

Logan County, ND

Risk-assessment baseline packet

County FIPS: 38047 Release: 2026-10 Data as of: 2026-09-30 Storm Events data through: 2026-06-30

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Summary

Plan status as of 2026-09-30: Approved, expires 2028-01-16. Plan: Logan County, ND Hazard Mitigation Plan 2023 (FEMA plan 108778), approved 2023-01-17. Since the plan was approved on 2023-01-17: 1 new hazard declaration (1 incident) and 26 NOAA Storm Events records; details under "What changed since your last plan". Highest expected annual loss (FEMA National Risk Index, modeled total; see B1-a): Cold Wave (\$2,047,054 a year), Inland Flooding (\$676,653) and Hail (\$397,366). The tables that follow are organized by the items of FEMA's Local Mitigation Plan Review Tool, Element B (B1-a to B2-c); each heading says which item its tables support.

TERMS USED

EAL: expected annual loss: FEMA's modeled average yearly loss from a hazard.
NRI: FEMA's National Risk Index (version 1.20, December 2025).
NFIP: National Flood Insurance Program.
RL, SRL: repetitive loss and severe repetitive loss: flood-insured properties with repeated claims (definitions in B2-c).
FMA, HMGP: Flood Mitigation Assistance and Hazard Mitigation Grant Program, FEMA mitigation grants.
PA: FEMA Public Assistance: disaster aid to governments and some nonprofits.
Zone-level: NOAA logged the event for a National Weather Service forecast zone, which may include parts of neighboring counties.
County-coded: NOAA logged the event to this county.
FIPS: the federal code for a place; 38047 is this area.
D0 to D4: U.S. Drought Monitor categories, from abnormally dry (D0) to exceptional drought (D4).
F/EF, EFU: Fujita and Enhanced Fujita tornado ratings; EFU is an unrated tornado.
kt, CONUS: knots (1 kt is about 1.15 mph); the contiguous United States.
CFR: Code of Federal Regulations.
A4-a, E1-a: other items of FEMA's Local Mitigation Plan Review Tool (sources, and changes since the last plan).
Dollars: nominal (as reported, labeled with the year), not adjusted for inflation.

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Plan clock

Status:	Approved, expires 2028-01-16	Plan:	Logan County, ND Hazard Mitigation Plan 2023 (FEMA plan 108778)
Approved:	2023-01-17	Days to expiry:	473

What changed since your last plan (approved 2023-01-17)

New federal declarations:	1 new hazard declaration (1 incident): DR-4760-ND (Severe Winter Storm and Straight-Line Winds)	Storm Events records since approval:	26 records (data through 2026-06-30)
Repetitive loss now:	FMA RL 0, SRL 0 (44 CFR 77.2); any definition: 0	Repeat-flood change:	this release sets the baseline count.

Sources: 1, 2, 4, 6 (numbered list at the end)

Plan status for every jurisdiction listed in this county

Source: 1

Jurisdiction	Type	Status	Plan	Approved	Expires	Days to expiry negative = days since expiry	Notes
Logan County	County	Approved, expires 2028-01-16	Logan County, ND Hazard Mitigation Plan 2023 (FEMA plan 108778)	2023-01-17	2028-01-16	473	
Fredonia city	City	Approved, expires 2028-01-16	Logan County, ND Hazard Mitigation Plan 2023 (FEMA plan 108778)	2023-01-17	2028-01-16	473	
Gackle city	City	Approved, expires 2028-01-16	Logan County, ND Hazard Mitigation Plan 2023 (FEMA plan 108778)	2023-01-17	2028-01-16	473	
Lehr city	City	Approved, expires 2028-04-09	McIntosh County, ND Hazard Mitigation Plan 2023 (FEMA plan 108992)	2023-04-10	2028-04-09	557	Also approved under plan 108778 (Logan County, ND Hazard Mitigation Plan 2023, expires 2028-01-16). FEMA's plan status map shows one plan per jurisdiction and may show one of these; this packet uses the approved plan that expires last.
Napoleon city	City	Approved, expires 2028-01-16	Logan County, ND Hazard Mitigation Plan 2023 (FEMA plan 108778)	2023-01-17	2028-01-16	473	

State plan status and tribal plans in this state: see the state page.

Supports FEMA checklist item B1-a: hazard identification

Hazards NRI does not cover (local data needed)

- dam failure (incl. upstream dams)
- levee failure
- flash flood as its own subtype
- ice jams
- debris flows
- erosion (riverine and coastal)
- land subsidence and sinkholes
- expansive soils

The 18 National Risk Index hazards, ranked by expected annual loss (EAL)

Sources: 5, 6

Rank by EAL	Hazard	NRI risk rating	EAL rating	EAL buildings <i>modeled dollars per year</i>	EAL agriculture <i>modeled dollars per year</i>	Cost of expected deaths and injuries <i>FEMA's dollar value per year, not property damage</i>	EAL total (see note) <i>modeled dollars per year</i>	Storm Events records, 1996 to 2026-06-30 <i>count</i>	Why this hazard can be left out <i>NRI Not Applicable, no declaration and no Storm Events record since 1996</i>	Storm Events coverage note
1	Cold Wave	Relatively Moderate	Relatively Moderate	\$233	\$710,020	\$1,336,801	\$2,047,054	28		
2	Inland Flooding	Very Low	Very Low	\$676,151	\$491	\$11	\$676,653	6		
3	Hail	Relatively Low	Relatively Low	\$216,527	\$131,739	\$49,100	\$397,366	95		
4	Strong Wind	Relatively Low	Relatively Low	\$95,205	\$75,925	\$91,624	\$262,754	78		Includes 40 High Wind records (a NOAA non-thunderstorm wind type, outside NRI's Strong Wind definition).
5	Tornado	Very Low	Very Low	\$142,293	\$8,505	\$9,373	\$160,171	8		
6	Winter Weather	Relatively Moderate	Relatively Moderate	\$72,381	\$271	\$47,768	\$120,420	108		
7	Wildfire	Very Low	Very Low	\$49,617	\$115	\$837	\$50,569	0		Declared 1 time; no Storm Events record of this type.
8	Ice Storm	Relatively Low	Relatively Low	\$22,152	n/a	\$15,075	\$37,227	1		
9	Drought	Very Low	Very Low	n/a	\$15,118	n/a	\$15,118	7		
10	Lightning	Very Low	Very Low	\$5,348	n/a	\$4,898	\$10,246	4		
11	Heat Wave	Very Low	Very Low	\$736	\$1	\$9,053	\$9,790	2		
12	Earthquake	Very Low	Very Low	\$1,292	n/a	\$242	\$1,534			Storm Events does not record earthquakes.

Rank by EAL	Hazard	NRI risk rating	EAL rating	EAL buildings <i>modeled dollars per year</i>	EAL agriculture <i>modeled dollars per year</i>	Cost of expected deaths and injuries <i>FEMA's dollar value per year, not property damage</i>	EAL total (see note) <i>modeled dollars per year</i>	Storm Events records, 1996 to 2026-06-30 <i>count</i>	Why this hazard can be left out <i>NRI Not Applicable, no declaration and no Storm Events record since 1996</i>	Storm Events coverage note
13	Landslide	Very Low	Very Low	\$2	n/a	\$2	\$4	0		Declared 1 time; no Storm Events record of this type.
	Hurricane	Not Applicable	Not Applicable					0	NRI rates hurricane Not Applicable for this county, and no counted federal declaration for this county names it (EM-3247-ND names it but is not counted as a local occurrence; see B1-d).	No recorded events in Storm Events since 1996 (data through 2026-06-30).

Total = buildings + agriculture + population equivalence; FEMA values each expected death (or 10 injuries) at \$13.7 million (2024 dollars).

NRI risk rating combines expected annual loss with social vulnerability and community resilience; EAL rating rates expected annual loss alone. Both compare this county with all U.S. counties.

Local data needed: state and local wildfire and landslide records (Storm Events records these hazards only in part).

Not applicable to this county per NRI, with no federal declaration and no Storm Events record since 1996: avalanche, coastal flooding, tsunami and volcanic activity. That is the evidence for leaving them out of the plan.

The state hazard mitigation plan also lists hazards for this county; FEMA asks the plan to explain any hazard it leaves out.

Supports FEMA checklist item B1-b: hazard location

Affects the whole county (national data give no location within it): Cold Wave, Drought, Hail, Heat Wave, Ice Storm, Lightning, Strong Wind and Winter Weather.

Inland Flooding: The FEMA Flood Insurance Rate Map (FIRM) is the required location source for flooding. See the FEMA Flood Map Service Center (<https://msc.fema.gov>) for this county.

NRI rating of the county's single census tract

Source: 5

Hazard	Census tract <i>NRI risk rating, score 0 to 100</i>
Earthquake	tract 9725 (Very Low, 9.7)
Hurricane	no tract has a National Risk Index rating for this hazard
Landslide	tract 9725 (Very Low, 56.1)
Tornado	tract 9725 (Relatively High, 75.3)
Wildfire	tract 9725 (Relatively Moderate, 93.2)

A tract number is the Census tract number (for example 9725 is Census Tract 9725). FEMA's Resilience Analysis and Planning Tool maps the National Risk Index for every tract: <https://www.fema.gov/emergency-managers/practitioners/resilience-analysis-and-planning-tool>

Supports FEMA checklist item B1-c: hazard extent

Extent: scale, observed range and worst recorded event per hazard

Sources: 6, 7

Hazard	Scale	Records <i>count and years</i>	Observed range	Worst recorded event	Most damaging (when different)	How it applies to jurisdictions	Note
Cold/Wind Chill, Extreme Cold/Wind Chill	wind chill	28 records, 1996 to 2025 (28 zone-level)	1 day to 6 days (median 2 days); 28 with a recorded value	6 consecutive days, 2021-02-10 to 2021-02-15, zone-level		Countywide (zone-level records).	
Frost/Freeze (outside NRI's Cold Wave definition)	crop damage	0					
Drought	U.S. Drought Monitor scale (D0 to D4)	7 records, 2021 (7 zone-level)	195 days; 1 with a recorded value	195 days (about 6.4 months), 2021-04-01 to 2021-10-12, a run of 7 consecutive Storm Events drought records, zone-level		Countywide (zone-level records).	Storm Events enters a drought at D2 or worse east of the Rockies and D3 or worse from the Rockies west (NWS Instruction 10-1605); NRI drought counts D3 and D4 only.
Earthquake	Modified Mercalli (local data)	0					Storm Events does not record earthquakes; the USGS earthquake catalog is the source.
Hail	hail size (inches)	114 records, 1958 to 2025	0.75 in to 3.5 in (median 1 in); 114 with a recorded value	3.5 in hail, 2007-08-26	Hail, 2010-07-14, \$1,500,000 property; \$1,000,000 crops (2010 dollars)	Event records naming jurisdictions in the plan: Napoleon city (40 records), Gackle city (22 records), Lehr city (13 records), Fredonia city (4 records).	
Excessive Heat, Heat	heat index (in event narratives)	2 records, 2001 to 2011 (2 zone-level)	1 day to 4 days (median 2.5 days); 2 with a recorded value	4 consecutive days, 2011-07-16 to 2011-07-19, zone-level		Countywide (zone-level records).	
Hurricane, Tropical Storm, Tropical Depression	Saffir-Simpson	0					Storm Events files every zone of a storm's episode under the storm's type; flooding from the storm is filed as Flood or Flash Flood records.
Ice Storm	Sperry-Piltz ice scale (local data)	1 record, 2023 (1 zone-level)		Ice Storm, 2023-12-26, \$500,000 property; \$0 crops (2023 dollars); NWS zone NDZ047		Countywide (zone-level records).	
Flash Flood, Flood, Lakeshore Flood	damage and flood days (flood depth: FIRM)	6 records, 1997 to 2014 (1 zone-level)		Flash Flood, 2014-08-16, \$250,000 property; \$100,000 crops (2014 dollars)		Event records naming jurisdictions in the plan: Napoleon city (4 records). Zone-level records (1) apply countywide.	Flood depth: see the FEMA Flood Insurance Rate Map. Storm Events damage is often \$0 or blank for floods, major ones included; FEMA Public Assistance by declaration (B1-d) shows which floods cost the most.
Debris Flow	none (count and damage only)	0					

Hazard	Scale	Records <i>count and years</i>	Observed range	Worst recorded event	Most damaging (when different)	How it applies to jurisdictions	Note
Lightning	annualized frequency (the measure FEMA's Local Mitigation Planning Handbook names)	4 records, 1997 to 2018		Lightning, 1997-07-19, \$50,000 property; crops not reported (1997 dollars)		Event records naming jurisdictions in the plan: Gackle city (2 records), Napoleon city (2 records).	Storm Events lists lightning with damage or casualties.
High Wind and Strong Wind (outside NRI's Strong Wind definition)	wind speed (kt and mph)	40 records, 1996 to 2026 (40 zone-level)	35 kt (40 mph) to 56 kt (64 mph) (median 50 kt (58 mph)); 40 with a recorded value	56 kt (64 mph) estimated gust, High Wind, 2021-01-14; same speed and measurement basis also recorded on 2000-04-05; NWS zone NDZ047	High Wind, 2011-02-13, \$20,000 property; \$0 crops (zone total, 2011 dollars)	Countywide (zone-level records).	
Thunderstorm Wind	wind speed (kt and mph)	48 records, 1969 to 2026	50 kt (58 mph) to 87 kt (100 mph) (median 57 kt (66 mph)); 39 with a recorded value	87 kt (100 mph) estimated gust, Thunderstorm Wind, 2016-06-22; same speed and measurement basis also recorded on 2001-06-09		Event records naming jurisdictions in the plan: Napoleon city (16 records), Gackle city (7 records), Lehr city (6 records), Fredonia city (4 records).	
Tornado	Enhanced Fujita (Fujita before Feb 2007)	18 records, 1965 to 2024	F/EF0 to F/EF3 (median F/EF1); 16 with a recorded value	F3 tornado, 1974-08-19, 33 yd wide, damage not recorded (pre-1996 record), 3 direct injuries	Tornado, 2011-07-10, \$450,000 property; \$0 crops (2011 dollars)	Event records naming jurisdictions in the plan: Napoleon city (6 records), Fredonia city (1 record).	Before 1996 a tornado is listed once, under the county where it began, with its whole path's rating and length; from 1996 on, each county lists its own segment. Length is not used to rank tornadoes (see Methods).
Wildfire	acres burned (local data)	0					
Winter Storm, Heavy Snow, Blizzard, Lake-Effect Snow, Winter Weather, Sleet	none in data (snowfall: local data)	108 records, 1996 to 2026 (108 zone-level)		Blizzard, 1997-01-09, \$1,530,000 property; crops not reported (1997 dollars), 1 direct injury (reported for the zone); NWS zone NDZ047		Countywide (zone-level records).	

In event narratives only (local data needed): wind chill, temperature, heat index, ice thickness, acres burned and snow depth; any physical measure of debris flow and lightning.

Storm Events records are more complete after 1996; before 1996 only Tornado (from 1950), Hail and Thunderstorm Wind (from 1955) exist. Zone-level records from zones that no NWS zone-county file places in this county (mostly before 2020) are not counted here (the Methods page explains the zone matching).

Dollars are nominal (as reported), labeled with the year; not adjusted for inflation.

Supports FEMA checklist item B1-d: previous occurrences

Federal declarations for this county: 26 declarations covering 23 separate hazard incidents counted in this packet (declarations for the same incident count once; non-natural and evacuation-only declarations are not counted).

Federal disaster declarations for this county

Sources: 1, 2, 3

Declared	Incident began	FEMA number	Type	Title	Mapped hazard	County Public Assistance <i>federal share obligated, nominal dollars</i>	Flags	Notes
2024-02-15	2023-12-25	DR-4760-ND	Major disaster	Severe Winter Storm and Straight-Line Winds	Winter Weather (primary); also designated: Strong Wind	no Public Assistance recorded	new since last plan; within last 5 years	
2022-07-13	2022-04-22	DR-4660-ND	Major disaster	Severe Winter Storm and Flooding	Inland Flooding; Winter Weather	\$64,167.10	in the 12 months before plan approval; within last 5 years	
2020-07-09	2020-04-01	DR-4553-ND	Major disaster	Flooding	Inland Flooding	\$229,845.29		
2020-04-01	2020-01-20	DR-4509-ND	Major disaster	COVID-19 Pandemic	Non-natural, not counted	no Public Assistance recorded		
2020-03-13	2020-01-20	EM-3477-ND	Emergency	COVID-19	Non-natural, not counted	no Public Assistance recorded		same incident as DR-4509
2020-01-21	2019-10-09	DR-4475-ND	Major disaster	Flooding	Inland Flooding	\$144,373.07		
2019-06-12	2019-03-21	DR-4444-ND	Major disaster	Flooding	Inland Flooding	\$113,309.39		
2011-05-10	2011-02-14	DR-1981-ND	Major disaster	Flooding	Inland Flooding	\$1,672,328.42		
2010-04-30	2010-02-26	DR-1907-ND	Major disaster	Flooding	Inland Flooding	\$788,366.72		
2010-02-26	2010-01-20	DR-1879-ND	Major disaster	Severe Winter Storm	Winter Weather	no Public Assistance recorded		
2009-03-24	2009-03-13	DR-1829-ND	Major disaster	Severe Storms and Flooding	Inland Flooding	\$1,097,983.98		
2007-07-17	2007-06-02	DR-1713-ND	Major disaster	Severe Storms and Flooding	Inland Flooding	\$24,900.26		
2005-09-13	2005-08-29	EM-3247-ND	Emergency	Hurricane Katrina Evacuation	Hurricane: evacuation support, not a local hazard event; not counted	no Public Assistance recorded		
2001-05-28	2001-03-01	DR-1376-ND	Major disaster	Severe Storms, Flooding, & Ground Saturation	Inland Flooding	\$76,050.72		
2000-06-27	2000-04-05	DR-1334-ND	Major disaster	Severe Storms, Flooding and Ground Saturation	Inland Flooding	\$161,483.10		

Declared	Incident began	FEMA number	Type	Title	Mapped hazard	County Public Assistance	Flags	Notes
						<i>federal share obligated, nominal dollars</i>		
1999-06-08	1999-03-01	DR-1279-ND	Major disaster	Severe Storms, Flooding, Snow, Ice, Ground Saturation, Landslides, Mudslides, and Tor	Inland Flooding (primary); also designated: Landslide, Tornado	\$181,695.36		
1997-04-07	1997-02-28	DR-1174-ND	Major disaster	Severe Flooding, Severe Winter Storms, Snowmelt, Spring Rains	Inland Flooding (primary); also designated: Wildfire, Winter Weather	no Public Assistance recorded		
1997-01-12	1997-01-03	DR-1157-ND	Major disaster	Severe Winter Storms and Blizzard Conditions	Winter Weather	no Public Assistance recorded		
1996-06-05	1996-03-12	DR-1118-ND	Major disaster	Severe Storms, Flooding, & Ice Jams	Inland Flooding	no Public Assistance recorded		
1995-05-16	1995-03-01	DR-1050-ND	Major disaster	Severe Storms, Flooding, and Ground Saturation	Inland Flooding	no Public Assistance recorded		
1994-07-01	1994-03-05	DR-1032-ND	Major disaster	Severe Storms, Flooding	Inland Flooding	no Public Assistance recorded		
1993-07-26	1993-06-22	DR-1001-ND	Major disaster	Severe Storms & Flooding	Inland Flooding	no Public Assistance recorded		
1979-04-26	1979-04-26	DR-581-ND	Major disaster	Severe Storms, Snowmelt & Flooding	Inland Flooding	no Public Assistance recorded		
1978-04-17	1978-04-17	DR-554-ND	Major disaster	Storms, Ice Jams, Snowmelt & Flooding	Inland Flooding	no Public Assistance recorded		
1976-07-21	1976-07-21	EM-3016-ND	Emergency	Drought	Drought	no Public Assistance recorded		
1969-04-18	1969-04-18	DR-256-ND	Major disaster	Flooding	Inland Flooding	no Public Assistance recorded		

County Public Assistance: applicants the FEMA record places in this county, including any state agencies FEMA files there; statewide rows are listed on the state page; federal share obligated, nominal dollars.

Statewide declarations

Source: 2

Declared	Incident began	FEMA number	Type	Title	Mapped hazard
1957-06-22	1957-06-22	DR-79-ND	Major disaster	Tornado	Tornado

FEMA recorded these with designated area Statewide and no county, so they are listed on every county page in the state and not counted with county rows. Local data needed: whether each one affected this county.

Public Assistance not placed in any North Dakota county: 1 row, \$23,693.61; listed on the North Dakota state page.

Source: 3

Previous occurrences by hazard, with explicit no-event rows

Sources: 2, 6, 7

Hazard	Storm Events records, all years on file <i>(years in the Period column)</i>	Since plan approval <i>records</i>	In the 12 months before plan approval <i>records</i>	Last 5 years <i>records</i>	Declared incidents, all years <i>separate disasters</i>	Declared since approval <i>separate disasters</i>	Period	Statement
Cold Wave	28	3	0	3	0	0	1996 to 2026-06-30	
Drought	7	0	0	1	1	0	1996 to 2026-06-30	
Earthquake	0	0	0	0	0	0		Storm Events does not record earthquakes; the USGS earthquake catalog is the source.
Hail	114	5	9	14	0	0	1955 to 2026-06-30	
Heat Wave	2	0	0	0	0	0	1996 to 2026-06-30	
Hurricane	0	0	0	0	0	0	1996 to 2026-06-30	No recorded events, 1996 to 2026-06-30, NOAA NCEI Storm Events
Ice Storm	1	1	0	1	0	0	1996 to 2026-06-30	
Inland Flooding	6	0	0	0	19	0	1996 to 2026-06-30	
Landslide	0	0	0	0	1	0	1996 to 2026-06-30	No Storm Events records of this type; 1 federal declared incident (see declarations table)
Lightning	4	0	0	0	0	0	1996 to 2026-06-30	
Strong Wind	88	5	6	13	1	1	1955 to 2026-06-30	Includes 40 High Wind records.
Tornado	18	1	0	1	1	0	1950 to 2026-06-30	
Wildfire	0	0	0	0	1	0	1996 to 2026-06-30	No Storm Events records of this type; 1 federal declared incident (see declarations table)
Winter Weather	108	11	7	21	5	1	1996 to 2026-06-30	

Notable Storm Events records

Sources: 1, 6, 7

Date	Event type	Magnitude or extent	Damage <i>nominal dollars</i>	Deaths, injuries <i>direct only</i>	Location	Flags	Why listed
2023-12-26	Ice Storm		\$500,000 property; \$0 crops (zone total, 2023 dollars)	0, 0	NWS zone NDZ047 (LOGAN), zone-level	new since last plan; within last 5 years	B1-c worst recorded: Ice Storm
2021-04-01	Drought		\$0 property; \$0 crops (zone total, 2021 dollars)	0, 0	NWS zone NDZ047 (LOGAN), zone-level		B1-c worst recorded: Drought
2021-02-10	Extreme Cold/ Wind Chill		\$0 property; \$0 crops (zone total, 2021 dollars)	0, 0	NWS zone NDZ047 (LOGAN), zone-level		B1-c worst recorded: Cold/Wind Chill, Extreme Cold/ Wind Chill
2021-01-14	High Wind	56 kt (64 mph) estimated gust	\$0 property; \$0 crops (zone total, 2021 dollars)	0, 0	NWS zone NDZ047 (LOGAN), zone-level		B1-c worst recorded: High Wind and Strong Wind
2016-06-22	Thunderstorm Wind	87 kt (100 mph) estimated gust	\$1,200,000 property; \$50,000 crops (2016 dollars)	0, 0	BURNSTAD		B1-c worst recorded: Thunderstorm Wind
2014-08-16	Flash Flood		\$250,000 property; \$100,000 crops (2014 dollars)	0, 0	NAPOLEON		B1-c worst recorded: Flash Flood, Flood, Lakeshore Flood
2007-08-26	Hail	3.5 in	\$250,000 property; \$500,000 crops (2007 dollars)	0, 0	NAPOLEON		B1-c worst recorded: Hail
2002-06-28	Thunderstorm Wind	55 kt (63 mph) estimated	damage not reported	0, 2	BURNSTAD		deaths or injuries recorded
1997-07-19	Lightning		\$50,000 property; crops not reported (1997 dollars)	0, 0	GACKLE		B1-c worst recorded: Lightning
1997-01-15	Blizzard		\$900,000 property; crops not reported (zone total, 1997 dollars)	2, 0	NWS zone NDZ047 (LOGAN), zone-level		deaths or injuries recorded
1997-01-09	Blizzard		\$1,530,000 property; crops not reported (zone total, 1997 dollars)	0, 1	NWS zone NDZ047 (LOGAN), zone-level		B1-c worst recorded: Winter Storm, Heavy Snow, Blizzard, Lake-Effect Snow, Winter Weather, Sleet
1974-08-19	Tornado	F3, 33 yd wide	damage not recorded (pre-1996 record)	0, 3	location not recorded		deaths or injuries recorded

The full list is in the Excel file, sheet "B1-d Storm Events history" (376 rows).

Location is the place NOAA recorded, as written in its data; it need not be a jurisdiction in this plan.

Local data needed: state-declared emergencies, from your state emergency management agency (federal data do not include them).

Tribal and special-area declarations in this state are listed on the state page.

Supports FEMA checklist item B1-e: probability of future events

Probability: FEMA annualized frequency and descriptor per hazard

Sources: 5, 6

Hazard	FEMA annualized frequency (modeled) <i>unit per row</i>	Unit	In plain terms	Descriptor	Descriptor basis	NRI events or days in its record period (hail, wind and tornado are area-weighted, so can be fractional)	NRI period	Location	Note
Cold Wave	16.4	event-days per year	about 16.4 days per year	Likely	Storm Events event- days in 14 of 30 years, 1996 to 2025 (46.7%)	312	2005-11-12 to 2024-11-12 (19 years)	countywide	
Drought	11.1	event-days per year	about 11.1 days per year	Possible	Storm Events event- days in 1 of 30 years, 1996 to 2025 (3.33%)	280	2000 to 2025 (25.25 years; D3 and D4 only)	countywide	
Earthquake	0.000131	annual probability at a location	chance a given location in the county has at least minor-damage shaking in a year: 0.0131%			not shown	modeled	see B1-f	No descriptor (Storm Events does not record earthquakes).
Hail	2.59	events per year	about 2.59 per year	Highly likely	FEMA annualized frequency (modeled)	98.6 (modeled)	1986 to 2023 (38 years)	countywide	
Heat Wave	1.68	event-days per year	about 1.68 days per year	Possible	Storm Events event- days in 2 of 30 years, 1996 to 2025 (6.67%)	27	2005-11-12 to 2024-11-12 (19 years)	countywide	
Hurricane		events per year					1851 to 2024 (Atlantic)	see B1-f	Not Applicable in NRI for this county; no descriptor.
Ice Storm	0.896	event-days per year	about 0.896 days per year	Possible	Storm Events event- days in 1 of 30 years, 1996 to 2025 (3.33%)	61	1946-12-31 to 2014-02-12 (67 years)	countywide	
Inland Flooding	0.214	event-days per year	about 0.214 days per year	Likely	Storm Events event- days in 5 of 30 years, 1996 to 2025 (16.7%)	6	1996 to 2023 (28 years)	see B1-f	
Landslide	0.149	events per year (modeled)	about 1 in 7 years	Likely	FEMA annualized frequency (modeled)	not shown	modeled	see B1-f	
Lightning	30.6	days per year with a strike	about 30.6 days per year	Highly likely	FEMA annualized frequency (modeled)	not shown	1995 to 2023 (29 years; CONUS)	countywide	
Strong Wind	1.64	events per year	about 1.64 per year	Highly likely	FEMA annualized frequency (modeled)	63	1986 to 2023 (38 years)	countywide	
Tornado	0.342	events per year	about 1 in 3 years	Likely	FEMA annualized frequency (modeled)	not shown	1950 to 2023 (EF2+); 1986 to 2023 (EF0-1)	see B1-f	

Hazard	FEMA annualized frequency (modeled) <i>unit per row</i>	Unit	In plain terms	Descriptor	Descriptor basis	NRI events or days in its record period (hail, wind and tornado are area-weighted, so can be fractional)	NRI period	Location	Note
Wildfire	0.000425	annual probability at a location	chance a given location in the county burns in a year: 0.0425%		Storm Events records in 0 of 30 years, 1996 to 2025 (0%)	not shown	modeled	see B1-f	No descriptor: no Storm Events record 1996 to 2025
Winter Weather	21.5	event-days per year	about 21.5 days per year	Highly likely	Storm Events event- days in 27 of 30 years, 1996 to 2025 (90%)	409	2005-11-12 to 2024-11-12 (19 years)	countywide	

FEMA annualized frequency (modeled) is the National Risk Index v1.20 (December 2025) estimate of how often a hazard affects this county in a year; it is not recorded events divided by years, and its unit differs by hazard (events, event-days, or days with a lightning strike per year). For earthquake, wildfire, coastal flooding and tsunami the value is the chance (or number of events) at a location in the county, not across the county, so no "1 in N years" is given and the descriptor comes from Storm Events where it has a record (none for earthquake). The Methods page gives each hazard's method, from FEMA's National Risk Index Technical Documentation v1.20.

Where NRI gives event-days, the descriptor comes from the share of years with a Storm Events record; NRI's source records more events, so the two differ.

Descriptor scale used in this packet (defined per unit)

Sources: 5, 6

Unit	Descriptor	Definition
events per year	Highly likely	1 or more per year
events per year	Likely	about once in 1 to 10 years
events per year	Possible	about once in 10 to 100 years
events per year	Unlikely	less than once in 100 years
annual probability	Likely	10% to under 100% chance in a given year
annual probability	Possible	1% to under 10% chance in a given year
annual probability	Unlikely	under 1% chance in a given year
event-days (share of years)	Highly likely	event-days recorded in 90% or more of years
event-days (share of years)	Likely	event-days recorded in 10% to under 90% of years
event-days (share of years)	Possible	event-days recorded in some years but under 10% of years
lightning strike-days	Highly likely	cloud-to-ground strikes on 1 or more days per year

Intensity bands: historical frequency (Storm Events)

Source: 6

Hazard	Band	Years	Events <i>county-coded records</i>	Years in period	Events per year <i>events / years</i>
Hail	1.00-1.99 in	1996 to 2025	52	30	1.73
Hail	2.00 in+	1996 to 2025	9	30	0.3
Thunderstorm Wind (counted as NRI Strong Wind)	50-64 kt	1996 to 2025	23	30	0.767
Thunderstorm Wind (counted as NRI Strong Wind)	65 kt+	1996 to 2025	14	30	0.467
Thunderstorm Wind (counted as NRI Strong Wind)	unmeasured or below 50 kt	1996 to 2025	0	30	0
Tornado	EF0-1	1996 to 2025	6	30	0.2
Tornado	EF2-3	1996 to 2025	1	30	0.0333
Tornado	EF4-5	1996 to 2025	0	30	0
Tornado	unrated (EFU)	1996 to 2025	1	30	0.0333

The bands show how often events of each severity were recorded in this county, to profile how severe events have been (FEMA's probability item asks for the range of intensities).

Hail smaller than 1 inch is not counted: on 2010-01-05 the National Weather Service raised its severe-hail threshold from 3/4 inch to 1 inch, so smaller reports became less common after 2009 (NWS Service Change Notice 09-52). NRI hail frequency uses a 0.75 inch threshold.

Optional: future conditions. Not a required item in the 2025 FEMA Local Mitigation Planning Policy Guide; some states ask for it. The federal Climate Mapping for Resilience and Adaptation (CMRA) site gives county exposure to future climate conditions (<https://resilience.climate.gov/>).

Supports FEMA checklist item B1-f: hazards that vary across jurisdictions

NRI risk score of the county's single census tract

Source: 5

Hazard	Tract score <i>NRI score, 0 to 100</i>	Rating
Cold Wave	99.9	Very High
Drought	90.4	Relatively Low
Earthquake	9.7	Very Low
Hail	99.2	Very High
Heat Wave	17.4	Relatively Low
Hurricane		Not Applicable
Ice Storm	93.3	Relatively High
Inland Flooding	70.2	Relatively Moderate
Landslide	56.1	Very Low
Lightning	54.2	Relatively Moderate
Strong Wind	99.1	Very High
Tornado	75.3	Relatively High

Hazard	Tract score	Rating
	NRI score, 0 to 100	
Wildfire	93.2	Relatively Moderate
Winter Weather	99.9	Very High

The score ranks a tract against all U.S. tracts (100 = highest). The rating is FEMA's category for the tract's risk value, computed differently, so the two can disagree.

Each jurisdiction (starting figures from federal data)

Sources: 1, 3, 4, 6

Jurisdiction	Type	Plan status	Repetitive loss	Public Assistance to this jurisdiction	Event records naming this place	Notes
			FMA RL and SRL (44 CFR 77.2); repeat-flood, any definition	FEMA records matched by applicant name; federal share obligated, nominal dollars	all years; since its plan	
Logan County	County	Approved, expires 2028-01-16	FMA RL 0, SRL 0; any 0	\$3,938,540.75	0 total; 0 since its plan	
Fredonia city	City	Approved, expires 2028-01-16	FMA RL 0, SRL 0; any 0	\$16,848.21	9 total; 0 since its plan	
Gackle city	City	Approved, expires 2028-01-16	FMA RL 0, SRL 0; any 0	\$561,105.45	31 total; 1 since its plan	
Lehr city	City	Approved, expires 2028-04-09	FMA RL 0, SRL 0; any 0	no Public Assistance recorded	19 total; 1 since its plan	Also approved under plan 108778 (Logan County, ND Hazard Mitigation Plan 2023, expires 2028-01-16). FEMA's plan status map shows one plan per jurisdiction and may show one of these; this packet uses the approved plan that expires last.
Napoleon city	City	Approved, expires 2028-01-16	FMA RL 0, SRL 0; any 0	no Public Assistance recorded	68 total; 1 since its plan	

Repetitive-loss counts are for whole NFIP communities, which can extend beyond this county (see the note in B2-c).

County Public Assistance in B1-d also includes applicants filed under the county that are not jurisdictions in this plan (for example state agencies, special districts and nonprofits), so the jurisdiction rows add up to less.

Supports FEMA checklist items B2-a and B2-b: vulnerability and potential impacts

Local data needed

The table below gives county-level starting figures; the plan describes impacts for each jurisdiction and its own assets.

- Critical facilities and lifelines per hazard
- A problem statement per jurisdiction per hazard
- Changes in development in hazard-prone areas since the last approval, or a statement of none (E1-a)
- Future assets

County-level starter: exposure, expected annual loss and damage since the plan

Sources: 1, 2, 3, 5, 6, 7

Hazard	Building exposure <i>modeled dollars</i>	Agriculture exposure <i>modeled dollars</i>	Population exposed <i>people</i>	EAL buildings <i>modeled dollars per year</i>	EAL agriculture <i>modeled dollars per year</i>	Cost of expected deaths and injuries <i>FEMA's dollar value per year, not property damage</i>	EAL as % of exposure <i>buildings; agriculture where noted</i>	Storm Events damage since 2023-01-17 <i>county-coded records, property plus crops, nominal dollars</i>	Zone-level damage since plan <i>property plus crops, reported for the zone</i>	Public Assistance since plan <i>nominal dollars; see note</i>	Note
Cold Wave	\$1,026,557,746	\$200,049,976	1,876	\$233	\$710,020	\$1,336,801	under 0.0001%		\$0		
Drought	n/a	\$46,708,658	n/a	n/a	\$15,118	n/a	0.0324% (agriculture)				NRI has no building exposure for this hazard; agriculture shown
Earthquake	\$1,692,635,950	n/a	1,876	\$1,292	n/a	\$242	under 0.0001%				
Hail	\$1,026,557,746	\$200,049,976	1,876	\$216,527	\$131,739	\$49,100	0.0211%	\$0			
Heat Wave	\$1,026,557,746	\$200,049,976	1,876	\$736	\$1	\$9,053	under 0.0001%				
Hurricane											Not Applicable in NRI for this county
Ice Storm	\$1,026,557,746	n/a	1,876	\$22,152	n/a	\$15,075	0.00216%		\$500,000		

Hazard	Building exposure <i>modeled dollars</i>	Agriculture exposure <i>modeled dollars</i>	Population exposed <i>people</i>	EAL buildings <i>modeled dollars per year</i>	EAL agriculture <i>modeled dollars per year</i>	Cost of expected deaths and injuries <i>FEMA's dollar value per year, not property damage</i>	EAL as % of exposure <i>buildings; agriculture where noted</i>	Storm Events damage since 2023-01-17 <i>county-coded records, property plus crops, nominal dollars</i>	Zone-level damage since plan <i>property plus crops, reported for the zone</i>	Public Assistance since plan <i>nominal dollars; see note</i>	Note
Inland Flooding	\$1,026,375,165	\$81,050	1	\$676,151	\$491	\$11	n/a (see note)				NRI counts the full building value of any census block with some flood loss; this is not the value of buildings in the floodplain. Use local FIRM overlays for B2-a/B2-b.
Landslide	\$1,682,382	n/a	3	\$2	n/a	\$2	0.000141%				
Lightning	\$1,026,557,746	n/a	1,876	\$5,348	n/a	\$4,898	0.000521%				
Strong Wind	\$1,026,557,746	\$200,049,976	1,876	\$95,205	\$75,925	\$91,624	0.00927%	\$200,000	\$0	no Public Assistance recorded (1 declaration)	
Tornado	\$1,026,557,746	\$200,049,976	1,876	\$142,293	\$8,505	\$9,373	0.0139%	\$0			
Wildfire	\$365,110,585	\$90,587,154	653	\$49,617	\$115	\$837	0.0136%				
Winter Weather	\$1,026,557,746	\$200,049,976	1,876	\$72,381	\$271	\$47,768	0.00705%		\$0	no Public Assistance recorded (1 declaration)	

Totals since 2023-01-17 (Storm Events through 2026-06-30): 8 county-coded records, 8 with a damage value recorded (including \$0), \$200,000; 18 zone-level records, 18 with a damage value recorded (including \$0), \$500,000 reported for the zone; Public Assistance: none recorded on the 1 counted declaration.

FEMA does not split Public Assistance by hazard. A declaration mapped to several hazards is listed under each of them with its full amount, so the per-hazard column does not add up to the total; the unit total counts each declaration once.

NRI computes earthquake exposure on its own basis, so it exceeds the county building value in B2-a.

Supports FEMA checklist item B2-a: vulnerability (county context)

County context

Source: 5

Measure	Value
Population	1,876
Building value (total, not at risk)	\$1,026,557,746
Agriculture value (total, not at risk)	\$200,049,976
NRI risk rating (all hazards)	Very Low
Expected annual loss, buildings and agriculture, all hazards	\$2,224,122
Expected annual loss, population equivalence, all hazards (NRI values each statistical life at \$13.7M; a modeled value of expected deaths and injuries, not property damage)	\$1,564,786
Social vulnerability rating	Relatively High
Community resilience rating	Relatively Moderate
NRI version	December 2025

FEMA's all-hazard expected annual loss adds buildings, agriculture and population equivalence; this table gives the property part and the population-equivalence part as separate rows.

Social vulnerability: higher means people are more likely to be harmed and slower to recover. Community resilience: lower means the community is less able to recover. High social vulnerability and low resilience both raise the NRI risk rating.

Supports FEMA checklist item B2-c: repetitive loss properties

Repetitive loss in this county, both definitions

Sources: 1, 4

Definition	Properties	Severe repetitive loss	Properties
Repetitive loss, FMA definition (44 CFR 77.2)	0	Severe repetitive loss, FMA definition (44 CFR 77.2)	0
Repetitive loss, NFIP insurance definition	0	Severe repetitive loss, NFIP insurance definition	0

The state NFIP coordinator's list, the source FEMA's Handbook names, often uses the NFIP insurance definition (second row).

Repeat-flood properties: county total and NFIP communities

Sources: 1, 4

Scope	RL, FMA <i>properties</i>	SRL, FMA <i>properties</i>	RL, NFIP <i>properties</i>	SRL, NFIP <i>properties</i>	Any category <i>properties</i>	Mitigated <i>properties</i>	Currently insured <i>properties</i>
County total	0	0	0	0	0	0	0

Repeat-flood properties by jurisdiction in the plan (NFIP community)

Sources: 1, 4

Jurisdiction	NFIP community ID	RL, FMA <i>properties</i>	SRL, FMA <i>properties</i>	RL, NFIP <i>properties</i>	SRL, NFIP <i>properties</i>	Any category <i>properties</i>	Mitigated <i>properties</i>	Currently insured <i>properties</i>
Logan County	380691	0	0	0	0	0	0	0
Fredonia city	385381	0	0	0	0	0	0	0
Gackle city	380334	0	0	0	0	0	0	0
Lehr city	380043	0	0	0	0	0	0	0
Lehr city	385382	0	0	0	0	0	0	0
Napoleon city	380044	0	0	0	0	0	0	0

Counts by occupancy group for each jurisdiction are in the Excel file, sheet "B2-c Jurisdictions".

Jurisdiction rows are whole NFIP communities and need not add up to the county total: a community that extends into another county is counted in full on each jurisdiction row, while the county table counts only its part in this county.

County repeat-flood properties by occupancy group: 0 in every occupancy group.

Sources: 1, 4

FMA RL and FMA SRL are the Flood Mitigation Assistance definitions (44 CFR 77.2), the ones the FEMA Local Mitigation Planning Policy Guide cites. NFIP repetitive loss (the FEMA insurance definition) is 2 or more claims over \$1,000 in 10 years, and a property can leave that group once it is mitigated. Also shown: NFIP severe repetitive loss, any category, mitigated and currently insured. The Methods page gives the OpenFEMA field details.

Counts are aggregates of FEMA's public NFIP Multiple Loss Properties file (FEMA's data date 2026-08-02; file version 2026-08-04). No property is identified. County assignment is FEMA's geocode.

In this county 0 properties are FMA repetitive loss but not NFIP repetitive loss, and 0 properties are NFIP repetitive loss but not FMA repetitive loss.

Exact counts; no count suppression.

Sources

Tables cite these sources by number. The full list, for the plan's bibliography (FEMA review item A4-a):

- 1. FEMA, OpenFEMA HazardMitigationPlanStatuses v1, version 2026-09-29T134039Z, pulled 2026-09-30, <https://www.fema.gov/api/open/v1/HazardMitigationPlanStatuses> (API)
- 2. FEMA, OpenFEMA DisasterDeclarationsSummaries v2, version 2026-09-29T162832Z, pulled 2026-09-30, <https://www.fema.gov/api/open/v2/DisasterDeclarationsSummaries> (API)
- 3. FEMA, OpenFEMA PublicAssistanceFundedProjectsSummaries v1, version 2026-09-29T150754Z, pulled 2026-09-30, <https://www.fema.gov/api/open/v1/PublicAssistanceFundedProjectsSummaries> (API)
- 4. FEMA, OpenFEMA NfipMultipleLossProperties v1, version 2026-08-04T164045Z, pulled 2026-09-30, <https://www.fema.gov/api/open/v1/NfipMultipleLossProperties> (API)

5. FEMA, FEMA National Risk Index 1.20.0 (December 2025), county and census tract tables, version 1.20.0, pulled 2026-09-30, https://www.fema.gov/about/reports-and-data/openfema/nri/v120/NRI_Table_Counties.zip (download, 25 MB), https://www.fema.gov/about/reports-and-data/openfema/nri/v120/NRI_Table_CensusTracts.zip (download, 635 MB)
6. NOAA NCEI, NOAA NCEI Storm Events Database, details files (csvfiles v1.0), version c20260918, pulled 2026-09-30, <https://www.ncei.noaa.gov/pub/data/swdi/stormevents/csvfiles/>
7. NOAA National Weather Service, NWS county-public forecast zones correlation file, version bp03mr20 to bp16ap26 (11 files; newest bp16ap26), pulled 2026-09-30, <https://www.weather.gov/gis/ZoneCounty>
8. U.S. Census Bureau, Census 2024 Gazetteer, 2020 place by county, CT county-to-cousub crosswalk, version 2024-gazetteer, pulled 2026-09-30, https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gazetteer/2024_Gaz_counties_national.zip, https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gaz_cousubs_national.zip, https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gaz_place_national.zip, https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gaz_unsd_national.zip, https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gaz_elsd_national.zip, https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gaz_scsd_national.zip, https://www2.census.gov/geo/docs/reference/codes2020/national_place_by_county2020.txt, https://www2.census.gov/geo/docs/reference/ct_change/ct_cou_to_cousub_crosswalk.xlsx (used to match place names and codes; no table prints its values)

What this packet is and what the plan adds

This packet is the federal data for the plan's risk assessment (the summary on page 1 says how it is organized); the plan and FEMA's review decide whether each item is met.

The plan adds what only the community has: local data on assets, critical facilities, development and each jurisdiction's impacts; local hazard history, including state-declared emergencies; the mitigation strategy; and adoption.

How the federal data are built: National Risk Index values are FEMA's model, not counts of events. Storm Events is more complete from 1996; zone-level records are placed by forecast zone, not by location in the county. Public Assistance for a jurisdiction is matched by applicant name. The Methods page gives every rule and the known edge cases.

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Corrections: to report an error, name the packet, the table and what your records show. Contact: contact@hazardplain.org