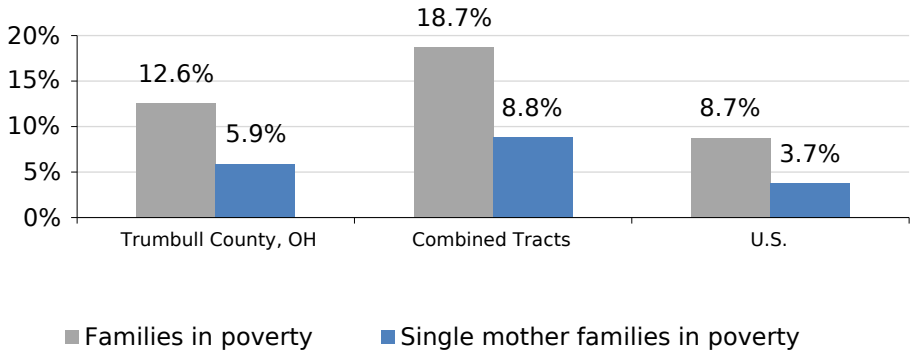
Families in Poverty

	Trumbull County, OH	Combined Tracts	U.S.
Total families for whom poverty status is determined, 2023*	52,476	5,168	82,220,165
Families in poverty	6,602	967	7,176,933
Families with children in poverty	4,718	600	5,059,541
Single mother families in poverty	3,087	457	3,074,609
Percent of Total, 2023*			
Families in poverty	12.6%	18.7%	8.7%
Families with children in poverty	9.0%	11.6%	6.2%
Single mother families in poverty	5.9%	8.8%	3.7%
Change in Percentage Points, 2010*-2023*			
For example, if the value is 3% in 2010* and 4.5% in 2023*, the reported change in percentage points is 1.5.			
Families in poverty	1.1	7.2	-1.3
Families with children in poverty	0.0	3.5	-1.7
Single mother families in poverty	-0.2	2.6	-1.1

High Reliability: Data with coefficients of variation (CVs) < 12% are in black to indicate that the sampling error is relatively small.
Medium Reliability: Data with CVs between 12 & 40% are in orange to indicate that the values should be interpreted with caution.
Low Reliability: Data with CVs > 40% are displayed in red to indicate that the estimate is considered very unreliable.

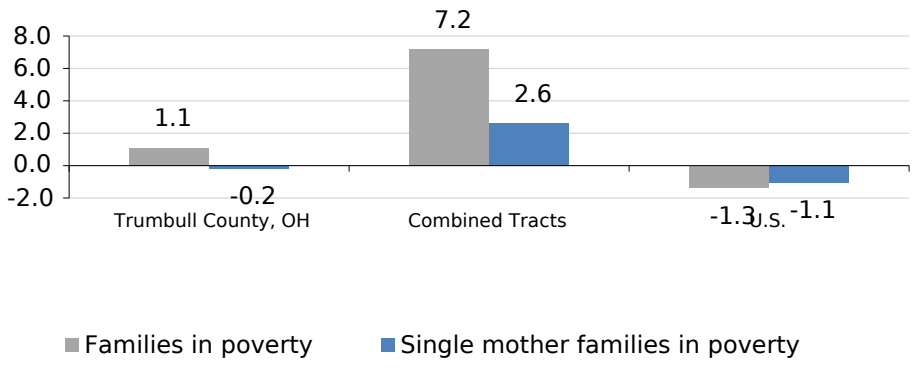
Families in Poverty, Percent of Total, 2023*

- Combined Tracts has the largest share of single mother families in poverty (8.8%).



Families in Poverty, Change in Percentage Points, 2010*-2023*

- The largest change in the share of single mother famiiles in poverty occurred in Combined Tracts, which went from 6.2% to 8.8%.



* ACS 5-year estimates used. 2023 represents average characteristics from 2019-2023; 2010 represents 2006-2010.

CITATION: U.S. Department of Commerce. 2023. Census Bureau, American Community Survey Office, Washington, D.C., , reported by Headwaters Economics' Neighborhoods at Risk, headwaterseconomics.org/apps/neighborhoods-at-risk.

Families in Poverty

What do we measure on this page?

This page describes the number of families living below the poverty line, and separately reports families with children and single mother families with children.

The Census defines a family as a group of two or more people who reside together and who are related by birth, marriage, or adoption.

The Census Bureau uses a set of income thresholds that vary by family size and composition to define who is poor. If the total income for a family or an unrelated individual falls below the relevant poverty threshold, then the family or an unrelated individual is classified as being "below the poverty level."

Why is it important?

Families in poverty may lack the resources to meet their basic needs. Their challenges cross the spectrum of food, housing, health care, education, vulnerability to natural disasters, and emotional stress.

To save money, families with low incomes often have to make lifestyle compromises such as unhealthy foods, less food, substandard housing, or delayed medical care.[1]

Lack of financial resources makes families in poverty more vulnerable to natural disasters. This is due to inadequate housing, social exclusion, and an inability to re-locate or evacuate.[11, 2]

Inadequate shelter exposes occupants to increased risk from storms, floods, fire, and temperature extremes.[2] Households with low incomes are more likely to have unhealthy housing such as leaks, mold, or rodents.[5]

The expense of running fans, air conditioners, and heaters makes low-income people hesitant to mitigate the temperature of their living spaces.[1, 2] Furthermore, those in high-crime areas may not want to open their windows.[2]

Families in poverty are disproportionately affected by higher food prices, which are expected to rise in response to climate change.[1]

Children in poor families, on average, receive fewer years of education compared to children in wealthier families.[12]

Low-income residents are less likely to have adequate property insurance, so they may bear an even greater burden from property damage due to natural hazards.[2]

Living in poverty can lead to a lack of personal control over potentially hazardous situations such as increased air pollution or flooding. Impoverished families may be less likely to take proactive measures to prevent harm.[11]

Superscript numbers refer to references provided at the end of the report.

CHANGES IN BOUNDARIES: Data describing change over time can be misleading when geographic boundaries have changed.
The Census provides documentation about changes in boundaries at this site: www.census.gov/geo/reference/boundary-changes.html

Neighborhoods at Risk

Selected Tracts

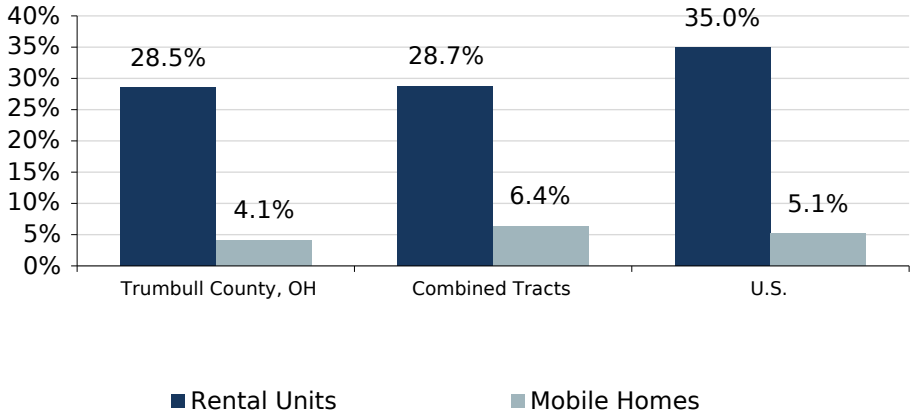
Rental & Mobile Homes

	Trumbull County, OH	Combined Tracts	U.S.
Total Occupied Housing Units, 2023*	86,135	9,371	127,482,865
Rental Units	24,548	2,691	44,590,828
Mobile Homes	3,552	598	6,559,377
Percent of Total, 2023*			
Rental Units	28.5%	28.7%	35.0%
Mobile Homes	4.1%	6.4%	5.1%
Change in Percentage Points, 2010*-2023*			
For example, if the value is 3% in 2010* and 4.5% in 2023*, the reported change in percentage points is 1.5.			
Rental Units	3.0	2.9	5.1
Mobile Homes	-1.0	-4.5	-0.3
Median Home Value (MHV), 2023* (2024 $s)	$131,943	na	$312,502
Change in MHV, 2010*-2023* (2024 $s)	-$15,452	na	$41,583

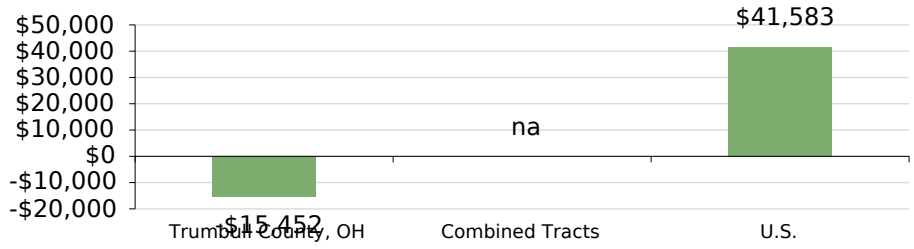
High Reliability: Data with coefficients of variation (CVs) < 12% are in black to indicate that the sampling error is relatively small.
Medium Reliability: Data with CVs between 12 & 40% are in orange to indicate that the values should be interpreted with caution.
Low Reliability: Data with CVs > 40% are displayed in red to indicate that the estimate is considered very unreliable.

Rental Units and Mobile Homes as a Percent of Total Housing Units, 2023*

- The U.S. has the largest share of rental units (35.0%).
- Combined Tracts has the largest share of mobile homes (6.4%).



Change in Median Home Value, 2010*-2023* (2024 $s)



* ACS 5-year estimates used. 2023 represents average characteristics from 2019-2023; 2010 represents 2006-2010.

CITATION: U.S. Department of Commerce. 2023. Census Bureau, American Community Survey Office, Washington, D.C., , reported by Headwaters Economics' Neighborhoods at Risk, headwaterseconomics.org/apps/neighborhoods-at-risk.

Rental & Mobile Homes

What do we measure on this page?

This page reports the numbers of housing units that are either rental units or mobile homes, and provides median home value.

Why is it important?

In general, home ownership contributes to well-being and stability. However, each type of living situation has its own risks and health concerns.

Home ownership is often associated with mental health benefits such as high self-esteem, a sense of control over one's living situation, and financial stability.[13]

The financial stress associated with losing one's home is heightened by people's emotional attachment to their home and their neighborhood.[14]

Homeowners typically pay a greater overall housing cost, but renters pay a larger proportion of their income. The high proportion of household costs for renters has further increased over the past 25 years.[15]

Rental homes are generally not maintained as well as those that are owned. Substandard housing conditions like dampness, mold, and exposure to toxic substances or allergens are linked with compromised health outcomes.[13]

Areas with high-density residences, such as urban areas, tend to have a greater proportion of renters.[1] High density living conditions and large, multistory apartment buildings exacerbate heat-related health stresses.[4]

Mobile homes are more likely to be damaged in extreme weather, which poses a risk for both the structure and the occupants.[4,11]

CHANGES IN BOUNDARIES: Data describing change over time can be misleading when geographic boundaries have changed.
The Census provides documentation about changes in boundaries at this site: www.census.gov/geo/reference/boundary-changes.html

Neighborhoods at Risk

Selected Tracts

People of Color and Hispanics

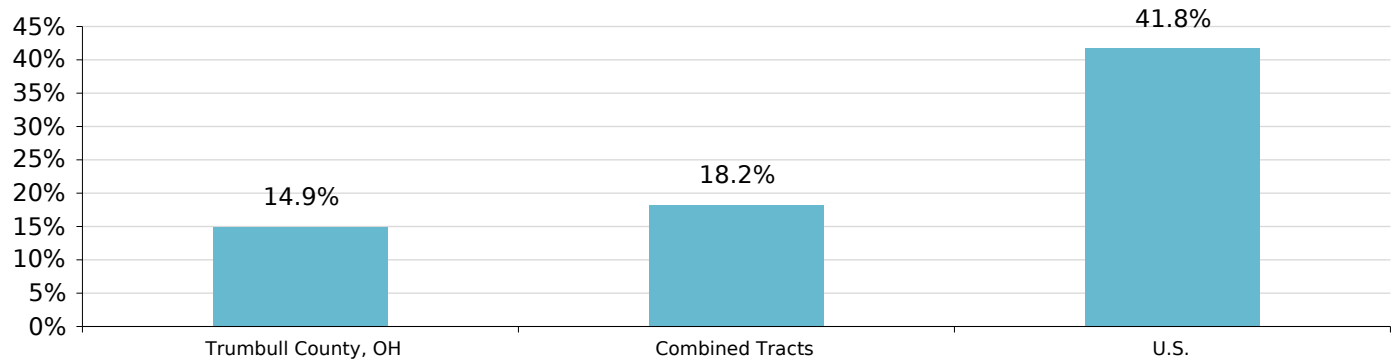
	Trumbull County, OH	Combined Tracts	U.S.
Total Population, 2023*	201,367	20,017	332,387,540
White alone	173,084	16,459	210,875,446
Black or African American alone	16,140	˙2,367	41,070,890
American Indian and Alaska Native alone	˙149	¨**0**	2,924,996
Asian alone	1,136	¨**14**	19,352,659
Native Hawaii & Other Pacific Is. alone	¨**141**	¨**0**	629,292
Some other race alone	˙765	¨**62**	21,940,536
Two or more races	9,952	˙1,115	35,593,721
Hispanic or Latino (of any race)	4,382	253	63,131,589
Not Hispanic or Latino	196,985	19,764	269,255,951
Not Hispanic & White alone	171,353	16,383	193,338,267
People of Color and Hispanics	30,014	3,634	139,049,273

Percent of Total, 2023*

White alone	86.0%	82.2%	63.4%
Black or African American alone	8.0%	˙11.8%	12.4%
American Indian and Alaska Native alone	0.1%	¨**0.0%**	0.9%
Asian alone	0.6%	¨**0.1%**	5.8%
Native Hawaii & Other Pacific Is. alone	¨**0.1%**	¨**0.0%**	0.2%
Some other race alone	˙0.4%	¨**0.3%**	6.6%
Two or more races	4.9%	˙5.6%	10.7%
Hispanic or Latino (of any race)	2.2%	˙1.3%	19.0%
Not Hispanic or Latino	97.8%	98.7%	81.0%
Not Hispanic & White alone	85.1%	81.8%	58.2%
People of Color and Hispanics	14.9%	18.2%	41.8%

High Reliability: Data with coefficients of variation (CVs) < 12% are in black to indicate that the sampling error is relatively small.
Medium Reliability: Data with CVs between 12 & 40% are in orange to indicate that the values should be interpreted with caution.
Low Reliability: Data with CVs > 40% are displayed in red to indicate that the estimate is considered very unreliable.

People of Color and Hispanics, Percent of Total, 2023*



* ACS 5-year estimates used. 2023 represents average characteristics from 2019-2023; 2010 represents 2006-2010.

CITATION: U.S. Department of Commerce. 2023. Census Bureau, American Community Survey Office, Washington, D.C., , reported by Headwaters Economics' Neighborhoods at Risk, headwaterseconomics.org/apps/neighborhoods-at-risk.

People of Color and Hispanics

What do we measure on this page?

Race is self-identified by Census respondents who choose the race or races with which they most closely identify. Included in "Other Races" are "Asian," "Native Hawaiian or Other Pacific Islander," and respondents providing write-in entries such as multiracial, mixed, or interracial.

Ethnicity has two categories: Hispanic or Latino, and Non-Hispanic or Latino. The federal government considers race and Hispanic origin to be two separate and distinct concepts. Hispanics and Latinos may be of any race.

"People of Color and Hispanics" is calculated by subtracting those who identify as both "Not Hispanic or Latino" and "White alone" from "Total Population."

Why is it important?

Race and ethnicity are strongly correlated with disparities in health, exposure to environmental pollution, and vulnerability to natural hazards.[1]

Research consistently has found race-based environmental inequities, including the tendency for minority populations to live closer to noxious facilities and Superfund sites, and to be exposed to pollution at greater rates than whites.[7, 1]

Many health outcomes are closely related to the local environment. Minority communities often have less access to parks and nutritious food, and are more likely to live in substandard housing.[1]

Minorities tend to be particularly vulnerable to disasters and extreme heat events. This is due to language skills, housing patterns, quality of housing, community isolation, and cultural barriers.[8, 4]

Blacks and Hispanics, two segments of the population that are currently experiencing poorer health outcomes, are an increasing percentage of the US population.[1,9]

Research has identified measurable disparities in health outcomes between various minority and ethnic communities.

Across races, the rates of preventable hospitalizations are highest among black and Hispanic populations. Preventable hospital visits often reflect inadequate access to primary care. These types of hospital visits are also costly and inefficient for the health care system.[5]

Relative to other ethnicities and races, Hispanics and blacks are less likely to have health insurance, but rates of uninsured are dropping for both groups.[10]

Compared to other races, blacks have higher rates of infant mortality, homicide, heart disease, stroke, and heat-related deaths.[5]

Hispanics have higher rates of diabetes and asthma.[5]

American Indians have a distinct pattern of health effects different from blacks and Hispanics. Native populations are less likely to have electricity than the general population.[2] They have high rates of infant mortality, suicide and homicide, and nearly twice the rate of motor vehicle deaths than the U.S. average.[5]

CHANGES IN BOUNDARIES: Data describing change over time can be misleading when geographic boundaries have changed.
The Census provides documentation about changes in boundaries at this site: www.census.gov/geo/reference/boundary-changes.html

Neighborhoods at Risk

Selected Tracts

Language Proficiency

	Trumbull County, OH	Combined Tracts	U.S.
Population 5 years or older, 2023*	190,785	18,875	313,447,641
Speak English "not well"***	734	**53**	13,134,090
Speak English "not well"***, percent	0.4%	**0.3%**	4.2%
Speak English "not well"***, change in percentage points**, 2010*-2023*	0.0	0.1	-0.5

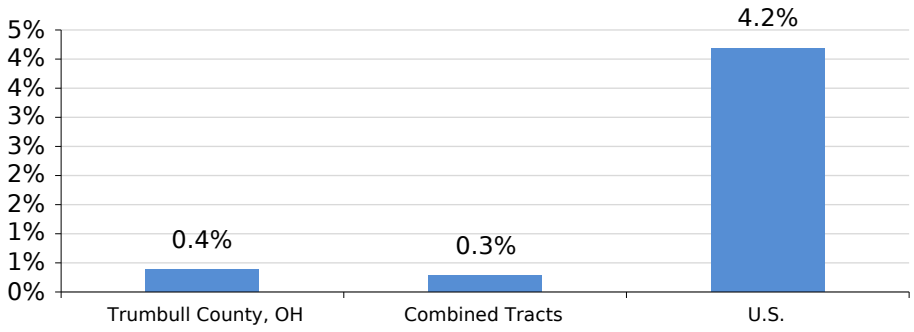
**For example, if the value is 3% in 2010* and 4.5% in 2015*, the reported change in percentage points is 1.5.

*** Includes "not well" and "not well at all".

High Reliability: Data with coefficients of variation (CVs) < 12% are in black to indicate that the sampling error is relatively small.
Medium Reliability: Data with CVs between 12 & 40% are in orange to indicate that the values should be interpreted with caution.
Low Reliability: Data with CVs > 40% are displayed in red to indicate that the estimate is considered very unreliable.

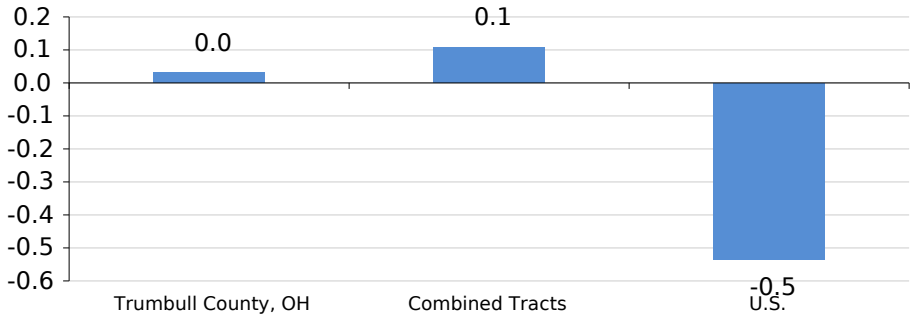
People Who Speak English "Not Well", Percent of Total, 2023*

- The U.S. has the largest share of people who speak English "not well" (4.2%).



People Who Speak English "Not Well", Change in Percentage Points, 2010* -2023*

- The largest change in the share of people who speak English "not well" occurred in the U.S., which went from 4.7% to 4.2%.



* ACS 5-year estimates used. 2023 represents average characteristics from 2019-2023; 2010 represents 2006-2010.

CITATION: U.S. Department of Commerce. 2023. Census Bureau, American Community Survey Office, Washington, D.C., , reported by Headwaters Economics' Neighborhoods at Risk, headwaterseconomics.org/apps/neighborhoods-at-risk.

Language Proficiency

What do we measure on this page?

This page reports the results of self-rated English-speaking ability questions in the American Community Survey.

Why is it important?

Many aspects of life in the US assume basic fluency in English. Thus, people with limited language skills are at risk for inadequate access to health care, social services, or emergency services.

A person's ability to take action during an emergency is compromised by language and cultural barriers.[4]

Poor English skills can make it harder to follow directions or interact with agencies.[4]

Lack of language skills can also instill lack of trust for government agencies.

In many industries, poor English skills can make it harder for people to get higher wage jobs.[1]

Language barriers make it harder to obtain medical or social services; and make it more difficult to interact with caregivers.[1]

Limited English skills may result in isolation from other segments of the US population, and social isolation is a health risk.[1] However some minority communities can be very tightly-knit and not isolated, so this risk factor cannot be generalized across all populations.

Neighborhoods at Risk

Selected Tracts

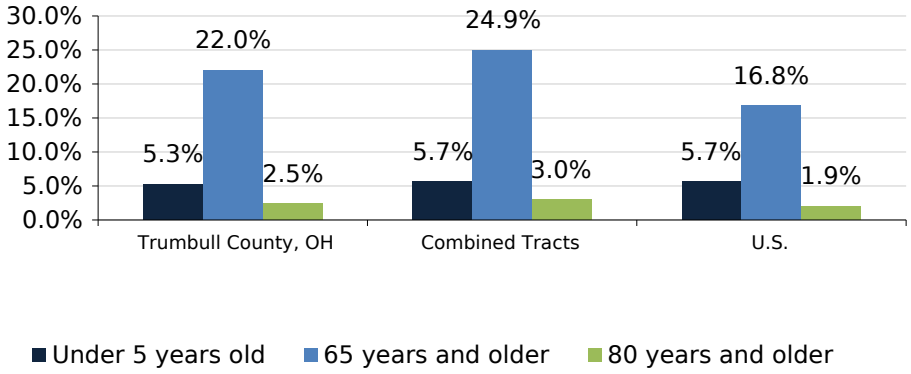
Young & Elderly Populations

	Trumbull County, OH	Combined Tracts	U.S.
Total Population, 2023*	201,367	20,017	332,387,540
Under 5 years old	10,582	1,142	18,939,899
65 years and older	44,363	4,991	55,970,047
80 years and older	4,986	591	6,378,567
Percent of Total, 2023*			
Under 5 years old	5.3%	5.7%	5.7%
65 years and older	22.0%	24.9%	16.8%
80 years and older	2.5%	3.0%	1.9%
Change in Percentage Points, 2010*-2023*			
For example, if the value is 3% in 2010* and 4.5% in 2023*, the reported change in percentage points is 1.5.			
Under 5 years old	-0.3	0.1	-0.9
65 years and older	5.2	6.5	4.1
80 years and older	0.0	0.8	0.2

High Reliability: Data with coefficients of variation (CVs) < 12% are in black to indicate that the sampling error is relatively small.
Medium Reliability: Data with CVs between 12 & 40% are in orange to indicate that the values should be interpreted with caution.
Low Reliability: Data with CVs > 40% are displayed in red to indicate that the estimate is considered very unreliable.

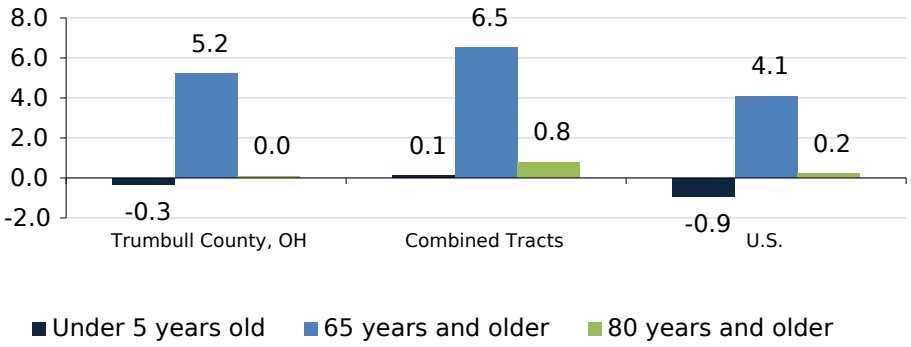
Population by Group, Percent of Total, 2023*

- Combined Tracts has the largest share of people under 5 years old (5.7%).
- Combined Tracts has the largest share of people 80 years and older (3.0%).



Population by Group, Change in Percentage Points, 2010*-2023*

- The largest change in the share of people under 5 years old occurred in the U.S., which went from 6.6% to 5.7%.
- The largest change in the share of people 80 years and older occurred in Combined Tracts, which went from 2.2% to 3.0%.



* ACS 5-year estimates used. 2023 represents average characteristics from 2019-2023; 2010 represents 2006-2010.

CITATION: U.S. Department of Commerce. 2023. Census Bureau, American Community Survey Office, Washington, D.C., , reported by Headwaters Economics' Neighborhoods at Risk, headwaterseconomics.org/apps/neighborhoods-at-risk.

Young & Elderly Populations

What do we measure on this page?

This page describes the number of people by specific age category.

The "Under 5 years old" category includes individuals younger than 5 years old. The "65 years and older" category includes individuals age 65 and older and the "80 years and older" category includes individuals age 80 and older. The "80 years and older" category is a subset of the "65 years and older" category.

Why is it important?

Young children and older adults both are vulnerable segments of the population. Understanding the age profile of a community can help users determine the types of services likely to be needed.[1]

Children's developing bodies makes them particularly sensitive to health problems and environmental stresses.[1]

Childhood lays the foundations for lifelong health. Poor health during childhood increases the likelihood of problems throughout adulthood.[2]

Because so many factors of a child's life are determined during pregnancy, infancy, and early childhood, children in poverty are an especially vulnerable population. Lack of adequate care through the early phases of life is more prevalent in poor populations.[2]

Children spend more time outside and have a faster breathing rate than adults, so they are more at risk for respiratory problems related to ground level ozone, airborne particulates, wildfire smoke, and allergens. Allergens are associated with climate change due to changing plant communities and longer pollen seasons.[3, 4]

Because their immune systems are not fully developed, children are more sensitive to infectious diseases. Natural disasters can breach public water supplies, compromise sanitation, and spread illness. Children are more vulnerable to these hazards compared to adults.[3]

Older adults also are at increased risk of compromised health related to environmental hazards and climate change.

Age is the single greatest risk factor related to illness or death from extreme heat.[4]

The elderly are more likely to have pre-existing medical conditions or compromised mobility, which reduces their ability to respond to natural disasters.[3]

The likelihood of chronic disease increases with age.[1, 5]

Older adults are more susceptible to air pollution such as ground level ozone, particulate matter, or dust. Increased dust is associated with drought, wildfires, and high wind events.[3, 6]

CHANGES IN BOUNDARIES: Data describing change over time can be misleading when geographic boundaries have changed.
The Census provides documentation about changes in boundaries at this site: www.census.gov/geo/reference/boundary-changes.html

Neighborhoods at Risk

Selected Tracts

Educational Attainment

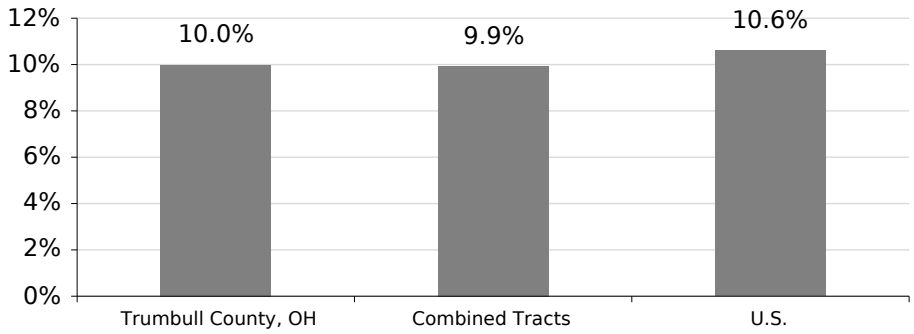
	Trumbull County, OH	Combined Tracts	U.S.
Total Population 25 years or older, 2023*	144,401	14,887	228,434,661
No high school degree	14,407	1,479	24,230,217
No high school degree, percent	10.0%	9.9%	10.6%
No high school degree, change in percentage points**, 2010*-2023*	-3.6	-7.2	-4.4

**For example, if the value is 3% in 2010* and 4.5% in 2023*, the reported change in percentage points is 1.5.

High Reliability: Data with coefficients of variation (CVs) < 12% are in black to indicate that the sampling error is relatively small.
Medium Reliability: Data with CVs between 12 & 40% are in orange to indicate that the values should be interpreted with caution.
Low Reliability: Data with CVs > 40% are displayed in red to indicate that the estimate is considered very unreliable.

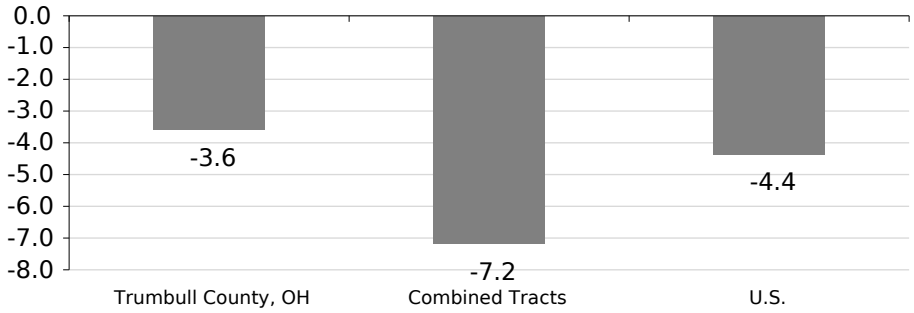
Population with Less than High School Education, Percent of Total, 2023*

- The U.S. has the largest share of people with less than a high school education (10.6%).



Population with Less than High School Education, Change in Percentage Points, 2010*-2023*

- The largest change in the share of people with less than a high school degree occurred in Combined Tracts, which went from 17.1% to 9.9%.



* ACS 5-year estimates used. 2023 represents average characteristics from 2019-2023; 2010 represents 2006-2010.

CITATION: U.S. Department of Commerce. 2023. Census Bureau, American Community Survey Office, Washington, D.C., , reported by Headwaters Economics' Neighborhoods at Risk, headwaterseconomics.org/apps/neighborhoods-at-risk.

Educational Attainment

What do we measure on this page?

This page describes levels of educational attainment, which refers to the highest degree or level of schooling completed by people 25 years and over.

Why is it important?

High school completion is used as a proxy for overall socioeconomic circumstances. Lack of education is strongly correlated with poverty and poor health.

People without a high school degree are more than twice as likely to live in inadequate housing compared to those with some college education.[5]

A study in California found the lack of a high school degree was the factor most closely related to social vulnerability to climate change.[4]

Thirty-eight percent of Americans without a high school degree do not have health insurance, compared to 10 percent with a college degree.[7]

The rate of diabetes is much greater for those without a high school degree. Incidence of this disease is more than double the rate of those who attended education beyond high school.[5]

Binge drinking is most severe among those without a high school degree. This demographic group had the highest risk of binge drinking across all measured categories (such as income, race, ethnicity, or disability status).[5]

CHANGES IN BOUNDARIES: Data describing change over time can be misleading when geographic boundaries have changed.
The Census provides documentation about changes in boundaries at this site: www.census.gov/geo/reference/boundary-changes.html

Neighborhoods at Risk

Selected Tracts

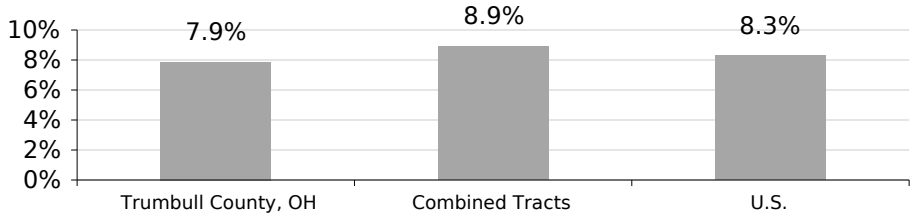
Potentially Vulnerable Households

	Trumbull County, OH	Combined Tracts	U.S.
Total Occupied Households, 2023*	86,135	9,371	127,482,865
People > 65 years & living alone	13,967	1,890	14,809,415
Single female households	11,454	1,415	15,592,781
with children < 18 years	6,574	775	9,459,043
Households with no car	6,776	837	10,602,826
Percent of Total, 2023*			
People > 65 years & living alone	16.2%	20.2%	11.6%
Single female households	13.3%	15.1%	12.2%
with children < 18 years	7.6%	8.3%	7.4%
Households with no car	7.9%	8.9%	8.3%
Change in Percentage Points, 2010*-2023*			
For example, if the value is 3% in 2010* and 4.5% in 2023*, the reported change in percentage points is 1.5.			
People > 65 years & living alone	13.2	16.6	-1.2
Single female households	0.1	2.1	-0.5
with children < 18 years	-1.0	-1.3	0.0
Households with no car	1.4	1.6	-116.0

High Reliability: Data with coefficients of variation (CVs) < 12% are in black to indicate that the sampling error is relatively small.
Medium Reliability: Data with CVs between 12 & 40% are in orange to indicate that the values should be interpreted with caution.
Low Reliability: Data with CVs > 40% are displayed in red to indicate that the estimate is considered very unreliable.

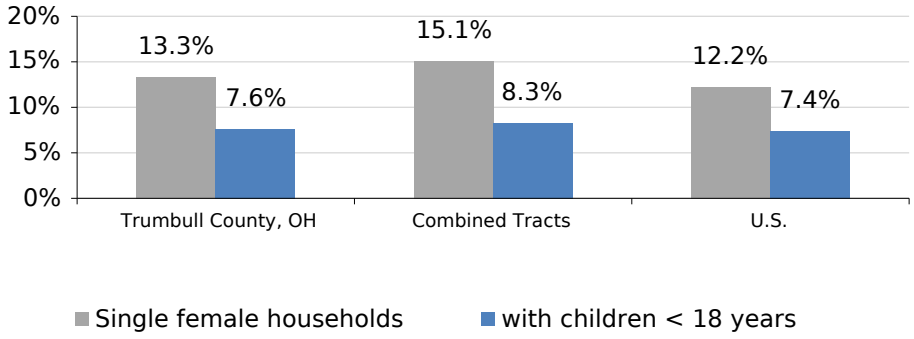
Households with No Car as a Percent of Total Households, 2023*

- Combined Tracts has the largest share of households with no car (20.2%).



Single Female Households as a Percent of Total Households, 2023*

- Combined Tracts has the largest share of single female households (15.1%).
- Combined Tracts has the largest share of single female households with children (8.3%).



* ACS 5-year estimates used. 2023 represents average characteristics from 2019-2023; 2010 represents 2006-2010.

CITATION: U.S. Department of Commerce. 2023. Census Bureau, American Community Survey Office, Washington, D.C., , reported by Headwaters Economics' Neighborhoods at Risk, headwaterseconomics.org/apps/neighborhoods-at-risk.

Potentially Vulnerable Households

What do we measure on this page?

This page describes household types that are associated with increased hardship, including the elderly living alone, single female households, single female households with children, and households without a car.

Why is it important?

Older adults are more likely to have compromised health and are less able to overcome disease. Living alone exacerbates health risks, and many health outcomes are worsened by social isolation.

- Social isolation is strongly linked to poor health such as premature death, smaller chances of survival after a heart attack, depression, and greater levels of disability from chronic diseases.[2]
- People 65 and older are particularly vulnerable to heat-related illness,[4] which is exacerbated by social isolation.

Households headed by women face challenges related to income, education, and food security. These factors make it more difficult to respond to health, environmental, or climate risks.

- Female-headed households are more likely to be living in poverty. This is most prevalent among black, Hispanic, and Native American households.[16]
- In 2014, 35 percent of female-headed households were food insecure, compared to 14 percent of all households.[17]
  Single mothers may be burdened by providing basic needs such as food and housing, which can make the urgency of other risks seem less important.[18]
- Single-mother families are disproportionally exposed to hazardous levels of air pollution.[4]
- Single mothers tend to be less educated and less affluent than the general population, which puts them at greater risk during natural disasters.[18]

Access to a car is linked with higher wages and more financial stability, and can help families relocate or evacuate in the event of emergencies.

- People who own cars are more likely to be employed, work longer hours, and earn more than those who do not.[19]
- Access to a car has measurable benefits for those receiving public assistance. Welfare recipients with access to a car were more likely to work more hours and get higher-paying jobs, and had a greater chance of leaving welfare.[20]
- During emergencies, natural disasters, and extreme weather events, people who do not have a car are less likely to evacuate or have access to emergency response centers.[4]
- During heat waves, people without a car are less able to go to community cooling centers or cooler areas.[4]
- Pedestrian fatalities are more than twice as likely in poor urban neighborhoods than in wealthier parts of cities.[21]

CHANGES IN BOUNDARIES: Data describing change over time can be misleading when geographic boundaries have changed.
The Census provides documentation about changes in boundaries at this site: www.census.gov/geo/reference/boundary-changes.html

Neighborhoods at Risk

Selected Tracts

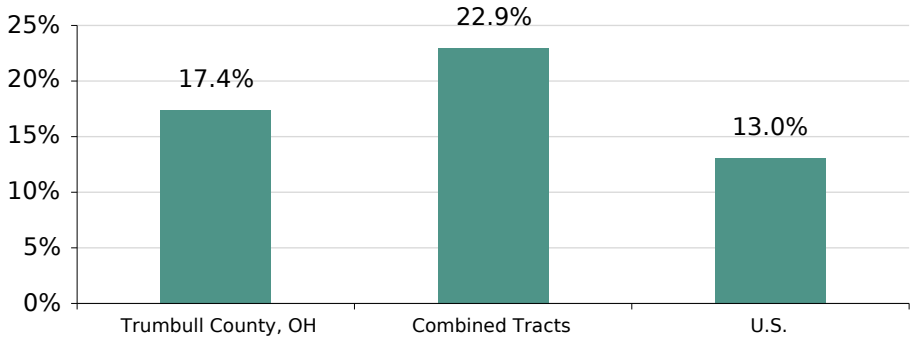
Potentially Vulnerable People

	Trumbull County, OH	Combined Tracts	U.S.
Total civilian noninstitutionalized population, 2023*	197,735	19,888	327,425,278
People w/ disabilities	34,336	4,564	42,703,063
People w/o health insurance	13,731	1,220	28,000,876
Percent of Total, 2023*			
Percent of people w/ disabilities	17.4%	22.9%	13.0%
Percent of people w/o health insurance	6.9%	6.1%	8.6%

High Reliability: Data with coefficients of variation (CVs) < 12% are in black to indicate that the sampling error is relatively small.
Medium Reliability: Data with CVs between 12 & 40% are in orange to indicate that the values should be interpreted with caution.
Low Reliability: Data with CVs > 40% are displayed in red to indicate that the estimate is considered very unreliable.

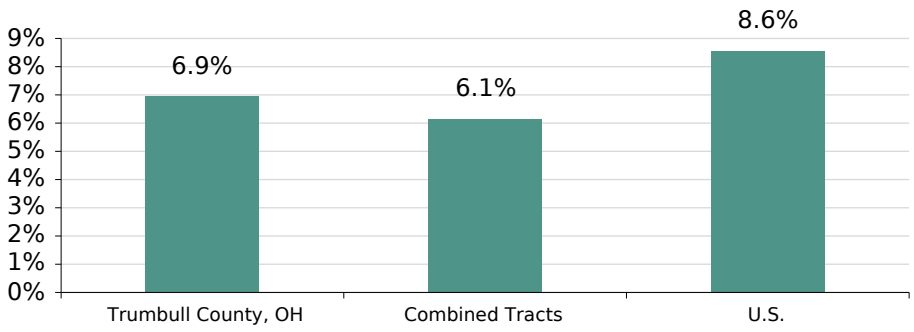
People with Disabilities, Percent of Total, 2023*

- Combined Tracts has the largest share of the noninstitutionalized population that is disabled (22.9%).



People without Health Insurance, Percent of Total, 2023*

- The U.S. has the largest share of the noninstitutionalized population without health insurance (8.6%).



* ACS 5-year estimates used. 2023 represents average characteristics from 2019-2023; 2010 represents 2006-2010.

CITATION: U.S. Department of Commerce. 2023. Census Bureau, American Community Survey Office, Washington, D.C., , reported by Headwaters Economics' Neighborhoods at Risk, headwaterseconomics.org/apps/neighborhoods-at-risk.

Potentially Vulnerable People

What do we measure on this page?

This page describes groups of people that are associated with increased hardship, including people with disabilities and people without health insurance.

Why is it important?

Disabled people are subject to health complications that make environmental risks more consequential.

Disabled people are less likely to have health insurance, compared to the non-disabled population.[5]

Being confined to a bed raises heat mortality.[2]

Extreme weather events or natural disasters may result in limited access to medical care. This is particularly consequential for those who already have compromised health.[3]

People who lack health insurance are disadvantaged by several different mechanisms. They may avoid or delay diagnoses, treatment, and/or medication and thus may increase their odds of poor health. They do not have a regular place of care, and they are not benefitting from the standard of care that is afforded many Americans.

Households living in poverty are more likely to be uninsured. More than one quarter of uninsured households live in poverty.[10]

People with lower educational attainment are more likely to be uninsured.[5]

People without health insurance are less likely to have a regular source of care, and less likely to receive preventive, primary, and specialty care services.[32,33] This risk is particularly evident among racial and ethnic minorities.[5]

People without health insurance are more likely to use the hospital emergency department for standard health care needs.[5]

About 25% of uninsured adults report having either delayed or gone without care in the past year because of costs.[23]

Uninsured people are more likely to skip medications due to the costs, and some providers are less likely to prescribe medications to uninsured patients.[24]

People who do not have health insurance suffer greater health consequences from air pollution compared to those with insurance.[4]

CHANGES IN BOUNDARIES: Data describing change over time can be misleading when geographic boundaries have changed.
The Census provides documentation about changes in boundaries at this site: www.census.gov/geo/reference/boundary-changes.html

Neighborhoods at Risk

Selected Tracts

Summary

Indicators 2023*	Combined Tracts	U.S.	Percent Difference Combined Tracts vs. U.S.
People under 5 years	5.7%	5.7%	0%
People over 65 years	24.9%	16.8%	39%
People of color (including Hispanic)	18.2%	41.8%	-79%
People who don't speak English well	0.3%	4.2%	-173%
People without a high school degree	9.9%	10.6%	-7%
Families in poverty	18.7%	8.7%	73%
Housing units that are rentals	28.7%	35.0%	-20%
Households with no car	8.9%	8.3%	7%
People with disabilities	22.9%	13.0%	55%
People without health insurance	6.1%	8.6%	-34%

High Reliability: Data with coefficients of variation (CVs) < 12% are in black to show that the sampling error is small.
Medium Reliability: Data with CVs between 12 & 40% are in orange. These values should be interpreted with caution.
Low Reliability: Data with CVs > 40% are displayed in red to indicate that the estimate is considered very unreliable.

* ACS 5-year estimates: 2023 represents average characteristics from 2019-2023.

CITATION: U.S. Department of Commerce. 2023. Census Bureau, American Community Survey Office, Washington, D.C., , reported by Headwaters Economics' Neighborhoods at Risk, headwaterseconomics.org/par.

Summary

What do we measure on this page?

This page shows a quick comparison for many of the indicators covered in this report to highlight how the selected tracts differ from the United States as a whole.

The percent, or relative, difference between the selected tracts and the U.S. is calculated by dividing the difference between the values by the arithmetic mean of the values.

Why is it important?

These indicators are all measures of a population more likely to experience adverse outcomes from disruptions due to extreme weather events, climate change, pollution, or limited health care access.

Particularly high percentages for any of these indicators may highlight populations that are at higher risk and in need of outreach from disaster planning, public health, or social service organizations.

CHANGES IN BOUNDARIES: Data describing change over time can be misleading when geographic boundaries have changed.
The Census provides documentation about changes in boundaries at this site: www.census.gov/geo/reference/boundary-changes.html

Endnotes

1 - County of Los Angeles Public Health, Health Atlas for the City of Los Angeles (Los Angeles, CA, June 2013). https://wattscommunitystudio.files.wordpress.com/2013/06/healthatlas.pdf

2 - Richard G. Wilkinson and Michael Gideon Marmot, Social determinants of health: The solid facts (World Health Organization, 2003). http://www.euro.who.int/__data/assets/pdf_file/0005/98438/e81384.pdf

3 - John M. Balbus and Catherine Malina, "Identifying vulnerable subpopulations for climate change health effects in the United States," Journal of Occupational and Environmental Medicine 51, no. 1 (2009): 33-37.

4 - Heather Cooley, Eli Moore, Matthew Heberger, and Lucy Allen, Social Vulnerability to Climate Change in California (California Energy Commission Pub. # CEC-500-2012-013, 2012).

5 - Centers for Disease Control and Prevention, "CDC Health Disparities and Inequalities Report — United States, 2011," Morbidity and Mortality Weekly Report 60 Suppl. (January 14, 2011). http://www.cdc.gov/mmwr/pdf/other/su6001.pdf

6 - Michelle L. Bell, Antonella Zanobetti, and Francesca Dominici, "Who is more affected by ozone pollution? A systematic review and meta-analysis," American Journal of Epidemiology (2014): kwu115.

7 - Evan J. Ringquist, "Assessing evidence of environmental inequities: A meta-analysis." Journal of Policy Analysis and Management 24, no. 2 (2005): 223-247.

8 - Alice Fothergill, Enrique G.M. Maestas, and JoAnne DeRouen Darlington, "Race, ethnicity and disasters in the United States: A review of the literature," Disasters 23, no. 2 (1999): 156-173.

9 - Sandra L. Colby and Jennifer M. Ortman. Projections of the Size and Composition of the US Population: 2014 to 2060 (U.S. Census Bureau, March 2015). https://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf

10 - Jessica C. Smith and Carla Medalia, Health Insurance Coverage in the United States: 2013 (U.S. Census Bureau, September 2014). https://www.census.gov/library/publications/2014/demo/p60-250.html

11 - Alice Fothergill and Lori A. Peek, "Poverty and disasters in the United States: A review of recent sociological findings," Natural Hazards 32, no. 1 (2004): 89-110.

12 - North Carolina Institute of Medicine, Prevention for the Health of North Carolina: Prevention Action Plan (October 2009): Chapter 11 Socioeconomic Determinants of Health. http://www.nciom.org/publications/?prevention

13 - William M. Rohe and Mark Lindblad, "Reexamining the Social Benefits of Homeownership after the Housing Crisis" (presentation, Homeownership Built to Last: Lessons from the Housing Crisis on Sustaining Homeownership for Low-Income and Minority Families–A National Symposium, Cambridge, MA, April 2013).

14 - Craig Evan Pollack, Beth Ann Griffin, and Julia Lynch, "Housing affordability and health among homeowners and renters," American Journal of Preventive Medicine 39, no. 6 (2010): 515-521.

15 - Adam Reichenberger, "A comparison of 25 years of consumer expenditures by homeowners and renters," U.S. Bureau of Labor Statistics: Beyond the Numbers: Prices and Spending 1, no. 15 (October 2012). http//www.bls.gov/opub/btn/volume-1/a-comparisonof-25-years-of-consumer-expenditures-by-homeowners-and-renters.htm

16 - Anastasia R. Snyder, Diane K. McLaughlin, and Jill Findeis, "Household composition and poverty among female-headed households with children: Differences by race and residence," Rural Sociology 71, no. 4 (2006): 597-624.

Endnotes (cont.)

17 - Nicholas T. Vozoris and Valerie S. Tarasuk, “Household food insufficiency is associated with poorer health,” Journal of Nutrition 133, no. 1 (2003): 120-126.

18 - William Donner and Havidán Rodríguez, “Population composition, migration and inequality: The influence of demographic changes on disaster risk and vulnerability,” Social Forces 87, no. 2 (2008): 1089-1114.

19 - Steven Raphael and Lorien Rice, “Car ownership, employment, and earnings,” Journal of Urban Economics 52, no. 1 (2002): 109-130.

20 - Tami Gurley and Donald Bruce, “The effects of car access on employment outcomes for welfare recipients,” Journal of Urban Economics 58, no. 2 (2005): 250-272.

21 - Mike Maciag, “Pedestrians dying at disproportionate rates in America's poorer neighborhoods,” Governing Magazine (August 2014). http://www.governing.com/topics/public-justice-safety/gov-pedestrian-deaths-analysis.html

22 - Marsha Lillie-Blanton and Catherine Hoffman, “The role of health insurance coverage in reducing racial/ethnic disparities in health care,” Health Affairs 24, no. 2 (2005): 398-408.

23 - Karlen E. Luthy, N.E. Peterson, J. Wilkinson, “Cost-efficient treatment for uninsured or underinsured patients with hypertension, depression, diabetes mellitus, insomnia, and gastroesophageal reflux,” Journal of the American Academy of Nurse Practitioners 20, no. 3 (2008): 136-143.

24 - Edward P. Havranek, “Unseen consequences: The uninsured, foctors, and cardiovascular Disease,” Journal of the American College of Cardiology 61, no. 10 (2013): 1076-1077.

Trumbull County Hazard Mitigation Plan
Map and Table List

01 THE PLANNING PROCESS

02 HAZARD IDENTIFICATION AND RISK ASSESSMENT

TRUMBULL COUNTY MITIGATION PURPOSE

- To ***PREVENT*** damages, when possible, through pro-active measures
- To ***LESSEN*** damages through rapid, effective response and containment of the hazard or incident
- To ***IMPROVE*** response through prioritization of handling consequences
- To ***HASTEN*** recovery through pre-planning and resource development
- To ***DIMINISH*** cascading events and unintended consequences
- To ***SATISFY*** needs through pre-incident anticipation of damages and danger

TRUMBULL COUNTY HMP TIMELINE

- Project Kick-Off with Trumbull County EMA September 17, 2025
- Workshops November 5 and 6, 2025
- Writing Phase by Contractor set for November – January 2025
- Final Draft Plan by January 31, 2026
- Public Review in February 2026
- Community Plan Adoption February 2026 (after public review)
- Anticipated new plan approval by OEMA/FEMA early March 2026

PROJECT FINANCIAL COMMITMENT

LINE ITEMS FOR GRANT	AMOUNT OR VALUE
Project Cost	$48,000.00
Grant (pays Contractor)	$36,000.00
Local Match (In-kind)	$12,000.00
Volunteer Hour Value (per FEMA)	$63.07
Volunteer Hours Needed	191 hours

PROJECT PARTICIPATION GOALS

Activity	Calculations	Outcomes
October 7 Meeting 10:00 a.m. 1:00 & 5:00 p.m.	20 vol. x 3 mtg. = 60 Volunteers 60 Vol. x 2 hr. = 120 Hrs. 120 hr. x $63.07 =	$7,568.40
October 8 Meeting 9:00 a.m. 1:00 p.m.	20 Vol. x 2 mtg. = 40 Vol. 40 Vol. x 2 hr. = 80 hrs. 80 hr. x $63.07-	$5,045.60
Review Meeting (optional)	20 Vol. X 1 hr. – 20 hr. 20 hrs. x $63.07 =	$1,261.40
Potential Total Match		**$13,975.40**

PARTICIPATION BREAK-OUT POTENTIAL

Jurisdiction Type	Representatives Per Unit	Hours Per Set
County Officials	25 elected or appointed officials	50 hours
City Officials (Cortland, Girard, Hubbard, Niles, Warren)	Mayor, Manager, Fire, Police, Streets, Utilities, Engineer, Planning/Zoning	80 hours
Village Officials (3)	Mayor, Administrator, Street/Utilities, Planning/Zoning, Fire, Police	36 hours
Small Village Officials (3)	Mayors	6 hours
Townships (24)	12 representatives	24 hours
Community & Social Groups	6 groups, 1 person	12 hours
Schools, Universities	6 people	12 hours
High-Hazard Dam Owners	5	10 hours

KEY EMA ROLES & RESPONSIBILITIES

- Identify plan participants so their needs, concerns and ideas are captured;
- Champion the project to the community so that residents are interested and engaged in the process;
- Manage meeting logistics and technology for a comfortable and pleasant experience for participants.

AND……..

- Have some examples of damages done by local incidents.
- Have a few examples of positive mitigation efforts.
- Build a bandwagon.
- Give regular and frequent reminders.
- ASK people to attend.

WHY NOT JUST AN EMAIL?

- 72 - 83% of all emails are *never opened*.
- If the subject line doesn’t grab the recipient, they’ll probably scroll on by.
- If the subject line does grab them, they often think it’s not important.
- People skim when they do open.
- People are distracted.
- People forget.
- Everybody is really busy.

GAME-CHANGERS

- A text or call the evening before or an hour before saying “Hope to see you at the mitigation meeting! Looking forward to your help!” or something similar.
- Offer to be there to greet them.
- Signage helps them to know they’re in the right spot.
- Seating assignments DO actually help make meetings go better when assignments are well considered and relevant.
- Name tags help us! We don’t know anyone on our first journey here.
- News articles help them feel this is important.

A NOTE ABOUT RSA

- We are YOUR ambassadors for emergency management. We work for you.
- Our sole interest is your mitigation plan.
- This is YOUR plan.
- Our goal is always to represent counties positively even though we have to ask questions that might be perceived as negative.
- We have no political objectives; we are emergency management specialists who have served without prejudice for decades.
- We will try to answer any and all questions honestly and fairly.

Hazard Mitigation Plan Workshop

TRUMBULL COUNTY HAZARD MITIGATION PLAN

2026

Today's goals

- Identify and describe the hazards and threats relevant to the county
- Rank – by county and municipality – included hazards and threats
- Describe damages those threats cause locally
- Identify and describe any unusual threats or damages to local areas

Hazards included in 2020

- Dam & Levee Failure
- Drought
- Earthquake
- Epidemic
- Flooding
- Geologic Hazards
- Hailstorm
- Infestation
- Severe Thunderstorm
- Severe Wind & Tornado
- Temperature Extremes
- Terrorism
- Wildfire

Why include a hazard?

- Does it happen, or can it happen?
- What kind of damage is done when it happens?
- How long does it take to restore use, reopen, or recover? Cost?
- Does the jurisdiction have the resources to respond and recover?

Optional hazards

- Disease outbreak, epidemic or pandemic (Public Health & Healthcare)
- Cybersecurity and cyber-terrorism (Law Enforcement)
- Agroterrorism & domestic terrorism (Law Enforcement)
- Complex Coordinated Event (School District to some degree)
- Specific Air or Water quality emergencies (Public Health)
- Radiation or Nuclear emergencies (Public Health)
- Hazardous Materials Incidents (LEPC and Fire Departments)

Hazard worksheet

- Fill out the top box so we know who to call for questions.
- Please write legibly. The hazards are evaluated based upon frequency, severity, damages, recovery time, and casualty likelihood.
- **There are no wrong answers! There are no right answers! Just your answers!**

Complete the Hazard Selection Worksheet

LOW: This doesn't happen much or has a low likelihood, damages are not bad, recovery is fast, and there are not usually long-term injuries or any deaths.

MEDIUM: This can be mild, but it is also sometimes pretty serious. There can be serious damages, businesses might be closed, and people do get hurt.

HIGH: This is bad. It takes a lengthy time to return to normal, people get hurt, some might die, and it is pretty serious.

#1 is the worst. #2 isn't quite as bad…….

Mark "**n/a**" if it should not be included in the plan

HAZARD RANKING WORKSHEET

Damage assessment

- After every storm or incident, we assess damages to figure out what was destroyed, damaged, or unaffected.
- Worst case scenario for planning purposes
- Damages prevent us from using property
- Inconvenience and interruption are damages

Vulnerability

- Vulnerability indicates to what degree you – or your jurisdiction – is likely to incur interruption or expense due to damages from a hazard.
- If a tree falls in the forest, your house is probably not vulnerable; but if a tree falls in your yard, your house is vulnerable.
- Vulnerability means damages, cost, inconvenience, and interruption are possible.
- Vulnerability is what mitigation tries to reduce.
- **We can't control the hazard, but we can control vulnerability.**

Damages Worksheet

- Please write legibly. One per person even if answers are the same.
- Select your **TOP 3** damages think are the worst from the named hazard.
- Don’t think too hard about the answers!
- There are NO wrong answers!

Strategies……what we can do

- Use wind resistant building materials
- Install detention and retention ponds
- Upsize sewers, bridge spans, generators, etc.
- Build windbreaks or use buffer strips
- Improve warning systems and communication
- Educate the public in what to do when a hazard develops
- Share information about where to go for help

Strategy Categories

- Structurally Engineered Projects
- Prevention
- Property Protection
- Natural Resource Protection
- Public Information
- Social Resiliency
- Response Enhancement

Prioritize

Pick the *BEST* answers, not all answers

COMPLETE THE STRATEGY WORKSHEET

After Today

- Sort, assemble, summarize the worksheets
- Finalize hazard selections, damage profiles, and strategies with EMA DIrector
- Draft a new hazard mitigation plan
- Hold the option to have a “Final Review” in-person meeting (January)
- Public Review February 1 – 15, 2026
- Submit to Ohio EMA for FEMA Review on February 16, 2026
- Completion of the Review in March

“No Control” Components

- Federal Shutdown – plans may not be actively reviewed during this time
- FEMA Region V Review – Random submittals to Region V; no advance warning
- Reviewer Schedule – Not under our control
- Changes to Local Mitigation Planning Guidance

“In Control” Components

- Attend meetings
- Respond quickly to questions from EMA or Contractor
- Submit review comments on time
- Adopt the plan when requested
- Send Adoption Resolutions to John Hickey

Thank You!

Trumbull County Hazard Mitigation Plan

2026 - 2031

Plan Organization

00 Executive Summary

01 The Planning Process

02 Hazard Identification & Risk Assessment

03 Strategies

04 Adoption

Plan Organization

05 Trumbull County Profiles

06 Exposure/Estimated Annual Loss Tables

07 NCDC Storm Event Database

08 Neighborhoods at Risk - Trumbull Co.

09 Meeting Materials

10 Map & Table Guide

01 The Planning Process

- Discusses the Process
- Talks about WHO helped by attending meetings
- Identifies WHEN meetings were held
- Discusses WHAT changes were made in Review
- Discusses HOW the plan will be used and maintained

02 Hazard Identification & Risk Assessment (HIRA)

- Demographic and Descriptive Section
- Hazard Identification – 11 Selected Hazards
- Vulnerability Assessment
- Risk Analysis

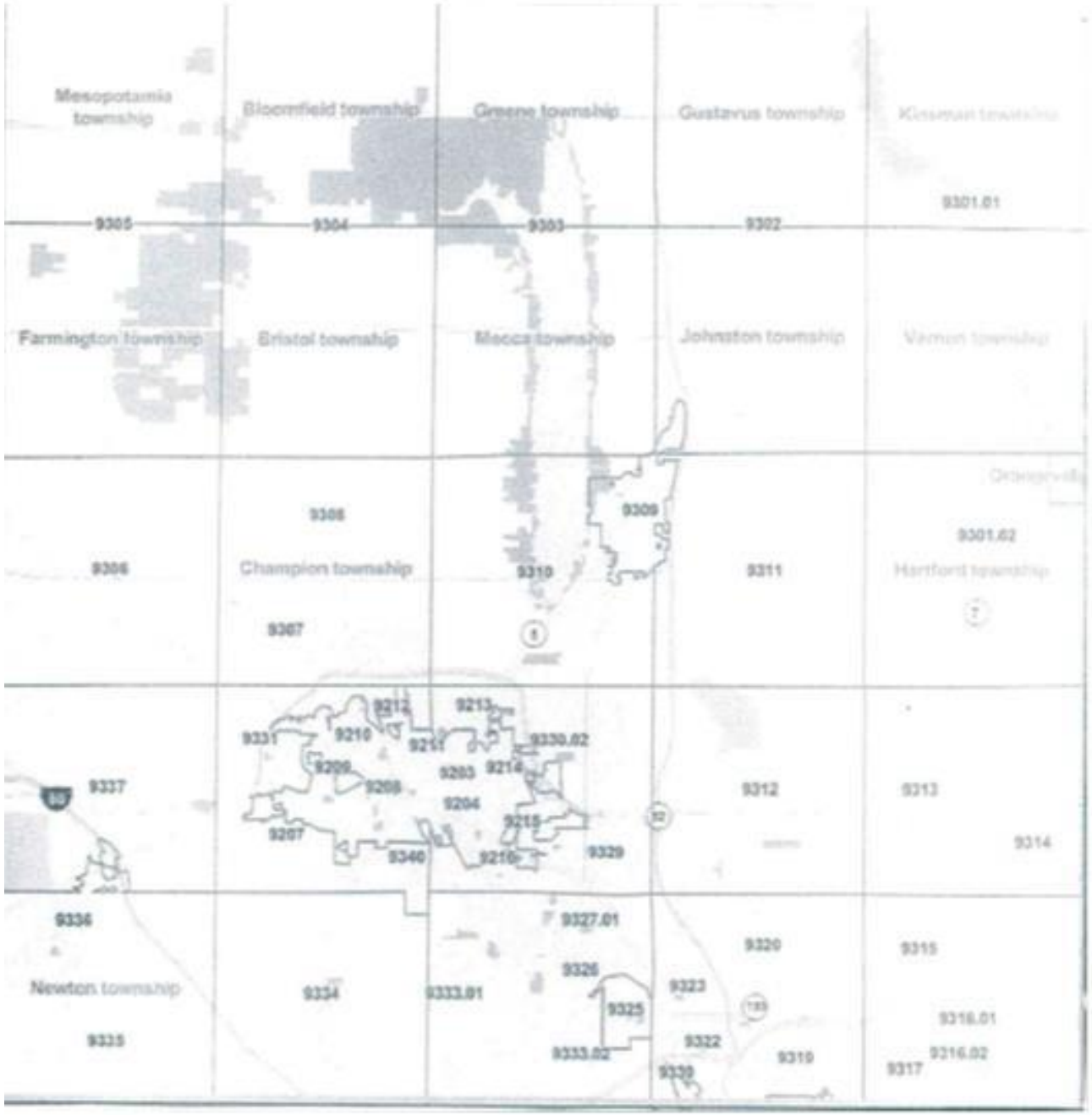
Table 2-65: Countywide Overall Average Vulnerability Prioritization

Jurisdiction	Complex Coordinated Event	Dam or Levee Failure	Disease Outbreak	Drought	Earthquake	Extreme Temperatures	Fire or Wildfire	Flood	Hazardous Materials Spill	Invasive Species	Land Subsidence & Erosion	Severe Storms & Thunderstorms	Severe Winter Storm & Blizzard	Tornado & Windstorm	Utility Failure
Trumbull County (Townships)	8	4	10	13	14	15	9	1	5	12	11	2	7	6	3
Cortland	8	n/a	11	9	12	13	6	2	7	10	n/a	1	5	3	4
Girard	2	5	11	13	12	15	10	1	8	14	9	4	7	3	6
Hubbard	7	n/a	8	13	10	12	11	1	6	14	9	4	5	3	2
Lordstown	8	n/a	9	10	12	11	6	2	7	n/a	13	3	4	5	1
McDonald	4	5	10	n/a	11	n/a	9	2	8	n/a	n/a	3	6	1	7
Newton Falls	7	5	12	13	14	11	9	1	8	15	10	3	6	2	4
Niles	7	2	8	12	13	14	9	1	10	15	11	3	5	6	4
Orangeville	n/a	n/a	n/a	n/a	n/a	n/a	6	1	n/a	n/a	n/a	2	3	5	4
Warren	6	3	11	10	12	15	9	1	8	13	14	2	7	4	5
West Farmington	13	n/a	7	8	12	9	6	2	10	n/a	11	1	3	5	4
Yankee Lake	n/a	n/a	n/a	n/a	n/a	n/a	5	2	6	n/a	n/a	3	4	1	7
Total Raw Score	70	24	97	101	122	115	95	17	83	93	88	31	62	44	51
Divisor	10	6	10	9	10	9	12	12	11	7	8	12	12	12	12
Adjusted Score	7.0	4.00	9.7	11.2	12.2	12.8	7.92	1.42	7.55	13.3	11.0	2.58	5.17	3.67	4.25
FINAL COUNTYWIDE RANK	**7**	**4**	**10**	**12**	**13**	**14**	**9**	**1**	**8**	**15**	**11**	**2**	**6**	**3**	**5**

Table 2-68: Comprehensive Countywide Risk Analysis

Hazard	Frequency	Response Duration	Speed of Onset	Magnitude	Business Impact	Human Impact	Property Impact	Score	Rank
Flood	5	4	3	3	3	3	3	24	1
Severe Thunderstorms	5	2	3	3	2	3	3	22	2
Tornado & Windstorm	3	3	4	3	2	2	4	21	3
Dam Failure	1	5	2	2	2	4	3	19	4
Utility Failure	3	3	4	1	2	3	2	18	5
Severe Winter Storms & Blizzard	4	3	2	2	2	2	2	17	6
Complex Coordinated Event	2	2	4	1	1	4	2	16	7
Hazardous Materials	3	2	4	1	1	1	2	14	8
Fire & Wildfire	4	1	3	1	1	1	2	13	9
Disease Outbreak	1	3	2	1	2	2	1	12	10
Land Subsidence & Erosion	2	2	1	1	2	1	2	11	11
Drought	1	2	1	1	1	2	2	10	12
Earthquake	1	1	2	1	1	2	1	9	13
Extreme Temperatures	1	1	1	1	1	2	1	8	14
Invasive Species	1	1	1	1	1	1	1	7	15

Map 2-14: Trumbull County Census Area Map



Inland Flood Exposure and Estimated Annual Loss Data

Table of Exposure (Exp.) and Estimated Annual Loss (EAL) Data

Tract	Annual Freque...	Exp. Area	Exp. Building	Exp. Population	Exp. Agriculture	EAL - Building	EAL - PE	EAL - Agriculture	EAL - Toal
976500	129 %	5.62 Sq. Miles	$ 1,405,434,730	106	$ 1,430,635	$ 1,343,280	$ 2,226	$ 13,366	$ 1,358,871
976600	129 %	5.47 Sq. Miles	$ 1,002,245,877	398	$ 2,815,139	$ 1,067,497	$ 8,354	$ 26,300	$ 1,102,151
976302	129 %	6.36 Sq. Miles	$ 1,950,174,503	85	$ 2,841,047	$ 799,644	$ 1,774	$ 26,542	$ 827,960
976700	129 %	2.97 Sq. Miles	$ 1,407,465,321	255	$ 1,219,405	$ 800,263	$ 5,341	$ 11,392	$ 816,996
976802	129 %	3.51 Sq. Miles	$ 1,414,103,478	41	$ 1,044,488	$ 759,427	$ 851	$ 9,758	$ 770,036
976801	129 %	4.82 Sq. Miles	$ 1,816,524,897	17	$ 1,623,363	$ 720,423	$ 366	$ 15,166	$ 735,954
976301	129 %	3.12 Sq. Miles	$ 1,821,244,999	11	$ 374,663	$ 621,362	$ 228	$ 3,500	$ 625,091
976403	129 %	2.41 Sq. Miles	$ 1,077,325,981	12	$ 622,693	$ 458,873	$ 262	$ 5,818	$ 464,952
976401	129 %	1.33 Sq. Miles	$ 723,020,351	4	$ 171,289	$ 439,901	$ 94	$ 1,600	$ 441,595
976402	129 %	2.88 Sq. Miles	$ 795,001,090	39	$ 978,162	$ 411,481	$ 824	$ 9,138	$ 421,444

03 Mitigation Strategies

- Status of Past Strategies – Not Required because this is a NEW plan
- Risk Priorities
- Strategies

Mitigation Action 6.16 The jurisdiction will improve and repair roads, streets, bridges, culverts, sidewalks, and berms damaged by rapid runoff and heavy precipitation.						
TRUMBULL COUNTY		Protection	County Engineer	3-9-2026	3-8-2031	LOC HMGP BRIC
CORTLAND		Protection	City Engineer	3-9-2026	3-8-2031	
GIRARD		Protection	City Engineer	3-9-2026	3-8-2031	
HUBBARD		Protection	City Engineer	3-9-2026	3-8-2031	
LORDSTOWN		Protection	Street Superintendent	3-9-2026	3-8-2031	
MCDONALD		Protection	Street Superintendent	3-9-2026	3-8-2031	
NEWTON FALLS		Protection	City Engineer	3-9-2026	3-8-2031	
NILES		Protection	City Engineer	3-9-2026	3-8-2031	
ORANGEVILLE		Protection	Street Superintendent	3-9-2026	3-8-2031	
WARREN		Protection	City Engineer	3-9-2026	3-8-2031	
WEST FARMINGTON		Protection	Street Superintendent	3-9-2026	3-8-2031	
YANKEE LAKE		Protection	Street Superintendent	3-9-2026	3-8-2031	

Public Comment Period

MARCH 12-26, 2026

Corrections
Clarifications
Questions
Additions or Deletions
Examples
Emphasis
Incorrect Tone

Federal Mitigation Plan Guidance

- Requires the NFIP verbiage and explanations
- Requires inclusion of Earthquake even if not suggested locally
- Strategy assignment details are part of federal requirements
- Acquisition and Relocation, Safe Rooms, and NFIP Participation strategies are **strongly recommended** in the guidance
- Interpretation by the reviewer contributes to how a plan is reviewed and what changes or additions are required
- The plan meets the expectations of local, state and federal parties when it is all done and adopted.

2026 Plan Requirements

- Guidance was released April 11, 2025
- Not extensive differences from 2023
- Set a minimum standard, exceeding it is acceptable
- Eliminated some of the social vulnerability requirements, but non-specifically
- Changed climate change topics but did not eliminate it
- Established a minimum standard only

Effective Review is GOOD!

If something is incorrect, let us know.

- Most demographics and data are pulled from 2020 Census
- Other data comes from the State of Ohio Dept. of Administrative Services
- Data expressed is for “a point in time” and it is understood that it will change every year
- Some analysis information is done based upon statistics which may seem odd
- This document speaks in “Emergency Management” and has all the industry jargon in it
- The purpose of the whole effort is to set up grant eligibility for any funding that becomes available, not just FEMA grants.

Navigating approval

1. Review at OEMA will take about 4-6 weeks
2. For now, all review is done at the state level on behalf of Region V
3. Changes generally have nothing to do with the strategies
4. Most changes do not affect the “essence” of the plan and are not impactful
5. Local adoptions by the County and each Village can take place while the plan is being reviewed.
6. Submitting the Adoption Resolutions during review can save 4-12 weeks time in waiting for the Letter of Final Approval
7. If the jurisdiction does not formally adopt, they are NOT covered by the plan.

Adoption of the HMP

Only the communities that have formally adopted the HMP are eligible to apply for mitigation grant funding.

Only communities that have formally adopted the HMP can be assured of disaster assistance – this is a continually changing item, and it is safest to assume response funding will be subject to mitigation plan status.

Answers change every day. Stay flexible.

Thank You!

Your time and effort are appreciated!

NAME:	EMAIL:	JURISDICTION:

HAZARD AND THREAT SELECTION

The following is the list of hazards and threats discussed at mitigation meetings. Each jurisdiction must select the hazards they consider a vulnerability, and then rank them from most-concerning to least-concerning. Please make your selections and fill in your rank of each one on the following table.

Threat/Hazard	Description	Include? Yes/No	Frequency	Severity	Damages	Recovery	Casualty
Complex Coordinated Event	This includes a school shooting, a mass shooting at a public place, or a widespread assault at a public building, church, government office, or community event						
Dam/Levee Failure	Leakage or failure of a dam or levee or inundation Focus includes high-hazard and significant hazard dams or levees						
Disease Outbreak, Pandemic, Epidemic	Outbreak of a highly contagious and serious viral illness such as influenza, which would cause extreme stress on healthcare systems, mortuary services, or business and productivity.						
Drought	Very high temperatures for an extended time, and /or extremely dry conditions without rain for an extended period of time						
Earthquake	Measurable, slight to high intensity earthquake of any magnitude; generally able to be “felt” by people and confirmed by seismic monitoring						
Extreme Temperatures	Extended temperatures with highs below 0 or above 90 and lows below 0 and above 75						
Fire or Wildfire	Extensive structural fire; catastrophic industrial fire; or catastrophic woodland fire fed by wind or extremely dry conditions						

Flood	Stream, ditch and river flooding; surface or flash flooding, storm sewer backup; ponding or large areas flooded with standing water						
Hazardous Materials Spill or Release	Road accident, fixed facility accident, pipeline release or other event that releases hazmat into the atmosphere						
Invasive Species (Infestation)	Presence of insects, noxious weeds, or nuisance wildlife to the extent that it interferes with normal activities or causes marked damage						
Landslide/Mudslide	Movement of significant land along elevations or embankments, and/or collapse of land onto roadways or into waterways in a sliding manner						
Land Subsidence and Erosion	Abandoned Mines; Orphan wells; Karst; land movement along waterways and ditches in a gradual eroding manner; topsoil erosion						
Severe Storms & Thunderstorms	Thunderstorms, hail, heavy rain, lightning, microburst, high wind, rapid precipitation						
Severe Winter Storm & Blizzard	Blizzard, heavy snow, wintry mix, sleet or ice, wind, extremely low temperatures and significantly low wind chill						
Tornado & Windstorm	Funnel cloud touchdowns and storms containing tornadoes; straight line winds, derecho or wind alone						
Utility Failure	Generation or distribution failure, serious fuel shortage, power outage, cellular or satellite outage, internet failure or outage, broadband outage, road or bridge collapse, sewer sinkhole						
Other:							

NAME:	EMAIL:	JURISDICTION:

DAMAGES WORKSHEET

This worksheet documents the type, extent, and cost of damages due to selected threats. Local input is assumed to be the most correct and relevant information about damages. ***Select only the worst or top 3 damages, in your opinion.*** *You may have more than three concerns, but please check your most concerning three only.*

Complex Coordinated Event				
☐ Traumatic Injuries	☐ Death	☐ After-incident mental health	☐ Responder Stress and Mental Health	☐ Children's Mental Health
☐ Building Damage	☐ Operational Interruption	☐ Public Fear and Mistrust	☐ Responder Death or Injury	☐ Responder Capability Issues
Dam/Levee Failure				
☐ Inundation Zone Flooding	☐ Loss of Access to Property or Area	☐ Loss of Egress from Property	☐ Loss of Emergency Services Access	☐ Loss of Electricity, Fuel or Gas
☐ Injuries during response	☐ Injuries/Death due to incident	☐ Extensive loss of dam's purpose	☐ Extensive/expensive repair/replacement	☐ Evacuation Difficulties
Disease Outbreak (Epidemic, Pandemic)				
☐ Healthcare System Capacity Issues	☐ Medication or Vaccine Issues	☐ Mass Absence from School or Work	☐ Death Surge Issues	☐ Business Productivity
☐ Supply Chain Problems	☐ First Responder Vulnerability and Availability	☐ Healthcare Worker Vulnerability and Availability	☐ Parental or Care Giver Responsibility vs. work responsibility	☐ Special Population Vulnerability
Drought				
☐ Loss of household water supply	☐ Medical Problems	☐ Lawn/Landscape Loss	☐ Crop or Livestock Loss	☐ Business Loss
☐ Industrial Interruption	☐ Bulk Distribution Problems	☐ Worker Safety from low supply	☐ Institutional Operational Problems	☐ Firefighting Water Supply Shortages
Earthquake				
☐ Protective Action Concerns ☐ Loss of Communication Systems	☐ Utility Service Damage ☐ Extended Closures	☐ Home Structural Damage ☐ Temporary Housing Concerns	☐ Infrastructure Damage ☐ Commercial Property Replacement	☐ Institutional Damage ☐ Capital Equipment Loss and Replacement

Extreme Temperatures (High and Low)				
☐ Special Population Vulnerability	☐ Power Supply Vulnerability	☐ Additional Utility Cost	☐ Lack of Heating Systems in homes	☐ Lack of home Air Conditioning
☐ Impact upon Poverty	☐ Impact on Disabled	☐ Work Productivity Impact	☐ Outdoor Worker Safety Impact	☐ Insufficient Water Supply or Capacity
Fire (Structural, Field or Wildland)				
☐ Residential Structure Fires	☐ Commercial Property Fires	☐ Field and Woodland Fires	☐ Institutional Fires	☐ Mutual Aid Concerns
☐ Technical Rescue Concerns	☐ Fire Apparatus Shortages or Issues	☐ Personnel Shortages	☐ Unmet or Insufficient Training Needs	☐ Special Rescue Equipment Issues
Flood (Riverine, Surface, Flash, Areal, Backup)				
☐ Flooded Roads and Streets	☐ Flooded Driveways and Lawns	☐ Home Basement Flooding	☐ Home Flooding in Living Spaces	☐ Loss of Mechanical Systems
☐ Flooded Commercial Zones	☐ Road and Bridge Damage	☐ Crop & Livestock Loss and Damage	☐ Building Content Loss	☐ Loss of Ingress and Egress to Areas
☐ Sanitation & Sewer System Failure	☐ Insufficient Pumping Capacity	☐ Debris Clean Up and Cost	☐ Structure Repairs and Replacement	☐ Erosion Damages and Topsoil Loss
Hazardous Materials Spill or Release				
☐ Evacuation & Sheltering Issues	☐ Natural Resource Contamination	☐ Highway Damage and Detour Needs	☐ Loss of Life	☐ Injuries
☐ HM Response Capabilities	☐ First Responder Concerns	☐ Hospital Response Capabilities	☐ Response Equipment Needs	☐ Responder Training Needs
Invasive Species				
☐ Nuisance	☐ Allergic Reactions and Injuries	☐ Landscaping Losses	☐ Parks & Recreational Losses	☐ Pet Endangerment
☐ Agricultural Losses (Crop & Livestock)	☐ Disease Spread	☐ Personal Property Damage	☐ Commercial Property Losses	☐ Aquatic Losses
Landslide & Mudslide				
☐ Property Use & Safety Concerns	☐ Damage to Utilities or Infrastructure	☐ Park & Recreational Closures	☐ Cost of Repairs and Restoration	☐ Road Blockages, Hazards and Safety
Land Subsidence and/or Erosion				
☐ Loss of Topsoil	☐ Loss of Structural Integrity	☐ Waterway Widening	☐ Sinkhole Development	☐ Uncapped or Abandoned Mines
☐ Sedimentation of Waterways	☐ Loss of Farmable Acreage	☐ Infrastructure Collapse	☐ Water Table Contamination or Exposure	☐ Road, Berm or Storm Drain Collapse

Severe Thunderstorms				
☐ Heavy Rain and Surface Flooding	☐ Road/Street Flooding	☐ Structural Flooding	☐ Home damage to roofs, siding, etc.	☐ Home Destruction
☐ Utility Outages	☐ Hail Damage	☐ Lightning Damage and Fire	☐ Vehicle damage	☐ Business Damage and Destruction
☐ Lightning Damage & Casualties	☐ Injury and Death	☐ Power Outages	☐ Debris Management	☐ Sheltering Capabilities
Severe Winter Storm & Blizzard				
☐ Extreme Cold	☐ Loss of Power or Fuel	☐ Road Closures	☐ Business and School Closures	☐ Critical Access for Public Safety
☐ Cold Injuries	☐ Transportation Difficulty & Crashes	☐ Snow Management	☐ Heating Assistance	☐ Excessive Debris or Damage
Tornado & Windstorm				
☐ Injuries and Death	☐ Property Damage	☐ Debris Management	☐ Utility Damage & Restoration	☐ Maintenance of Critical Services
☐ Damage to Public Works	☐ Sheltering Capacity	☐ Infrastructure Restoration	☐ Worker Safety Concerns	☐ Home Repairs and Restoration
Utility Failure				
☐ Medical Vulnerability	☐ Special Population Vulnerability	☐ Loss of food supplies in homes	☐ Business & School Closures	☐ Livestock Management
☐ Loss of Firefighting Capacity	☐ Loss of Personal Communications	☐ Difficulty in Warning & Notification	☐ Environmental Injuries & Death	☐ Industrial Closure & Process Loss

Name:	Email:	Jurisdiction:

STRATEGY/MITIGATION ACTION SELECTION WORKSHEET

Select potential mitigation actions that you feel are MOST important. Please select no more than stated in each section.

Yes	No	Strategy
COMPLEX COORDINATED EVENT **– SELECT NO MORE THAN 3**		
		Develop and implement a program of active aggressor training for schools, retail neighborhoods, churches, and other organizations, and make it available to them to use for training their employees, customers, students, and members.
		Encourage the development of facility, institutional, and organizational threat assessment teams to identify, monitor, and respond as appropriate to threats within their organization.
		Support the installation of monitoring and surveillance tools in buildings and areas where the threat of an active aggressor is significantly present.
		Develop public education materials for county residents that give best-practice actions to take when faced with an act of aggression.
		Promote the availability and use of anonymous reporting systems to report intended acts of aggression in the jurisdiction.
DAM/LEVEE FAILURE **– SELECT NO MORE THAN 4**		
		Ensure that Emergency Management officials and first responders are familiar with dam emergency action plans, and encourage communication and joint exercises to facilitate rapid, effective response should the need arise.
		Ensure that warning and notification processes and systems are in place for an emergency at all dams.
		Evaluate or monitor (when not owned by jurisdictions) dams for structural condition and assess wear and tear regularly.
		Create, update and improve emergency action plans for dams owned by public entities, and support private sector owners in doing same.
		Continue to update and revise, or request and monitor, flood inundation maps for all high and significant hazard dams in the county.
		Assist and support dam owners/operators in identifying and procuring funding for repair and rehabilitation, using grants when available.
		Require the development and exercise of Emergency Action Plans in the jurisdiction.
DISEASE OUTBREAK **– SELECT NO MORE THAN 3**		
		Establish local guidelines for the release of local contagious disease statistics to the general public.
		Establish a local coalition of child-centered institutions (schools) to exchange current contagious disease concerns and best practices.
		Establish a public education campaign that encourages prevention of the spread of contagious disease.
		Establish reasonable inventory of protective gear for use by healthcare and first response personnel during initial stages of an outbreak.
		Initiate a public education campaign to present best practices and facts about contagious disease, vaccines, treatment and prevention.
		Establish an inventory process to be used for protective gear, medication availability, treatment centers, or other resources for use during a widespread outbreak of specific illness.
DROUGHT**– SELECT NO MORE THAN 5**		

		Encourage residents to develop personal supplies of bottled water, portable fans, portable cooling devices, household generators, and other supplies that would be useful during an extended power outage in extreme heat.
		Establish sources and bulk distribution processes for providing potable water to residents during an extended drought or water distribution outage.
		Develop water conservation plans for use during an extended drought or water shortage.
		Develop public information procedures to share drought information and recommendations with the public.
		Encourage the use of water-saving fixtures and appliances in renovation and construction.
		Construct new facilities, including reservoirs, treatment plants, and water towers where water supply is highly vulnerable to drought.
		Identify and utilize sources of raw water that are resilient to drought.
		Install dry hydrants in private and public ponds or other available bodies of water to assist with water supply for firefighting purposes.
		Expand water utilities to meet community needs, ensuring that new development does not negatively impact existing water distribution systems.
EARTHQUAKE **– SELECT NO MORE THAN 3**		
		Identify and quantify vulnerable people and property, and identify potential damages and costs from a 5.0 earthquake centrally located in the county.
		Conduct an engineered assessment of critical facility vulnerability to earthquake damages.
		Improve, retrofit, or otherwise improve resiliency of critical structures like water towers, utility poles, transformers, distribution points, and substations to be more resistant to earthquake damages.
		Develop emergency communication messages that provide specific information about what to do, where to go, and how to minimize personal vulnerability to falling objects and physical danger.
		Identify future development or business practices that will either increase or reduce vulnerability to a strong earthquake within 25 miles of any part of the jurisdiction.
EXTREME TEMPERATURES **– SELECT NO MORE THAN 3**		
		Identify and make ready community-based facilities to be used as warming/cooling centers to serve residents under extreme circumstances or during demand-induced power outages.
		Conduct a study to identify and reach the homeless population, as well as those households without adequate heat or cooling, for the purpose of communication and being able to take targeted protective actions during applicable times.
		Establish a calling point (such as 2-1-1) to serve as a conduit for people with heat or cold-related needs to contact officials and agencies in the community to provide assistance during temperature extremes.
		Create a blanket, coat, and boots donation system to provide for individuals in need during extreme cold.
		Create, encourage use of, and promote a heating/cooling assistance program for households in need during extended temperature extremes.
		Conduct a public information campaign regarding the dangers of carbon monoxide poisoning, portable heater use, household appliance uses for heat, and other measures residents-in-need might use to stay warm or cool, and put themselves in danger by doing so.
FIRE AND/OR WILDFIRE **– SELECT NO MORE THAN 4**		
		Assess adequacy of fire apparatus and equipment, and establish a plan to fill gaps and improve resources where necessary.

		Improve and expand public safety capacity with an emphasis upon new worker recruitment, optimal training and effective retention for all fire and EMS services.
		Assess the condition and adequacy of existing special rescue equipment (structural, extrication, water rescue, trench or confined space, hazmat, etc.) and monitoring and alert systems, based upon vulnerability and incident history.
		Use public information practices to heighten awareness of fire prevention, such as proper disposal of smoking materials and campfire debris, and discourages the practice of open burning, ditch bank burning, and other uses of fire to control brush, vegetation, and waste.
		Utilize grant programs to upgrade and revise building codes, regulations, and inspection capacity to reduce fire loss.
		Retrofit fire protection devices and systems into historical and aging structures that are critical to the community or the preservation of its history.
		Install sod strips, fire barriers, or other breaks that will deter fire spread in areas exceptionally vulnerable to field or wildland fires, or in recreational areas that have increased vulnerability to fire.
FLOOD **– SELECT NO MORE THAN 7**		
		Maintain, or establish where not in place or sanctioned, NFIP participation; support flood loss reduction through development, review and revision of floodplain regulations; update local resolutions pertinent to flood prevention; and participate in the development and adoption of new flood risk maps as that process occurs. Consider CRS participation where appropriate.
		Use acquisition and relocation grant programs to reduce repetitive and severe repetitive loss structure losses when property owners prefer to relocate.
		Utilize engineered devices (retention and detention ponds, storm sewers, floodwalls, berms, vegetative buffers, diversions, and others) to control flooding on commercial and residential property.
		Maintain, upgrade, repair and replace stormwater management systems and devices.
		Complete a stormwater management study and plan to provide the basis for stormwater management practices and improvements that will reduce flooding.
		Create dry dams and wetlands in low lying areas that frequently flood.
		Clear waterways of debris, obstructions, excess sedimentation, and other impediments to effective flow when the waterway is part of a maintenance program, and encourage property owners of waterways not a part of a maintenance program to do the same.
		Review, update, and enforce existing land use regulations, floodplain regulations, zoning rules, commercial building codes, and other permit processes as development tools, especially in areas with high flood vulnerability to prevent new damages due to flooding.
		Encourage management of surface runoff and chemical residue through techniques such as installation of grassy waterways, creation of infiltration basins and trenches, porous pavement installation, filtration techniques like catch basin inserts, sand and organic filters, rain gardens and vegetated filter strips.
		Work with conservancy districts and other organizations that have an interest in flood prevention and control and waterway maintenance to study countywide water drainage through the watersheds, and to identify areas where natural bottlenecks and water problems cause flood damage.
		Improve and repair roads, streets, sidewalks and bridges, culverts and berms damaged by rapid runoff, standing water, and heavy precipitation

		Create evacuation plans for high flood risk areas in the county that avoid the use of roads, bridges and areas that are quick to flood, and would likely be unsafe very early on during a flood event; share these plans with the officials, responders, and individuals who would be involved in evacuation.
		Maintain an adequate supply of rapidly deployable signs to mark flooded roadways quickly.
		Develop flash flood warning messages that give specific directions to the population about what to do, where to go, and the timing of the anticipated inundation, and call for implementing the warnings as early as the hazard it known.
HAZARDOUS MATERIALS SPILLS AND RELEASES **– SELECT NO MORE THAN 3**		
		Provide hazardous materials response training, equipment and supplies to all first responders, utilizing grant programs when available to cover the costs.
		Ensure that road signage is clear and visible to drivers, and to help limit the use of county and township roads by hazardous materials haulers to prevent road damage, wear and tear, and deterioration due to excess load weights.
		Ensure proper pre-digging procedures are followed by property owners, contractors, and technicians and that proper notifications are made in advance of the digging.
		Enforce load limits on local roads, bridges, and overpasses to prevent hazardous materials spills and releases due to overweight and improper hauling, and monitor speed as vehicles move through the controlled speed zones
		Develop specific messages and warning processes to notify the public of spills and releases, and to give them specific information about the area to avoid, protective actions they must take, and other critical information.
INVASIVE SPECIES **– SELECT NO MORE THAN 2**		
		Communicate with residents about any invasive species that is negatively affecting the jurisdiction, and identify common health and social reactions to it, as well as proper management techniques to remove or isolate the invasive species.
		Remove dead/diseased trees and vegetation from public property, and advocate for the same on private property to prevent excessive storm damage and impact to structures and property.
		Develop effective and affordable debris management procedures for trees and vegetation that have fallen due to prior damage by invasive species.
		Establish roles and responsibilities of local officials and residents regarding discovery and management of an invasive species that endangers the public welfare or property, or interferes with the preservation of natural and historical resources.
LANDSLIDE and MUDSLIDE **– SELECT NO MORE THAN 3**		
		Design and install slope protection devices and measures where properties are endangered or safety is a concern.
		Document properties that have landslide or erosion problems to identify mitigation options to reduce damages in the future.
		Issue warnings and block off roadways, when landslide or significant erosion onto the roadway is imminent or has occurred; communicate with residents and tourists regarding specific areas to avoid.
		Modify building codes to require mitigation efforts when structures are built on high banks that have increased risk of landslide and mudslide.
		Establish local guidance to identify factors that make a property vulnerable to landslide, and that identifies mitigation measures that are considered best practices to alleviate some of the risk.
LAND SUBSIDENCE AND EROSION **– SELECT NO MORE THAN 3**		
		Develop an inventory of properties that experience excessive erosion and/or land subsidence, such as sinkholes or other collapse.

		Develop an inventory of local abandoned mines, abandoned gas and oil wells, or other abandoned below-ground structures that may contribute to collapse or deterioration in the future.
		Incorporate soil studies into community development activities.
		Advocate crop rotation, buffer strips, cover drops and other conservation practices to protect topsoil from wind and water damage.
		Issue warnings and block off roadways, when landslide or significant erosion onto the roadway is imminent or has occurred; communicate with residents and tourists regarding specific areas to avoid.
SEVERE THUNDERSTORMS, WINDSTORMS, WINTER STORMS AND TORNADO **– SELECT 7**		
		Improve warning and notification systems for better overall coverage as well as to expand the options for receiving messages to include a variety of digital systems, wireless systems, and fixed devices to warn the public of dangerous weather, including systems that will reach tourists and others who are in the county temporarily.
		Provide emergency communication about specific protective action procedures, including evacuation and shelter sites, storm timelines, warning and notification sources, and basic survival needs during extreme cold or severe storms.
		Use grant programs and other public funding to construct safe rooms, or to retrofit areas as safe rooms in high-occupancy structures, or to support safe room construction by property owners.
		Provide shelters, cooling/warming centers and comfort stations with equipment and supplies, using grants when possible.
		Expand and improve communication systems to help first responders, public officials, and other critical providers communicate with one another during emergency response to severe weather.
		Develop storm resilience through the installation of generators and other alternate power systems for use after severe storms and weather, especially at critical facilities and shelters, when power outages occur.
		Use surge protection devices to protect equipment in public offices, and in buildings where critical equipment is stored and maintained, and equip these buildings with lightning detection devices.
		Manage and remove debris and obstructions from ditches and rivers after storms to improve drainage of storm water.
		Maintain public property and retrofit or repair damages with storm-resistant material, when possible, and secure foundations of temporary or modular or mobile buildings, advocating that private property owners do the same for their property.
		Work with owners and operators of residential facilities that house elderly, disabled, those rehabilitating from injury, persons recovering from addictions or poverty, or those with ongoing mental illness to establish emergency plans to protect, shelter, and care for their clients during a significant storm, disaster, utility outage, evacuation, shelter in place, or another emergency.
		Establish a county-wide evacuation assessment for residential facilities that indicates which facilities are self-sufficient, which would need external help and what kind of help they would need, and which ones would need to shelter in place due to circumstances that would make evacuation impractical.
		Develop a plan and resources to assist elderly, disabled, and disadvantaged persons with snow removal, debris removal, and property clean up after severe storms.
		Work with vehicle owners who could help mobility challenged individuals or others who do not have vehicles in disasters, including four-wheeled drive, multi-passenger, wheelchair accessible, and others to create transportation strike teams for disaster response, when necessary
		Develop methods to prevent contamination of waterways or aquifers during snow removal and salting icy roads
UTILITY AND INFRASTRUCTURE FAILURE **– SELECT 5**		

		Protect groundwater resources by supporting and requiring wise management of crop, lawn care and other facility use of chemicals such as pesticides and fertilizers.
		Repair, refurbish, replace or install water distribution pumps and storage facilities, or improve distribution systems
		Support and enforce septic system regulations that make the systems more resilient to disaster impacts
		Support reasonable chemical, fertilizer, pesticide, and manure management programs that protect groundwater and waterways from contamination.
		Support the installation of wind-resistant power poles, water towers, communication towers, and so forth.
		Repair, replace and improve roads, berms, culverts, bridges and drainage systems to more aptly handle heavy stormwater loads and to enhance drainage of critical areas.
		Assess the condition of generators, as well as identify gaps where generators are needed, and repair, upgrade or replace aging equipment as needed.
		Ensure that redundant fuel supply is available for long-term generator operation in an extended power outage incident.
		Utilize land use planning and comprehensive community planning to ensure the availability of resilient utilities to new businesses, residential areas, and other new construction areas.
SOCIAL VULNERABILITY **– SELECT 2**		
		Review, update and improve the Emergency Operations Plan so that difficult-to-serve and disadvantaged populations are served in disasters, and that agencies and departments charged with serving them are prepared to do so without a gap in the services provided to these individuals.
		Advocate for pro-active behavioral health services to provide an ongoing continuum of care during disasters that mirrors their care at other times.
		Establish post-disaster recovery messages to assist people with specific needs, such as medical assistance, transportation, children's services, sensory devices, assistant with mental health or financial assistance
		Create linguistically appropriate, understandable and complete emergency communication messages for county population, and identify resources to use in communicating with non-English speaking tourists and others; these messages will be provided to dispatchers for their use as needed.
COMMUNITY RESILIENCE AND RECOVERY **– SELECT 3**		
		Create a Continuity of Government or Continuity of Business plan, as appropriate, that provides hard copies of critical documents, redundant storage of documents, succession of duties identification, and prioritizes critical activities to maintain services through a long-term incident.
		Incorporate mitigation measures into emergency operations plans, comprehensive plans, economic and community development plans, school emergency plans, resource guides, and other community growth and operation documents to facilitate the accomplishment of mitigation goals.
		Enhance and multiply the role Emergency Management plays in community development to improve efforts to reduce disaster damages.
		Monitor, improve, and revise development guidance to require development in disaster-prone areas to build or renovate with mitigation measures emphasized, enforced, and otherwise required.
		Require businesses or institutions that build in disaster-prone areas to submit mitigation and emergency response measures to the jurisdiction as part of the development process.