

2.2.4 Earthquake

An earthquake is a sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of the Earth's tectonic plates.				
RISK  HIGHEST HIGH MEDIUM LOW LOWEST	Period of Occurrence:	Earthquakes can occur at any time	Risk Ranking:	Low
	Warning Time:	None	Type of Hazard:	Natural
	Probability:	Remote (Unlikely to occur during a year)	Impact:	Localized (Less than 10% of land are affected)
	Disaster Declarations:	None		

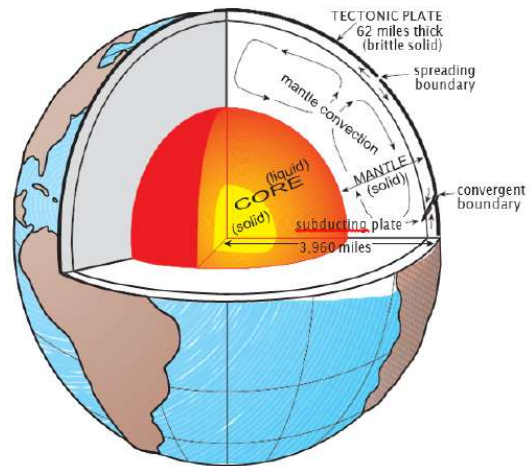
Hazard Introduction and Overview

Earth consists of four layers: the inner core (innermost layer), outer core, mantle, and crust (outermost layer). Figure 2.2.4.a provides a three dimensional representation of the earth's layers.

Further, the crust consists of many tectonic plates that are slowly moving, sliding past, and bumping into one another. Most earthquakes originate along the edges of these tectonic plates, called fault lines. The rough edges of the tectonic plates become lodged against each other. When a plate moves enough, the edges become dislodged, causing an earthquake. The epicenter of the earthquake is the location directly above the ruptured fault. (USGS, n.d.).

Some earthquakes have foreshocks, which are smaller earthquakes that happen at the same location as the larger earthquake that follows. The largest, main earthquake is called the main shock, which always has aftershock that follow. Current technology does not allow scientists to determine that an earthquake is a foreshock until the larger earthquake follows. Regulators and researchers have documented earthquakes induced by human activity in the United States, Japan, and Canada. The cause of these human-caused earthquakes was the injection of fluids into deep wells for waste disposal and secondary recovery

Figure 2.2.4.a



Interior zones of Earth. Earth's crust consists of great plates that slowly move across the surface of Earth in response to convection cells in the mantle. Most earthquakes occur where plates meet, such as at spreading or convergent boundaries. Modified from Washington Division of Geology and Earth Resources, Information Circular No. 85, 1988.

Source: Educational Leaflet No. 9 Revised Edition
2015 Division of Geological Survey

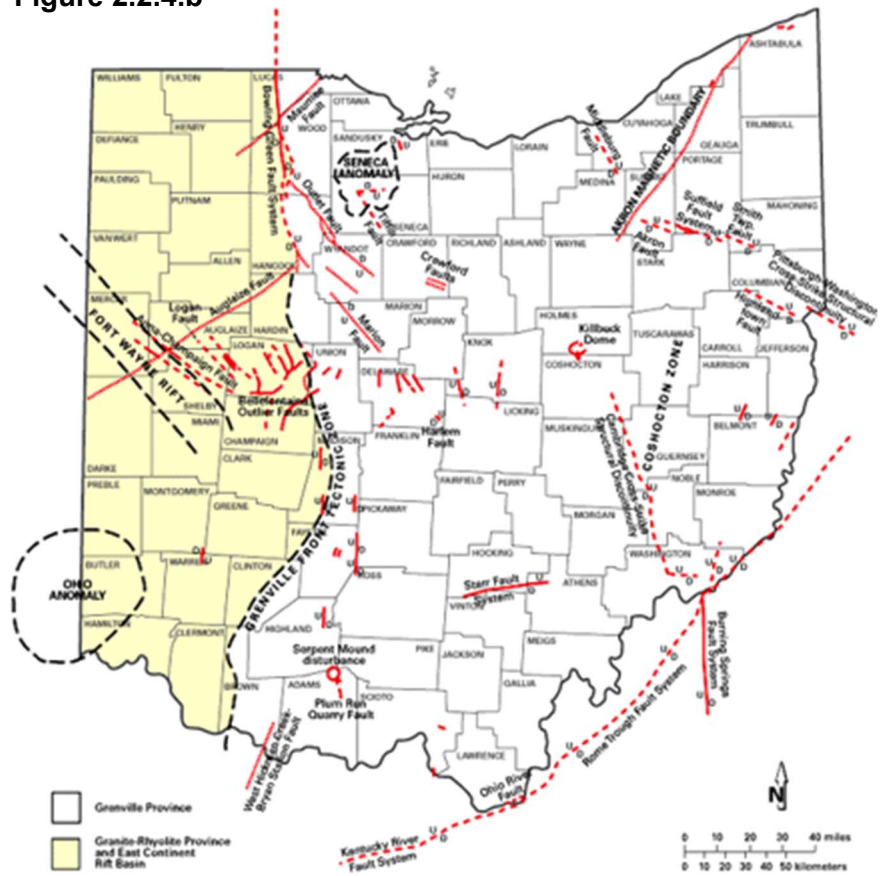
of oil and filling large reservoirs for water supplies. Deep mining and nuclear testing can also cause small to moderate quakes. A common misconception is that hydraulic fracturing, or “fracking,” is causing *all* of the induced earthquakes. Fracking “is directly causing a small percentage of the induced earthquakes felt by humans in the United States. Most induced earthquakes in the United States are a result of the deep disposal of fluids (wastewater) related to oil and gas production” (Rubinstein and Mahani, 2015).

Location and Extent

Earthquakes are more widespread than is often realized. The area of greatest seismic activity in the United States is along the Pacific Coast, in the states of California and Alaska; however, as many as 40

states have moderate earthquake risk. Although most people do not think of Ohio as an earthquake-prone state, at least 170 earthquakes with epicenters in Ohio have been felt since 1776, and 14 of these have caused “minor to moderate” damage in Ohio. Ohio is on the periphery of the New Madrid Seismic Zone, an area in Missouri and adjacent states that was the site of the largest earthquake sequence to occur in historical times in the continental United States.

Figure 2.2.4.b



Earthquake epicenters occur on fault lines; however, their effects can be felt miles away. Although Ohio is not considered to be at high risk for earthquakes, there are several fault lines, some well-known and some speculative, traversing the state.

Figure 2.2.4.b illustrates fault lines in Ohio and was modified by the USGS from a Division of Geological Survey Map PG-23. This map portrays a number of deep faults and other structures

that have been identified by a variety of geologic studies. Very few of the faults are visible at the surface. Clermont County is located within the Granite-Rhyolite Province and East Continent Rift Basin and is just west of the Grenville Front Tectonic Zone. Southern Ohio has experienced more than 30 earthquakes. Clermont County could be impacted by two separate geological fault systems. The Cincinnati Arch is one such fault and last contributed to an earthquake felt in Clermont County in 1875.

According to the Ohio Earthquake Epicenters interactive map provided by the Ohio Department of Natural Resources – Division of Geological Survey there have been five earthquakes epi-centered in Clermont County since 1804. The majority of these earthquakes were centered between the Villages of Batavia and Owensville. The Division of Geological Survey also monitors a seismograph station as part of the OhioSeis Network located at the Stonelick State Park in northeastern Clermont County. The station was installed in July 2018 and sits atop stiff clay soils above Ordovician-age bedrock, 25 miles northeast of Cincinnati.

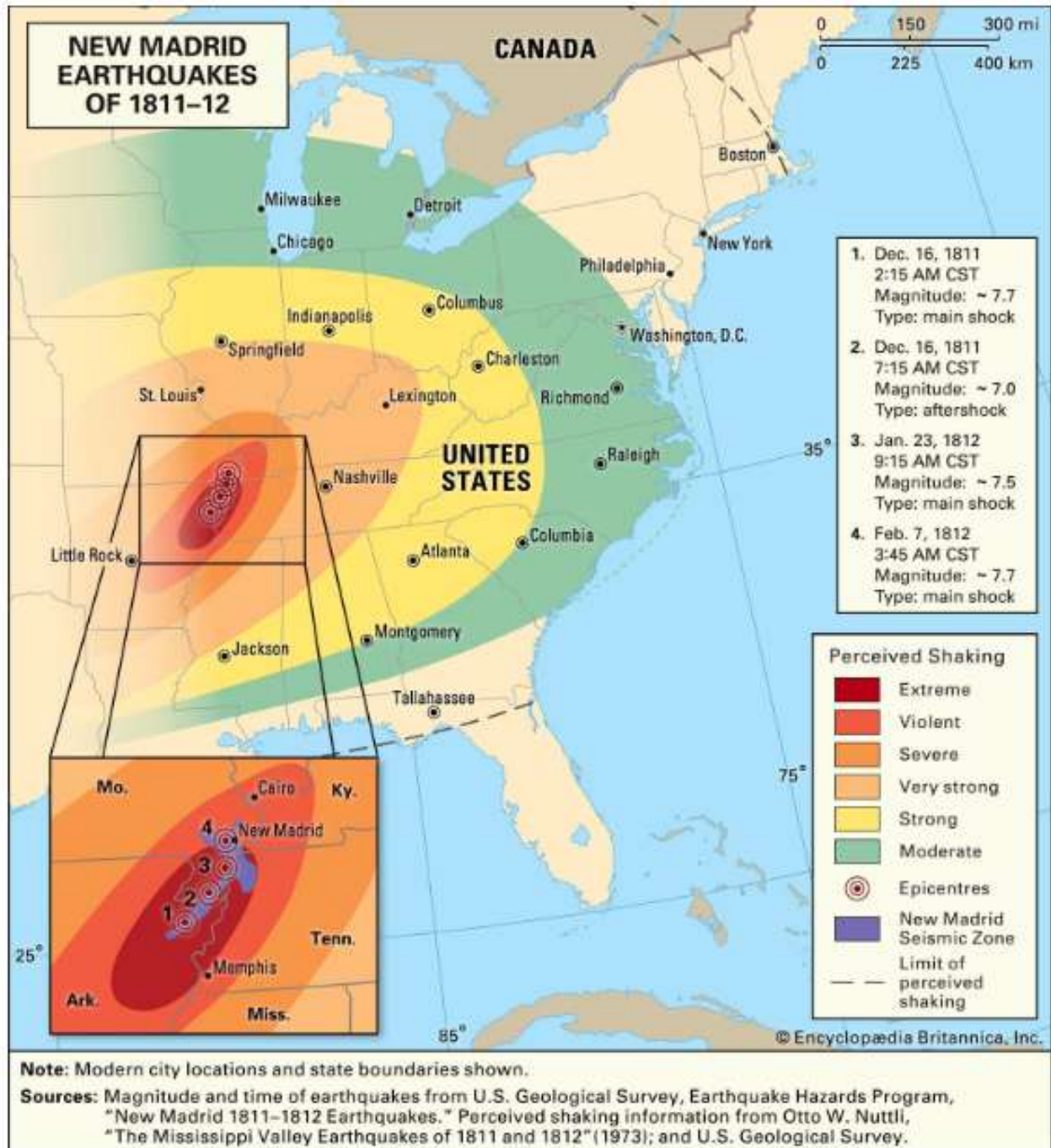
Although there are numerous intensity scales to evaluate the effect of earthquakes, the Modified Mercalli Intensity Scale (MMI) is the scale currently used in the U.S. The MMI was developed in 1931 by seismologists Harry Wood and Frank Neumann. The MMI scale assigns value to a site after an earthquake based on observed effects, ranging from acceptable to catastrophic. The MMI scale is shown in Figure 2.2.4.c below.

Figure 2.2.4.c

MODIFIED MERCALLI AND MAGNITUDE SCALE COMPARISON		
	<i>Modified Mercalli Scale</i>	<i>Magnitude Scale</i>
I	Felt by few people under especially favorable conditions.	1.5
II	Felt by few persons at rest, especially on upper floors of buildings.	2.0
III	Felt quite noticeably indoors, especially on upper floors of buildings. Many do not recognize it as an earthquake. Standing vehicles may rock slightly. Vibration feels like passing truck.	2.5
IV	During the day felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation of a heavy truck striking building; standing vehicles rock noticeably.	3.0
V	Felt by nearly everyone; many awakened. Some dishes and windows broken. Unstable objects overturned.	3.5
VI	Felt by all; many frightened. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.	4.0
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by vehicle drivers.	4.5
VIII	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. Disturbs	5.0
IX	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. Underground pipes broken.	5.5
X	Some well-built wooden structures are destroyed; most masonry and frame structures with foundations destroyed; train rails bent.	6.0
XI	Few, if any, masonry structures remain standing. Bridges destroyed. Underground pipelines taken out of service. Train rails bent greatly.	6.5
XII	Damage total. Waves seen on ground surfaces. Lines of sight and level are distorted. Objects thrown into the air.	7.0

Scientific studies regarding earthquakes have identified the potential for a major incident occurring within the New Madrid Seismic Zone. Based on data from the New Madrid earthquake of 1811 and 1812, all of Clermont County could perceive strong shaking and the southwestern portion of the county could experience very strong shaking in the event of an earthquake with the same magnitude occurring. (Britannica.com, n.d.).

Figure 2.2.4.d



Impacts and Vulnerability

The severity of the effects of earthquakes are dependent on the amount of energy released from the fault or epicenter. The effects of an earthquake can be felt far beyond the site of its occurrence. They usually occur without warning and after just a few seconds can cause massive damage and extensive casualties. Common effects of earthquakes are ground motion and shaking, surface ruptures, and ground failure. The most significant human risk during an earthquake is structure movement and collapse. Contents within structures may fall or fail and injure or kill occupants inside of the structures.

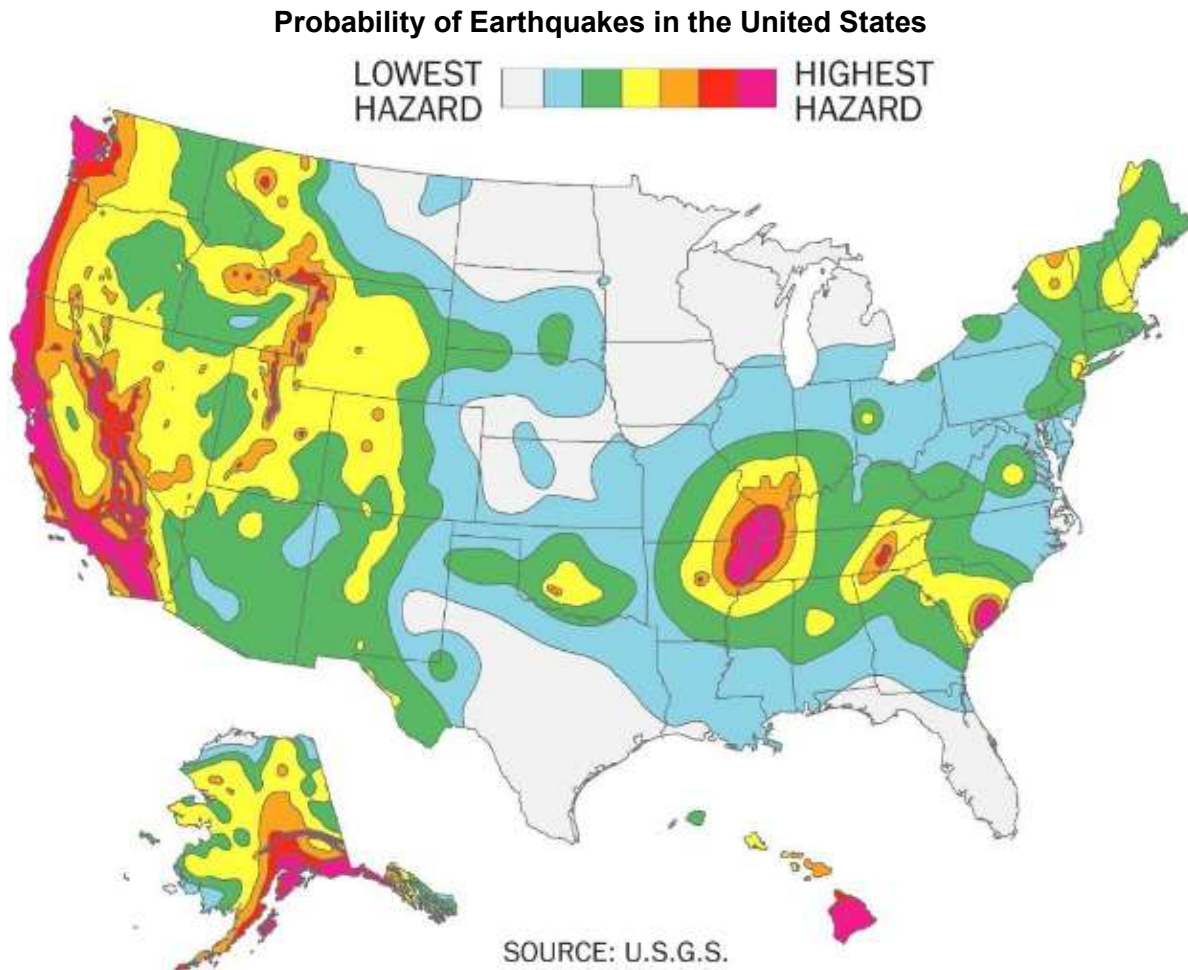
Earthquakes can affect people and structures alike, although older structures may be more susceptible to cracks and damage. "With most earthquakes, trauma caused by the collapse of buildings is the cause of most deaths and injuries. However, a surprisingly large number of patients require acute care for non-surgical problems such as acute myocardial infraction, exacerbation of chronic diseases such as diabetes or hypertension, anxiety and other mental health problems, respiratory disease from exposure to dust and asbestos fibers from rubble, and near-drowning resulting from significant, rapid flooding as a result of dam or levee failures.

Earthquakes can cause a variety of cascading effects, including fires due to broken electrical lines and gas mains, structural damage and utility and communication system outages, they can trigger landslides, and, less commonly, tsunamis. Ground shaking refers to the vibration of the ground during an earthquake. Generally, the severity of ground shaking increases as magnitude increases, and decreases as distance from the causative fault increases.

The largest magnitude earthquake epi-centered in Clermont County was a magnitude 2.9, occurring on May 5th, 1804, near the Village of Batavia. This earthquake measured III on the Modified Mercalli Intensity Scale. This magnitude earthquake would not likely result in damage to buildings; however, it would be noticeable felt indoors especially by those on upper floors, standing vehicles may rock slightly, ground vibrations would be similar to a large truck passing by.

The USGS has placed Clermont County in the second lowest hazard area regarding probability of earthquakes in the United States, see the map below (Figure 2.2.4.d) . Further, historical data indicates that when earthquakes occur, there are typically of a low magnitude resulting in no damages.

Figure 2.2.4.e



Historical Occurrences

The Ohio Department of Natural Resources-Division of Geological Survey maintains the Ohio Earthquake Epicenters Database, which lists all earthquakes detected in Ohio. According to the database, there has been five earthquake epi-centered in Clermont County since 1804, as illustrated in Table 2.2.4.1 and Figure 2.2.4.e below. The most recent earthquake epi-centered in Clermont County occurred on August 31, 2025. The highest magnitude earthquake to occur in the county was a 2.9 magnitude, which occurred on May 5, 1804. There has not been any recorded earthquake events that have resulted in damages or human impact in Clermont County.

Table 2.2.4.1

Clermont County Earthquake Epicenters			
Date	Location	Magnitude	MMI Rating
May 5, 1804	Approximately 5,000 feet north of Clermont County Animal Shelter	2.9	III
September, 1859	Approximately 2 miles north of Clermont County Airport	2.5	Felt
1864	Approximately 1.3 miles north of UC Clermont College	2.5	Felt
September 17, 2018	Approximately 2,240 feet east of Beckjord / Nelp Road intersection	1.5	NF
December 24, 2024	Approximately 3.5 miles north of Williamsburg	0.90	NF

Source: Ohio Earthquake Epicenters, ODNR-Division of Geological Survey, Ohio Seismic Network

1 – NF = Not Felt

Figure 2.2.4.f

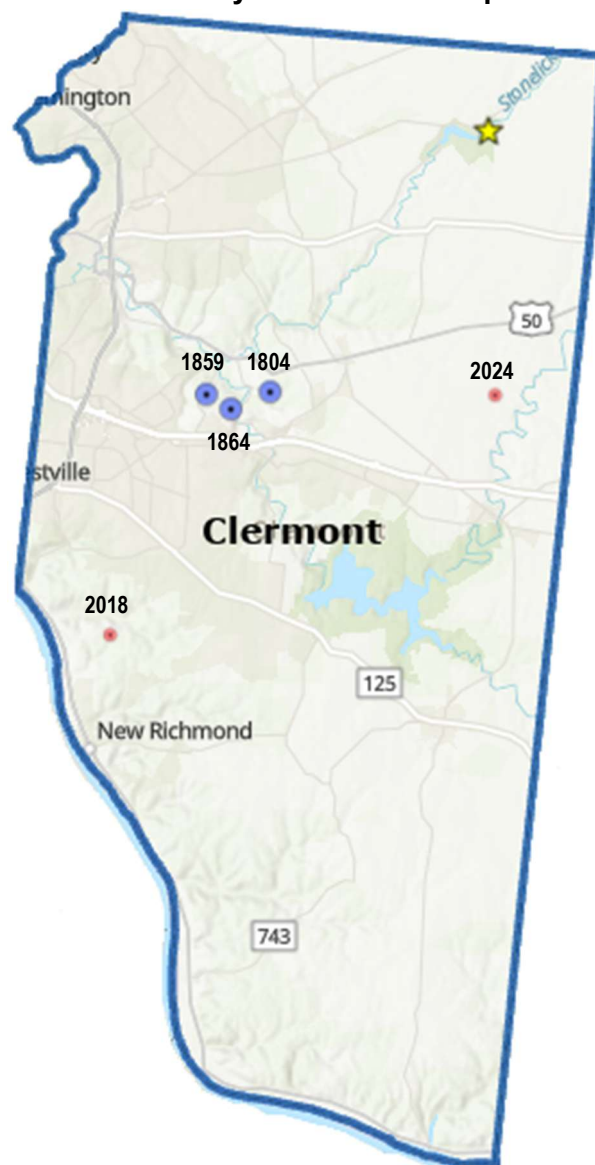
Clermont County Historical Earthquakes

Cincinnati Earthquake – August 31, 2025

On Sunday, August 31, 2025, a magnitude 2.5 earthquake was detected in Springsboro which is northeast of Greater Cincinnati, near Interstate 75. The event was centered about 7.6 miles below the Earth's surface and was likely not felt by many, though some residents in areas near Interstate 75, towards Franklin, may have experienced minor shaking.

Loss and Damages

All USGS and OhioSeis descriptions of earthquakes indicate that there have been no major losses or damages to structures or people, only minor damage such as cracked plaster or glass. Information obtained from FEMA's National Risk Index (NRI) was utilized to assess earthquake impacts for each participating jurisdiction.



Source: ODNR-Division of Geological Survey

Table 2.2.4.2

Clermont County Earthquake NRI Exposure / Expected Annual Loss Estimates					
<i>Census Tract</i>	<i>Exposure (Buildings)</i>	<i>Exposure (Population)</i>	<i>Expected Annual Loss (Buildings)</i>	<i>Expected Annual Loss (Population Equivalence)</i>	<i>Expected Annual Loss (Total)</i>
39025040101	\$565,956,000	5,071	\$20,093	\$10,346	\$30,439
39025040102	\$296,082,000	2,655	\$11,120	\$4,773	\$15,893
39025040202	\$332,263,000	2,215	\$9,809	\$3,077	\$12,887
39025040203	\$1,022,057,000	6,230	\$29,278	\$10,924	\$40,202
39025040205	\$341,667,000	3,192	\$9,527	\$3,234	\$12,761
39025040206	\$894,642,000	4,463	\$40,111	\$8,220	\$48,331
39025040301	\$889,854,000	3,979	\$11,599	\$2,570	\$14,169
39025040302	\$950,558,000	3,900	\$17,039	\$3,635	\$20,674
39025040303	\$1,429,178,000	7,628	\$23,036	\$5,349	\$28,385
39025040401	\$968,143,000	3,349	\$14,467	\$2,924	\$17,391
39025040403	\$499,134,000	2,786	\$16,437	\$4,891	\$21,328
39025040404	\$988,877,000	3,974	\$21,750	\$5,964	\$27,714
39025040405	\$549,067,000	3,101	\$6,241	\$1,353	\$7,595
39025040500	\$1,064,895,000	5,082	\$15,294	\$3,624	\$18,918
39025040600	\$1,669,444,000	7,439	\$27,709	\$6,365	\$34,074
39025040702	\$565,200,000	4,351	\$15,412	\$6,635	\$22,046
39025040703	\$538,176,000	3,479	\$13,834	\$5,000	\$18,834
39025040704	\$624,057,000	3,949	\$18,566	\$6,476	\$25,042
39025040800	\$959,827,000	5,663	\$25,062	\$8,732	\$33,794
39025040900	\$1,041,839,000	5,682	\$42,438	\$11,972	\$54,410
39025041001	\$970,099,000	5,873	\$26,196	\$5,960	\$32,157
39025041002	\$894,312,000	3,092	\$22,993	\$4,810	\$27,803
39025041101	\$613,662,000	3,411	\$10,021	\$3,250	\$13,271
39025041102	\$957,985,000	5,352	\$24,419	\$9,595	\$34,014
39025041104	\$710,091,000	3,822	\$28,986	\$11,898	\$40,884
39025041105	\$610,080,000	6,110	\$15,659	\$5,072	\$20,731
39025041201	\$525,613,000	4,125	\$7,844	\$2,474	\$10,318
39025041202	\$1,271,834,000	5,024	\$51,657	\$9,269	\$60,926
39025041303	\$704,811,000	5,036	\$19,007	\$5,990	\$24,997
39025041304	\$26,504,000	23	\$1,145	\$69	\$1,214
39025041305	\$815,187,000	5,269	\$16,941	\$4,234	\$21,174
39025041306	\$1,086,982,000	5,438	\$55,880	\$15,103	\$70,983
39025041307	\$948,007,000	4,904	\$22,208	\$5,737	\$27,945

Clermont County Earthquake NRI Exposure / Expected Annual Loss Estimates					
Census Tract	Exposure (Buildings)	Exposure (Population)	Expected Annual Loss (Buildings)	Expected Annual Loss (Population Equivalence)	Expected Annual Loss (Total)
39025041403	\$704,705,000	4,378	\$30,011	\$9,770	\$39,781
39025041404	\$648,422,000	4,834	\$18,289	\$5,669	\$23,958
39025041405	\$611,770,000	5,384	\$17,100	\$6,677	\$23,777
39025041406	\$1,115,869,000	5,230	\$10,828	\$2,079	\$12,907
39025041503	\$597,853,000	4,730	\$21,506	\$7,412	\$28,919
39025041504	\$724,969,000	3,967	\$25,205	\$8,338	\$33,543
39025041505	\$677,702,000	3,600	\$9,402	\$2,879	\$12,281
39025041506	\$533,323,000	2,799	\$8,742	\$2,093	\$10,835
39025041600	\$825,958,000	5,533	\$17,530	\$6,032	\$23,562
39025041701	\$483,856,000	4,308	\$19,979	\$9,044	\$29,023
39025041702	\$474,665,000	3,223	\$9,998	\$3,255	\$13,253
39025041800	\$555,989,000	3,637	\$23,412	\$8,705	\$32,117
39025041900	\$791,501,000	5,525	\$29,784	\$10,677	\$40,461
39025042001	\$505,791,000	3,412	\$14,784	\$6,277	\$21,061
39025042002	\$499,137,000	2,374	\$16,411	\$3,701	\$20,112
Grand Totals	\$36,077,593,000	208,601	\$964,756	\$292,136	\$1,256,893

Source: USDHS/FEMA – The National Risk Index, Version 1.19

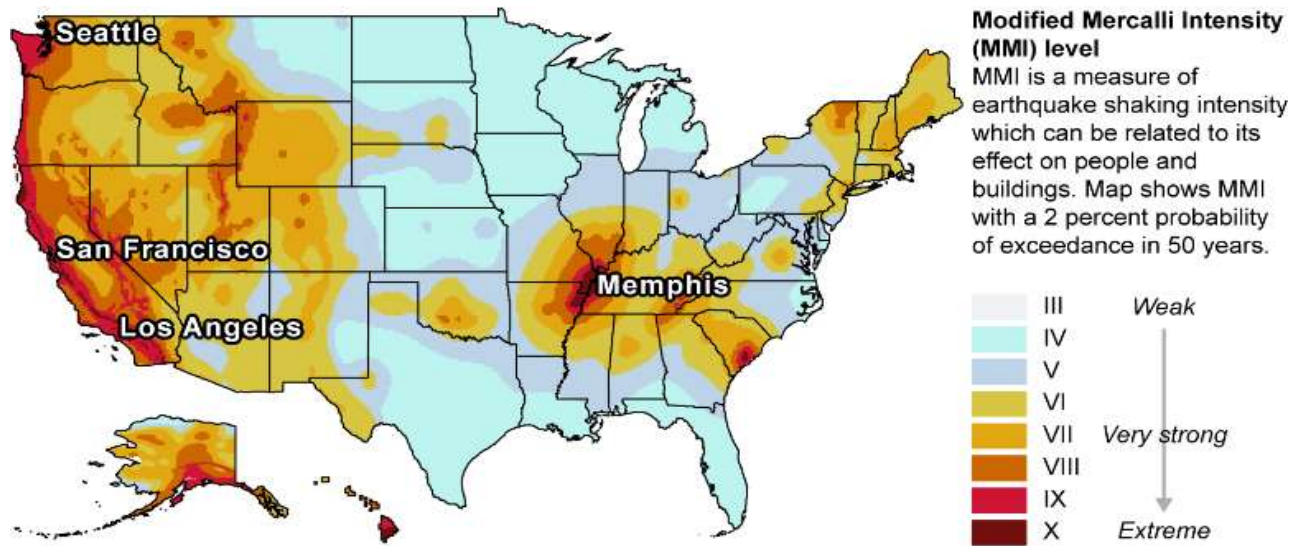
Future Occurrences

While not commonly considered an earthquake-prone area, the southwest region of Ohio does experience seismic activity. According to the USGS database, Clermont County has a low seismic hazard level. The USGS database indicates that there is a two percent (2%) chance of a potentially damaging earthquake occurring within the next 50 years in Clermont County.

Future occurrences of earthquakes in the southwest region of Ohio are relatively low and remain a moderate-priority concern. Of the six historical earthquakes to be epi-centered in Clermont County three were felt by humans.

In a study examining risks to federal buildings, the Government Accountability Office (GAO) included a map illustrating MMI level earthquakes with a 2% probability of exceedance in 50 years. For reference “A 2% in 50 year probability equates to an earthquake recurring and exceeding a given MMI level about every 2,475 years.” As can be seen on the map below (Figure 2.2.4.f) all of Clermont County is within a maximum MMI V level.

Figure 2.2.4.g



Source: GAO presentation of U.S. Geological Survey mapping; MapInfo (map). | GAO-16-680

Risk Assessment

This section summarizes the vulnerability of Clermont County to earthquake. The county conducted an online survey for the public to share its thoughts on the hazards listed in this plan. The following table presents the results of that survey, specifically regarding earthquake.

Table 2.2.4.3

Public Sentiment, Earthquake					
Hazard	Level of Concern				Total Responses
	Not at All	Somewhat	Concerned	Very	
EARTHQUAKE	34 (65.38%)	13 (25.0%)	4 (7.69%)	1 (1.93%)	52
In the past five years, do you remember this hazard occurring in your community?				0 (0.00%)	52
Have you noticed an increase in the occurrences or intensity of this hazard?				5 (9.62%)	52
Have you noticed a decrease in the occurrences or intensity of this hazard?				0 (0.00%)	52

Source: Online Public Survey Results

The following table assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above. The categories in the table appear in Ohio EMA's Mitigation Information Portal (MIP) tool.

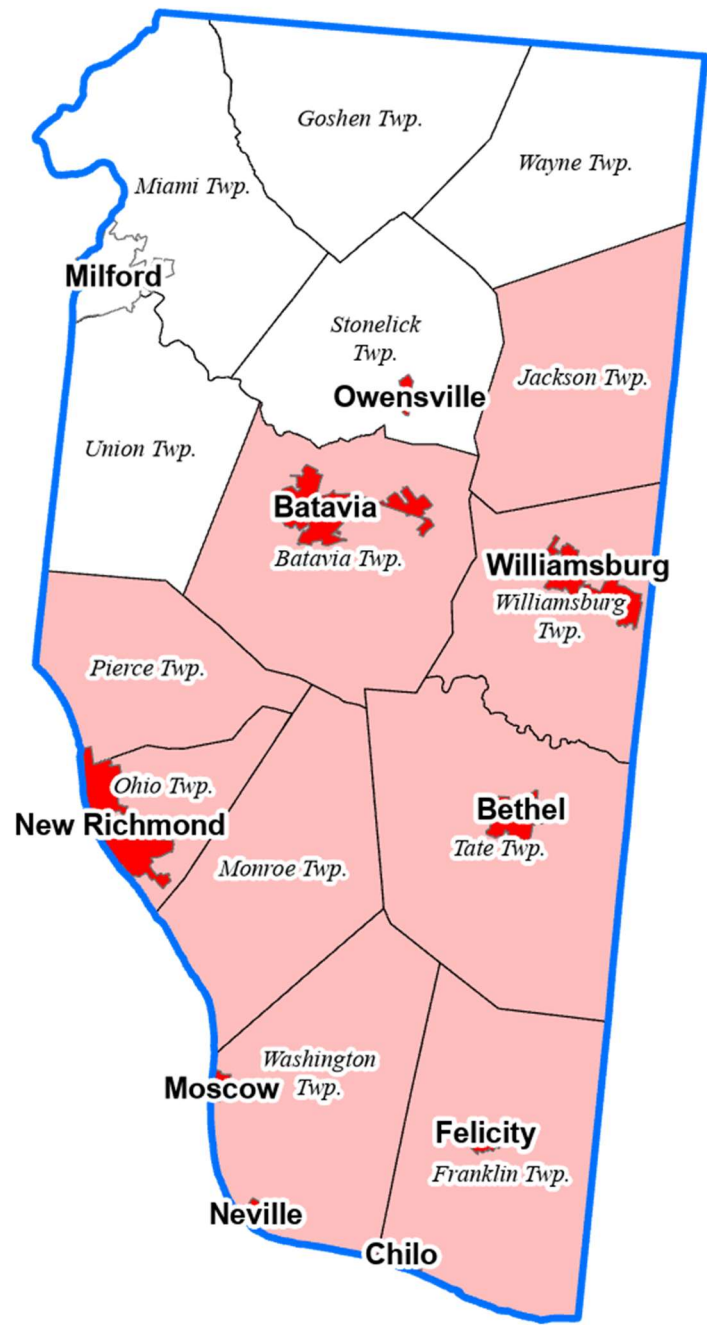
Table 2.2.4.4

Risk Ranking, Earthquake			
Category	Points	Description	Notes
Frequency	2	Remote (Unlikely to occur during a year)	Six recorded occurrences in 221 years creates an average of 0.02 events per year.
Response	2	One day	Data suggests that earthquakes in Clermont County have been of a low magnitude and have caused no reported damage.
Onset	5	No warning	Earthquakes occur with no warning.
Magnitude	1	Localized (<10% land area affected)	The largest earthquake event in Clermont County was a 2.9 magnitude with a MMI rating of III. This event did not result in any reported damages.
Business	1	Less than 24 hours	No historical earthquakes have disrupted the county's economy.
Human	1	Minimum (Minor injuries)	Past earthquakes in Clermont County have been low magnitude and have not caused any human injuries or deaths.
Property	1	Less than 10% property affected	Earthquakes in Clermont County have been low magnitude and have caused no reported property damage.
Totals	13	LOW	

FEMA's *Local Mitigation Planning Handbook* (2023c) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. The following map identifies those multi-jurisdictional risks concerning earthquake. Those labels not underlaid by a shaded drop shadow are not more or less at risk of earthquake. Those with red drop shadows are more at risk.

Figure 2.2.4.h

Earthquake Multi-Jurisdictional Risk Map



2.2.5 Extreme Temperatures

In most of the United States, extreme heat is defined as a long period (two to three days) of high heat and humidity with temperatures above 95 degrees (Ready.gov, 2023). Extremely cold involves temperatures that are 10-15 degrees below average and are dangerous to human health.				
	RISK	Period of Occurrence:	At any time, typically during the middle summer and middle winter months	Risk Ranking: Low
		Warning Time:	Over 24 hours	Type of Hazard: Natural
		Probability:	Occasional (May or may not occur in a year)	Impact: Less than 10% of property affected
		Disaster Declarations:	USDA FSA S3344 (2012) – Excessive Heat USDA FSA S4589 (2019) – Excessive Heat USDA FSA S4732 (2020) – Excessive Cold	

Hazard Introduction and Overview

The extreme temperature hazard includes both extreme heat and cold. Temperatures can vary widely over a year, but each season is associated with general, expected temperature fluctuation. Summer and winter will generally have the highest and lowest temperature ranges, respectively. *Extreme* temperatures are 10 degrees above or below the average high or low temperature for an area. For example, an *extremely* cold temperature for Clermont County would be below 13° F in January (based on the average minimum January temperature of 23° F [NOAA NCEI, 2025]). Those temperatures above 96° F in July (per the average maximum of 86° F [NOAA NCEI, 2025]) would constitute an *extremely* hot temperature. Ready.gov uses a slightly different definition for extreme heat, identifying it as “a period of high heat *and humidity* with temperatures above 95 degrees *for at least two to three days*” (Ready.gov, 2023, emphasis added). Significantly, this definition adds a time element and the moderating variable of humidity. Duration can be significant in that the inability to get relief from the extreme temperatures contributes to the impact.

The National Weather Service (NWS) chart below shows the various temperatures and humidity levels that can be dangerous to humans and animals. These conditions can also have serious impacts on crops, causing below-average harvests. Repeated years of extreme temperatures can easily cause significant economic impacts on agricultural industries.

Table 2.2.5.1

NOAA's National Weather Service Heat Index																	
Temperature (°F)																	
Relative Humidity (%)		80	82	84	86	88	90	92	94	96	98	10	102	104	106	108	110
	40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
	45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
	50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
	55	81	84	86	89	93	97	101	106	112	117	124	130	137			
	60	82	84	88	91	95	100	105	110	116	123	129	137				
	65	82	85	89	93	98	103	108	114	121	128	136					
	70	83	86	90	95	100	105	112	119	126	134						
	75	84	88	92	97	103	109	116	124	132							
	80	84	89	94	100	106	113	121	129								
	85	85	90	96	102	110	117	126	135								
	90	86	91	98	105	113	122	131									
	95	86	93	100	108	117	127										
	100	87	95	103	112	121	132										
Likelihood of heat disorders with prolonged exposure or strenuous activity																	
		Caution			Extreme Caution			Danger			Extreme Danger						

Extremely cold temperatures are immediately dangerous to both humans and livestock by causing frostbite and hypothermia, which can lead to permanent injury and death. The chart below, again from the NWS, shows how quickly frostbite can occur at different temperatures and wind speeds. In unprotected structures, cold temperatures can freeze water pipes causing them to burst upon thawing, leading to significant damage. Cold snaps during typically warmer weather during the growing season can damage and destroy some crops, depending on their sensitivity to temperature.

Table 2.2.5.2

NOAA's National Weather Service Windchill Chart																			
Wind (mph)	Temperature (°F)																		
	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-76	-80	-87
	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
	45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
	50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
	55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
	60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98
Frostbite Times																			
						30 Minutes		10 Minutes		5 Minutes									

Location and Extent

Extreme temperatures can affect all participating jurisdictions throughout the county. The average minimum temperatures, referenced above, taken from data reporting average January low and July high temperatures between 1895 and 2024, are 23° F and 86° F (NOAA NCEI, 2025). The lowest reported average January temperature from the NOAA NCEI data was 20.8° F (in 2025), and the highest average July temperature was 87° F (in 1934).

The following data was obtained from the Wilmington, Ohio National Weather Service (NWS), it provides the number of heat and cold weather advisories and warnings issued for Clermont County from 2020 to 2025.

Table 2.2.5.3

Clermont County Extreme Temperature Advisories and Warnings (2020 – 2025)						
Advisory / Warning	2020	2021	2022	2023	2024	2025
Heat Advisory	2	3	8	2	0	5
Excessive Heat Warning	0	0	1	3	0	0
Totals	2	3	9	5	0	5
Cold Weather Advisory*	--	--	--	--	0	3
Wind Chill Advisory	0	0	1	0	0	0
Wind Chill Warning	0	0	1	0	0	0
Totals	0	0	2	0	0	3

Source: National Weather Service – Wilmington, OH * Cold Weather Advisory began winter of 2024-2025

The National Weather Service, in collaboration with local partners, issues several heat-related products as conditions warrant. Descriptions of those products are contained in the Table 2.2.5.4 below.

Table 2.2.5.4

NWS, Heat-Related Products	
<i>Product</i>	<i>Description</i>
Excessive Heat Warning	Issued within 12 hours of extremely dangerous heat conditions. Issued when the maximum heat index temperature is expected to be 105°F or higher for at least two days and nighttime air temperatures will not drop below 75°.
Excessive Heat Watch	Issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A watch is used when the risk of a heatwave has increased, but its occurrence and timing are still uncertain.
Heat Advisory	Issued within 12 hours of the onset of extremely dangerous heat conditions. This Advisory is issued when the maximum heat index temperature is expected to be 100°F or higher for at least two days, and nighttime temperatures will not drop below 75°.
Excessive Heat Outlook	Issued when the potential exists for an excessive heat event in the next 3-7 days. Provides information to those who need considerable lead time to prepare for an event.

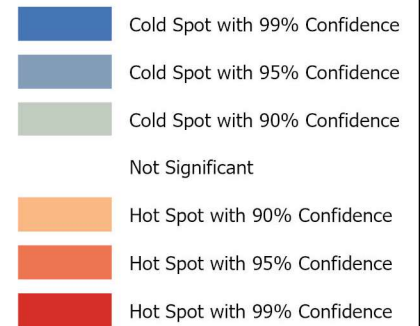
A potential variable to consider is the urban heat island. Urban heat islands occur when urbanized areas replace natural land cover with dense concentrations of pavement, buildings, and other surfaces that absorb and retain heat. Urbanized areas experience higher temperatures than outlying rural areas as these buildings, infrastructure, etc. absorb and re-emit the sun's heat. Daytime temperatures in urban areas can be approximately 1° to 1.7° F higher than temperatures in more rural areas, and nighttime temperatures can be between 2° and 5° F higher (USEPA, 2023). These conditions thus exacerbate heat events.

Though Clermont County does not have urban areas as one thinks of relating to major U.S. cities, portions of the county are more *urbanized* than others. The following graphic estimates areas susceptible to the urban heat island effect in the county. The denser concentration of address points serves as a proxy for "urbanized areas." (Planners conducted an "optimized hot spot analysis" within the ArcMap 10.8.2 GIS software, using address points as the input feature.) As expected, the potential impacted areas center on Union, Miami and Goshen Townships and the City of Milford and Village of Batavia. (Note: The blue and gray areas on the following figure show the least densely built areas of the county.)

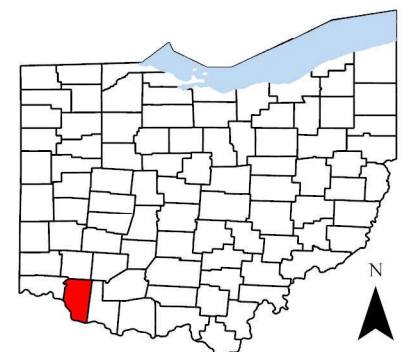
CLERMONT COUNTY HAZARD MITIGATION PLAN

**Figure 2.2.5.a:
Est. Urban Heat Island**

Data Source(s):
Clermont County GIS



DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



0 0.9 3.85 3.7 5.55 7.4
Miles

The National Weather Service also issues products regarding extremely cold temperatures. Such products include frost advisories, freeze watches and warnings, and wind chill advisory and warnings. The descriptions are outlined in the table below.

Table 2.2.5.5

NWS, Products Related to Extreme Cold	
<i>Product</i>	<i>Description</i>
Frost Advisory	Issued when temperatures, winds, and sky cover are favorable for frost development. This is most likely when temperatures are less than or equal to 36 degrees.
Freeze Watch	Freeze Watches are issued a few days ahead of a cold front in which temperatures are expected to be 29-32 degrees.
Freeze Warning	Freeze Warnings are issued when low temperatures are expected to be 29-32 degrees.
Hard Freeze Watch	Hard Freeze Watches are issued days ahead of a cold front in which temperatures are expected to be 28 degrees or less.
Hard Freeze Warning	Hard Freeze Warnings issued when temperatures are expected to be 28 degrees or less
Wind Chill Advisory	Issued when the wind chill temperatures with the combination of the wind and cold air will be between -10°F to -24°F.
Wind Chill Warning	Issued when the wind chill or feel like temperature with the combination of the wind and cold air will be -25°F or colder.

The elevations throughout the county vary, with areas along the Ohio River being approximately 500 ft. lower in elevation than other areas (particularly in the northcentral portion of the county) (topographic-map.com, n.d.). This variance, however, is not likely to yield considerable variation in temperatures.

Impacts and Vulnerability

The impacts of extreme temperatures can affect the population's health rather than structures. The extent of damage to infrastructure would consist of broken pipes, cracks and buckling of pavement due to expansion/contraction, and power outages. A short segment of U.S. Route 52 buckled due to extreme heat during the summer of 2025. Infrastructure systems may be constrained during both hot and cold events, as residents push air conditions (during hot spells) and furnaces (during cold snaps).

Extreme heat can impact health in a variety of ways. High temperatures can trigger a variety of heat stress conditions such as heat stroke, heat exhaustion, heat cramps, sunburn, and heat rash. High relative humidity exacerbates these conditions. High humidity also reduces the ability of sweat to evaporate from the skin, reducing the body's ability to cool itself. Prolonged

exposure to heat can necessitate medical intervention; in extreme cases, prolonged exposure could cause death. The table below outlines the possible heat disorders for people in high-risk groups (i.e., children, elderly, etc.).

Table 2.2.5.6

Heat Risks	
<i>Heat Index</i>	<i>Possible Heat Disorders for People in High-Risk Groups</i>
80°F-90°F	Fatigue is possible with prolonged exposure to physical activity
90°F -105°F	Sunstroke, heat cramps, or heat exhaustion is possible with prolonged exposure and/or physical activity
105°F -130°F	Sunstroke, heat cramps, or heat exhaustion are likely, and heatstroke is possible with prolonged exposure and/or physical activity
130°F +	Heat/Sunstroke highly likely with continued exposure

Extreme cold conditions also impact human health in several ways. Cold weather acts as a vasoconstrictor, meaning it constricts blood vessels and raises the risk of a heart attack. Prolonged exposure to cold weather can cause cold-related illnesses, which include hypothermia, frostbite, trench foot/immersion foot, and chilblains.

Although extreme heat does not typically affect infrastructure, it does have the potential to create a power outage if the electric grid is overtaxed due to prolonged heavy use of air conditioning. Power outages during periods of extreme heat may also accompany severe weather. For example, on June 29, 2012, a widespread power outage occurred during an excessive heat warning due to a Derecho. This power outage lasted three days and left more than 30,000 Duke Energy customers without power. This storm prompted a disaster declaration as it impacted two-thirds of the state resulting in approximately one million customers without power statewide.

Social Vulnerability Considerations

Extreme temperatures of either type, heat or cold, appear to impact children and the elderly more severely than other population groups. The following map shows concentrations of the elderly (i.e., 65 and over) as well as children (i.e., under 18) in the county by Census tracts.

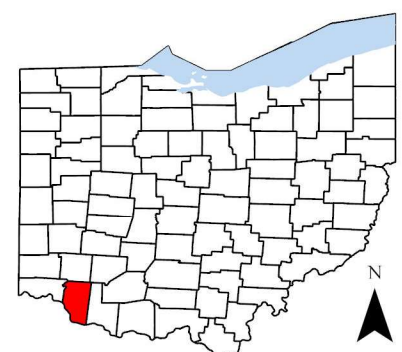
CLERMONT COUNTY HAZARD MITIGATION PLAN

**Figure 2.2.5.b:
(SVI) Age**

Data Source(s):
CDC ATSDR SVI (2020)

-  >25%, Age 65+
-  >25%, Age 17 & Under

DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



0 0.9 3.85 3.7 5.55 7.4
Miles

Many seniors live alone, isolated from children and other younger family members who established careers and lives in other areas. This problem is potentially acute in areas experiencing a high instance of outmigration. It is difficult to map areas with high concentrations of socially isolated senior citizens, though connections need not be limited to family. Areas with active senior citizens centers, congregate living areas with programs serving seniors, etc., foster community and social capital. Even in areas with high concentrations of elderly populations, this social capital can mitigate the effects of extreme temperatures (Klinenberg, 2015).

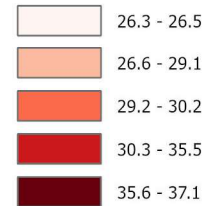
Further, elderly populations living in the areas above as potentially susceptible to the urban heat island effect may experience exacerbated severe heat illnesses. Similarly, those living in poverty may find themselves in areas more impacted by the urban heat island effect, and these individuals may not have the resources to contribute toward medical care if they suffer from heat-related illnesses. The following map shows the intersection of Census tracts with greater than 25% of persons living below the poverty line with the estimated urban heat islands.

CLERMONT COUNTY HAZARD MITIGATION PLAN

**Figure 2.2.5.c:
(SVI) Poverty**

Data Source(s):
CDC ATSDR SVI (2020)

>25%, Below Poverty Estimate

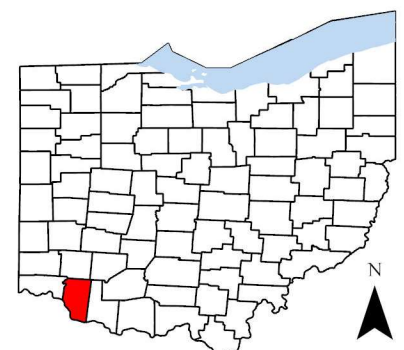


DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



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COUNTY OHIO

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Consulting



0 0.9 3.85 3.7 5.55 7.4
Miles

Finally, the homeless population could also be more at risk simply for being exposed to the elements. Many communities in Ohio report that homelessness is becoming more of a problem, with it manifesting not only as people living outdoors of a structure but also those "couch surfing" or staying with friends and acquaintances. These populations are nearly impossible to map, but an awareness of their potential risk is helpful.

Historical Occurrences

According to NOAA's National Centers for Environmental Information (NCEI) (2024), there have been 12 extreme temperature events in the county since 1996 (an average of 0.43 events per year). Seven of these events were related to heat and five were related to cold.

Table 2.2.5.7

Historical Extreme Temperature Events – Clermont County					
<i>Date</i>	<i>Type</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
2/01/1996	Extreme Cold	0	0	\$20,000*	\$0
7/20/1999	Extreme Heat	0	0	\$0.00	\$0.00
8/07/2007	Excessive Heat	0	0	\$0.00	\$0.00
8/23/2007	Excessive Heat	0	0	\$0.00	\$0.00
6/28/2012	Extreme Heat	0	0	\$0.00	\$0.00
7/01/2012	Extreme Heat	0	0	\$0.00	\$0.00
1/07/2014	Extreme Cold	0	0	\$0.00	\$0.00
1/02/2018	Extreme Cold	0	0	\$0.00	\$0.00
1/30/2019	Extreme Cold	0	0	\$0.00	\$0.00
7/20/2019	Excessive Heat	0	0	\$0.00	\$0.00
12/22/2022	Extreme Cold	0	0	\$0.00	\$0.00
8/25/2023	Excessive Heat	0	0	\$0.00	\$0.00
Totals		0	0	\$20,000	\$0.00

* Damages resulted from freezing and bursting water pipes and house fires caused by space heaters.

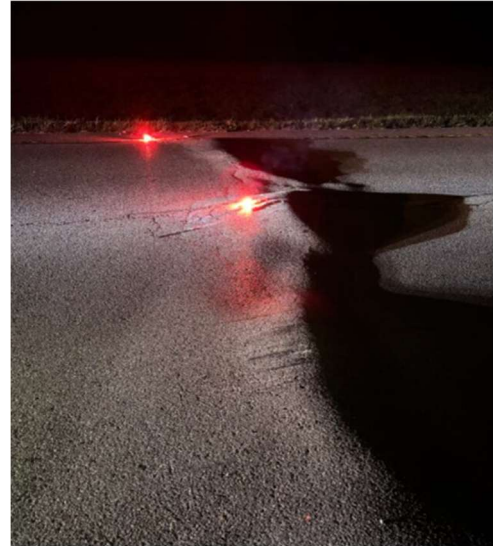
Countywide Excessive Heat – June 28, 2012

A very warm air mass moved into the region during late June. This air mass brought a prolonged period of above normal temperatures, record heat, and dangerous heat indices to much of southwestern Ohio, southeastern Indiana, and northern Kentucky. Many locations across southwestern Ohio experienced heat indices over 100 degrees Fahrenheit on June 28 and 29. On June 30, heat indices generally rose to 90 to 95 degrees, which was compounded by widespread power outages in the area from the June 29 derecho.

U.S. Route 52 Pavement Buckling – June 25, 2025

The westbound portion of U.S. Route 52 outside of the Village of New Richmond experienced an eight-inch buckle. The pavement buckled as a result of thermal expansion due to extremely hot conditions. Road crews were able to mill the pavement down and make permanent repairs to the roadway (Fox 19.com, 2025).

Figure 2.2.5.d



8-inch buckle on U.S. Route 52

Countywide Extreme Cold – January 30, 2019

An arctic air mass was pushed into the Ohio Valley behind a cold front. Sub-zero temperatures reached the lower teens in some areas and combined with wind gusts of 30 to 45 mph, creating wind chills from 20 to 40 below zero. The wind chill in both Day Heights and two miles south of Pleasant Plain dropped to 29 below zero.

Loss and Damages

Extreme temperatures can impact all areas and jurisdictions of the county and are typically widespread events. Planners utilized information from FEMA's National Risk Index (2024) to assess extreme temperature impacts.

Table 2.2.5.8

Clermont County Cold Wave NRI Exposure / Expected Annual Loss Estimates							
Census Tract	Exposure (Buildings)	Exposure (Pop)	Exposure (Ag)	EAL (Buildings)	EAL (Pop Equivalence)	EAL (Ag)	EAL (Total)
39025040101	\$565,964,912	5,071	\$11,863,729	\$20	\$222	\$3,153	\$3,395
39025040102	\$296,093,220	2,648	\$1,640,799	\$10	\$116	\$436	\$563
39025040202	\$332,271,724	2,215	\$1,802,394	\$12	\$97	\$479	\$588
39025040203	\$1,022,070,560	6,230	\$732,952	\$36	\$273	\$195	\$504
39025040205	\$341,676,114	3,192	\$26,858	\$12	\$140	\$7	\$159
39025040206	\$894,653,283	4,463	\$852,559	\$32	\$196	\$227	\$454
39025040301	\$889,865,533	3,979	\$8,845	\$32	\$175	\$2	\$208
39025040302	\$950,572,549	3,900	\$85,348	\$34	\$171	\$23	\$227
39025040303	\$1,429,187,632	7,628	\$41,135	\$51	\$335	\$11	\$396
39025040401	\$968,154,343	3,349	\$16,266	\$34	\$147	\$4	\$186
39025040403	\$499,144,737	2,786	\$1,421	\$18	\$122	\$0	\$140
39025040404	\$988,884,593	3,974	\$3,570	\$35	\$174	\$1	\$210
39025040405	\$549,076,131	3,101	\$5,525	\$19	\$136	\$1	\$157

Clermont County Cold Wave NRI Exposure / Expected Annual Loss Estimates							
Census Tract	Exposure (Buildings)	Exposure (Pop)	Exposure (Ag)	EAL (Buildings)	EAL (Pop Equivalence)	EAL (Ag)	EAL (Total)
39025040500	\$1,064,910,314	5,082	\$8,913	\$38	\$223	\$2	\$263
39025040600	\$1,669,457,750	7,439	\$119,637	\$59	\$326	\$32	\$417
39025040702	\$565,211,242	4,351	\$48,809	\$20	\$191	\$13	\$224
39025040703	\$538,186,019	3,479	\$152	\$19	\$153	\$0	\$172
39025040704	\$624,067,866	3,949	\$1,000	\$22	\$173	\$0	\$196
39025040800	\$959,839,371	5,663	\$1,864,725	\$34	\$248	\$496	\$778
39025040900	\$1,041,851,226	5,682	\$3,329,092	\$37	\$249	\$885	\$1,171
39025041001	\$970,109,996	5,861	\$761,073	\$34	\$257	\$202	\$494
39025041002	\$894,322,825	3,092	\$669,277	\$32	\$136	\$178	\$345
39025041101	\$613,673,503	3,411	\$86,377	\$22	\$150	\$23	\$194
39025041102	\$957,999,896	5,352	\$134,546	\$34	\$235	\$36	\$304
39025041104	\$710,098,998	3,822	\$4,882	\$25	\$168	\$1	\$194
39025041105	\$610,093,661	6,110	\$42,215	\$22	\$268	\$11	\$301
39025041201	\$525,625,929	4,125	\$2,223	\$19	\$181	\$1	\$200
39025041202	\$1,271,849,462	5,024	\$27,920	\$45	\$220	\$7	\$273
39025041303	\$704,821,673	5,036	\$5,454	\$25	\$221	\$1	\$247
39025041304	\$26,506,533	23	\$1,446	\$1	\$1	\$0	\$2
39025041305	\$815,199,374	5,269	\$2,303	\$29	\$231	\$1	\$261
39025041306	\$1,086,996,949	5,438	\$35,432	\$39	\$239	\$9	\$286
39025041307	\$948,021,715	4,896	\$335,035	\$34	\$215	\$89	\$337
39025041403	\$704,717,021	4,378	\$3,140	\$25	\$192	\$1	\$218
39025041404	\$648,431,113	4,834	\$349	\$23	\$212	\$0	\$235
39025041405	\$611,782,206	5,384	\$4,874	\$22	\$236	\$1	\$259
39025041406	\$1,115,877,913	5,230	\$20,319	\$40	\$229	\$5	\$274
39025041503	\$597,864,510	4,730	\$68,123	\$21	\$207	\$18	\$247
39025041504	\$724,979,932	3,958	\$38,036	\$26	\$174	\$10	\$209
39025041505	\$677,709,159	3,600	\$38,988	\$24	\$158	\$10	\$192
39025041506	\$533,329,739	2,794	\$78,225	\$19	\$123	\$21	\$162
39025041600	\$825,972,684	5,533	\$167,793	\$29	\$243	\$45	\$317
39025041701	\$483,863,723	4,308	\$774,370	\$17	\$189	\$206	\$412
39025041702	\$474,675,733	3,223	\$1,066,047	\$17	\$141	\$283	\$441
39025041800	\$556,003,358	3,637	\$231,955	\$20	\$160	\$62	\$241
39025041900	\$791,512,363	5,525	\$4,780,435	\$28	\$242	\$1,270	\$1,541
39025042001	\$505,801,751	3,401	\$2,639,954	\$18	\$149	\$702	\$869
39025042002	\$499,144,852	2,352	\$1,968,343	\$18	\$103	\$523	\$644
Grand Total	\$36,078,125,690	208,527	\$36,442,863	\$1,278	\$9,147	\$9,684	\$20,109

Source: USDHS/FEMA – The National Risk Index, Version 1.19

Table 2.2.5.9

Clermont County Heat Wave NRI Exposure / Expected Annual Loss Estimates							
<i>Census Tract</i>	<i>Exposure (Buildings)</i>	<i>Exposure (Pop)</i>	<i>Exposure (Ag)</i>	<i>EAL (Buildings)</i>	<i>EAL (Pop Equivalence)</i>	<i>EAL (Ag)</i>	<i>EAL (Total)</i>
39025040101	\$565,964,912	5,071	\$11,863,729	\$27	\$3,253	\$974	\$4,254
39025040102	\$296,093,220	2,648	\$1,640,799	\$14	\$1,699	\$135	\$1,848
39025040202	\$332,271,724	2,215	\$1,802,394	\$16	\$1,421	\$148	\$1,585
39025040203	\$1,022,070,560	6,230	\$732,952	\$49	\$3,996	\$60	\$4,106
39025040205	\$341,676,114	3,192	\$26,858	\$16	\$2,048	\$2	\$2,066
39025040206	\$894,653,283	4,463	\$852,559	\$43	\$2,863	\$70	\$2,976
39025040301	\$889,865,533	3,979	\$8,845	\$43	\$2,552	\$1	\$2,596
39025040302	\$950,572,549	3,900	\$85,348	\$46	\$2,502	\$7	\$2,554
39025040303	\$1,429,187,632	7,628	\$41,135	\$69	\$4,893	\$3	\$4,965
39025040401	\$968,154,343	3,349	\$16,266	\$47	\$2,148	\$1	\$2,196
39025040403	\$499,144,737	2,786	\$1,421	\$24	\$1,787	\$0	\$1,811
39025040404	\$988,884,593	3,974	\$3,570	\$48	\$2,549	\$0	\$2,597
39025040405	\$549,076,131	3,101	\$5,525	\$26	\$1,989	\$0	\$2,016
39025040500	\$1,064,910,314	5,082	\$8,913	\$51	\$3,260	\$1	\$3,312
39025040600	\$1,669,457,750	7,439	\$119,637	\$80	\$4,772	\$10	\$4,862
39025040702	\$565,211,242	4,351	\$48,809	\$27	\$2,791	\$4	\$2,822
39025040703	\$538,186,019	3,479	\$152	\$26	\$2,232	\$0	\$2,258
39025040704	\$624,067,866	3,949	\$1,000	\$30	\$2,533	\$0	\$2,563
39025040800	\$959,839,371	5,663	\$1,864,725	\$46	\$3,633	\$153	\$3,832
39025040900	\$1,041,851,226	5,682	\$3,329,092	\$50	\$3,645	\$273	\$3,968
39025041001	\$970,109,996	5,861	\$761,073	\$47	\$3,760	\$62	\$3,869
39025041002	\$894,322,825	3,092	\$669,277	\$43	\$1,983	\$55	\$2,081
39025041101	\$613,673,503	3,411	\$86,377	\$29	\$2,188	\$7	\$2,225
39025041102	\$957,999,896	5,352	\$134,546	\$46	\$3,433	\$11	\$3,490
39025041104	\$710,098,998	3,822	\$4,882	\$34	\$2,452	\$0	\$2,486
39025041105	\$610,093,661	6,110	\$42,215	\$29	\$3,919	\$3	\$3,952
39025041201	\$525,625,929	4,125	\$2,223	\$25	\$2,646	\$0	\$2,672
39025041202	\$1,271,849,462	5,024	\$27,920	\$61	\$3,223	\$2	\$3,286
39025041303	\$704,821,673	5,036	\$5,454	\$34	\$3,230	\$0	\$3,265
39025041304	\$26,506,533	23	\$1,446	\$1	\$15	\$0	\$16
39025041305	\$815,199,374	5,269	\$2,303	\$39	\$3,380	\$0	\$3,419
39025041306	\$1,086,996,949	5,438	\$35,432	\$52	\$3,488	\$3	\$3,543
39025041307	\$948,021,715	4,896	\$335,035	\$46	\$3,141	\$27	\$3,214
39025041403	\$704,717,021	4,378	\$3,140	\$34	\$2,808	\$0	\$2,843
39025041404	\$648,431,113	4,834	\$349	\$31	\$3,101	\$0	\$3,132
39025041405	\$611,782,206	5,384	\$4,874	\$29	\$3,454	\$0	\$3,484
39025041406	\$1,115,877,913	5,230	\$20,319	\$54	\$3,355	\$2	\$3,410
39025041503	\$597,864,510	4,730	\$68,123	\$29	\$3,034	\$6	\$3,069
39025041504	\$724,979,932	3,958	\$38,036	\$35	\$2,539	\$3	\$2,577
39025041505	\$677,709,159	3,600	\$38,988	\$33	\$2,309	\$3	\$2,345
39025041506	\$533,329,739	2,794	\$78,225	\$26	\$1,792	\$6	\$1,824
39025041600	\$825,972,684	5,533	\$167,793	\$40	\$3,549	\$14	\$3,603
39025041701	\$483,863,723	4,308	\$774,370	\$23	\$2,763	\$64	\$2,850

Clermont County Heat Wave NRI Exposure / Expected Annual Loss Estimates							
<i>Census Tract</i>	<i>Exposure (Buildings)</i>	<i>Exposure (Pop)</i>	<i>Exposure (Ag)</i>	<i>EAL (Buildings)</i>	<i>EAL (Pop Equivalence)</i>	<i>EAL (Ag)</i>	<i>EAL (Total)</i>
39025041702	\$474,675,733	3,223	\$1,066,047	\$23	\$2,067	\$87	\$2,178
39025041800	\$556,003,358	3,637	\$231,955	\$27	\$2,333	\$19	\$2,379
39025041900	\$791,512,363	5,525	\$4,780,435	\$38	\$3,544	\$392	\$3,974
39025042001	\$505,801,751	3,401	\$2,639,954	\$24	\$2,182	\$217	\$2,423
39025042002	\$499,144,852	2,352	\$1,968,343	\$24	\$1,509	\$162	\$1,694
Grand Total	\$36,078,125,690	208,527	\$36,442,863	\$1,734	\$133,765	\$2,991	\$138,489

Source: USDHS/FEMA – The National Risk Index, Version 1.19

Future Occurrences

The U.S. Environmental Protection Agency notes that extreme weather is likely to become more frequent. Since 1901, average temperatures have continued to rise in the contiguous 48 states with nine of the 10 warmest years having occurred since 1998. Since the 1970s, summer highs and winter lows have become more common and occur at a more frequent rate (2021). As such, participating jurisdictions can expect to see more extreme highs and lows more frequently than in the past.

Risk Assessment

This section summarizes the vulnerability of the county to extreme temperatures. Planning stakeholders conducted an online survey for the public to share their thoughts on the hazards listed in this plan. The following table presents the results of that survey, specifically regarding extreme temperatures.

Table 2.2.5.10

Public Sentiment, Extreme Temperatures					
<i>Hazard</i>	<i>Level of Concern</i>				<i>Total Respondents</i>
	<i>Not at All</i>	<i>Somewhat</i>	<i>Concerned</i>	<i>Very</i>	
EXTREME TEMPS	12 (23.08%)	19 (36.54%)	13 (25.0%)	8 (15.38%)	52
In the past five years, do you remember this hazard occurring in your community?				10 (19.23%)	52
Have you noticed an increase in the occurrences or intensity of this hazard?				27 (51.92%)	52
Have you noticed a decrease in the occurrences or intensity of this hazard?				0 (0.00%)	52

Table 2.2.5.11 assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above. The categories in the table appear in Ohio EMA's Mitigation Information Portal (MIP) tool.

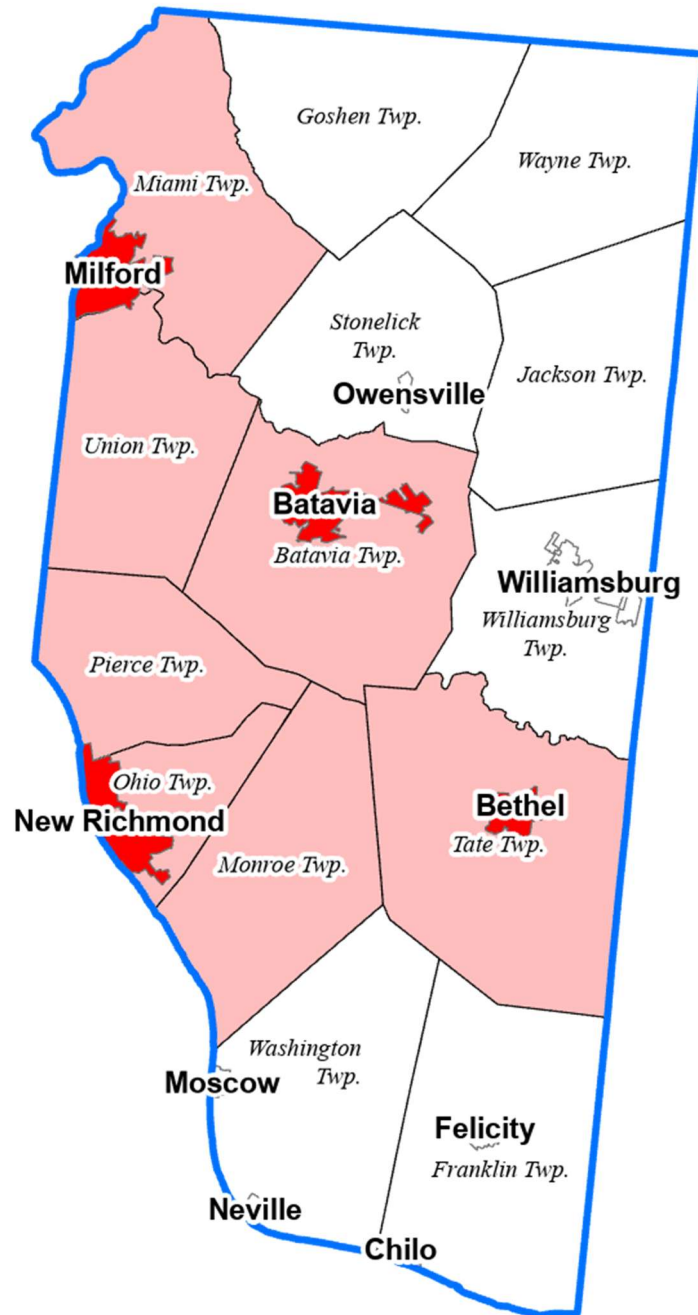
Table 2.2.5.11

Risk Ranking, Extreme Temperatures			
Category	Points	Description	Notes
Frequency	3	Occasional (May or may not occur in a year)	There have been 12 extreme temperature events since 1996, for an average of 0.4 events per year.
Response	2	One day	Most incidents do not require a response, though a few may necessitate the opening of a warming or cooling station. Operations at a warming/cooling station may exceed a single day, but planners used the "one day" criterion as a planning average.
Onset	1	Over 24 hours	Extreme temperature events are forecasted ahead of time.
Magnitude	4	Catastrophic (more than 50% of land area affected)	Though the term <i>catastrophic</i> sounds urgent, in this case, it refers to the reality that the entire county would likely be impacted by the front causing the temperature extreme to occur.
Business	1	Less than 24 hours	Extreme temperatures rarely close or otherwise impact the operation of business.
Human	2	Low (some injuries)	Extreme temperatures could cause injury and death (Klinenberg, 2015). Though these incidents could cause injury or death, historical data does not report injuries or deaths attributed to extreme heat or cold. Planners thus selected the "Low" label as a planning average.
Property	1	Less than 10% of property affected	The effects of extreme temperatures typically impact people; thus, planners selected the lowest category for property impacts.
Totals	14	LOW	

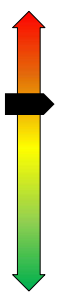
FEMA's *Local Mitigation Planning Handbook* (2025b) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. The following map identifies those multi-jurisdictional risks for extreme temperatures. The jurisdictions labeled in white are not more or less at risk of extreme temperatures. Those in red are more at risk. Jurisdictions listed with higher risk contain census tracts with higher concentrations of the vulnerable populations noted in Figures 2.2.5.b and c above, particularly as they intersect with the estimated urban heat island effect.

Figure 2.2.5.e

Extreme Temperatures Multi-Jurisdictional Risk Map



2.2.6 Flooding

A general or temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal water or the rapid accumulation of runoff surface waters from any source. A flash flood is a sudden localized flood, typically due to intense rainfall.				
 RISK HIGHEST HIGH MEDIUM LOW LOWEST	Period of Occurrence:	At any time, typically following a period of prolonged precipitation	Risk Ranking:	Medium
	Warning Time:	6-12 hours	Type of Hazard:	Natural
	Probability:	Frequent (Will occur during a year)	Impact:	Limited (10-50% land areas affected)
	Disaster Declarations:	DR-243-OH (1968) DR-870-OH (1990) DR-1097-OH (1996) DR-1122-OH (1996) DR-1164-OH (1997) DR-1390-OH (2001) OH-L0146 (2001) DR-1556-OH (2004) DR-1580-OH (2005) DR-4002-OH (2011) USDA FSA S3934 (2015) DR-4360-OH (2018) DR-4361-OH (2018) USDA FSA S4444 (2018) DR-4424-OH (2019) DR-4428-OH (2019) USDA FSA S4502 (2019) USDA FSA S4515 (2019) USDA FSA S4539 (2019) USDA FSA S5291 (2022) DR-4848-OH (2024)		

Hazard Introduction and Overview

Floods are one of the most prevalent hazards in the United States (FEMA, 2017), and flooding is the most frequently occurring natural disaster in Ohio. Each year, floods cause more property damage in the United States than any other type of natural disaster, killing an average of 150 people a year. The history of flooding within Clermont County indicates that it can occur at any time of the year. However, nearly all major floods are produced by spring rains falling on saturated, or frozen soil. According to FEMA, flooding is a temporary condition of partial or complete inundation of normally dry land areas from:

1. The overflow of inland tidal waters.
2. The unusual and rapid accumulation of runoff of surface waters from any source.
3. Mudslides which are proximately caused by flooding and are akin to a river of liquid and flowing mud on the surfaces of normally dry areas, as when earth is carried by a current of water and deposited along the path of the current.

Other types of flooding include flash flooding or river flooding from excessive rainfall, snowmelt, ice/debris jams, and dam or levee failure. Flooding is among the highest priority hazard in Clermont County.

- **Excessive Rainfall:** This is the most common cause of flooding. Water accumulates quicker than the soil can absorb, resulting in flooding or flash flooding.
- **Snowmelt:** Occurs when the major source of water involved is melting snow. The water runs off the already saturated ground into nearby streams or rivers, causing them to rapidly rise or overflow. Unlike rainfall that can reach the soil almost immediately, the snowpack can store the water for an extended amount of time until temperatures rise above freezing and the snow melts.
- **Ice or Debris Jams:** Common during the winter and spring months along rivers, streams, and creeks. As ice or debris moves downstream, it may get caught on obstructions to the water flow. When this occurs, water can be held back, causing upstream flooding. When the jam finally breaks, flash flooding can occur downstream.
- **Dam or levee failures:** Dams and levees can overtop, have excessive seepage, or have a structural failure, which result in flooding, and are covered in Section 2.2.2 – Dam & Levee Failure Hazard Profile.

According to the National Flood Insurance Program (NFIP), flash floods are the most common severe weather emergency in the United States (2016.) The NFIP also states that a flash flood is defined as “a rapid flooding of low-lying areas in less than six hours, which is caused by intense rainfall from a thunderstorm or several thunderstorms” (2016.) These storms are capable of dropping large amounts of rain within a brief period. Flash floods occur with little or no warning and can reach full peak in only a few minutes. Flash floods develop more quickly than river flooding and are harder to predict. Unlike river flooding, flash floods can occur in many places that river flooding does not. These areas are less prepared for flooding, leading to greater danger and potential for property damage. Flash flooding is usually a widespread event, as small creeks and streams overflow their banks and flood large areas of agricultural fields and rural roads.

Flooding that occurs in or near the urban areas is often attributed to failing storm sewers and poor drainage systems. Excessive amounts of paved areas or other impermeable surfaces upstream can increase the amount and rate of water runoff. Development affects the runoff of storm water and snowmelt. When rain falls in an undeveloped area, as much as 90 percent (90%) of it will infiltrate the ground; in a highly developed area, as much as 90% will run off.

The State of Ohio Rain/Snow Monitoring System (STORMS) is an automated rain gauge system that monitors an area's snow and rainfall to identify potential flooding. The system transmits real-time precipitation data to the State Emergency Operations Center (SEOC), the National Weather Service (NWS), and county emergency management agencies. Rain gauges are positioned near watersheds and report data 24 hours a day electronically to Columbus and are used by the NWS as a tool to issue flood and flash flood watches and warnings. Local governments are able to access the data through computer systems connected to the gauges. The following eight STORMS rain gauges are located in Clermont County.

- O'Bannon Creek (03244936)
- Stonelick (35048)
- Little Miami River, Milford (03245500)
- Perintown (35047)
- East Fork Little Miami River (03247500)
- Veterans Memorial (35049)
- East Fork Little Miami River, Williamsburg (03246500)
- Moscow (35046)

Location and Extent

Floods occur in every state in the U.S., and, according to NOAA's National Severe Storms Laboratory, kill more people each year than tornados, hurricanes, or lightning (NSSL, n.d.). Riverine flooding is limited to floodplain areas; however, flash flooding and urban flooding can occur in several locations. Clermont County has a history of being vulnerable to flooding, largely due to the physical geography of the county, which includes approximately 27 miles of Ohio River shoreline¹, the East Fork Little Miami River and Little Miami River watersheds, and several creeks and streams (i.e., Big Indian Creek, Bullskin Creek, Cloverlick Creek, Five Mile Creek, Gladys Creek, Nine Mile Creek, Solomon Run, Stonelick Creek, Ten Mile Creek, and Twelve Mile Creek), as well as varied topography. Additional flash flooding can occur due to inadequate storm drain capacity in municipalities not located near a river or stream.

Clermont County has three major drainage basins, the Ohio River basin, the East Fork Little Miami River watershed, and the Little Miami River watershed. The East Fork Little Miami River watershed is the largest watershed in Clermont County covering the northeastern and central sections covering 320,000 acres. This watershed extends into Brown, Clinton, Highland,

¹ Ohio River Shoreline – Utilized measure tool feature on Google Maps tracing shoreline

Warren, and Hamilton Counties. The East Fork flow into Harsha Lake, a 2,160-acre public lake before joining the Little Miami River. The East Fork is a major tributary to the Little Miami River.

The Little Miami River watershed is comprised primarily of the Little Miami River which is a National and State Scenic River with the East Fork being its primary tributary in Clermont County. The river is a Class I tributary of the Ohio River, flowing 111 miles through five counties in southwestern Ohio.

Planning stakeholders from the Clermont County Engineer's Office provided a list of roadways and miscellaneous highwater areas that are frequently inundated during prolonged or heavy rain events. The table below outlines these areas and the river stage that typically results the flooding at the locations.

Table 2.2.6.1

Ohio River Flood Areas – Clermont County Roads (Ohio River Flood Stage @ Cincinnati – 52' = Elevation 490)	
<i>Ohio River Stage</i>	<i>Roadway Flooding</i>
50 feet	Old State Route 52 at Nine Mile Creek
52 feet	Old State Route 52 near culvert between Nine Mile and the roadway
54 feet	749 Locust Corner Road near Nine Mile Creek
54 feet	Clermontville Spur near dead end
55.5 feet	Nine Mile Road near Locust Corner Road and Old State Route 52
57 feet approx.	Laurel Moscow Road 0.5 miles from State Route 52
60 feet approx.	Moscow Spur near bridge 0.5 miles from State Route 52
<i>(Ohio River Flood Stage @ Meldahl Dam – 52.5' = Elevation 495.5)</i>	
52.5 feet	Felecity Cedron
	1. 0.5 miles from State Route 133
	2. 0.9 miles from State Route 133
54.7 feet	3. 0.2 miles from State Route 133
60 feet approx.	Chilo Spur
<i>Miscellaneous High Water Areas</i>	
Backwater area of the Ohio River impacts RV Park in Washington Township	
Blue Sky Park near Jester Road	
Branch Hill-Loveland near Sylvan Drive	
Bucktown Road near Grants Farm	
Bucktown Road 0.5 miles north of State Route 50	
Burdshall Road at Brown Countyline	
Cedarville between Belfast and Goshen Road	
Deerfield Road near Parker Road	
Glancy Corner-Marathon Road near State Route 286	
Goshen Road between State Route 131 and Cedarville Road	
Hunt Road at State Route 131	
Hunt Road west of Marathon-Edenton Road	
Loveland-Miamiville Road near sewer plant by Ibold Road	
Martin Road, Shiloh Road, State Routes 133 & 727 in Wayne Township	

Miscellaneous High Water Areas
Miami River View Park Road northern end (Branch Hill-Loveland Road) and washout of U.S. Route 50 in Miami Township
North Broadway storm sewers in Owensville Village
Shayler Run in Batavia Township
State Route 125 at 9 Mile in Union Township (Beechmont Ford)
State Route 132 in Ohio Township
Stonelick Williams Corner Road, Stonelick Oliver Branch Road, Titus Road, Wilshire Circle Road, and drainage issues on Goshen Road in Stonelick Township
U.S. Route 52, Ohio River flooding in Monroe Township
U.S. Route 52 west side of Neville Village
Washington & Green, Route 222, and wet land at County Park Street in Chilo Village

The following table (Table 2.2.6.2) illustrates the major watersheds that have the potential to cause flooding in particular jurisdictions of Clermont County. The map that follows illustrates the flood risk areas of the county (for municipal flood risk maps see Appendix 5).

Table 2.2.6.2

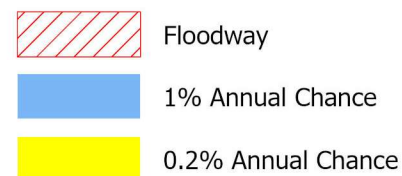
Jurisdictions	Jurisdictions within Proximity of Major Watersheds						
	East Fork Little Miami River	Little Miami River	Ohio River	Big Indian Creek	Cloverlick Creek	O'Bannon Creek	Stonelick Creek
Batavia Township	✓						✓
Batavia Village	✓						
Bethel Village	✓				✓		
Chilo Village			✓	✓			
Felicity Village		✓					
Franklin Township			✓				
Goshen Township						✓	✓
Jackson Township	✓						
Miami Township	✓	✓				✓	
Milford City		✓					
Monroe Township			✓	✓			
Moscow Village			✓				
Neville Village			✓				
New Richmond Village			✓				
Ohio Township			✓				
Owensville Village	✓						✓
Pierce Township			✓				
Stonelick Township							✓
Tate Township				✓			
Union Township	✓						

Jurisdictions	Jurisdictions within Proximity of Major Watersheds						
	<i>East Fork Little Miami River</i>	<i>Little Miami River</i>	<i>Ohio River</i>	<i>Big Indian Creek</i>	<i>Cloverlick Creek</i>	<i>O'Bannon Creek</i>	<i>Stonelick Creek</i>
Washington Township			✓	✓			
Wayne Township							✓
Williamsburg Township	✓				✓		
Williamsburg Village	✓						

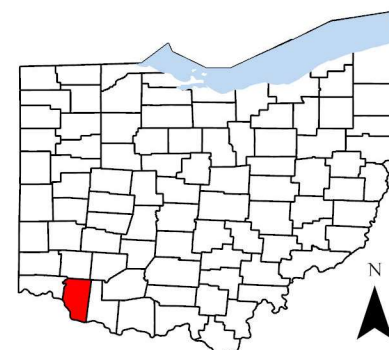
CLERMONT COUNTY HAZARD MITIGATION PLAN

**Figure 2.2.6.a:
Flood Risk Areas**

Data Source(s):
FEMA, OEMA



DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



0 0.93 3.85 3.7 5.55 7.4
Miles

Floods are described by their horizontal extents, the depth of the floodwaters and the probability of occurrence. According to FEMA and the Ohio Committee for Severe Weather Awareness, floods are among the most frequent and costly disasters. Historically, floods were referred to as a function of time (i.e., a “100-year” flood). A more accurate description would be that a “100-year” flood is one that has a 1% chance of occurring in a year, a 50-year flood is one that has a 2% chance of occurrence in a year, a 500-year flood has a 0.2% chance of occurrence in any year.

Flooding can be exacerbated by the presence of impermeable surfaces due to buildings and pavement or lack of appropriately sized flood water detention basins. Any development within floodplains² or floodways³ can impact the direction, flow, and level of the watercourse during periods of high water. If fill material is placed, or a house is constructed in a floodplain, it will alter the boundaries of the floodplain downstream of that area. Not only does development in the floodplain increase dangers downstream, developments within the floodplain are at higher risk of damage due to flooding. This damage includes fill material and debris from destroyed structures upstream colliding with structures in the floodplain downstream of an affected area. Many bridges are washed out in floods because river borne debris obstruct their free-flow area.

The National Flood Insurance Program (NFIP) has identified a subset of structures covered by flood insurance policies that are referred to as “repetitive loss” and “severe repetitive loss” properties. Table 2.2.6.3 lists the criteria for classification as a repetitive loss or severe repetitive loss property as defined by both the Flood Mitigation Assistance (FMA) Grant and the NFIP.

² Floodplain – Any area that has the potential to flood from any source.

³ Floodway – The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

Table 2.2.6.3

Repetitive Loss and Severe Repetitive Loss Definitions		
Program	Repetitive Loss	Severe Repetitive Loss
Flood Mitigation Assistance (FMA) Grant	A Repetitive Loss (RL) property is a structure covered by a contract for flood insurance made available under the NFIP that: Has incurred flood-related damage on 2 occasions, in which the cost of the repair, on the average, equaled or exceeded 25% of the market value of the time of each such flood event; At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.	(a) Is covered under a contract for flood insurance made available under the NFIP; and (b) Has incurred flood-related damage - For which <u>4 or more separate claims payments</u> (includes building and contents) have been made under flood insurance coverage with the amount of each such claim exceeding \$5,000, and with the cumulative amount of such claim's payments exceeding \$20,000, or - For which <u>at least 2 separate claims payments</u> (includes only building) have been made under such coverage, with the cumulative amount of such claims exceeding the market value of the insured structure.
National Flood Insurance Program (NFIP)	A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than \$1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling ten-year period, since 1978.	A single family property (consisting of 1 to 4 residences) that is covered under flood insurance by the NFIP and has incurred flood-related damage for which 4 or more separate claims payments have been paid under flood insurance coverage, with the amount of each claim payment exceeding \$5,000 and with cumulative amount of such claims payments exceeding \$20,000; or for which at least 2 separate claims payments have been made with the cumulative amount of such claims exceeding the reported value of the property.

Source: FEMA, National Flood Insurance Program (NFIP)

Repetitive Loss Properties

Within Clermont County and its municipalities there are 20 unmitigated Repetitive Loss (RL) structures⁴, and four Severe Repetitive Loss (SRL) structures⁵, these structures combined have experienced 71 total losses. The majority of these structures are located outside of municipal boundaries, and all are classified as single family residential units. Clermont County and the Village of New Richmond both have two unmitigated SRL single family residential structures. Approximately 70% the total losses also involve single family residential structures located in the unincorporated areas of the county and the Village of New Richmond. Total payouts regarding losses incurred by the 24 total RL/SRL structures to date is \$1,958,977, see Table 2.2.6.4 below.

⁴ Repetitive Loss Structure – An insurable building for which two or more claims of >\$1,000 were paid by NFIP within any rolling ten-year period

⁵ Severe Repetitive Loss Structure – A single family property covered under flood insurance, which has incurred flood-related damages for which four or more separate claims have been paid >\$5,000 with cumulative amounts >\$20,000; or for which two separate payments with a cumulative amount of such claims exceeding the reported value of the property.

Table 2.2.6.4

Clermont County Unmitigated Repetitive Loss & Severe Repetitive Structures					
Community Name (Jurisdiction)	Occupancy Type	Total RL/SRL Structures	RL Structures	SRL Structures	Total Losses
Batavia Village	Multi-Family Residential	1	1	0	2
	Other Residential	1	1	0	4
Bethel Township	Single Family Residential	1	1	0	2
Franklin Township	Single Family Residential	1	1	0	3
Miami Township	Single Family Residential	3	1	2	10
	Business Non- Residential	1	1	0	2
Milford City	Single Family Residential	1	1	0	2
Monroe Township	Single Family Residential	1	1	0	5
	Multi-Family Residential	1	1	0	3
Moscow Village	Single Family Residential	1	1	0	2
New Richmond Village	Single Family Residential	7	5	2	23
	Business Non- Residential	1	1	0	3
Pierce Township	Single Family Residential	1	1	0	3
Stonelick Township	Single Family Residential	1	1	0	2
Union Township	Single Family Residential	1	1	0	2
Williamsburg Village	Other Non- Residential	1	1	0	3
Countywide Total		24	20	4	71

Source: Ohio Emergency Management Agency

Table 2.2.6.5 indicates the incorporated jurisdictions that are in compliance with state floodplain management standards and participate in the National Flood Insurance Program (NFIP), and the date in which they entered the program. Clermont County has been participating in the NFIP since December 2, 1977. There are three communities that do not participate in the NFIP as they do not contain any Special Flood Hazard Areas (SFHAs). Clermont County and participating jurisdictions have adopted and implemented floodplain management requirements, including regulating all and substantially improved construction in SFHAs, and will continue to enforce regulations in the future.

Table 2.2.6.5

NFIP Enrollment			
Jurisdiction	CID	Enrollment Date	Current Effective Map Date
Clermont County	390065#	12/02/77	3/16/06
Batavia Village	390066#	5/07/76	3/16/06
Bethel Village	Not included in NFIP – No SFHA		
Chilo Village	390067#	11/02/73	3/16/06
Felicity Village	Not included in NFIP – No SFHA		
Milford City	390227#	2/08/74	2/17/10
Moscow Village	390070#	2/08/74	3/16/06
Neville Village	390641#	11/23/73	3/16/06
New Richmond Village	390071#	3/01/74	3/16/06
Owensville Village	Not included in NFIP – No SFHA		
Williamsburg Village	390072#	3/29/74	3/16/06

Source: FEMA NFIP Community Status Book Report
(M) – No Elevation Determined – All Zone A, C and X

Each jurisdiction has designated a floodplain administrator to serve as NFIP Coordinator. The floodplain administrators routinely monitors and maintains the jurisdiction's floodplain area and ordinance to ensure that development is compliant with that ordinance (and, consequently, the NFIP). Clermont County has Special Purpose Flood Damage Reduction Regulations in effect. The primary objectives of this plan includes:

- The protection of human life and health,
- Minimizing the need for rescue and relief efforts,
- Minimizing prolonged business interruptions,
- Minimizing damage to public facilities and utilities,
- Ensuring that those who occupy flood hazard areas assume responsibility,
- Minimizing the impact of development on the natural and beneficial values of the floodplain,
- Preventing floodplain uses that are hazardous or environmentally incompatible,
- Meeting the community participation requirements of the NFIP.

Table 2.2.6.6 below identifies the designated floodplain administrators or local contacts for each jurisdiction of Clermont County that currently participates in the NFIP.

Table 2.2.6.6

Designated Floodplain Administrators / Local Contacts – Clermont County				
<i>Jurisdiction</i>	<i>Point of Contact</i>	<i>Agency</i>	<i>Address</i>	<i>Phone</i>
Clermont County	Heath Wilson, Chief Building Official	County Building Department	2275 Bauer Road Batavia, OH 45103	513.732.7213
Batavia Village	Ken Geis, Zoning Administrator	Batavia Planning & Zoning	65 N. Second Street Batavia, OH 45103	513.732.2020
Chilo Village	Heath Wilson, Chief Building Official	County Building Department	2275 Bauer Road Batavia, OH 45103	513.732.7213
Milford City	Tim Casto, City Engineer	City of Milford	745 Center Street, Suite 200 Milford, OH 45150	513.779.7851
Moscow Village	Heath Wilson, Chief Building Official	County Building Department	2275 Bauer Road Batavia, OH 45103	513.732.7213
Neville Village	Heath Wilson, Chief Building Official	County Building Department	2275 Bauer Road Batavia, OH 45103	513.732.7213
New Richmond Village	Kathryn Gail Bailey, Village Administrator	Village of New Richmond	102 Willow Street New Richmond, OH 45157	513.553.4146
Williamsburg Village	Heath Wilson, Chief Building Official	County Building Department	2275 Bauer Road Batavia, OH 45103	513.732.7213

Source: ODNR-Division of Water Resources – Floodplain Management Program – Community Contact List, 2025

Impacts and Vulnerability

Floods are one of the costliest disasters in the United States. Just one inch of water in a home can potentially cause up to \$25,000 in damages (FEMA, 2025). Hazards associated with flooding can be divided into primary hazards that occur due to contact with water; cascading or secondary effects that occur because of the flooding, such as disruption of services and health impacts; and long-term or tertiary effects, such as changes in the position of river channels. Table 2.2.6.7 describes the types of effects of flooding.

Table 2.2.6.7

Effects of Flooding	
Type	Description
Primary Effects	• With higher velocities, streams are able to transport larger particles as suspended load. Such large particles include not only rocks and sediment, but, during a flood, such large objects as automobiles, houses, and bridges. • Massive amounts of erosion can be accomplished by floodwaters. Such erosion can undermine bridge structures, levees, and buildings, causing their collapse. • Water entering human-built structures causes damage. Even with minor flooding of homes, furniture is ruined, floors and walls are damaged, and anything that comes in contact with the water is likely to be damaged or lost. Flooding of automobiles usually results in damage that cannot easily be repaired. • The higher velocity of floodwaters allows the water to carry more sediment as suspended load. When the floodwaters retreat, velocity is generally much lower and sediment is deposited. After retreat of the floodwaters, everything is usually covered with a thick layer of stream-deposited mud, including the interior of buildings. • Flooding of farmland usually results in crop loss. Livestock, pets, and other animals are often carried away and drowned. • Humans that get caught in high velocity floodwaters are often drowned. • Floodwaters can concentrate garbage, debris, and toxic pollutants into small areas that can cause the secondary effects of health hazards.
Cascading or Secondary Effects	• Disruption of Services ○ Drinking water supplies may become polluted, especially if sewerage treatment plants are flooded. ○ Gas and electrical service may be disrupted. ○ Transportation systems may be disrupted, resulting in shortages of food and cleanup supplies.
Long-Term or Tertiary Effects	• Location of river channels may change as the result of flooding; new channels develop, leaving the old channels dry. • Sediment deposited by flooding may destroy farmland (although silt deposited by floodwaters could also help to increase agricultural productivity). • Jobs may be lost due to the disruption of services, destruction of business, etc. (although jobs may be gained in the construction industry to help rebuild or repair flood damage). • Destruction of wildlife habitat.

In addition to property and structure damage, flood waters pose a risk to human health. Floodwaters can contain downed power lines, human and livestock waste, household, medical, and industrial waste and debris, wild or stray animals, and other contaminants that can cause illnesses (CDC, 2018).

Flash floods are considered the most dangerous type of floods. Flash flood waters are fast-moving and can destroy buildings and bridges and scour new channels. Occasionally debris floating in flash-floodwater accumulates at natural or man-made obstructions and restricts the flow of water. This obstruction causes upstream flooding, and subsequent downstream flooding if the obstruction is suddenly released.

Some areas are at a higher risk for flooding than others. For example, densely populated areas are at a high risk for flash floods. Construction in these areas increases runoff by reducing the amount of rain absorbed by the ground. In these areas, heavy rain can overwhelm storm drain systems, or drains can become plugged by debris, both of which contribute to flooding. Flood hazards are dynamic and change over time because of development, land use changes, and other variables.

Flooding impacts to a community include injuries and potentially fatalities to citizens and public safety officials, damage to property, loss revenue and economic damages, and increased demand on public safety and infrastructure related services. Response activities include unanticipated overtime for Emergency Operations Center (EOC) activations, evacuations and sheltering of displaced individuals, rerouting traffic destined for impassible roads, bridge and road damage repairs, and rescue or medical missions related to motorists and isolated individuals. Private property damages to homes and vehicles as well as land erosion, river channel changes, agricultural damages, and livestock losses resulting in significant rural economic impacts to local residents.

Areas near rivers are also at an increased risk for flooding. Excessive rain, ice jams, snowmelt, and runoff can all increase the water levels of a river or stream. The Little Miami, East Fork Little Miami, and Ohio Rivers as well as their tributaries have the potential to cause flooding in Clermont County. Hazus flood model data suggest that 1,200 people from 422 households could be displaced by a flood at the 100-year flood level. The following map depicts the location of major waterways in the county.

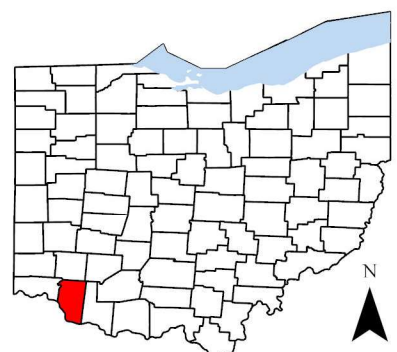
CLERMONT COUNTY HAZARD MITIGATION PLAN

**Figure 2.2.6.b:
Rivers & Streams**

Data Source(s):
ODNR, U.S. Census
(Tiger Data)

-  Lakes
-  Major Waterways
-  Small Streams

DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



0 0.9 3.85 3.7 5.55 7.4
Miles

Historical Occurrences

Clermont County has a long history of flooding and has suffered damage from numerous major flooding events. The county has received 20 flood / flash flood disaster declarations over the past 56 years.

Flooding events are listed in the National Oceanic and Atmospheric Administration's (NOAA's) National Centers for Environmental Information's (NCEI's) Storm Events Database, which maintains records of flooding events in Clermont County since 1996. The following table (Table 2.2.6.8) presents the 55 reported floods in Clermont County since 1996 creating an average of 1.96 floods per year. These floods have resulted in approximately \$4.1 million in reported property damage. As can be seen, the months with the most reported floods were April, June, and July. The most floods reported in a single year was six, occurring in 2002 and 2003.

Table 2.2.6.8

Historical Flooding Clermont County					
Location	Date	Deaths	Injuries	Property Damage	Crop Damage
CLERMONT (ZONE)	1/17/1996	0	0	\$30,000	\$0
CLERMONT (ZONE)	1/23/1996	0	0	\$1,000,000	\$0
CLERMONT (ZONE)	4/29/1996	0	0	\$5,000	\$0
CLERMONT (ZONE)	5/11/1996	0	0	\$0	\$0
CLERMONT (ZONE)	5/15/1996	0	0	\$0	\$0
CLERMONT (ZONE)	3/2/1997	0	0	\$3,000,000	\$0
CLERMONT (ZONE)	6/1/1997	0	0	\$0	\$0
CLERMONT (ZONE)	4/16/1998	0	0	\$0	\$0
CLERMONT (ZONE)	1/4/2000	0	0	\$0	\$0
CLERMONT (ZONE)	2/14/2000	0	0	\$0	\$0
CLERMONT (ZONE)	2/18/2000	0	0	\$0	\$0
CLERMONT (ZONE)	2/21/2000	0	0	\$0	\$0
CLERMONT (ZONE)	7/18/2001	0	0	\$0	\$0
CLERMONT (ZONE)	4/19/2002	0	0	\$0	\$0
CLERMONT (ZONE)	4/21/2002	0	0	\$0	\$0
CLERMONT (ZONE)	4/28/2002	0	0	\$0	\$0
CLERMONT (ZONE)	5/28/2002	0	0	\$0	\$0
CLERMONT (ZONE)	6/6/2002	0	0	\$0	\$0
CLERMONT (ZONE)	11/10/2002	0	0	\$0	\$0
CLERMONT (ZONE)	2/22/2003	0	0	\$0	\$0
CLERMONT (ZONE)	5/10/2003	0	0	\$0	\$0
CLERMONT (ZONE)	7/10/2003	0	0	\$0	\$0
CLERMONT (ZONE)	7/13/2003	0	0	\$0	\$0
CLERMONT (ZONE)	7/15/2003	0	0	\$0	\$0
CLERMONT (ZONE)	8/8/2003	0	0	\$0	\$0
CLERMONT (ZONE)	7/31/2004	0	0	\$0	\$0
CLERMONT (ZONE)	10/18/2004	0	0	\$0	\$0

Historical Flooding Clermont County					
Location	Date	Deaths	Injuries	Property Damage	Crop Damage
CLERMONT (ZONE)	1/5/2005	0	0	\$20,000	\$0
CLERMONT (ZONE)	3/28/2005	0	0	\$0	\$0
CLERMONT (ZONE)	4/22/2005	0	0	\$0	\$0
CLERMONT (ZONE)	6/14/2005	0	0	\$0	\$0
CLERMONT (ZONE)	11/15/2005	0	0	\$0	\$0
CLERMONT CO.	3/4/2008	0	0	\$2,000	\$0
CLERMONT CO.	3/19/2008	0	0	\$5,000	\$0
CLERMONT CO.	6/9/2010	2	0	\$3,000	\$0
CLERMONT CO.	4/19/2011	0	0	\$1,000	\$0
CLERMONT CO.	6/21/2011	0	0	\$2,000	\$0
CLERMONT CO.	12/5/2011	0	0	\$1,000	\$0
CLERMONT CO.	7/23/2013	0	0	\$0	\$0
CLERMONT CO.	12/22/2013	0	0	\$0	\$0
CLERMONT CO.	4/4/2014	0	0	\$0	\$0
CLERMONT CO.	4/16/2017	0	0	\$5,000	\$0
CLERMONT CO.	6/8/2018	0	0	\$20,000	\$0
CLERMONT CO.	4/20/2019	0	0	\$0	\$0
CLERMONT CO.	6/18/2019	0	0	\$2,000	\$0
CLERMONT CO.	6/19/2019	0	0	\$10,000	\$0
CLERMONT CO.	5/19/2020	0	0	\$0	\$0
CLERMONT CO.	7/6/2020	0	0	\$0	\$0
CLERMONT CO.	5/6/2022	0	0	\$0	\$0
CLERMONT CO.	8/6/2022	0	0	\$5,000	\$0
CLERMONT CO.	8/21/2022	0	0	\$0	\$0
CLERMONT CO.	1/3/2023	0	0	\$10,000	\$0
CLERMONT CO.	1/12/2023	0	0	\$0	\$0
CLERMONT CO.	7/15/2023	0	0	\$0	\$0
CLERMONT CO.	8/28/2024	0	0	\$0	\$0
TOTALS		2	0	\$4,121,000	\$0

Source: NCEI Storm Event Database

The NCEI Storm Events Database also maintains records of flash flood events that have occurred in Clermont County. Since 1996, there have been 58 flash flood events, for an average of 2.07 flash floods per year. These flash floods have resulted in approximately \$2.4 million in reported property damage. The months of June and July had the most flash floods reported. The most flash floods to occur in one year was seven, occurring in 2001. Table 2.2.6.9 below presents these events.

Table 2.2.6.9

Historical Flash Flooding Clermont County					
Location	Date	Deaths	Injuries	Property Damage	Crop Damage
EDENTON	4/29/1996	0	0	\$2,000	\$0
COUNTYWIDE	5/4/1996	0	0	\$10,000	\$0
COUNTYWIDE	5/15/1996	0	0	\$5,000	\$0
FRANKLIN TWP	7/29/1996	0	0	\$25,000	\$0
COUNTYWIDE	12/1/1996	0	0	\$0	\$0
FELICITY	3/1/1997	0	0	\$20,000	\$0
COUNTYWIDE	6/1/1997	0	0	\$10,000	\$0
BATAVIA	6/16/1997	0	0	\$10,000	\$0
COUNTYWIDE	6/18/1997	0	0	\$5,000	\$0
COUNTYWIDE	4/16/1998	0	0	\$0	\$0
COUNTYWIDE	6/11/1998	0	0	\$105,000	\$0
BATAVIA	6/16/1998	0	0	\$0	\$0
COUNTYWIDE	1/3/2000	0	0	\$50,000	\$0
COUNTYWIDE	2/18/2000	0	0	\$10,000	\$0
BETHEL	7/4/2000	0	0	\$5,000	\$0
COUNTYWIDE	8/9/2000	0	0	\$5,000	\$0
COUNTYWIDE	12/16/2000	0	0	\$5,000	\$0
NORTHWEST PORTION	5/18/2001	0	0	\$5,000	\$0
GOSHEN	6/6/2001	0	0	\$3,000	\$0
COUNTYWIDE	7/17/2001	0	0	\$1,790,000	\$0
WILLIAMSBURG	7/25/2001	0	0	\$0	\$0
FELICITY	7/26/2001	0	0	\$0	\$0
COUNTYWIDE	8/11/2001	0	0	\$0	\$0
BATAVIA	8/18/2001	0	0	\$0	\$0
SOUTH CENTRAL PORTION	5/7/2002	0	0	\$3,000	\$0
OWENSVILLE	5/10/2003	0	0	\$100,000	\$0
MILFORD	8/2/2003	0	0	\$0	\$0
NEW RICHMOND	1/5/2005	0	0	\$10,000	\$0
BATAVIA	4/22/2005	0	0	\$0	\$0
COUNTYWIDE	3/12/2006	0	0	\$0	\$0
BETHEL	7/13/2006	0	0	\$6,000	\$0
MILFORD	7/18/2006	0	0	\$0	\$0
MT REPOSE	6/26/2009	0	0	\$1,000	\$0
MILFORD, BETHEL	7/30/2009	0	0	\$30,000	\$0
FELICITY	6/12/2010	0	0	\$25,000	\$0
AMELIA	4/23/2011	0	0	\$2,000	\$0
AMELIA, TOBASCO, BETHEL	6/21/2011	0	0	\$27,000	\$0
FELICITY	7/19/2011	0	0	\$1,000	\$0
GOSHEN	5/1/2012	0	0	\$3,000	\$0
GOSHEN	7/10/2013	0	0	\$2,000	\$0
WILLIAMSBURG, MARATHON	7/23/2013	0	0	\$4,000	\$0
BATAVIA	12/22/2013	0	0	\$1,000	\$0
AMELIA	4/26/2016	0	0	\$0	\$0
WILLOWVILLE	7/28/2016	0	0	\$0	\$0

Historical Flash Flooding Clermont County					
Location	Date	Deaths	Injuries	Property Damage	Crop Damage
AMELIA, WILLIAMSBURG	8/17/2016	0	0	\$7,000	\$0
SALT AIR	10/19/2016	0	0	\$0	\$0
BATAVIA	3/1/2017	0	0	\$0	\$0
WILLOWVILLE	4/16/2017	0	0	\$0	\$0
AMELIA, WILLIAMS CORNERS	4/29/2017	0	0	\$0	\$0
LOVELAND	6/23/2017	0	0	\$0	\$0
CHILO	7/23/2017	0	0	\$0	\$0
MULBERRY	6/8/2018	0	0	\$3,000	\$0
BATAVIA	2/7/2019	0	0	\$0	\$0
COUNTYWIDE	6/16/2019	0	0	\$48,000	\$0
GOSHEN, MULBERRY	6/19/2019	0	0	\$0	\$0
NEWTONSVILLE	6/30/2020	0	0	\$4,000	\$0
NICHOLSVILLE	9/3/2020	0	0	\$0	\$0
MODEST	9/5/2022	0	0	\$5,000	\$0
LINDALE, MT OLIVE	7/18/2023	0	0	\$25,000	\$0
TOTALS		0	0	\$2,372,000	\$0

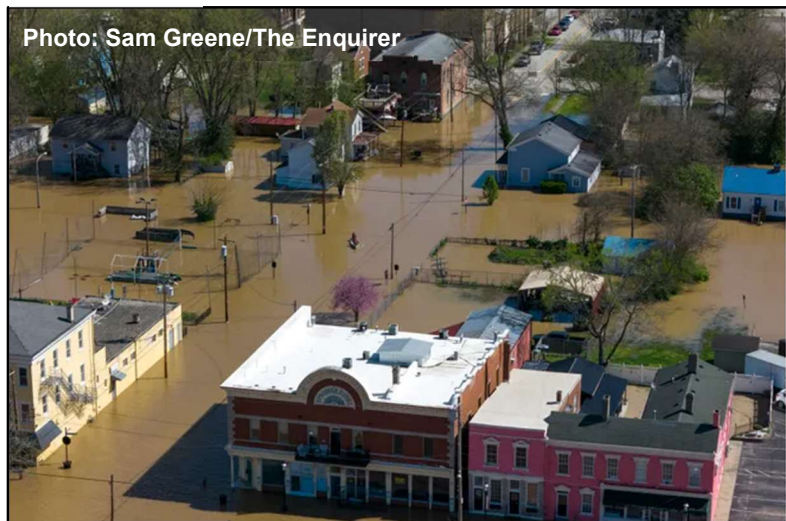
Source: NCEI Storm Event Database

Ohio River Flood – April 5-8, 2025

This flood was the result of days of heavy rainfall causing the Ohio River to crest at over 60 feet, which inundated portions of the Village of New Richmond, including its downtown area and Front Street. The Meldahl Dam gauge hit 54.69 feet on Sunday, April 6. The National Weather Service (NWS) in Wilmington reported total rainfall between five and seven inches on Sunday.

Dozens of homes and businesses were damaged or destroyed. The flooding caused several residents to be displaced, roads were impassable, and many businesses were forced to close. The Clermont County Emergency Operations Center (EOC) was activated on Saturday, April 5. An American Red Cross (ARC) shelter was opened to the public in the lower level of the New Richmond Exempted Village Schools District Office. This flood brought back memories of severe floods in 1955, 1964, 1967, 1997, and 2018 which had

Figure 2.2.6.c



New Richmond's Front Street, April 2025 – Ohio River Flood.

Dozens of homes and businesses were damaged or destroyed. The flooding caused several residents to be displaced, roads were impassable, and many businesses were forced to close. The Clermont County Emergency Operations Center (EOC) was activated on Saturday, April 5. An American Red Cross (ARC) shelter was opened to the public in the lower level of the New Richmond Exempted Village Schools District Office. This flood brought back memories of severe floods in 1955, 1964, 1967, 1997, and 2018 which had

similar devastating impacts on the village. The Great Flood of 1937 remains the worst natural disaster to occur in the village's history, the village lost 250 of its 415 homes during this flood.

The following table obtained from the Clermont County Emergency Management Agency outlines damages sustained by municipalities as a result of the flood.

Table 2.2.6.10

Clermont County – Ohio River Flood April 2025 Damages				
Jurisdiction	Structural Impacts			
	Destroyed	Major	Minor	Affected
New Richmond Village	0	10	47	30
Monroe Township	0	1	0	21
Pierce Township	0	2	6	11
Moscow Village	0	0	7	3
Neville Village	0	1	0	2
TOTALS	0	14	60	67

Source: Clermont County EMA

Countywide Flash Flooding – July 17, 2001 (DR-1390-OH)

Eleven bridges along county and township roads sustained damage in Miami, Goshen, and Wayne Townships. Four hundred homes, four businesses, two public buildings and more than two dozen cars, driveways and private bridges were damaged due to the high water. Total estimate of public assistance was estimated at \$1,786,058, (NCEI Storm Event Database, 2025).

Loss and Damages

Information obtained from FEMA's National Risk Index (NRI) was utilized to assess flooding impacts for each census tract of Clermont County.

Table 2.2.6.11

Clermont County Flooding NRI Exposure / Expected Annual Loss Estimates							
Census Tract	Exposure (Buildings)	Exposure (Pop)	Exposure (Ag)	EAL (Buildings)	EAL (Pop Equivalence)	EAL (Ag)	EAL (Total)
39025040101	\$3,102,090	14	\$53,489	\$2,062	\$3,967	\$1,993	\$8,022
39025040102	\$1,832,254	11	\$950	\$1,218	\$2,960	\$35	\$4,214
39025040202	\$721,661	7	\$6,945	\$480	\$1,966	\$259	\$2,704
39025040203	\$8,509,711	60	\$2,372	\$5,657	\$16,605	\$88	\$22,351
39025040205	\$0	0	\$0	\$0	\$0	\$0	\$0
39025040206	\$0	0	\$0	\$0	\$0	\$0	\$0
39025040301	\$29,612,043	107	\$460	\$19,686	\$29,546	\$17	\$49,249
39025040302	\$61,994,651	264	\$106	\$41,214	\$73,016	\$4	\$114,234

Clermont County Flooding NRI Exposure / Expected Annual Loss Estimates							
Census Tract	Exposure (Buildings)	Exposure (Pop)	Exposure (Ag)	EAL (Buildings)	EAL (Pop Equivalence)	EAL (Ag)	EAL (Total)
39025040303	\$0	0	\$0	\$0	\$0	\$0	\$0
39025040401	\$14,859,729	55	\$3,796	\$9,879	\$15,216	\$141	\$25,236
39025040403	\$0	0	\$0	\$0	\$0	\$0	\$0
39025040404	\$0	0	\$0	\$0	\$0	\$0	\$0
39025040405	\$6,108,817	76	\$0	\$4,061	\$20,978	\$0	\$25,039
39025040500	\$149,733,771	337	\$6,506	\$99,543	\$93,066	\$242	\$192,851
39025040600	\$55,914,160	16	\$593	\$37,172	\$4,333	\$22	\$41,527
39025040702	\$0	0	\$0	\$0	\$0	\$0	\$0
39025040703	\$0	0	\$0	\$0	\$0	\$0	\$0
39025040704	\$0	0	\$0	\$0	\$0	\$0	\$0
39025040800	\$7,243,519	55	\$46,486	\$4,816	\$15,071	\$1,732	\$21,619
39025040900	\$5,740,154	26	\$31,999	\$3,816	\$7,225	\$1,192	\$12,233
39025041001	\$1,175,727	8	\$1,752	\$782	\$2,197	\$65	\$3,044
39025041002	\$802,459	5	\$129	\$533	\$1,331	\$5	\$1,869
39025041101	\$1,520,070	8	\$0	\$1,011	\$2,129	\$0	\$3,139
39025041102	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041104	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041105	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041201	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041202	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041303	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041304	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041305	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041306	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041307	\$4,916,685	13	\$87,609	\$3,269	\$3,455	\$3,264	\$9,988
39025041403	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041404	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041405	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041406	\$18,148,021	16	\$2,767	\$12,065	\$4,405	\$103	\$16,573
39025041503	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041504	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041505	\$36,843	0	\$421	\$24	\$85	\$16	\$125
39025041506	\$28,419,958	94	\$7,036	\$18,894	\$25,971	\$262	\$45,127
39025041600	\$293,628,506	1,352	\$12,387	\$195,205	\$373,581	\$462	\$569,247
39025041701	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041702	\$87,262,699	104	\$7,373	\$58,012	\$28,869	\$275	\$87,156
39025041800	\$0	0	\$0	\$0	\$0	\$0	\$0
39025041900	\$357,591	3	\$1,558	\$238	\$781	\$58	\$1,077
39025042001	\$103,029,999	147	\$130,714	\$68,494	\$40,676	\$4,870	\$114,040
39025042002	\$233,768,774	262	\$253,378	\$155,410	\$72,277	\$9,441	\$237,127
Grand Total	\$1,118,439,889	3,038	\$658,824	\$743,541	\$839,703	\$24,547	\$1,607,790

Source: USDHS/FEMA – The National Risk Index, Version 1.19

Future Occurrences

Based on the frequency of previous occurrences, the probability of future flooding in Clermont County is highly likely. New urban development upslope of inadequate existing storm water facilities in older urban areas also exacerbates storm water runoff issues as these communities expand.

Floods and flash floods can occur at any time. Based on historical occurrences in Clermont County they are most likely to occur between April and July. While this trend is expected to continue, intense severe storms at various times in the year may result in floods at uncommon times.

Risk Assessment

The following table identifies the assets within Clermont County that are located within Special Flood Hazard Areas (i.e., 0.2% annual chance flood areas, 0.1% annual chance flood areas).

Table 2.2.6.12

Clermont County Assets Located in SFHAs					
Asset	Address	Jurisdiction	Asset Type	SFHA	
				0.2%	0.1%
Anthony Meldahl Locks & Dam	2443 US Rt 52	Chilo	High Potential Loss		X
Bullskin Creek Site	N/A	Chilo	Natural, Cultural, Historical		X
Cardboard Boat Museum	311 Front Street	New Richmond	Special Consideration		X
Chilo Dairy Bar	2811 US Rt 52	Chilo	Special Consideration	X	
Chilo Village Hall	300 Washington St.	Chilo	Government		X
Edington Mound	2241 US Rt 52	Felicity	Natural, Cultural, Historical		X
Gene Holland Park	128 Water Street	Moscow	Special Consideration		X
HealthSource	100 River Valley Rd	New Richmond	Medical		X
Moscow Village Hall	30 Wells Street	Moscow	Government	X	
Moscow Water Tower	1839 US Rt 52	Moscow	Utility, Infrastructure		X
Neville Village Hall	608 Main St	Neville	Government		X
New Richmond Exempted Village School Dist.	212 W. Main St	New Richmond	Special Consideration		X
New Richmond Fire Dept. # 36	300 Hamilton St	New Richmond	Emergency Services		X
New Richmond Fire Dept. #37	104 Market St	New Richmond	Emergency Services		X
New Richmond Police Dept.	102 Willow St	New Richmond	Emergency Services		X
New Richmond Preparatory Acad.	212 Market St	New Richmond	Vulnerable Pop.		X
New Richmond Utilities Office	102 Willow St	New Richmond	Utility, Infrastructure		X
New Richmond Village Hall	102 Willow St	New Richmond	Government		X
New Richmond Water Works	701 Washington St	New Richmond	Cultural, Historical		X
Ohio DOT	939 Old US Rt 52	New Richmond	Utility, Infrastructure	X	

Clermont County Assets Located in SFHAs					
Asset	Address	Jurisdiction	Asset Type	SFHA	
				0.2%	0.1%
Ohio River Lock #34 Museum	521 Co. Park Rd	Chilo	Cultural, Historical		X
Ross-Growdy House Museum	125 George St	New Richmond	Cultural, Historical		X
Snead Mound	US Rt 52	Neville	Cultural, Historical		X
Sycamore Park	4082 SR 132	Batavia	Cultural, Historical	X	

This section summarizes the vulnerability of Clermont County to flooding. The county conducted an online survey for the public to share its thoughts on the hazards listed in this plan. The following table presents the results of that survey, specifically regarding flooding.

Table 2.2.6.13

Public Sentiment, Flooding					
Hazard	Level of Concern				Total Responses
	Not at All	Somewhat	Concerned	Very	
FLOODING	18 (34.62%)	18 (34.62%)	10 (19.23%)	6 (11.54%)	52
In the past five years, do you remember this hazard occurring in your community?				12 (23.08%)	52
Have you noticed an increase in the occurrences or intensity of this hazard?				19 (36.54%)	52
Have you noticed a decrease in the occurrences or intensity of this hazard?				3 (5.77%)	52

Source: Online Public Survey Results

Table 2.2.6.14 assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above. The categories in the table appear in Ohio EMA's Mitigation Information Portal (MIP) tool.

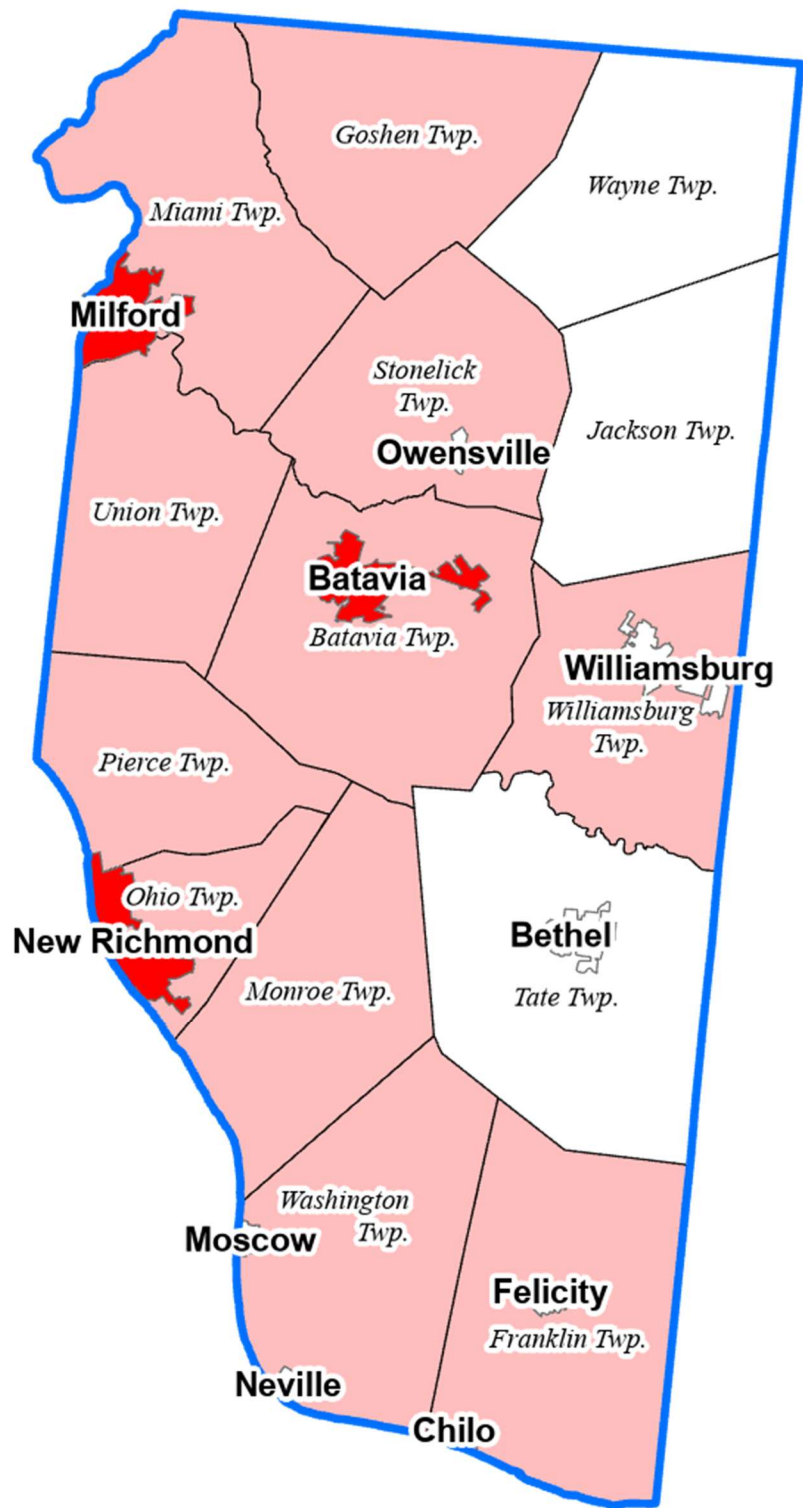
Table 2.2.6.14

Risk Ranking, Flooding			
Category	Points	Description	Notes
Frequency	5	Frequent (Will occur during a year)	Based on historical data, Clermont County as experienced 113 flood-related incidents in 28 years, for an average of 4.04 incidents per year.
Response	4	One month	The recovery following large-scale floods can take several weeks.
Onset	3	6-12 hours	The NWS typically issues flood watches and warnings within 12-24 hours; however, flash floods often have less lead time.
Magnitude	2	Limited (10-25% land area affected)	Flooding is a site-specific hazard.
Business	2	One week	It typically takes impacted businesses approximately one week to resume operations following a flood event.
Human	3	Medium (Multiple severe injuries)	There have been two reported fatalities related to flooding since 1996 (per the NCEI). Flooding can result in injuries and fatalities.
Property	1	Less than 10% of property affected	Historical data depicts an average of \$57,460 in property damage per incident since 1996 which is less than 10% of the property in Clermont County.
Totals	20	MEDIUM	

FEMA's *Local Mitigation Planning Handbook* (2023c) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. The following map identifies those multi-jurisdictional risks concerning flooding. Those labels not underlaid by a shaded drop shadow are not more or less at risk of flooding. Those with red drop shadows are more at risk.

Figure 2.2.6.d

Flooding Multi-Jurisdictional Risk Map



2.2.7 Hazardous Materials Release

A chemical, biological, or radiological material that may pose a threat to life, health, property, or the environment. For this profile, the hazardous materials incidents include only those that are not intentional.				
 RISK HIGHEST HIGH MEDIUM LOW LOWEST	Period of Occurrence:	At any time	Risk Ranking:	Medium
	Warning Time:	None	Type of Hazard:	Technological
	Probability:	Frequent (Will occur during a year)	Impact:	Localized (less than 10% of land area affected)
	Disaster Declarations:	None		

Hazard Introduction and Overview

A hazardous material is a substance or material which, because of its chemical, physical or biological nature, poses a threat to life, health, or property if released from a confined setting. A release may occur by spilling, leaking, emitting toxic vapors, or any other process that enables the material to escape its container, enter the environment, and create a potential hazard. Several common hazardous materials include those that are explosive, flammable or combustible, poisonous, toxic, corrosive or radioactive. Related combustible hazardous materials include oxidizers and reactive materials, while toxins produced by etiological (biological) agents are types of poison that can cause disease.

Through the possibility of a release is present at any time, a release while in transit is of great concern to the U. S. Department of Transportation (USDOT). While fixed sites store and use hazardous materials, the materials are usually produced elsewhere and shipped to a fixed facility by rail car, truck, pipeline, or onboard ships or barges. Placards or other signage denoting the hazard material being shipped are placed on or in vehicles as required. Hazardous materials constantly move through Ohio on interstate highways, the rail system, via pipelines and on shipping lanes in rivers and Lake Erie.

The hauling, storage, and use of hazardous materials play a vital role in the economy of our nation. Over three billion tons of hazardous materials are transported annually, and 100,000 trucks haul hazardous materials on the country’s highways each day (PHMSA, 2024). Almost half of all freight trains carry hazardous materials (FRA, 2024). Hazardous materials can release as a secondary result of a natural disaster like an earthquake or flood, or human-caused hazard like a

cyberattack or terrorism. In either case, buildings or vehicles can release their hazardous materials inventories when structurally compromised or involved in traffic accidents.

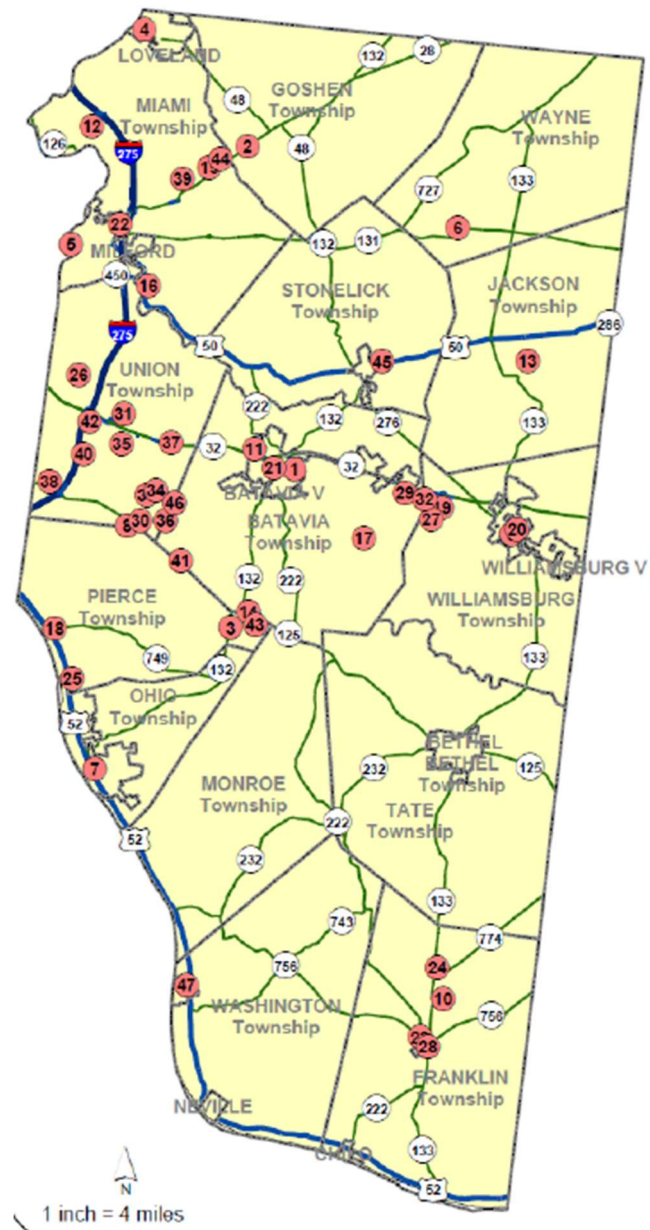
Location and Extent

Ohio is a crossroads state into which, through which, or out of which, virtually every one of the 50,000 chemicals known to be manufactured in the US are transported (OEPA, 2013). The U.S. has about 800,000 hazmat shipments per day nationwide, and Ohio's hazmat shipments make up roughly 12% of all hazmat shipments in the U.S, (PHMSA, 2025).

Hazardous materials spills, leaks, or accidents can occur anywhere in Clermont County; however, they are more likely to happen on transportation pathways such as highways and railways, most often during the unloading phase of transport. Hazardous materials incidents could also occur at facilities that routinely handle hazardous materials such as gas stations, chemical companies, and other Tier II reporting facilities. The majority of the transportation infrastructure utilized to move hazardous materials through Clermont County is in the northern portion of the county, which is also the most populated area of the county. The Hazmat Risk Areas Map on the following page (Figure 2.2.7.a) graphically depicts buffers around the Tier II facilities (1/2 mile), and along highways, and railways where hazmat releases are most likely to occur in the county.

Figure 2.2.7.a

FY2024 EHS REPORTING FACILITIES

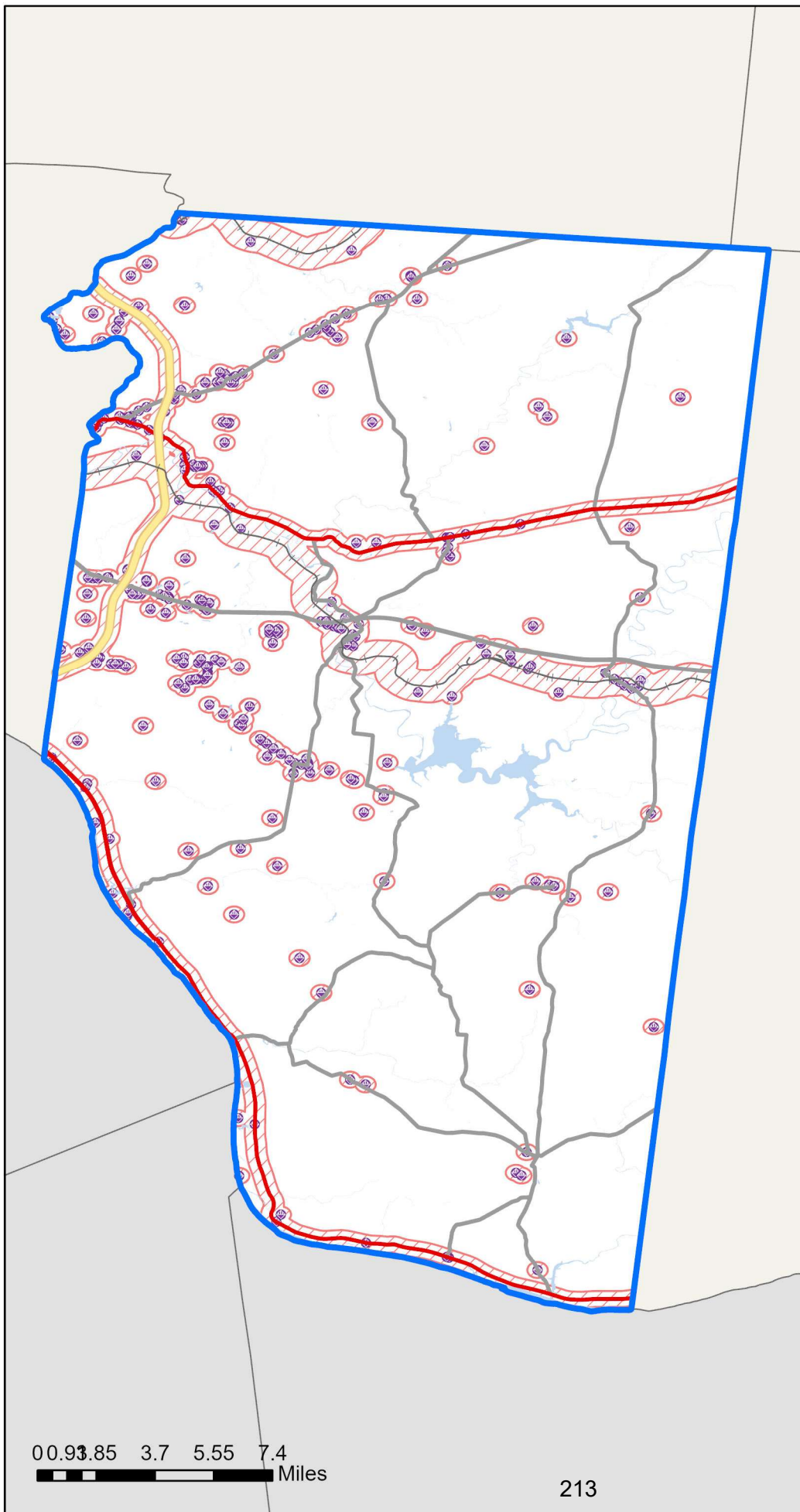


The Emergency Planning and Community Right-to-Know Act (EPCRA), was passed as Title III of the Superfund Amendments and Reauthorization Act (SARA) in 1986. The act requires facilities that processes, use, or store Extremely Hazardous Substances (EHSs) or other hazardous substances as classified by OSHA's hazard communication standard to file a "Tier II" report with the Local Emergency Planning Committee (LEPC) on an annual basis. This is also codified in the Ohio Revised Code (ORC) Chapter 3750. According to the Clermont County Emergency Management Agency there are a total of 140 reporting SARA Title III, Tier II facilities in Clermont County, of those 47 report EHS materials. The majority of these facilities are located in Batavia, Miami, and Union townships (see Figure 2.2.7.a above). Several large chemical manufacturing companies operate near Clermont County as part of the broader Cincinnati chemical manufacturing hub. Duke Energy operates a natural gas transmission pipeline in the southern portions of Clermont County (NPMS, 2024). The pipeline runs from Neville heading northeast to Bethel.

CLERMONT COUNTY HAZARD MITIGATION PLAN

**Figure 2.2.7.b:
Hazmat Risk Areas**

Data Source(s):
U.S. Census (Tiger Data),
USEPA



Permitted Release Facilities

Hazmat Risk Areas

Interstates

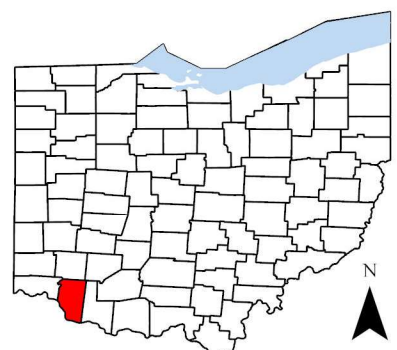
US Routes

DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



CLERMONT
COUNTY OHIO

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The following federal agencies collect data as they relate to hazardous materials incidents, the Pipeline and Hazardous Materials Safety Administration (PHMSA) governed by the U.S. Department of Transportation (DOT), and the National Response Center (NRC), governed by the U.S. Coast Guard (USCG). Data was also obtained from the Ohio EPA, the State Emergency Response Commission (SERC), and the Clermont County LEPC. The types of materials that can cause a hazmat release are wide-ranging and may include chlorine, sodium hydroxide, sulfuric acid, radioactive isotopes, anhydrous ammonia, gasoline, and other hydrocarbons, as well as medical/biological waste from hospitals or clinics. Hazardous materials subject to reporting under the Emergency Planning and Community Right-to-Know Act (EPCRA) or Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) include these four groups:

- **Extremely Hazardous Substances (EHS):** These are materials with acutely toxic properties that may do irreversible damage or cause death to people or harm the environment when released or used outside their intended use. Examples include ammonia, chlorine, and sulfuric acid.
- **Hazardous Substances:** These are any materials posing a threat to human health and the environment or any substance designated by the Environmental Protection Agency (EPA) to be reported if a designated quantity of the substance is spilled into the waters of the United States or otherwise released into the environment.
- **Hazardous Chemicals:** If present at a chemical facility in certain amounts, these substances require a Material Safety Data Sheet (MSDS) under the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard. Such substances are capable of producing fires and explosions or adverse health effects such as cancer, burns, or dermatitis.
- **Toxic Chemicals:** Chemicals or chemical categories that appear on the list because of their chronic or long-term toxicity.

Impacts and Vulnerability

Due to the wide variety of substances used, transported, and stored in the area, it is difficult to assign an overall impact of these substances to public health, the environment, the economy, and infrastructure. An incident causing the accidental release of a hazardous material is spontaneous, with little time for warning, and they can occur rapidly. The chemical, physical, and biological properties of hazardous materials pose a potential risk to life, health, the environment, and property when not properly contained. Further, the recovery and clean-up

activities involved in a hazmat incident may require several hours, days, or even weeks to complete and can cost thousands, if not millions of dollars to clean up.

The extent of the damage from a hazmat release can become widespread, to include hazardous materials reaching source water via storm drains, and the rivers and streams. Spills into waterways and those that reach the groundwater are of particular concern due to the threat they impose to drinking water and subsequently public health, the environment, and fauna in the area. Many chemicals are safe at low amounts and low concentrations but can become dangerous and even toxic at high amounts and concentrations. Additionally, some chemicals can be flammable and can become more volatile when exposed to oxygen.

Additionally, transportation-based hazard incidents have the potential to result in cascading impacts. For example, a rail-based incident could isolate a community in Clermont County as well as several other communities in the region. A significant problem associated with rail incidents, particularly those involving hazardous materials, is that a stopped train can block several roadway intersections, essentially cutting some areas off. These blocks not only hinder evacuation from those areas but also emergency services access to those areas.

Many factors influence the impact of a potential incident, including quick and solid decision-making by emergency officials, location and type of release, evacuation and shelter-in-place needs, public health concerns, and relevant economic considerations. If evacuation is necessary, road closures and traffic jams may result. If a large-scale evacuation is deemed necessary, it can pose serious long-term economic consequences to the impacted area. A delay in the resumption of industry commerce may cause economic losses for both business owners and employees. Also, an evacuation ordered on short notice could cause serious problems for businesses requiring time to shut down specialized equipment. Public or private emergency response organizations may be challenged by the expenses dictated by a hazardous material release and may need to wait an uncomfortable length of time for the responsible party to reimburse any outstanding costs, further straining the economic resources of the impacted area.

A major incident involving significant injuries may severely tax regional medical services, as medical facilities are not generally designed to manage mass amounts of victims on short notice. Consequently, in the event of a major incident, hospitals and other medical facilities must still be able to provide their customary level of service to all patients, regardless of whether they were incident victims or not.

Historical Occurrences

The total number of hazmat incidents reported to the Clermont County Emergency Management Agency's (CCEAM) Hazardous Materials Incident Database between 2000 and 2025 was 451. Of the total incidents 61.9% (n=279) were classified as reportable spills.

The majority of these incidents occurred in Miami Township (n=79), Union Township (n=69), and Batavia Township (n=44). The largest spill involved approximately 8,880 gallons of #2 fuel oil in the Village of New Richmond, on August 19, 2014. The materials involved in most incidents were Diesel Fuel (n=93) and gasoline (n=51), and 19 of the 451 incidents resulted in injuries. Table 2.2.7.1 below presents the reportable spills between 2000 and 2025.

Table 2.2.7.1

Reportable Hazmat Incidents Clermont County (2000 - 2025)					
<i>Incident Date</i>	<i>Location</i>	<i>Township/ Municipality</i>	<i>Chemical Involved</i>	<i>Quantity Released</i>	<i>Injuries Sustained</i>
01/25/00	2726 Crane Schoolhouse	Tate Township	Home Heating Oil	180 gal	None
02/11/00	4484 Elmwood Road	Batavia Township	Fuel Oil	± 100 gal	None
02/15/00	4300 Roudebush Lane	Batavia Village	Diesel Fuel - # 2	± 150 gal	None
02/28/00	Behind 1616 SR 28	Goshen Township	Oil & Hydraulic Fluid	± 50 gal	None
03/08/00	757 US 52 Beckjord Power Station	New Richmond Village	Oil	50 gal	None
04/24/00	1757 US 52, Zimmer Power Station	Moscow Village	Sulfuric Acid	60 gal	None
04/25/00	1757 US 52, Zimmer Power Station	Moscow Village	Fuel Oil	± 10 gal	None
06/02/00	3770 Fomorin Road	Jackson Township	#2 Fuel Oil	125 gal	None
07/15/00	826 State Route 133	Franklin Township	Mineral Oil	± 40 gal	
07/20/00	1098 Old SR 74	Union Township	Gasoline	30 gal	
09/11/00	893 Ohio Pike	Union Township	Waste motor oil, trans fluid, grease	± 200 gal	None
10/22/00	Ohio River, at Beckjord (Tugboat)	Pierce Township	Diesel, hydraulic fl. & motor oil	< 1 gal	None
12/07/00	6829 Shiloh Road	Goshen Township	Fuel Oil	150-200 gal	None
12/17/00	SR 32 in Front of Batavia ZF Plant	Batavia Township	Diesel Fuel	± 40 gal	None
01/17/01	118 Harrison Street	Felicity Village	#1 Kerosene	275 gal	None
01/30/01	Ramp from US 50 to I-275	Miami Township	Diesel Fuel	20 gal	None
04/23/01	3560 State Route 131	Jackson Township	Diesel Fuel, Oil	30-35 gal	Driver transported
05/01/01	2662 Herold Road	Batavia Township	Diesel Fuel	40-50 gal	None
05/07/01	5629 Brooks Holding	Miami Township	Mineral Oil	75 gal	None
05/19/01	Next to 797 Wright Street	Wayne Township	Fuel Oil	> 250 gal	None
06/07/01	Schoolhouse Road/McGuffey Lane	Union Township	Diesel Fuel	unknown	None
07/02/01	757 US 52 Beckjord Power Station	Pierce Township	Fuel Oil, #2	< 1 oz	
08/07/01	4707 Shephard Road	Union Township	Diesel Oil	30-35 gal	
08/13/01	1084 Michelle Trail	Miami Township	Diesel Fuel, Oil	108 gal	None
08/16/01	617 Ohio Pike, BW3's Restaurant	Union Township	Diesel Fuel	125 gal	None
09/26/01	4711 Olive Branch-Stonelick Road	Batavia Township	Fuel Oil	± 220 gal	
10/11/01	4125 Half Acre Road	Williamsburg Township	Oily substance		None
10/14/01	5473 Belfast Owensville Road	Stonelick Township	Unknown	unknown	None
10/25/01	6105 Main Street	Miami Township	Fuel Oil	28 gal	None
11/16/01	4618 SR 132, South of Benton Road	Batavia Township	Diesel Fuel	40 gal	None
12/26/01	SR 133 near SR 32	Williamsburg Township	Gasoline	± 100 gal	None Reported
01/11/02	48 W Main Street	Batavia Township	Mineral Oil	± 70 gal	None Reported
01/12/02	6040 Carole Drive	Miami Township	#2 Fuel Oil	50-75 gal	None

Reportable Hazmat Incidents Clermont County (2000 - 2025)					
Incident Date	Location	Township/ Municipality	Chemical Involved	Quantity Released	Injuries Sustained
03/04/02	1069 Old St Rt 74	Union Township	Hydraulic Oil	± 50 gal	None
03/07/02	2635 SR 28	Goshen Township	Poss Motor Oil	25 gal	None
03/21/02	903 Hawthorne Drive	Union Township	Fuel Oil	unknown	None
04/16/02	Buckler off of Clermontville Laurel	Monroe Township	Motor Oil	2 gal	None
05/08/02	3126 Clover Road	Williamsburg Township	#1 Heating Oil	± 200 gal	None
06/06/02	757 US 52 Beckjord Power Station	New Richmond Village	lubricating oil	3-4 drops	None
06/26/02	931 Round Bottom Road	Union Township	Diesel & Hydraulic Fuel Oil	25-30 gal	None
07/09/02	2592 US 52	Washington Township	Motor Oil	3-5 gal	None Reported
08/17/02	6285 Tri-Ridge Blvd	Miami Township	Paving Runoff, Possible	unknown	None
09/21/02	Gleneste Withamsville & Clepper Lane	Union Township	Transmission Fluid	± 8 qts	None
09/23/02	2598 SR 222	Monroe Township	Diesel Fuel	1,000 gal	None
11/05/02	4000 McMann Road	Union Township	Sodium Hydroxide	55 gal drum	2 persons
11/15/02	4199 Brandonmore Drive	Union Township	Unknown	unknown	None
01/02/03	1217 Twelve Mile Road	Ohio Township	Gas and Oil from 2 junk cars	unknown	None
02/15/03	3800 US 50	Jackson Township	Fuel Oil	25-30 gal	None
03/11/03	757 US 52 Beckjord Power Station	New Richmond Village	Hydraulic Oil	2 oz	None
03/12/03	1997 SR 133	Tate Township	Fuel Oil	± 150 gal	None
03/12/03	6583 Paxton-Guinea Road	Miami Township	PCB-free Mineral Oil	25 gal	None
03/15/03	2746 Lindale Mt Holly Road	Monroe Township	Home Heating Oil	60 gal	None
03/24/03	US 52 @ Sycamore Street	New Richmond Village	Fuel Oil/Diesel Fuel	± 100 gal	None
03/26/03	695 W Plane Street	Bethel Village	Unleaded Gasoline	± 500 gal	None
04/10/03	Roundbottom Road	Union Township	Diesel Fuel	± 20-30 gal	
05/05/03	Cook Road & Cooks Grant	Miami Township	Liquid Lawn Fertilizer	100 gal	None
05/10/03	6935 Goshen Road	Goshen Township	Unknown		None
05/11/03	Williamsburg Bantam Road	Tate Township	Non-PCB Mineral Oil	± 45 gal	None
06/03/03	2845 SR 133	Tate Township	Motor Oil	± 25 gal	None
07/10/03	757 US 52 Beckjord Power Station	New Richmond Village	Kerosene	< 1 gal	None
07/11/03	1757 US 52, Zimmer Power Station	Moscow Village	#2 Fuel Oil	± 1 gal	
07/18/03	SR 131 - from Newtonsville to Day Heights	Multiple - Wayne Stonelick, Miami Twps	Diesel Fuel	± 25 gal	None
08/04/03	757 US 52 Beckjord Power Station	Pierce Township	Lubricating Oil	1-2 oz	None
08/13/03	757 US 52 Beckjord Power Station	Pierce Township	Lubricating Oil	± 1 gal	None
09/23/03	4440 Gleneste Withamsville Road	Union Township	Mineral Oil	40-60 gal	None
10/02/03	556 Hal Cor Lane	Pierce Township	Diesel Oil (Home Heating)	± 30 gal	None
01/01/04	5491 Sugar Camp Road	Miami Township	Gasoline & Oil	15-20 gal	None

Reportable Hazmat Incidents Clermont County (2000 - 2025)					
Incident Date	Location	Township/ Municipality	Chemical Involved	Quantity Released	Injuries Sustained
01/02/04	757 US 52 Beckjord Power Station	Pierce Township	Petroleum Based Oil	< 1 oz	None
01/29/04	3976 Bach Buxton Road	Union Township	Water based NonToxic Ink	± 30 gal	None
02/24/04	1268 Holland Drive	Miami Township	#2 Heating Oil	100 gal	None
03/06/04	102 High St/100 Caroline Street	New Richmond Village	Fuel Oil	200 gal	None
04/08/04	757 US 52 Beckjord Power Station	Pierce Township	Fuel Oil	> 1 gal	None
06/21/04	1751 SR 125 Lot #229	Pierce Township	Fuel Oil	100 gal	None
08/02/04	Precision Dr./McMann	Union Township	Aluminum Finishing Oil	30 gal	None
09/06/04	1143 SR 131	Miami Township	Gasoline	27.5 gal	None
01/03/05	1546 SR 133	Franklin Township	Diesel Fuel	25 gal	1 Brown Co General
01/14/05	1981 Front Wheel Drive	Batavia Township	Water Soluble Cutting Oil	250 gal	None
01/21/05	138 Pine Drive (Lindale Mt. Holly Road)	Monroe Township	Transformer Oil	40 gal	None
01/25/05	SR 133 & Concord Hennings Mill Road	Williamsburg Township	Diesel Fuel	100 gal	
02/08/05	1352/1354 Ridgecrest Drive	Miami Township	Fuel Oil		None
04/23/05	2683 Bethel New Richmond Road	Tate Township	Gasoline	6 gal	None
06/06/05	3762 Spring Grove Road	Tate Township	Fuel Oil	290 gal	None
06/12/05	3552 Turnberry	Pierce Township	Gasoline	10 gal	None
07/14/05	208 E. Main Street Williamsburg	Williamsburg Village	Diesel Fuel or Kerosene	unknown	None
08/23/05	4000 McMann Road	Union Township	Sodium Hydroxide	unknown	None
09/01/05	5900 McPicken Drive	Miami Township	Athletic Field Paint	> 1 gal	None
10/26/05	6066 Branch Hill Guinea Pike	Miami Township	Propane Gas	50 gal	None
11/10/05	689 Locust Corner Road	Pierce Township	Diesel Fuel	4-5 55 gal drum	None
11/18/05	1757 US 52, Zimmer Power Station	Moscow Village	Fuel Oil	1 qt	None
11/18/05	2794 US 50	Stonelick Township	Brown Substance	unknown	None
12/24/05	300 River Valley Blvd	New Richmond Village	#2 Diesel Fuel	150-200 gal	None
01/13/06	1008 Heiserman Road	Miami Township	Diesel Fuel	25-30 gal	None
03/23/06	1757 US 52, Zimmer Power Station	Moscow Village	Hydraulic Oil	1 qt	
03/29/06	2693 St Rt 222	Monroe Township	Gasoline	± 200 gal	None
09/29/06	SR 222 & Union Chapel Road	Batavia Township	Diesel Fuel	300-400 gal	None
10/19/06	Behind 6001 Deerfield Road	Miami Township	Diesel Fuel	unknown	None
10/29/06	1450 O'Bannonville Road	Goshen Township	Fuel Oil	50-100 gal	None
12/21/06	St Rt 232 & Swings Corner Pt Isabel Road	Tate Township	Gasoline	± 10 gal	none
01/26/07	Batavia Transmission Plant	Batavia Township	Diesel Fuel	150 gal	None
02/22/07	1082 O'Bannonville Road	Goshen Township	Motor Vehicle Fluids	unknown	None
03/20/07	757 US 52 Beckjord Power Station	New Richmond Village	Sulfuric Acid	190 gal	None
03/29/07	6634 Shiloh Road	Goshen Township	Heating Oil	± 100 gal	None

Reportable Hazmat Incidents Clermont County (2000 - 2025)					
Incident Date	Location	Township/ Municipality	Chemical Involved	Quantity Released	Injuries Sustained
03/31/07	Thornton's Gas Station	Union Township	Gasoline	2000 gal	None
04/26/07	757 US 52 Beckjord Power Station	New Richmond Village	Lubricationg Oil	sheen	
05/02/07	Sharps Cutoff & Jackson Pike	Jackson Township	Liquid Nitrogen & Atrazine	300 gal	None
05/31/07	100, 200 & 300 Block of Front Street	New Richmond Village	Unknown	unknown	None
06/21/07	McGuffey Lake	Union Township	Oil	3/4 gal	None
06/26/07	5963 Werner Lane, Blanchester	Wayne Township	Hydraulic Oil / Motor Oil	20-40 gal 2-3 gal	None
10/17/07	676 Felicity Higginsport Road	Franklin Township	Propane (liquid)	2000 gal	None
12/04/07	4043 McMann Road	Union Township	Ethylene Glycol (60%)	20-25 gal	Non-life threatening
01/09/08	3964 Pharo Drive	Union Township	Heating Fuel Oil	unknown	None
01/11/08	757 US 52 Beckjord Power Station	Pierce Township	Hydrazine 34% solution	180 gal	None
02/05/08	Eastgate MHP, 1751 E Ohio Pk., Lot 212	Pierce Township	Fuel Oil	50 gal	None
02/12/08	3353 SR 222	Batavia Township	Fuel Oil		None
02/12/08	3443 SR 132	Batavia Township	Diesel Fuel	400 gal	None
02/21/08	3383 SR 222	Batavia Township	Transformer Oil	40 gal	None
03/17/08	855 Old Mill Drive	Miami Township	Transformer Oil	40 gal	None
06/15/08	2599 Sprague Rd - Lake Chloe	Tate Township	Oil-algae	unknown	None
06/29/08	6307 Traylor Lane	Goshen Township	Home Heating Oil	30 gal	None
07/21/08	1349 US RT 52, Point Pleasant	Monroe Township	Gasoline	50 gal	None
07/21/08	Number 9 Rd near Marathon Edenton Rd	Wayne Township	Petro Chemicals	> 1 gal	None
09/20/08	2733 Spring Hill Road	Wayne Township	Transformer Oil	27 gal	None
09/20/08	3950 Pettett Drive	Wayne Township	Transformer Oil	28 gal	None
09/20/08	6325 Manila Road	Goshen Township	Transformer Oil	28 gal	None
11/05/08	SR 32 & SR 133	Williamsburg Township	Diesel Fuel	100 gal	None
11/15/08	SR 28 & Romar Dr Lowes	Miami Township	Diesel Fuel	200 gal	None
11/19/08	SR 32 and Herold Road	Batavia Township	Diesel Fuel	55 gal	Yes
12/23/08	6125 Manila Road	Wayne Township	Fuel Oil	250 gal	None
01/02/09	1757 US 52, Zimmer Power Station	Moscow Village	Grease	1 lb	None
02/07/09	757 US 52 Beckjord Power Station	New Richmond Village	Hydrazine 35% solution	< 200 gal	None
02/28/09	51 Van Fleet Road	Batavia Township	Oil	25 gal	None
03/05/09	757 US 52 Beckjord Power Station	Pierce Township	Lube Oil	2-3 oz	None
03/06/09	KDI, 3975 McMann Road	Union Township	Wastewater sludge	25 gal	None
03/16/09	US50 and Newtonsville-Hutchinson Road	Stonelick Township	Mineral Oil	100 gal	None
04/19/09	4000 McMann Road	Union Township	Copper 2 Phthalocyanine	20 gal	None
05/11/09	US 52 and Sycamore Street	New Richmond Village	Diesel Fuel	3-4 gal	None
08/14/09	1757 US 52, Zimmer Power Station	Moscow Village	Ammonia Vapor 15% solution	945 lbs	None

Reportable Hazmat Incidents Clermont County (2000 - 2025)					
Incident Date	Location	Township/ Municipality	Chemical Involved	Quantity Released	Injuries Sustained
11/02/09	5965 Newtonville Hutchinson Road	Wayne Township	Fuel Oil	120 gal	None
11/18/09	32 & Elick Lane	Union Township	#2 Diesel Fuel	150 gal	None
12/29/09	2679 SR 125, 3014 Sugartree	Tate Township	Fuel Oil	150 gal	None
12/29/09	3014 Sugartree Road	Tate Township	Kerosene	< 25 gal	None
12/30/09	3014 Sugartree Road	Tate Township	Diesel Fuel	150 gal	None
02/02/10	6303 Traylor Ln.	Goshen Township	Fuel Oil	< 80 gal	None
02/08/10	6456 Charles Snider Road	Goshen Township	Fuel Oil	120 gal	None
02/22/10	5838 Wolfpen Pleasant Hill Road	Miami Township	Biodiesel	100 gal	None
04/08/10	3284 Lunsford Road	Batavia Township	Fuel Oil	275 gal	None
05/05/10	NB I275 near HWY 28 (mm57)	Miami Township	Diesel Fuel	220 gal	None
06/16/10	SR 32 & Bauer Road WB	Batavia Township	Diesel Fuel	100 gal	None
07/02/10	1311 Green Ln	Goshen Township	Oil	30 gal	None
07/07/10	1757 US 52, Zimmer Power Station	Moscow Village	Oil	< .25 gal	None
07/20/10	Susanna Way & Augusta Street	New Richmond Village	Transformer Oil	30 gal	None
11/01/10	2553 State Route 133	Tate Township	Diesel Fuel	30 gal	None
12/28/10	1004 Tech Drive	Miami Township	Resin & Acetone	495 gal	None
04/02/11	1757 US 52, Zimmer Power Station	Moscow Village	Turbine Cooling Oil	2 gal	None
08/10/11	3660 Number 9 Road	Wayne Township	Fuel Oil	40 gal	
08/28/11	I-275 NB ramp at US 50	Union Township	Driveway Sealer	300-400 gal	None
04/26/12	Galley Hill Rd & Craver Road	Stonelick Township	Oil	unknown	None
03/20/13	1740 Parker Road	Goshen Township	Fuel Oil	110 gal	None
03/26/13	124 East Street, Utopia	Franklin Township	Diesel Fuel	100 gal	None
08/08/13	Garrison Spurling near Ernies Drive	Wayne Township	Aviation Fuel/Pesticides/Insecticides/Diesel Fuel	200 gal	
09/01/13	4725 Tealtown Road	Union Township	Home heating fuel oil	< 30 gal	None
11/21/13	1141 Ohio Pike	Pierce Township	Fuel Oil	25 gal	None
12/02/13	2117 Laurel Lindale Road	Monroe Township	Propane	unknown	None
12/07/13	595 West Plane Street	Bethel Village	Gasoline	23 gal	None
12/27/13	4731 Tealtown Road	Union Township	Transformer Oil	± 33 gal	
02/19/14	2255 Ohio Pike	Monroe Township	Diesel Fuel	50+ gal	None
02/19/14	Manila Rd South of Woodville Pike	Goshen Township	Gasoline	5-10 gal	None
03/30/14	1751 Ohio Pike	Pierce Township	Fuel Oil	500 gal	
04/25/14	By-Pass 28 and Business 28	Miami Township	Diesel Fuel	50 gal	None reported
04/28/14	757 US 52 Beckjord Power Station	New Richmond Village	Diesel Fuel	20 gal	None

Reportable Hazmat Incidents Clermont County (2000 - 2025)					
Incident Date	Location	Township/ Municipality	Chemical Involved	Quantity Released	Injuries Sustained
08/19/14	757 US 52 Beckjord Power Station	New Richmond Village	#2 fuel oil	± 8,880 gal	None
06/22/15	2212 Waters Road	Washington Township	Mineral oil - non-PCB	5-8 gal	None
07/01/15	4054 Cedarwood Lane	Union Township	Mineral oil - non-PCB	Unk (35-60 gal)	None
07/08/15	4685 State Route 133	Jackson Township	Diesel Fuel	150 gal	None
10/06/15	4301 Ferguson Drive & Ivy Pointe Blvd.	Union Township	Diesel Fuel	10 gal	None
10/23/15	3465 State Route 222	Batavia Township	Diesel Fuel	30 gal	None reported
12/01/15	961 Old State Route 74	Union Township	Gasoline	39 gal	None
12/28/15	4641 Blackberry Lane	Union Township	Mineral Oil	est 25 gal	
01/21/16	798 Hwy 28	Miami Township	Gasoline	79 gal	None
02/12/16	2135 Idelett Hill Road	Monroe Township	Fuel Oil	100-150 gal	None
04/16/16	4278 Mt Carmel Tobasco Road	Union Township	Mineral Oil	5 gal	None
10/10/16	7011 Garrison Spurling Road	Wayne Township	Diesel Fuel / Hydraulic Fluid	100 / 50 gal	
10/12/16	27 Whitney Drive	Miami Township	Motor Oil	55 gal	None
12/11/16	SR 131 & SR 133	Wayne Township	Diesel Fuel	10 gal	None
12/30/16	6003 Jess Thelma Drive	Goshen Township	Fuel Oil	250-275 gal	none
01/10/17	5781 Willnean Drive	Miami Township	Transformer Oil	12 gal	None
01/11/17	1079 Fox Run Road	Miami Township	Transformer Oil	12 gal	None
01/12/17	182 S Front Street	Williamsburg Village	Sewage	75 gal	
01/31/17	896 Locust Lane	Union Township	Fuel Oil	226 gal	None reported
03/09/17	4214 Zagar Drive	Union Township	Fuel Oil	20-30 gal	None
03/26/17	990 HWY 50	Miami Township	Gasoline	4-5 gal	Unknown
05/10/17	Lila Avenue & SR 131	Milford, City	Hydraulic Oil	50 gal	No
05/15/17	1530 Jamar Way	Monroe Township	Oil	100 gal	
05/26/17	2884 SR 132	Ohio Township	Trans fluid/ hydraulic fluid	20-30 gal	Driver transported
07/03/17	529 Ohio Pike	Union Township	Unknown	25 gal	No
08/25/17	728 Ohio Pike	Union Township	Transformer Oil	66 gal	no
11/03/17	1757 US 52, Zimmer Power Station	Moscow Village	Hydraulic Fluid	5 gal	No
03/13/18	931 Round Bottom Road	Union Township	Motor oil, hydraulic fluid, antifreeze	44 qts, 25 gal, 1 gal	Driver taken to hospital
03/14/18	1474 Thomaston Drive	Batavia Township	Propane, Potassium, Ferrocyanide, Potassium Chloride	Unknown	None
03/21/18	6642 Oakland Road	Goshen Township	Crude Oil & Natural Gas	500 gal	Unknown
05/16/18	Race St. & Victor Stier Drive	Milford, City	Diesel Fuel	10-25 gal.	None
05/18/18	200 Castleberry Court	Milford, City	Fuel Oil	25-30 gal	None

Reportable Hazmat Incidents Clermont County (2000 - 2025)					
Incident Date	Location	Township/ Municipality	Chemical Involved	Quantity Released	Injuries Sustained
06/19/18	2243 US 52, East of Neville	Washington Township	Diesel Fuel	Approx 40 gal	Occupants of vehicle were killed.
08/02/18	Ohio River, 300 block of Front Street	New Richmond Village	Unknown	Unknown	None
08/30/18	1 Stillmeadow Drive	Pierce Township	Oil (waste product)	Unknown	None
09/05/18	6401 Branch Hill Guinea Pike	Miami Township	Gasoline	12 gal	None
09/23/18	3008 SR 222	Monroe Township	Mineral Oil	66 gal	None
10/17/18	Ohio River, Meldahl Lock & Dam	Chilo Village	Gasoline; motor oil	4-5 gal; 5 qrts;	None
10/23/18	Wards Corner Road @ Miami Lakes Drive	Miami Township	Diesel Fuel	38 gal	None
11/09/18	305 W Plane Street	Bethel Village	Diesel Fuel	35-75 gal	None
11/16/18	3031 Macedonia Road	Tate Township	Non- PCD Mineral Oil	27 gallons	None
12/01/18	793 Greenwood Lane	Union Township	Fuel Oil	125 gal	None
03/27/19	SR 232 & Joseph's Run Road.	Monroe Township	Gasoline et. al.	30 gal	
04/29/19	Interstate 275 @ 64mm	Union Township	Diesel Fuel	Approx 60 gal.	Yes
06/12/19	3922 Bach-Buxton Rd., Sun Chemical	Union Township	Flammable Liquid	50 gal	Yes
06/18/19	3097 Leeds Road	Monroe Township	Gasoline	Unknown	None
08/28/19	6339 Branch Hill Miamiville Road	Miami Township	Pond Dye/Aqua Shade	Unknown	None
10/22/19	2826 SR 222	Monroe Township	Gasoline	< 100 gal	Driver - transported to hospital
12/09/19	4816 Tealtown Road	Union Township	Fuel Oil	275 gal	None
01/12/20	6372 Branch Hill Miamiville Road	Miami Township	Unknown	Unknown	
02/04/20	Northbound I-275 @ Ohio Pike (SR125)	Union Township	Diesel Fuel	125-150 gal	
04/03/20	32 Hitchcock Lane	Batavia Township	Fuel Oil	200 gal	None
05/06/20	6189 S. Shadow Hill Way	Miami Township	Mineral Oil	approx 20 gal.	None
06/13/20	Railroad (Ohio & Indian Railway)	Loveland, City	Hydraulic Fluid	55 gal	None
06/17/20	95 South 4th Street	Batavia Village	Fuel Oil	100 gal	None
08/25/20	1757 US 52, Zimmer Power Station	Moscow Village	Sulfuric Acid 93%	900 gals	None
09/14/20	2023 State Route 131, UDF	Stonelick Township	Diesel Fuel	15 gal	None
09/15/20	2598 SR 222	Monroe Township	Diesel Fuel/Water mixture	approx 20 gal.	None
10/09/20	3285 State Route 131	Wayne Township	Motor Oil & Lubricants	40-60 gal	None
11/05/20	934 State Route 28	Miami Township	Non-PCB Oil	approx 30 gal	None
01/04/21	Ohio River	Moscow Village	Fuel Oil	unknown	None
04/20/21	6649 Gaynor Road	Goshen Township	Diesel Fuel	1,850	None
05/15/21	546 Wards Corner Road	Miami Township	Oil	+/- 40 gal	None
05/31/21	3680 Hopper Hill Road	Pierce Township	Diesel Fuel	+25 gallons	none

Reportable Hazmat Incidents Clermont County (2000 - 2025)					
Incident Date	Location	Township/ Municipality	Chemical Involved	Quantity Released	Injuries Sustained
06/29/21	SR 32 Bauer Rd/Olive Branch Stonelick Rd	Batavia Township	Diesel Fuel	50 gal	None
07/01/21	6177 Newtonsville Road	Wayne Township	Cattle manure	unknown	
08/19/21	1375 State Route 32	Union Township	Diesel Fuel	50 gal	
08/25/21	3259 Martin Road	Wayne Township	Transformer Oil	50 gal	None
09/19/21	5207 Monterey Road	Jackson Township	Non-PCB Mineral Oil	34 gal	None
09/23/21	3048 Bachelier Road	Pierce Township	Fuel	28 gal	None
11/12/21	2131 State Route 131	Stonelick Township	Diesel Fuel	30-40 gal	None
01/31/22	2658 State Route 222	Monroe Township	Fuel Oil	< 5 gal	None
04/29/22	1166 Deblin Drive	Miami Township	Oil	10 gal	None
05/08/22	2184 Wilshire Circle	Stonelick Township	Fuel Oil	40 gal	None
06/19/22	1041 Old US 52	New Richmond Village	PCB Oil	30-40 gal	None
07/07/22	6576 SR 48	Goshen Township	25 KBA Oil	12 gal	None
07/18/22	691 US 50	Milford, City	Non-PCB Mineral Oil	100 gal	
07/23/22	824 Main Street, Kroger Fuel Center	Milford, City	Gasoline	40-50 gal	None
08/05/22	Westbound SR32 @ Elick Road	Union Township	Diesel Fuel	40-80 gal	None
09/29/22	20 Madagascar Drive (Tradewinds MHP)	Ohio Township	Natural Gas	unknown	None
10/06/22	5327 SR 132	Stonelick Township	Diesel Fuel	50+ gal	None
01/18/23	1362 Norma Lane	Goshen Township	Fuel Oil	100 gal	None
05/16/23	Cole Road @ Riverwalk Drive/Lewis	Pierce Township	Motor Oil and Antifreeze	6-8 Quarts	2 Transported / 1 declined
07/28/23	6853 Shiloh Road	Goshen Township	Non-PCB Oil	30 gal	None
07/28/23	6907 Shiloh Road	Goshen Township	Diesel Fuel	20-30 gal	none
08/03/23	3000 Hospital Drive	Batavia Township	Diesel Fuel	30-40 gal	None
10/11/23	Half Acre Road & SR 276	Williamsburg Township	Diesel Fuel	200 gal	None
10/19/23	Eastbound SR 125 @ I-275	Union Township	Diesel Fuel	120 gal	None
10/28/23	5653 Happy Hollow Road	Miami Township	Mineral Oil	9 gal	None
01/25/24	4330 Batavia Road	Batavia Township	Non PCB Transformer Oil	5-10 gal	None
03/15/24	Wolfpen Pleasant Hill Rd/Heatherstone Way	Miami Township	Gasoline	Unknown	None
03/15/24	55 W Techne Center Drive	Miami Township	Mineral Oil	15 gal	None
05/04/24	828 Almahurst Ln	Miami Township	Hydraulic Fluid	Unknown	None
05/16/24	2043 State Route 756	Washington Township	Diesel Fuel	38 gal	None
05/25/24	3423 Clover Road	Williamsburg Township	Diesel Fuel	Unknown	None
05/31/24	1459 Baldwin Road	Union Township	Mulch Dye	55 gal	None

Reportable Hazmat Incidents Clermont County (2000 - 2025)					
<i>Incident Date</i>	<i>Location</i>	<i>Township/ Municipality</i>	<i>Chemical Involved</i>	<i>Quantity Released</i>	<i>Injuries Sustained</i>
07/03/24	4400 SR 222	Batavia Township	Non PCB Transformer Oil	48 gal	None
10/18/24	1152 US 50	Miami Township	Diesel Fuel	35 gal	None
02/28/25	110 Glendale Milford Road	Miami Township	Diesel Fuel, Hydraulic oil	100 gal Diesel; 35 gal oil	None
03/15/25	5997 Hunt Road	Wayne Township	Non-PCB Oil	Approx. 40 gal	None
05/08/25	1106 Main Street	Milford, City	Natural Gas	Unknown	None
06/08/25	5484 South Garrett Drive	Miami Township	Diesel Fuel	75- 100 gal	None
07/22/25	3645 Bootjack Corner Road	Williamsburg Township	Diesel Fuel	100 gal	None
06/26/25	6805 SR 727	Wayne Township	Gasoline	Unknown	
08/13/25	1929 US50	Stonelick Township	Diesel Fuel	approx. 500 gal	None
08/20/25	3960 Greenbriar Road	Batavia Township	Chlorine	50 lbs.	None
09/14/25	3679 Lucas Road	Wayne Township	Gasoline	20 gal	None
10/20/25	Allen Drive/ Wolfpen Pleasant Hill Road	Miami Township	Non-PCB Transformer Oil	60 gal	None
11/06/25	4440 Glen Este-Withamsville Road	Union Township	Non-PCB Transformer Oil	75 gal	None

Source: Clermont County EMA

Loss and Damages

The U.S. DOT-Office of Hazardous Materials Safety, Incident Reports Database provides loss data for some of the reported incidents. The Clermont County data included 10 incidents with “damages” reported from 2020 to 2024. Those reported damages were \$246,547, or an average of \$24,655 per incident.

Data is also available nationally regarding loading/unloading incidents at fixed facilities. According to a report prepared for the Federal Motor Carrier Safety Administration, the average non-explosion loading/unloading incident results in losses of \$5,000 (Battelle, 2001). Though it is difficult to extrapolate that figure to an annualized loss estimate, it provides a site-specific point of reference for future planning.

Future Occurrences

Predicting the exact probability of future hazardous materials incidents in Clermont County is complex and depends on several factors. Due to effective regulations, the number of hazardous materials incidents has decreased in recent decades nationwide according to FEMA. Despite the decrease in incidents, hazardous materials are integral to everyday life, and are involved in production, storage, transportation, and disposal of many products, thus, the risk of incidents, while potentially reduced, does remain.

Clermont County has a history of industrial activity, including chemical manufacturing and related industries which involves the handling and transportation of hazardous materials.

Risk Assessment

The following table identifies 135 assets within Clermont County that are located within hazardous materials risk areas. The majority of these assets are located in Batavia Village, Milford City, New Richmond Village, Williamsburg Village, and Miami and Union Townships. Approximately 26% of these assets are classified as vulnerable populations, and 15% as emergency services.

Table 2.2.7.2

Clermont County Assets Located in Hazmat Risk Areas			
Asset	Address	Jurisdiction	Asset Type
279 th Composite Squadron - CAP	4184 Taylor Rd	Batavia Twp	Special Consideration
Anthony Meldahl Locks & Dam	2443 U.S. Route 52	Chilo	High Potential Loss
Auxier Gas	2698 Old SR 32	Batavia Twp	Utility, Infrastructure
Batavia Elementary School	3 Bulldog Place	Batavia	Vulnerable Pop

Clermont County Assets Located in Hazmat Risk Areas			
Asset	Address	Jurisdiction	Asset Type
Batavia High School	1 Bulldog Place	Batavia	Vulnerable Pop
Batavia Middle School	2 Bulldog Place	Batavia	Vulnerable Pop
Batavia Police Department	65 N. Second St	Batavia	Emergency Services
Batavia Village Hall	65 N. Second St	Batavia	Government
Bethel-Tate High School	3420 SR 125	Tate Twp	Vulnerable Pop
Bethel-Tate Local School Dist.	675 W. Plane St	Bethel	Special Consideration
Bethel-Tate Middle School	649 W. Plane St	Bethel	Vulnerable Pop
Cardboard Boat Museum	311 Front St	New Richmond	Special Consideration
CareFirst Urgent Care	8456 SR 28	Miami Twp	Medical
Central Joint Fire/EMS District # 11	1776 SR 125	Batavia Twp	Emergency Services
Chilo Dairy Bar	2811 U.S. Route 52	Chilo	Special Consideration
Chilo Village Hall	300 Washington St	Chilo	Government
Cincinnati Children's Eastgate	4315 Ivy Pointe Blvd	Union Twp	Medical
Clermont Agricultural Society	1000 Locust St	Owensville	Special Consideration
Clermont County Courthouse	101 East Main St	Batavia	Government
Clermont County Economic Devel.	101 East Main St	Batavia	Special Consideration
Clermont County Engineer	2381 Clermont Center Dr.	Batavia	Special Consideration
Clermont County Fairgrounds	1000 Locust St	Owensville	Special Consideration
Clermont County Jail	4700 E. Filager Rd	Batavia	Special Consideration
Clermont County OSU Extension	1000 Locust St	Owensville	Special Consideration
Clermont County Sheriff's Office	4470 SR 222	Batavia	Emergency Services
Clermont SWCD	1000 Locust St	Owensville	Special Consideration
Clermont County Water Resources	4400 Haskell Lane	Batavia	Utility, Infrastructure
Clermont Northeastern Early Childhood Ed.	2792 U.S. Route 50	Stonelick Twp	Vulnerable Pop
Clermont Northeastern Elem. School	5347 Hutchinson Rd	Stonelick Twp	Vulnerable Pop
Clermont Northeastern High School	5327 Hutchinson Rd	Stonelick Twp	Vulnerable Pop
Clermont Northeastern Middle School	2792 U.S. Route 50	Stonelick Twp	Vulnerable Pop
Clermont Pediatric Center	3003 Hospital Dr	Batavia	Medical
Clermont Transportation Connection	4003 Filager Rd	Batavia	Special Consideration
DaVita Clermont County Dialysis	5901 Montclair Blvd.	Miami Twp	Medical
DaVita Eastgate Dialysis	4435 Aicholtz Rd	Union Twp	Medical
DaVita Ohio Pike Dialysis	1761 SR 125	Pierce Twp	Medical
Dimmitt Woods	611 College Dr	Batavia	Vulnerable Pop
Duke Energy Bethel-Batavia Pipeline	Old State Route 32	Batavia Twp	Utility, Infrastructure
Ebon C. Hill Intermediate School	150 Fossyl Dr	Bethel	Vulnerable Pop
Edington Mound	2241 U.S. Route 52	Felicity	Cultural, Historical
Epilepsy Alliance of Ohio-Arborview	5405 Fomorin Rd	Williamsburg	Vulnerable Pop
Epilepsy Alliance of Ohio-Cedar Ck	5411 Fomorin Rd	Williamsburg	Vulnerable Pop
Epilepsy Alliance of Ohio-Sycamore	800 South Riverside Dr	Batavia	Vulnerable Pop
Five Points Landing Park	527 Lila Ave	Milford	Special Consideration
Gene Holland Park	128 Water St	Moscow	Special Consideration
Gauche Park	410 South Broadway St	Owensville	Special Consideration
Goshen Log Cabin	1843 SR 28	Goshen	Cultural, Historical
Goshen Township Fire Dept. # 18	1849 SR 28	Goshen	Emergency Services

Clermont County Assets Located in Hazmat Risk Areas			
Asset	Address	Jurisdiction	Asset Type
Harmony Hill Dairy House	299 3rd St	Williamsburg	Cultural, Historical
HealthSource Batavia	2055 Hospital Dr.	Batavia	Medical
HealthSource New Richmond	100 River Valley Rd	New Richmond	Medical
HealthSource Williamsburg	500 S. 5th St	Williamsburg	Medical
Hometown Urgent Care	1068 SR 28	Milford	Medical
Huhtamaki	1985 James E. Sauls Dr	Batavia Twp	High Potential Loss
Jackson Township Fire Dept. # 24	3261 US Route 50	Jackson Twp	Emergency Services
Laurels of Milford	934 SR 28	Milford	Vulnerable Pop
Magnolia Springs	767 Loveland-Miamiville Rd	Miami Twp	Vulnerable Pop
Marge Schott Lake Dam	39.21361 -81.2806	Miami Twp	High Potential Loss
Mellon Ridge, Inc.	1659 SR 28	Goshen Twp	Vulnerable Pop
Mercy Health – Clermont Hospital	3000 Hospital Dr	Batavia	Medical
Mercy Health-Milford Family Medicine	201 Old Bank Rd, #103	Milford	Medical
Mercy Health Urgent Care	1064 SR 28	Milford	Medical
Mercy Health-West Clermont	4101 Bach Buxton Rd	Union Twp	Medical
Miami Township Fire Depart. # 26	5888 McPicken Dr	Miami Twp	Emergency Services
Miami Township Fire Depart. # 28	1154 U.S. Route 50	Miami Twp	Emergency Services
Miami Township Police Dept	5900 McPicken Dr	Miami Twp	Emergency Services
Milacron, LLC	4165 Half-Acre Rd	Williamsburg	High Potential Loss
Milford Academy & Preschool	1039 SR 28	Miami Twp	Vulnerable Pop
Milford City Hall	745 Center St	Milford	Government
Milford Community Fire Depart. 71	687-B US Route 50	Milford	Emergency Services
Milford Electric Supply	1283 US Route 30	Milford	Utility, Infrastructure
Milford High School	1 Eagles Watch Way	Miami Twp	Vulnerable Pop
Milford Police Department	745 Center St	Milford	Emergency Services
Milford Water Department	745 Center St	Milford	Utility, Infrastructure
Monroe Elementary School	2117 Laurel Lindale Rd	Monroe Twp	Vulnerable Pop
Morris Nursing Home	322 S. Charity St	Bethel	Vulnerable Pop
Moscow Village Hall	30 Wells Street	Moscow	Government
Moscow Water Tower	1839 U.S. Route 52	Moscow	Utility, Infrastructure
Neville Village Hall	608 Main St	Neville	Government
New Richmond Exept Vill School Dist.	212 W. Main St	New Richmond	Special Consideration
New Richmond Fire Dept. # 36	300 Hamilton St	New Richmond	Emergency Services
New Richmond Fire Dept. # 37	104 Market St	New Richmond	Emergency Services
New Richmond Preparatory Academy	212 Market St	New Richmond	Vulnerable Pop
New Richmond Police Department	102 Willow St	New Richmond	Emergency Services
New Richmond Utilities Office	102 Willow St	New Richmond	Utility, Infrastructure
New Richmond Village Hall	102 Willow St	New Richmond	Government
New Richmond Water Works	701 Washington St	New Richmond	Cultural, Historical
O'Bannon Terrace of Goshen	6716 SR 132	Goshen Twp	Vulnerable Pop
Ohio DOT	939 Old U.S. Route 52	New Richmond	Utility, Infrastructure
Ohio State Highway Patrol	100 Hospital Dr	Batavia	Emergency Services
Owensville Police Department	115 W. Main St	Owensville	Emergency Services
Owensville Village Hall	115 W. Main St	Owensville	Government
Pattison Elementary School	5330 S. Milford Rd	Milford	Vulnerable Pop

Clermont County Assets Located in Hazmat Risk Areas			
Asset	Address	Jurisdiction	Asset Type
Pattison Park	2228 U.S. Route 50	Batavia	Special Consideration
Pinebrook Senior Living	5877 Wolfpen Pleasant Hill Rd	Milford	Vulnerable Pop
Promont House & Museum	906 Goshen Pike	Milford	Cultural, Historical
Ross-Growdy House Museum	125 George St	New Richmond	Cultural, Historical
St. Louis School	250 North Broadway	Owensville	Vulnerable Pop
St. Thomas More School	788 Ohio Pike	Union Twp	Vulnerable Pop
St. Veronica Elementary School	4475 Mt. Carmel-Tobasco Rd.	Union Twp	Vulnerable Pop
Siena Gardens	1055 SR 125	Pierce Twp	Vulnerable Pop
Snead Mound	U.S. Route 52	Neville	Cultural, Historical
South Afton Industrial Park	4226 Half-Acre Rd	Williamsburg Twp	High Potential Loss
Spaulding Elementary School	6755 Linton Rd	Goshen Twp	Vulnerable Pop
Stonelick State Park	2895 Lake Dr	Wayne Twp	Special Consideration
Stonelick Township Fire Dept. # 40	2541 US Route 50	Stonelick Twp	Emergency Services
Summerside Elementary School	4639 Vermona Dr	Union Twp	Vulnerable Pop
Sunrise Manor Nursing & Rehab.	3434 SR 132	Batavia Twp	Vulnerable Pop
Sycamore Park	4082 SR 132	Batavia	Cultural, Historical
Take Care Clinic (Walgreens)	719 Ohio Pike	Withamsville	Medical
Tata Consultancy Services	1000 Summit Dr	Miami Twp	High Potential Loss
The Atlantes	776 Old SR 74-B	Union Twp	Vulnerable Pop
Total Quality Logistics	4104 Founders Boulevard	Batavia	High Potential Loss
Total Quality Logistics	1701 Edison Dr	Miami Twp	High Potential Loss
Tri-State Warbird Museum	4021 Borman Dr	Batavia	Cultural, Historical
Union Township Fire Dept. # 50	1141 Cincinnati-Batavia Pike	Union Twp	Emergency Services
Union Township Fire Dept. # 52	3873 Back Buxton Rd	Union Twp	Emergency Services
Union Township Police Department	4312 Glen-Este-Withamsville Rd	Union Twp	Emergency Services
Venetian Gardens Nursing Home	1650 SR 28	Goshen Twp	Vulnerable Pop
Wayne Township Fire Dept. # 55	797 Wright St	Wayne Twp	Emergency Services
West Clermont Local School District	4350 Alcholtz Rd	Union Twp	Special Consideration
West Clermont High School	4101 Bach-Buxton Rd	Union Twp	Vulnerable Pop
West Clermont Middle School	1340 Clough Pike	Batavia Twp	Vulnerable Pop
William Bick Elementary School	101 Fossyl Dr	Bethel	Vulnerable Pop
Williamsburg Elementary School	839 Spring St	Williamsburg	Vulnerable Pop
Williamsburg Local School District	549 A W. Main St	Williamsburg	Special Consideration
Williamsburg Middle/High School	500 S. 5th St	Williamsburg	Vulnerable Pop
Williamsburg Police Department	107 W. Main St	Williamsburg	Emergency Services
Williamsburg Public Works	107 W. Main St	Williamsburg	Utility, Infrastructure
Williamsburg Twp Fire Dept. # 73	915 W. Main St	Williamsburg	Emergency Services
Williamsburg Village Hall	107 W. Main St	Williamsburg	Government
Willowbrook Lake Dam	39.1022 -84.255	Union Twp	High Potential Loss
Withamsville-Tobasco Elementary School	3950 Britton Boulevard	Union Twp	Vulnerable Pop

This section summarizes the vulnerability of Clermont County to hazardous materials releases. The county conducted an online survey for the public to share its thoughts on the hazards listed in this plan. Table 2.2.7.3 presents the results of that survey, specifically regarding hazardous materials releases.

Table 2.2.7.3

Public Sentiment, Hazardous Materials Release					
Hazard	Level of Concern				Total Responses
	Not at All	Somewhat	Concerned	Very	
HAZMAT RELEASE	22 (42.31%)	12 (23.08%)	11 (21.15%)	7 (13.46%)	52
In the past five years, do you remember this hazard occurring in your community?				2 (3.85%)	52
Have you noticed an increase in the occurrences or intensity of this hazard?				10 (19.23%)	52
Have you noticed a decrease in the occurrences or intensity of this hazard?				2 (3.85%)	52

Source: Online Public Survey Results

The following table assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above. The categories in the table appear in Ohio EMA's Mitigation Information Portal (MIP) tool.

Table 2.2.7.4

Risk Ranking, Hazardous Materials Release			
Category	Points	Description	Notes
Frequency	5	Frequent (Will occur in a year)	A total of 21 hazmat incidents were reported to the U.S. DOT between 2020 and 2024. This creates an average of 5.25 incidents per year.
Response	3	One week	The recovery and clean-up activities involved in a hazmat incident may require several hours, days, or even weeks to complete
Onset	5	None	Hazmat releases typically occur with no warning.
Magnitude	1	Localized (Less than 10% of land area affected)	Hazmat release are site-specific events and are highly localized.
Business	1	Less than 24 hours	Historical hazmat releases in Clermont County have rarely disrupted businesses for longer than 24 hours.
Human	3	Medium (Multiple severe injuries)	There is a potential for multiple severe injuries and illness to result from a hazmat release.
Property	1	Less than 10% of property affected	Hazmat releases are site-specific events and are likely to impact substantially less than 10% of the county.
Totals	19	MEDIUM	

FEMA's *Local Mitigation Planning Handbook* (2023c) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. The following map identifies those multi-jurisdictional risks concerning hazardous materials releases. Those labels not underlaid by a shaded drop shadow are not more or less at risk. Those with red drop shadows are more at risk.

Figure 2.2.7.c

Hazardous Materials Release Multi-Jurisdictional Risk Map

