

wood.



Larimer County Multi-Jurisdictional Hazard Mitigation Plan Update

Hazard Mitigation Planning Committee Meeting #2

Risk Assessment and Goals Update

May 15, 2020 – 1pm-3pm

woodplc.com

Agenda

1. Introductions
2. Review of the Planning Process and Requirements
3. Public Involvement Activities
4. Hazard Identification and Risk Assessment (HIRA) Update
5. Capabilities Assessment Update
6. Mitigation Goals and Objectives Update
7. Next Steps
8. Questions



Meeting Logistics

- Please mute your mic when not speaking.
- ...but please feel free to unmute when you have something to say!
- You can also use the chat log to make comments, ask questions, or provide information.
- This meeting is being recorded.
- Slides and meeting summary will be made available.



Post Meeting Survey

- Risk Assessment Significance Ratings
- Goals and Objectives Suggested Revisions
- General Comments/Input on today's meeting

https://bit.ly/Larimer_HMP_Post_Mtg2_Survey

Please complete by: May 22, 2020



Review of the Planning Process and Requirements

Mitigation Planning Process

- **Phase 1: Organize Resources**
 - Coordination & Contracting
 - Data Collection & Review
 - Public Education and Input
 - Floodplain Management and CRS
- **Phase 2: Identify Hazards and Assess Risks**
 - Risk Assessment
- **Phase 3: Develop a Mitigation Strategy**
 - Develop Mitigation Goals, Objectives, & Actions
- **Phase 4: Plan Adoption, Monitoring and Evaluation**
 - Draft Plan
 - Plan Approval, Submittal & Adoption



Progress So Far

- ✓ Kickoff meeting in April
- ✓ Data Collection Guides completed
- ✓ Risk and capability assessments drafted by Wood, based on research and HMPC/stakeholder input
- ✓ Online public survey open until May 31st
- ✓ First public meeting scheduled for May 28th, 5-7 pm



Public Involvement Activities

Public Survey

- Open until May 31st:
- https://bit.ly/Larimer_HMP_Public_Survey
 - Please indicate the level of significance you perceive for each hazard.
 - How many times has a natural hazard disrupted your daily life in the last five years?
 - Do you have information on specific hazard issues/problem areas that you would like the planning committee to consider?
 - Please indicate the types of mitigation actions that you think should have the highest priority.
 - Please comment on any other pre-disaster mitigation actions that the planning committee should consider.



First Public Meeting

- May 28th 5-7 pm
- Online webinar using Zoom
- Draft Agenda
 - Introductions
 - Mitigation Planning and the Disaster Mitigation Act
 - Hazard Mitigation Plan Purpose & Scope
 - Hazard Identification and Risk Assessment
 - Review Goals for the LHMP
 - Discuss Mitigation Action Strategies
 - Online Survey
 - Schedule and Next Steps
 - Questions and Answers



Hazard Identification and Risk Assessment (HIRA) Update

Terminology

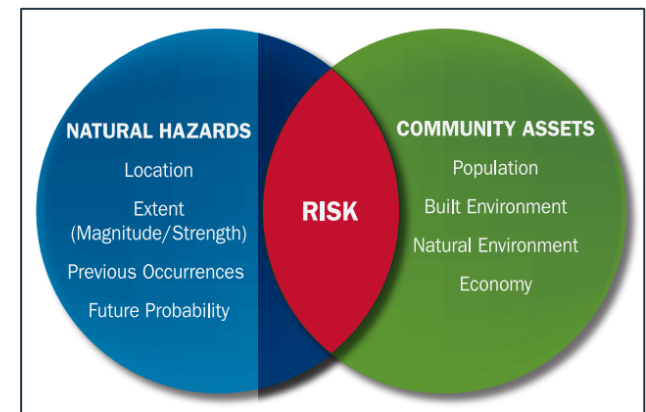
- **Hazard:** Act or phenomenon with potential to do harm
- **Vulnerability:** susceptibility to harm, damage, loss
- **Exposure:** People, property, systems or functions that could be lost to a hazard
- **Risk:** Combines hazard, vulnerability, exposure and probability
- **Mitigation:** Actions taken in advance of a hazard's impact that reduce its severity



Conducting a Risk Assessment - Requirements

Components:

- Hazard identification and profiling (what, where, how often, how bad)
- Vulnerability Assessment (what will be affected?)
 - Estimate losses by jurisdiction
 - Assess vulnerabilities of critical facilities
 - Includes an assessment of mitigation capabilities



Hazard Identification and Risk Assessment Includes

- Hazard / Problem Description
- Past Occurrences
- Geographic Location (Area Affected)
- Magnitude/Severity (Extent)
- Climate Change Considerations
- Probability of Future Occurrences
- Vulnerability Assessment
 - People
 - General Property
 - Critical Facilities and Infrastructure
 - Economy
 - Historic, Cultural and Natural Resources
 - Future Development
- Risk Summary and Overall Significance

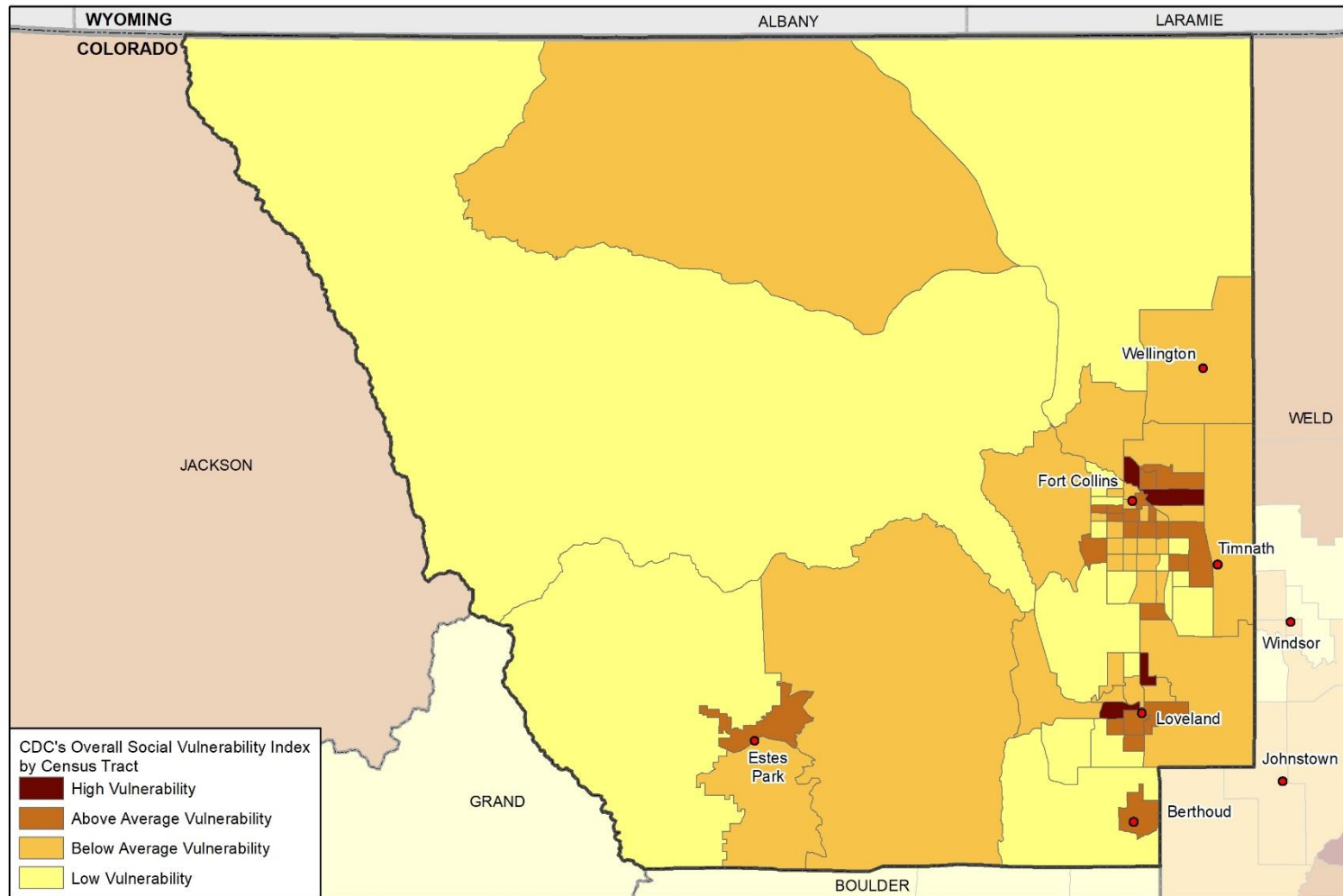


Social Vulnerability

Variable		Ranking Compared to Colorado Counties	Ranking Compared to US Counties	Vulnerability
Socioeconomic status		37%	15%	Low
	Below poverty	49%	32%	Below Average
	Unemployment	59%	42%	Below Average
	Income	27%	8%	Low
	No high school diploma	19%	2%	Low
Household composition and disability		27%	2%	Low
	Age 65 or older	33%	19%	Low
	Age 17 or younger	41%	23%	Low
	Disability	27%	6%	Low
	Single-parent households	62%	19%	Low
Minority status and language		35%	60%	Above Average
	Minority	33%	52%	Above Average
	Speaking English "less than well"	38%	63%	Above Average
Housing and transportation		33%	36%	Below Average
	Multiunit structures	78%	91%	High
	Mobile homes	18%	16%	Low
	Crowding	18%	30%	Below Average
	No vehicle	41%	22%	Low
	Group quarters	73%	64%	Above Average
Overall Social Vulnerability		35%	12%	Low



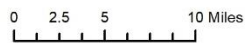
Social Vulnerability



CDC's Overall Social Vulnerability Index by Census Tract

- High Vulnerability
- Above Average Vulnerability
- Below Average Vulnerability
- Low Vulnerability

wood. Map compiled 5/2020; intended for planning purposes only. Data Source: Larimer County, CDC SVI 2018



2016 Hazard Summary

Hazard	Future Probability	Magnitude/Severity	Geographic Location	Warning Time	Duration	Overall Significance
Flood – Flash & Riverine	0.9	1.2	0.6	0.3	0.4	3.4
Fire – Wildland	1.2	0.9	0.4	0.4	0.4	3.3
Spring/Summer Storm	1.2	0.6	0.6	0.2	0.3	2.9
Earthquake	0.6	0.9	0.6	0.4	0.3	2.8
Biological Hazards / Contagion	1.2	0.6	0.4	0.1	0.4	2.7
Tornado	0.6	0.9	0.4	0.4	0.4	2.7
Winter Storm	0.9	0.6	0.6	0.2	0.3	2.6
Hazmat	0.6	0.9	0.4	0.4	0.2	2.5
Landslide/Rockslide	0.9	0.6	0.4	0.4	0.2	2.5
Erosion / Deposition	0.9	0.6	0.2	0.4	0.2	2.3
Utility Disruption	0.6	0.6	0.4	0.4	0.3	2.3
Civil Disturbance	0.6	0.6	0.4	0.4	0.2	2.2



2020 Hazard Summary (Draft)

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Flood – Flash & Riverine	Highly Likely	Significant	Catastrophic	High
Fire – Wildland	Highly Likely	Significant	Critical	High
Spring/Summer Storm	Highly Likely	Extensive	Critical	High
Earthquake	Occasional	Limited	Catastrophic	High
Biological Hazards / Contagion	Highly Likely	Extensive	Catastrophic	High
Tornado	Likely	Limited	Critical	High
Winter Storm	Highly Likely	Extensive	Critical	High
Hazmat	Likely	Limited	Critical	High
Landslide/Rockslide	Likely	Limited	Critical	High
Erosion / Deposition	Likely	Significant	Limited	Moderate
Utility Disruption	Likely	Significant	Critical	Moderate
Civil Disturbance	Likely	Limited	Limited	Moderate
Dam Failure/Incident	?	?	?	?



Hazard Ranking Methodology

- **Frequency of Occurrence:**
 - **Highly Likely:** Near 100% probability in next year
 - **Likely:** 10–100% probability in next year (>1 in 10 years)
 - **Occasional:** 1–10% probability in next year (>1 in 100 years)
 - **Unlikely:** <1% probability in next 100 years.
- **Spatial Extent:**
 - **Extensive:** 50-100% of planning area
 - **Significant:** 10-50% of planning area
 - **Limited:** <10% of planning area
- **Potential Severity:**
 - **Catastrophic:** Multiple deaths, shutdown of facilities for >30 days, >50% of property damaged
 - **Critical:** Multiple severe injuries, shutdown of facilities for >2 weeks, >25% of property damaged
 - **Limited:** Some injuries, shutdown of critical facilities for >1 week, >10 percent of property damaged
 - **Negligible:** Minor injuries, minimal quality-of-life impact, shutdown of critical facilities for <24 hours, <10 percent of property damaged.
- **Overall Significance:**
 - **High**
 - **Medium**
 - **Low**



Flood –Flash and Riverine

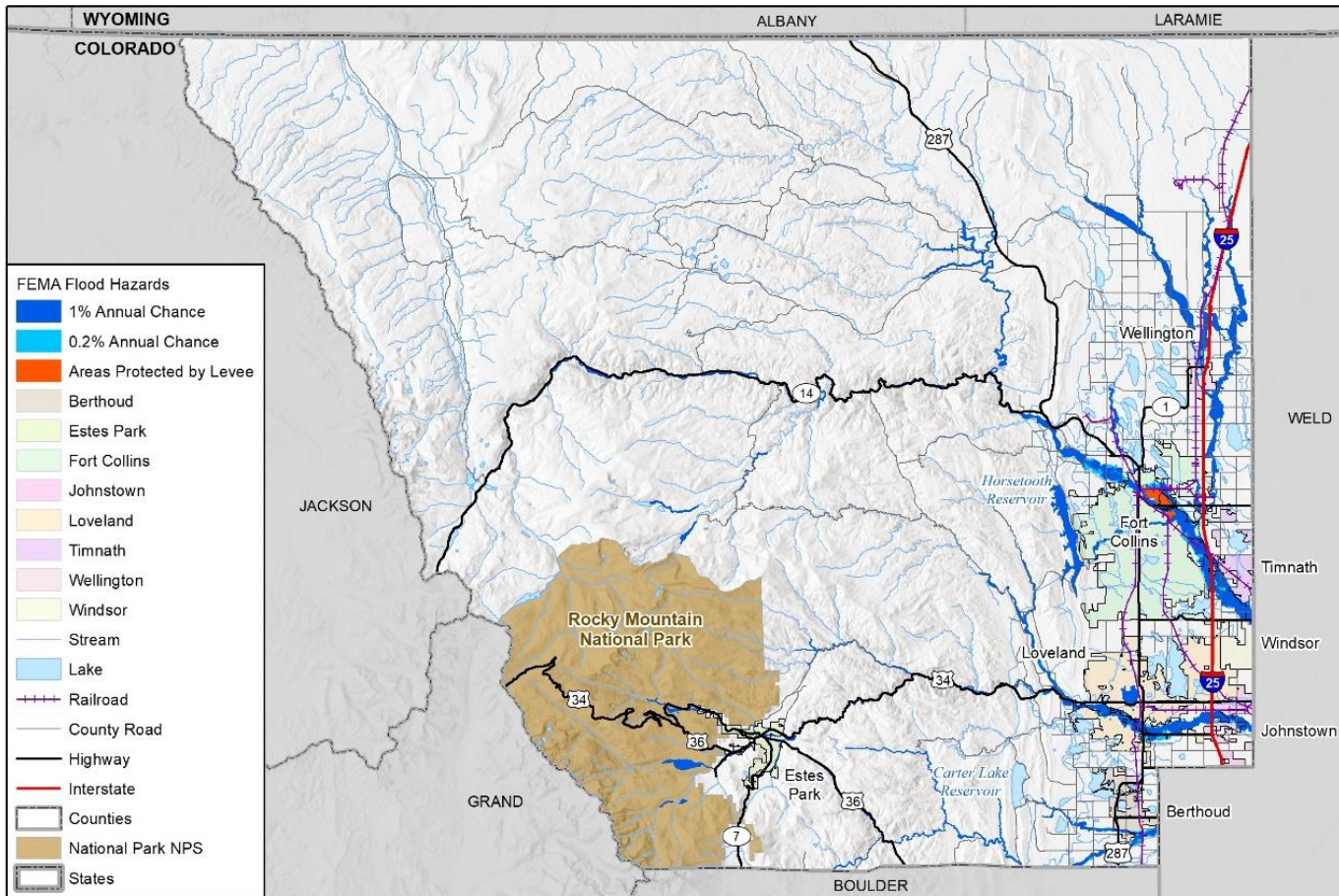
- 2016 HMP Plan: High Risk
- 2020 Analysis
 - Frequency: Highly Likely
 - Extent/Area: Significant
 - Severity: Catastrophic
 - Overall Risk: High



2013 Flooding in Fort Collins. Source: Fcgov.com

- Intense storms are projected to occur more frequently, increasing the frequency of flood events

Flood – FEMA Flood Mapping



- 395 Stream miles of Mapped Floodplain in FEMA CNMS database
 - 139 valid stream miles
 - 256 unverified or unknown stream miles



Flood: NCEI Flood Losses 1954-2019

Community	Total Events	Total Injuries	Total Fatalities	Total Property Damage	Total Crop Damage	Total Damage
Fort Collins	8	40	5	\$190,510,000	\$50,000	\$190,560,000
Glendevey	2	0	0	\$109,000,000	\$0	\$109,000,000
Larimer County	3	0	0	\$200,000	\$0	\$200,000
Poudre Park	7	0	0	\$65,000	\$45,000	\$110,000
Timnath	1	0	0	\$100,000	\$10,000	\$110,000
Buckeye	1	0	0	\$25,000	\$50,000	\$75,000
Rustic	1	0	0	\$20,000	\$20,000	\$40,000
Berthoud	8	0	2	\$25,000	\$10,000	\$35,000
Deer Ridge	2	0	0	\$30,000	\$5,000	\$35,000
Glen Haven	1	0	0	\$10,000	\$25,000	\$35,000
Virginia Dale	2	0	0	\$10,000	\$20,000	\$30,000
Bellvue	1	0	0	\$25,000	\$0	\$25,000
Loveland	3	0	0	\$25,000	\$0	\$25,000
Livermore	1	0	0	\$10,000	\$10,000	\$20,000
Masonville	2	0	0	\$10,000	\$5,000	\$15,000
Mountain View	1	0	0	\$10,000	\$5,000	\$15,000
Birds	1	0	0	\$0	\$0	\$0
Central Portion	1	0	0	\$0	\$0	\$0
Drake	2	0	0	\$0	\$0	\$0
Estes Park	1	0	0	\$0	\$0	\$0
Red Feather Lakes	1	0	0	\$0	\$0	\$0
Southeast Portion	1	0	0	\$0	\$0	\$0
Teds Place	1	0	0	\$0	\$0	\$0
The Forks	1	0	0	\$0	\$0	\$0
Wellington	1	0	0	\$0	\$0	\$0
Total	54	40	7	\$300,075,000	\$255,000	\$300,330,000

- 54 Total flood & flash flood events in NOAA NCEI Database, totaling over \$300,000 in damages.
- 7 total fatalities & 40 injuries resulting from events. Nearly all sustained within the City of Fort Collins.



Flood: NFIP Policies & Loss

Community	Total Premium and FPF	Total Policy Count	Total Coverage (in Thousands)	Total Losses	Total Dollars Paid
Berthoud	\$2,236	6	\$1,778	1	\$139,313
Estes Park	\$142,284	210	\$49,528	90	\$1,713,220
Fort Collins	\$203,804	355	\$105,844	61	\$686,954
Johnstown	\$4,441	11	\$3,675	-	\$0
Larimer County	\$645,486	542	\$151,097	325	\$10,330,744
Loveland	\$109,286	125	\$40,856	31	\$1,641,483
Timnath	\$2,080	5	\$1,575	1	\$4,074
Unknown	\$0	-	\$0	2	\$11,884
Wellington	\$24,274	35	\$11,823	10	\$52,161
Windsor	\$3,504	8	\$2,800	-	\$0
Total	\$1,137,395	1297	\$366,526	521	\$14,579,833



Totals include NFIP direct policies and Write-your-own (WYO) policies



Flood – Repetitive Losses

Jurisdiction	Repetitive Loss Buildings	Repetitive Losses	Payments
Estes Park	11	11	\$531,021
Fort Collins	2	3	\$229,316
Unincorporated	15	22	\$1,168,548
Total	28	36	\$1,928,885



Wildfire

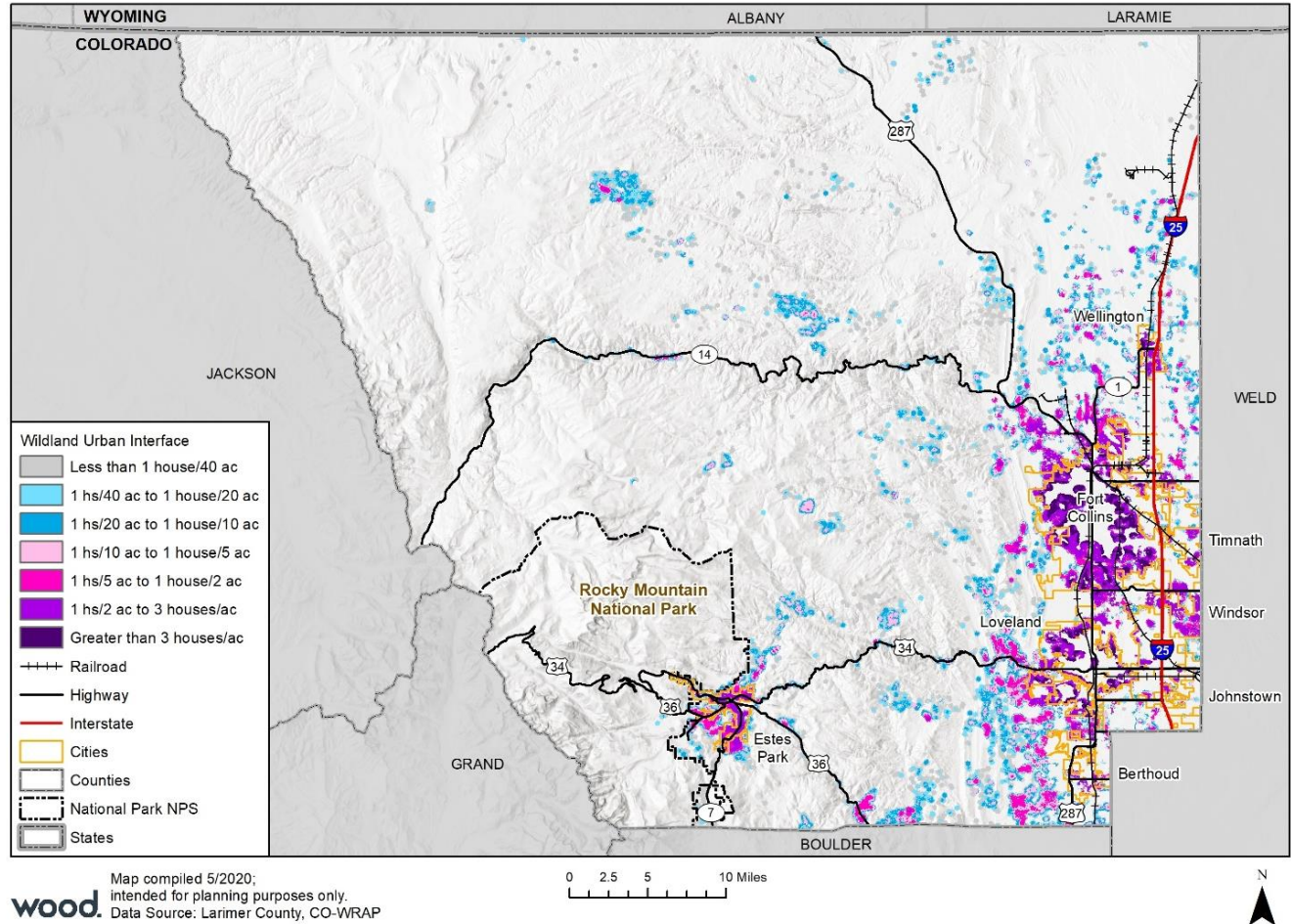
- 2016 HMP Plan: High Risk
- 2020 Analysis
 - Frequency: Highly Likely
 - Extent/Area: Significant
 - Severity: Critical
 - Overall Risk: High



The High Park fire near homes just northwest of Horsetooth Reservoir, Monday, June 11, 2012, near Fort Collins. (RJ Sangosti, The Denver Post)

Wildfire: Wildland Urban Interface (WUI)

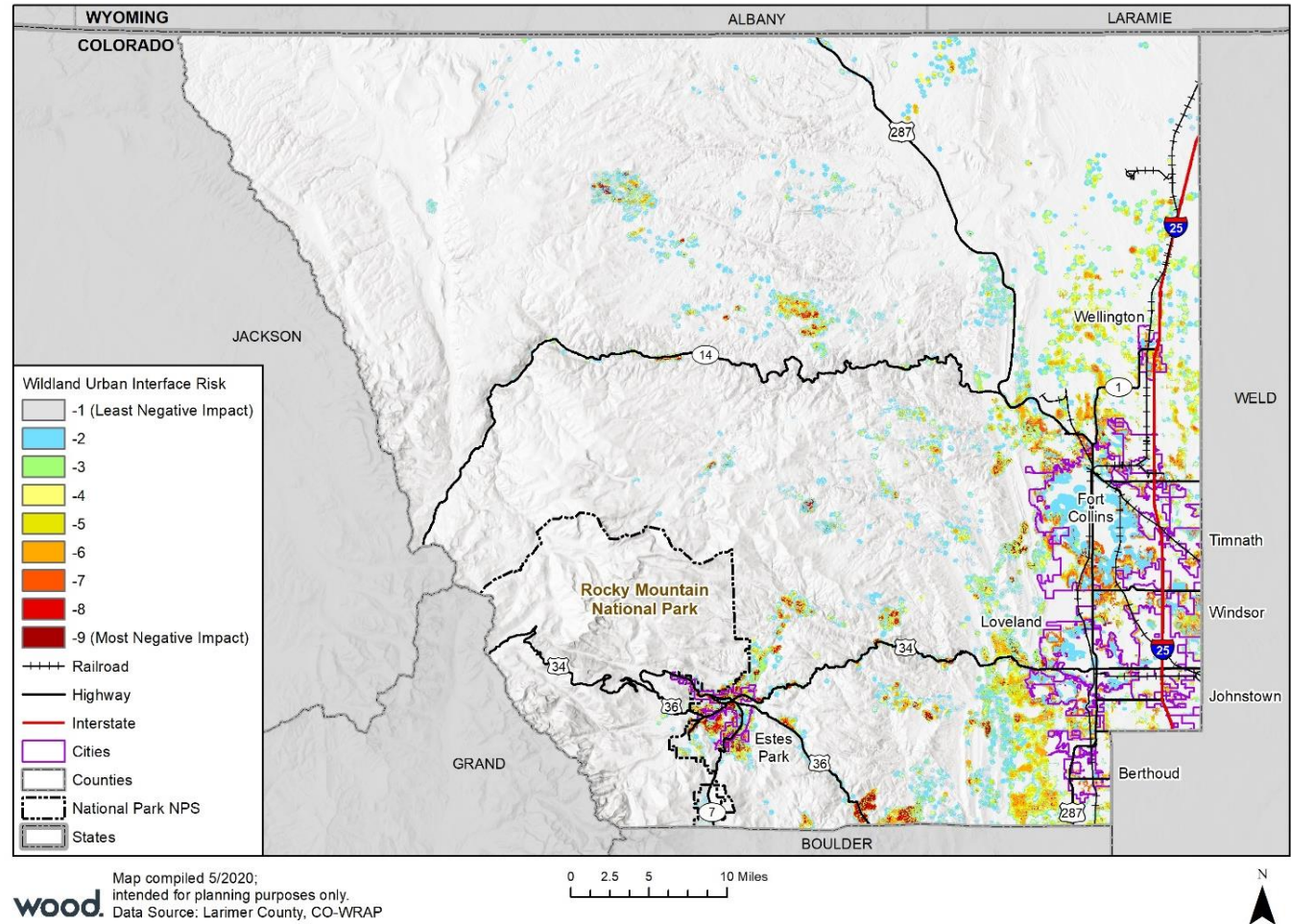
205,233 acres where housing meets or intermixes with wildland fuels



Wildfire: WUI Risk Index

Rates risk based on housing density and potential flame length on a scale from -1 to -9

19,726 acres (9.4% of the WUI) is rated a -7 to a -9

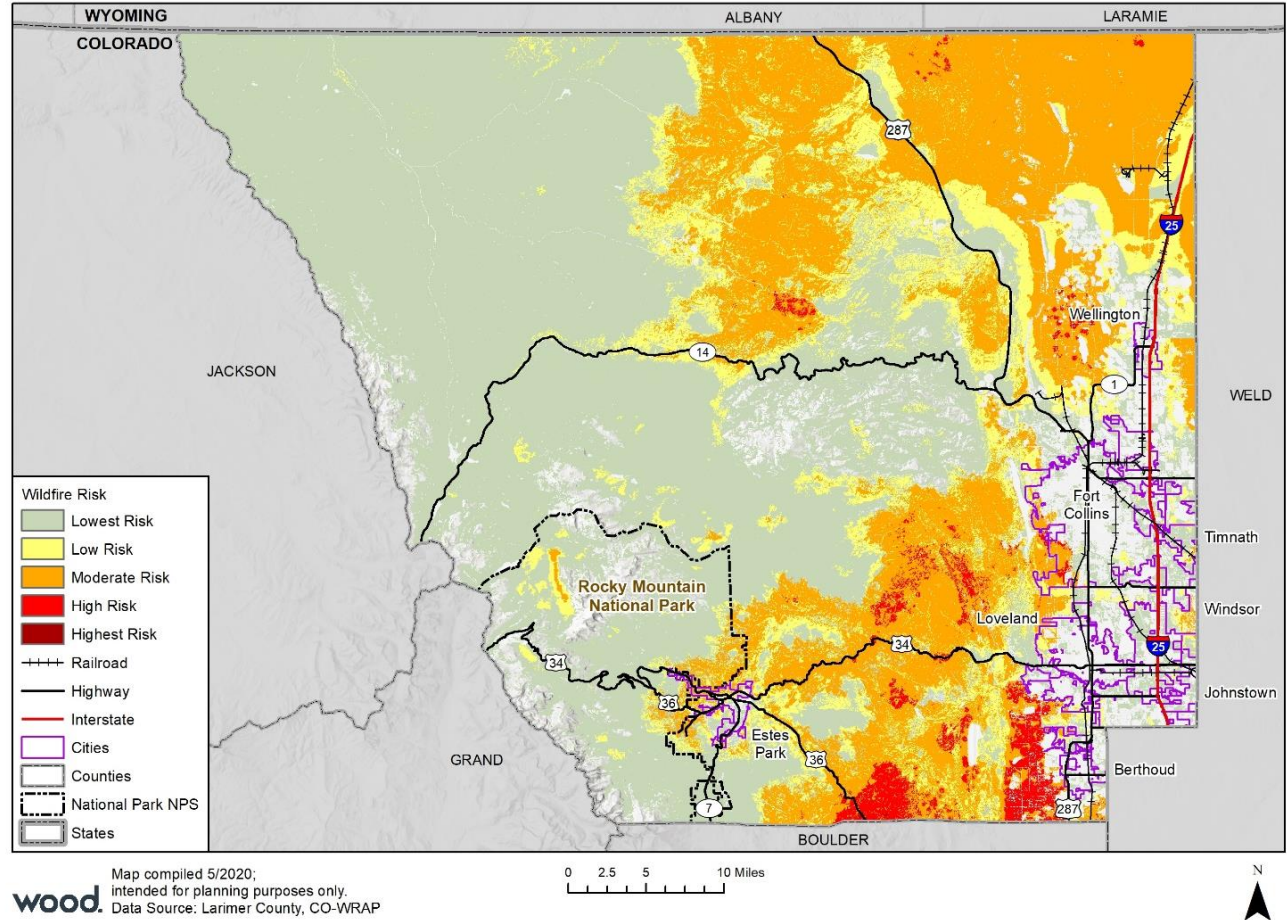


Wildfire Risk

Rates risk based the probability of a fire and the possibility of loss and harm based on:

- WUI Risk Index,
- Drinking Water Risk,
- Forest Assets Risk,
- Riparian Areas Risk

28,063 acres (1.7% of Larimer County) are in the High or Highest Risk category



Spring/Summer Storm

- 2016 HMP Plan: High Risk
- 2020 Analysis
 - Frequency: Highly Likely
 - Extent/Area: Extensive
 - Severity: Critical
 - Overall Risk: High



Source: NWS

Spring/Summer Storm

- Transition period of weather
- 100,000 thunderstorms in the U.S. each year
 - 10% considered severe
- Severe Thunderstorm: Contains 1 or more of following:
 - Hail >1 inch
 - 57.5 mph Winds
 - Or Tornado
- Multi-Hazard Profile:
 - Hail
 - Lightning
 - Severe Wind



Source: The Coloradoan



Spring/Summer Storm: Hail

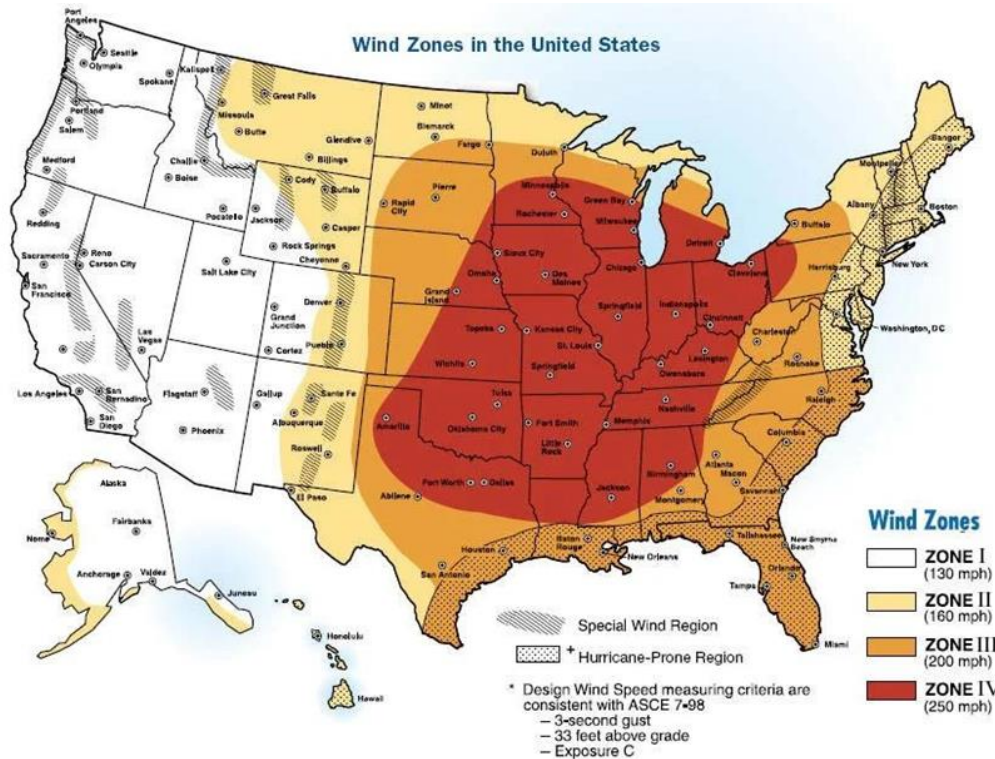
- NCEI Records:
 - 554 Events
 - \$4,395,500 Total Damages
- \$4,483,790 Indemnity Payments
- Most Damaging Event:
 - July 16, 1995
 - Town of Wellington
 - 2-2.75 inches (baseball size)
 - \$500,000 in property damages
- Largest Recorded Hailstone:
 - 4.5 inches (July 30, 1979)



Source: The Coloradoan. Photo credit: Amber Lauren via Facebook

Spring/Summer Storm: Severe Wind

Wind exceeding 50-60mph

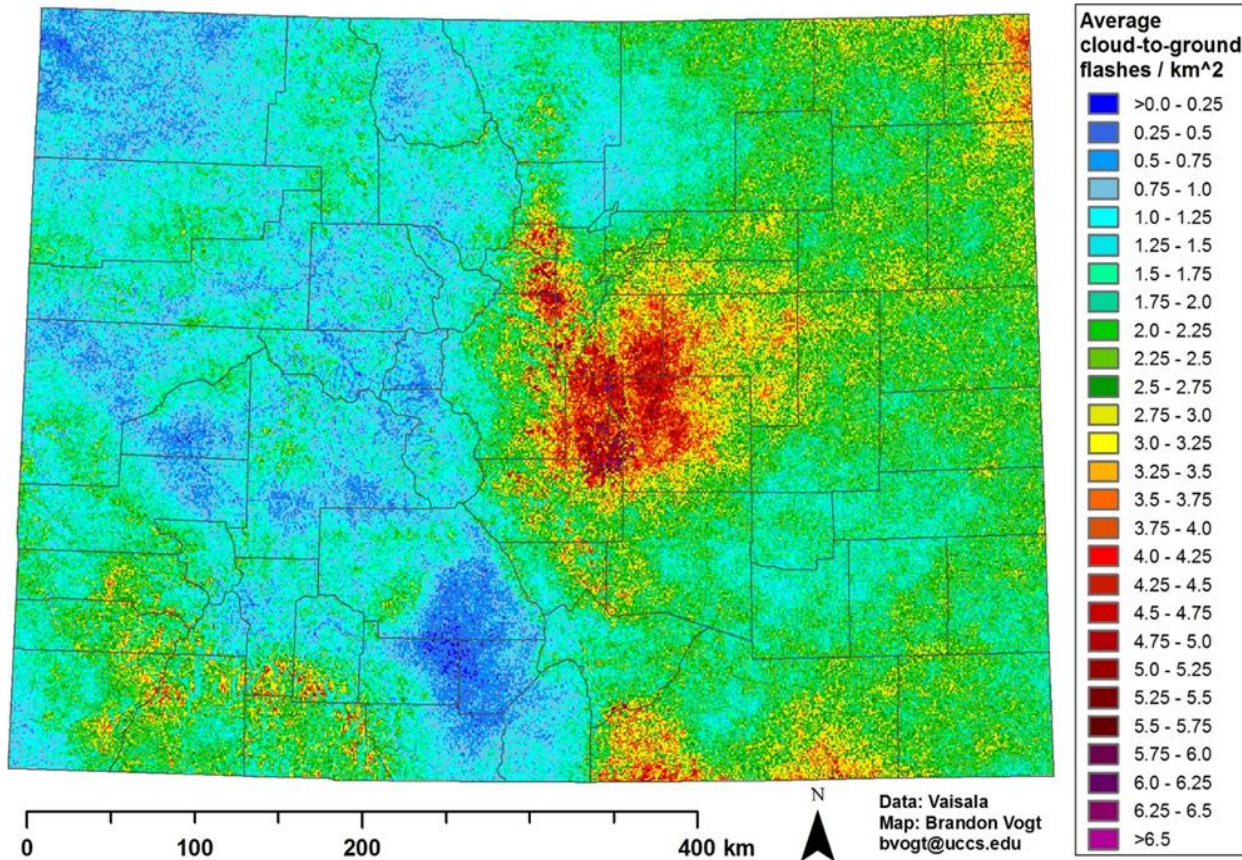


- NCEI Records:
 - 299 Events
 - 29 casualties
 - \$13,866,500 total damages
- Greatest Windspeed:
 - 125mph
 - November 2, 1997
 - Christ Mountain
- Most Damaging Event:
 - \$7.2 Million
 - April 8, 1999
- Related hazards: Wildfire, Utility Disruption



Spring/Summer Storm: Lightning

Colorado Lightning 1996 - 2016: Annual



NCEI Records:

- 46 Events
- \$217,000 in property damages
 - 6 Structural fires
 - 4 Wildland fires

Lightning Casualties:

- 10 deaths
- 76 injured

Vulnerabilities

- Outdoor Enthusiasts
 - Tourists
- Outdoor Workers
- Power Outages
 - 8% Electricity-Dependent Beneficiaries
- Communication Systems/Equipment



Tornado

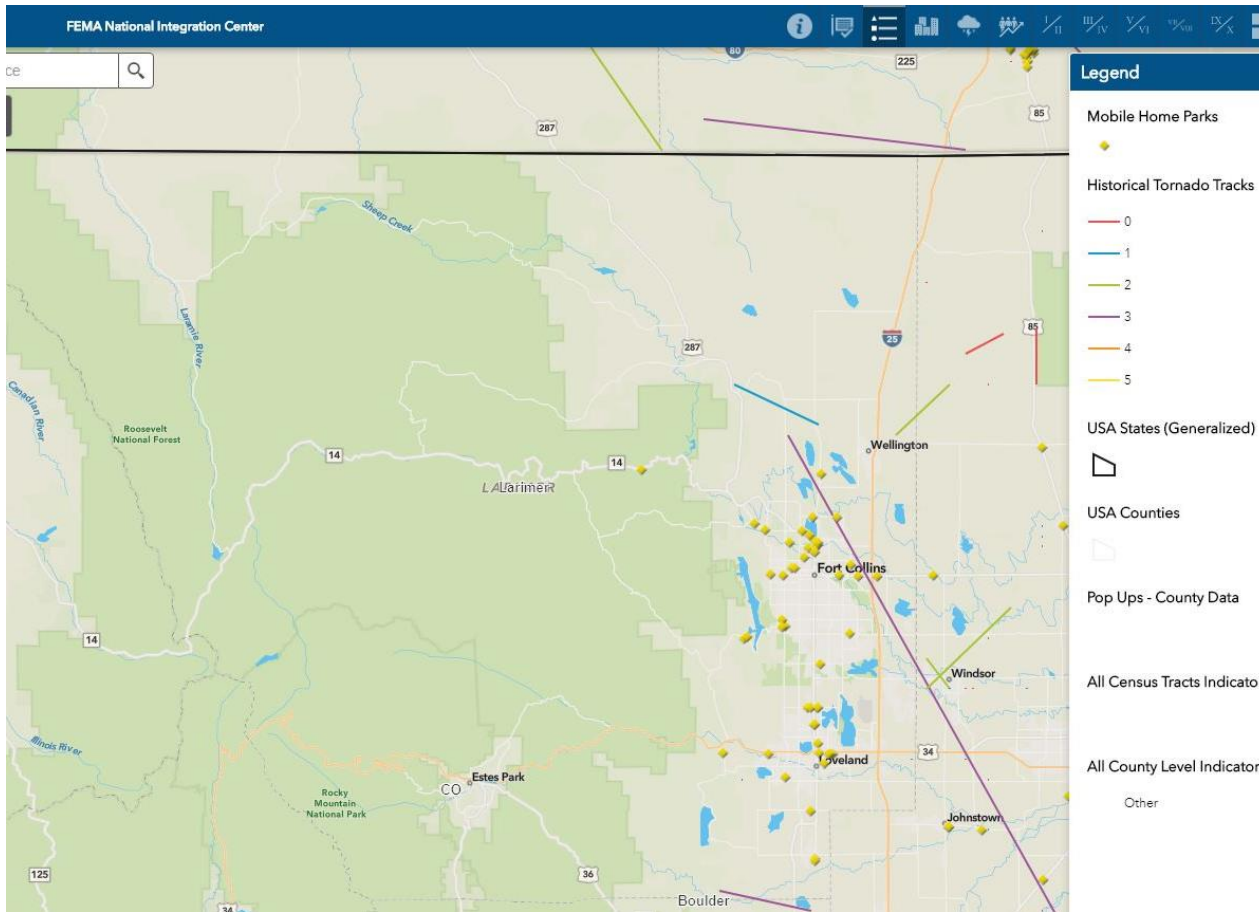
- 2016 HMP Plan: High Risk
- 2020 Analysis
 - Frequency: Likely
 - Extent/Area: Limited
 - Severity: Critical
 - Overall Risk: High



Source: The Coloradoan



Tornado



- Most often generated by thunderstorm activity
- Eastern portion of County most vulnerable
- NCEI Records:
 - 31 events
 - \$65,310 Total Damages
 - Wellington most frequently reported
- 3.8% of total housing is mobile homes



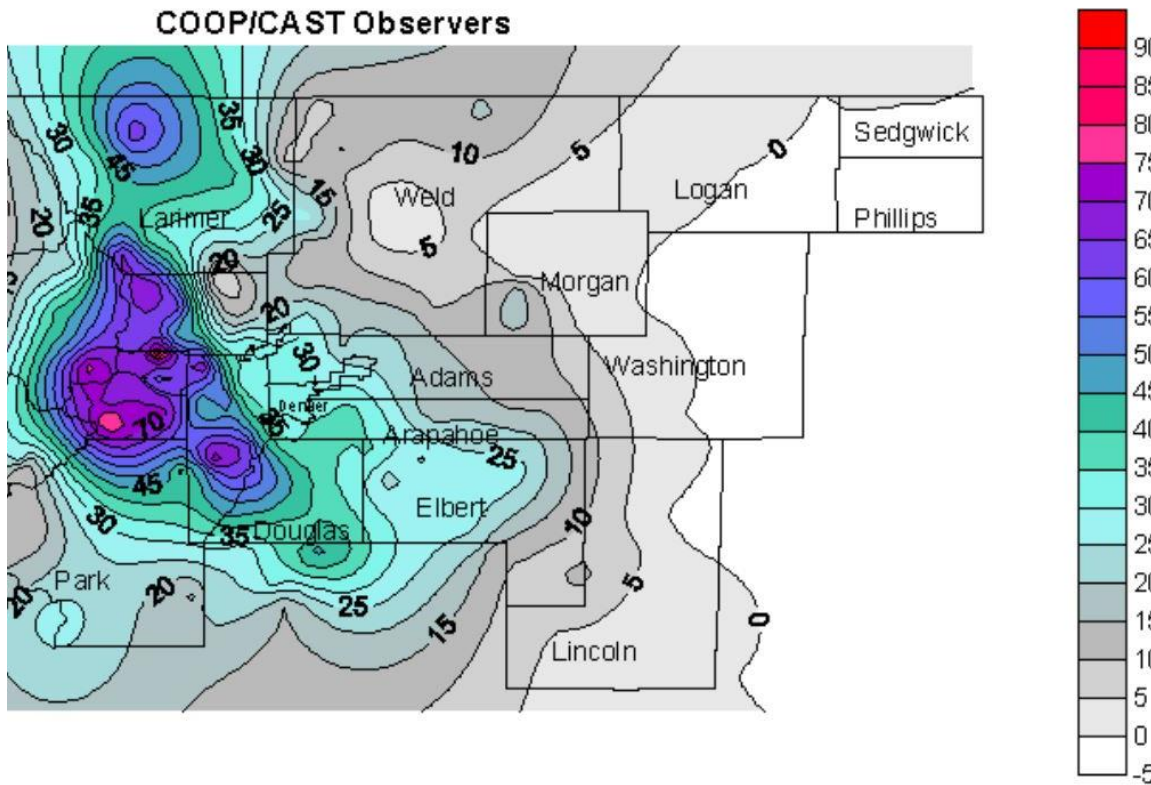
Winter Storm

- 2016 HMP Plan: High Risk
- 2020 Analysis
 - Frequency: Highly Likely
 - Extent/Area: Extensive
 - Severity: Critical
 - Overall Risk: High



Winter Storm

March 17-20, 2003 Snowfall Totals



Source: Colorado Climate Center

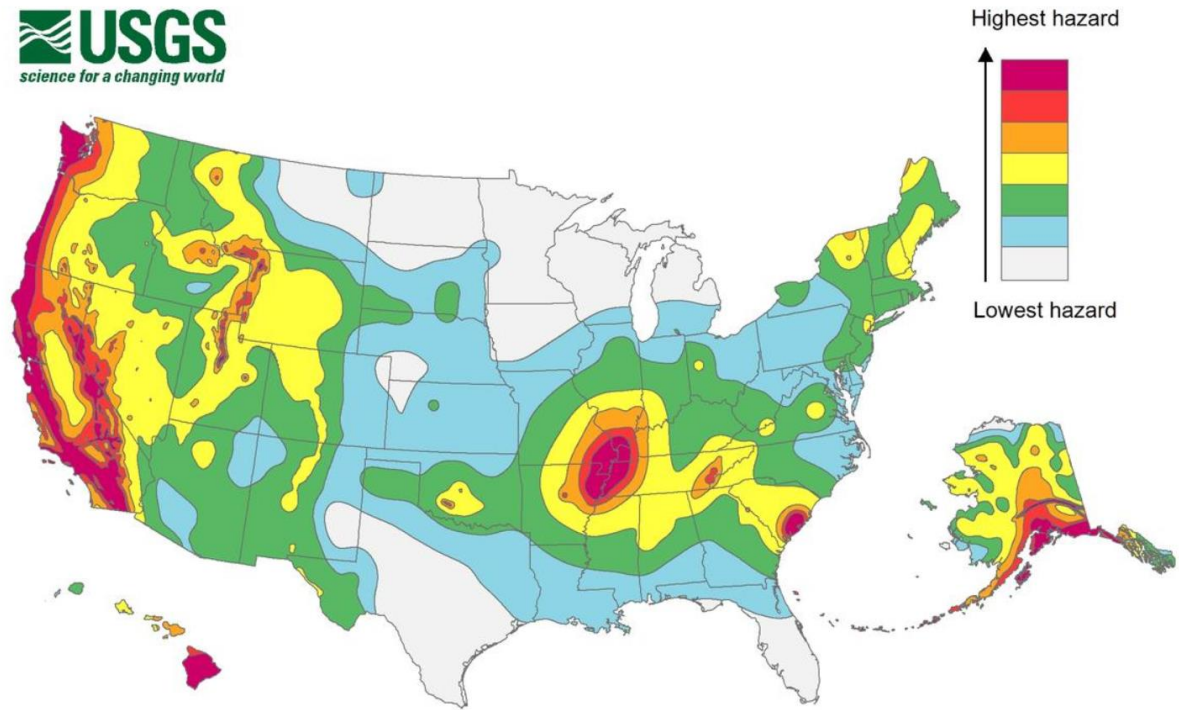
- Can occur in multiple locations and elevations at same time.
- Average snowfall varies
- NCEI Records:
 - 379 events
 - 1 causality
 - \$31 Million in property damages
- Vulnerable Populations:
 - Elderly (65+): 14.7%.
 - Disability: 9.8%
 - Electricity Dependent Equipment: 8%



Earthquake



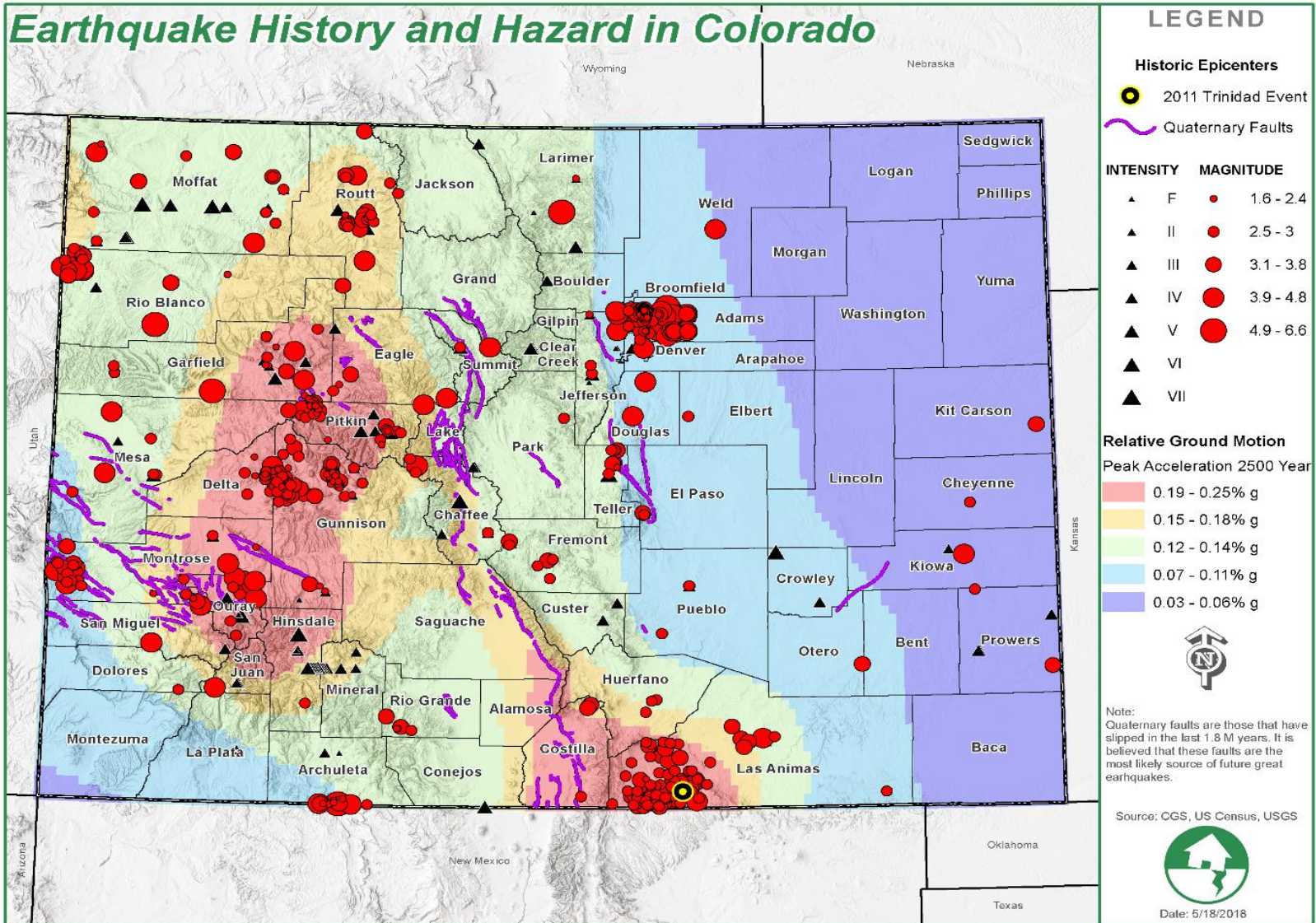
- 2016 HMP Plan:
High Risk



- 2020 Analysis
 - Frequency: Occasional
 - Extent/Area: Limited
 - Severity: Catastrophic
 - Overall Risk: High



Earthquake - continued



Earthquake

- History
 - Nov 7, 1882 earthquake was largest in CO, epicenter suspected to be in Larimer County near Estes Park M6.6 (estimated)
 - Most recent economically damaging earthquakes:
 - August 9th, 1967 in the Denver metro area. The 5.3 magnitude earthquake caused more than a million dollars of damage in Denver and the northern suburbs.
 - Trinidad earthquake August 22, 2011 M 5.3 Intensity V



Earthquake

Hazus Loss Estimation 2500 year (2% in 50 year) Probabilistic Scenario

	Capital Stock Losses					Income Losses				Total Loss
	Cost Structural Damage	Cost Non-struct. Damage	Cost Contents Damage	Inventory Loss	Loss Ratio %	Relocation Loss	Capital Related Loss	Wages Losses	Rental Income Loss	
Colorado										
Larimer	60,307	228,059	101,219	2,163	0.86	39,296	13,134	16,025	18,055	478,257
Total	60,307	228,059	101,219	2,163	0.86	39,296	13,134	16,025	18,055	478,257
Region Total	60,307	228,059	101,219	2,163	0.86	39,296	13,134	16,025	18,055	478,257

Hazus Loss Estimation Golden Fault M 6.5 Deterministic Scenario (2016 Plan)

Category	Single Family	Other Residential	Commercial	Industrial	Other	Total
Direct Structural Losses in Millions of \$	\$217.4	\$ 41.7	\$147.9	\$7.0	\$312.6	\$726.6



Landslide/Rockslide

- 2016 HMP
 - High Risk
 - Most common geologic hazard in Colorado
- 2020 Analysis
 - Frequency: Likely
 - Extent/Area: Limited
 - Severity: Critical
 - Overall Risk: High

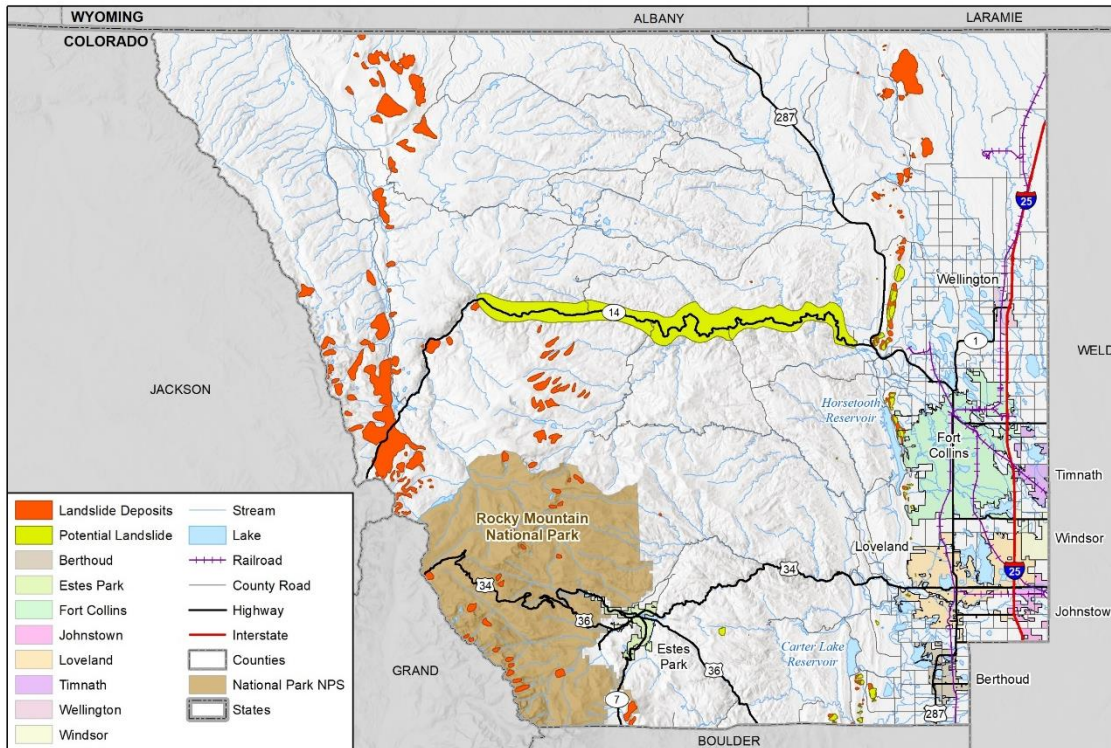


Landslide/Rockslide

- Landslide vs Rockslide (per the CGS)
 - Landslide
 - Broadest term that encompasses all mass movements of soil or rock down a slope such as falls, topples, slides, spreads, flows, etc.
 - Most often activated by heavy rainfall, snowfall, melting snowpack
 - Rockslide
 - Type of landslide that consists mainly of rocks and boulders moving down a slope
 - For example, a rockslide closed County Road 43 near Drake in May 2017



Landslide/Rockslide



Map compiled 5/2020:
intended for planning purposes only.
Data Source: Larimer County, CGS

1. Landslide deposits

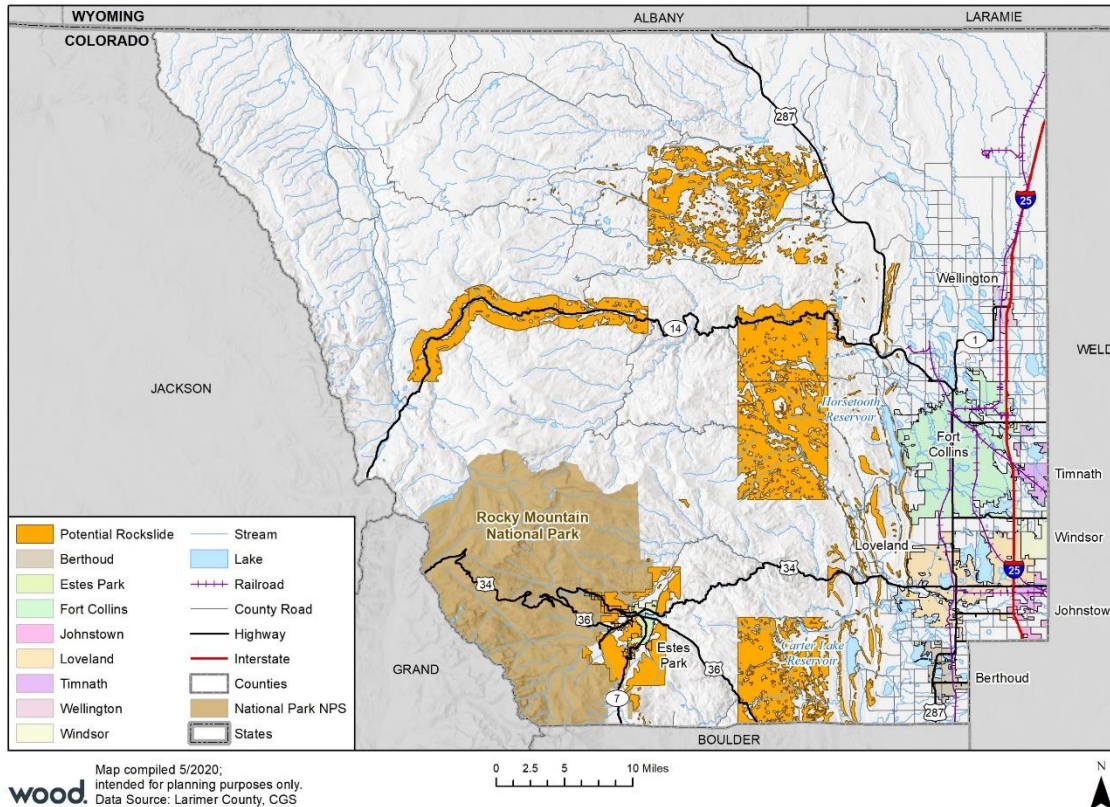
- West
- Northeast
- RMNP
- CO 14 in west
- South of Estes Park

2. Landslide potential

- West of Fort Collins along CO 14



Landslide/Rockslide



- ## 1. Potential rockslide
- West of Horsetooth Reservoir
 - North (west of US 287)
 - RMNP
 - CO 14
 - Estes Park
 - West of Carter Lake Reservoir



Landslide/Rockslide

Climate change and development

- Increased landslide risk caused by:
 - Increased rainfall events
 - Wildfires destabilize soil on steep slopes
 - Erosion caused by development on steep hillsides



Erosion/Deposition

- 2016 HMP Plan
 - Moderate Risk
 - Potential to cause substantial losses, but pose little harm to county
- 2020 Analysis
 - Frequency: Likely
 - Extent/Area: Significant
 - Severity: Limited
 - Overall Risk: Moderate



Erosion/Deposition

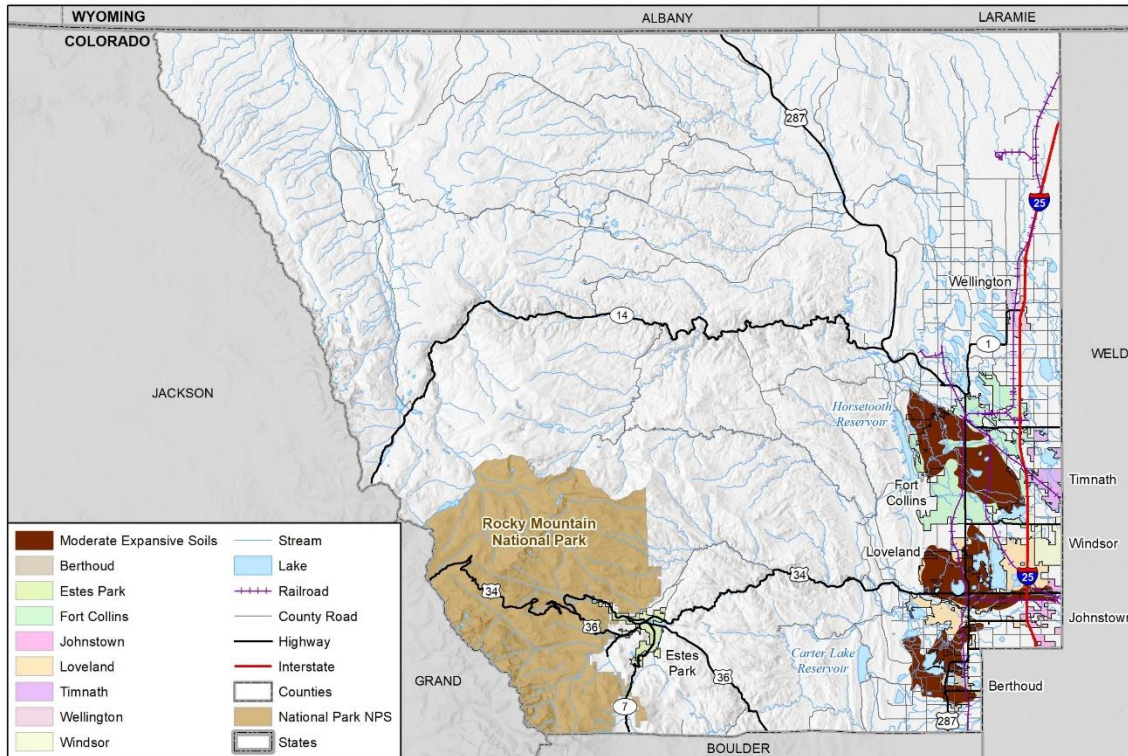
- Erosion vs Deposition
 - Erosion is the removal or loss of layers or soil
 - Deposition is where the soil is then placed or deposited after moving, often by gravity, wind, or water
 - If soil is lost (eroded) in one location, it must end up (deposit) in another location
- Includes:
 1. Expansive soils
 2. Collapsible soils
 3. Subsidence
 4. Undermined areas
 5. Geologic hazards



Erosion/Deposition

1. Expansive Soils

- Moderate in southeast
- Fort Collins, Loveland, Berthoud
- US 34 and 287



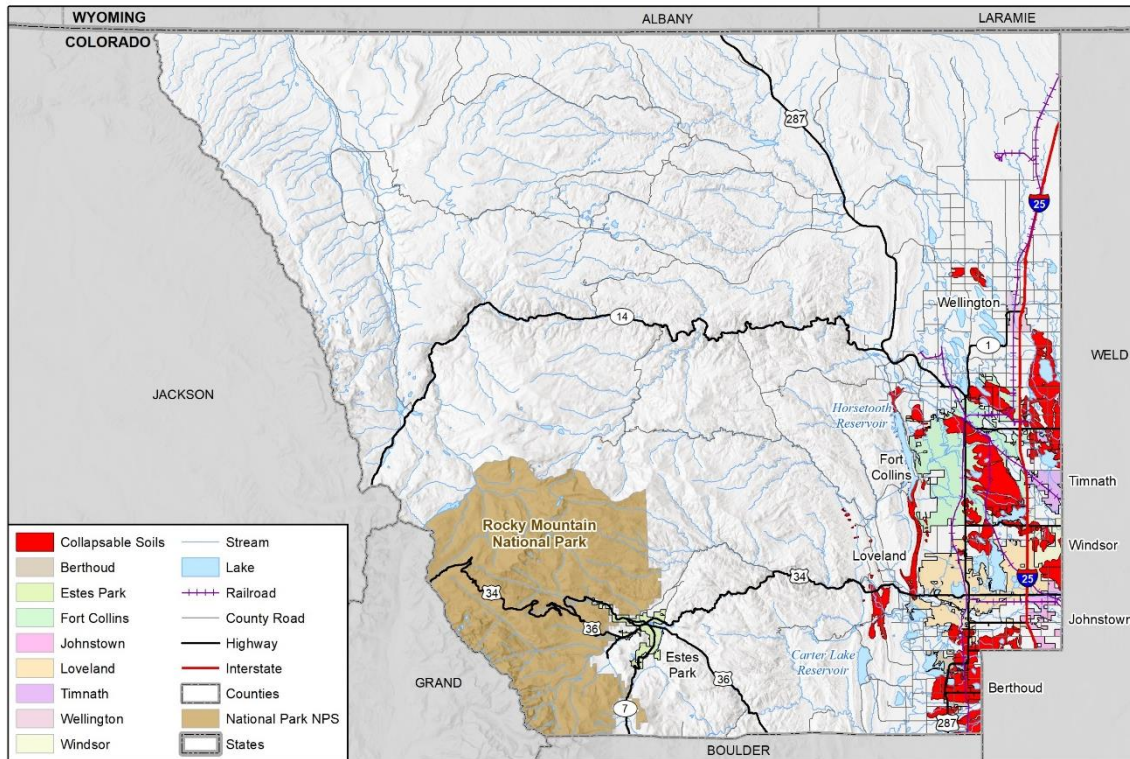
Map compiled 5/2020:
intended for planning purposes only.
Data Source: Larimer County, CGS



Erosion/Deposition

2. Collapsible Soils

- Present in southeast
- Fort Collins, Loveland, Windsor, Berthoud
- US 34 and 287



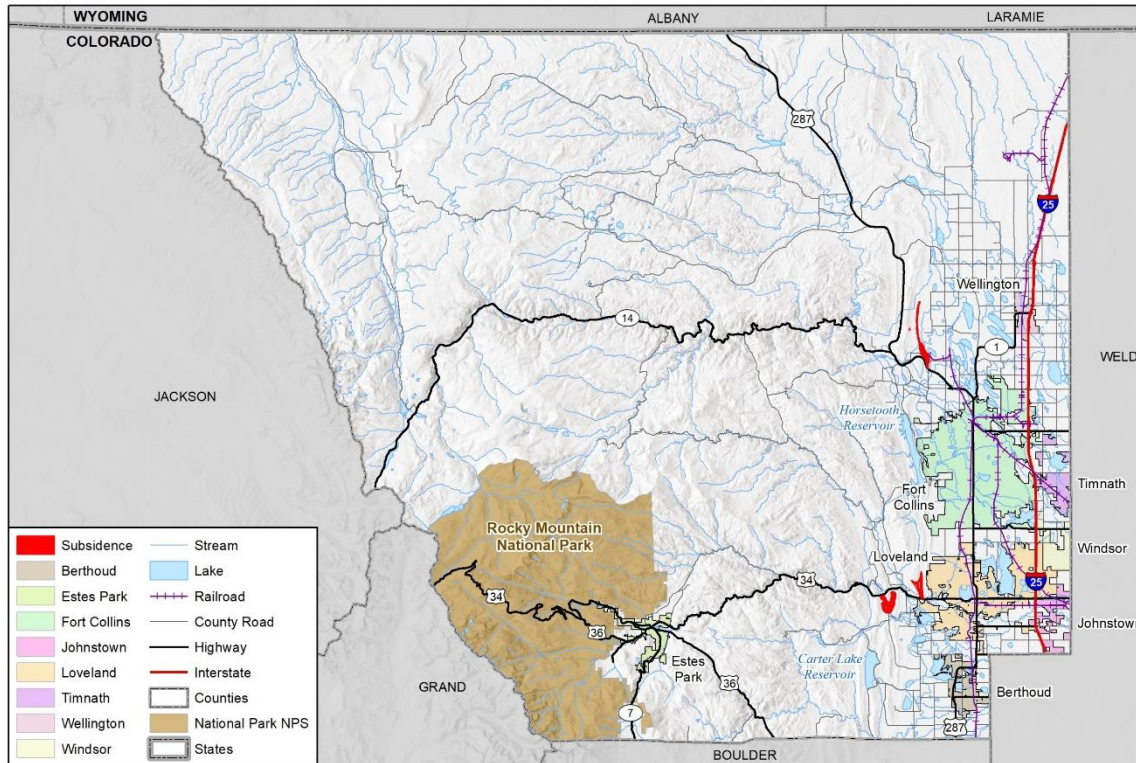
Map compiled 5/2020;
Intended for planning purposes only.
Data Source: Larimer County, CGS



Erosion/Deposition

3. Subsidence

- Present in southeast
- West of Loveland
- Northwest of Fort Collins



Map compiled 5/2020;
intended for planning purposes only.
Data Source: Larimer County, CGS

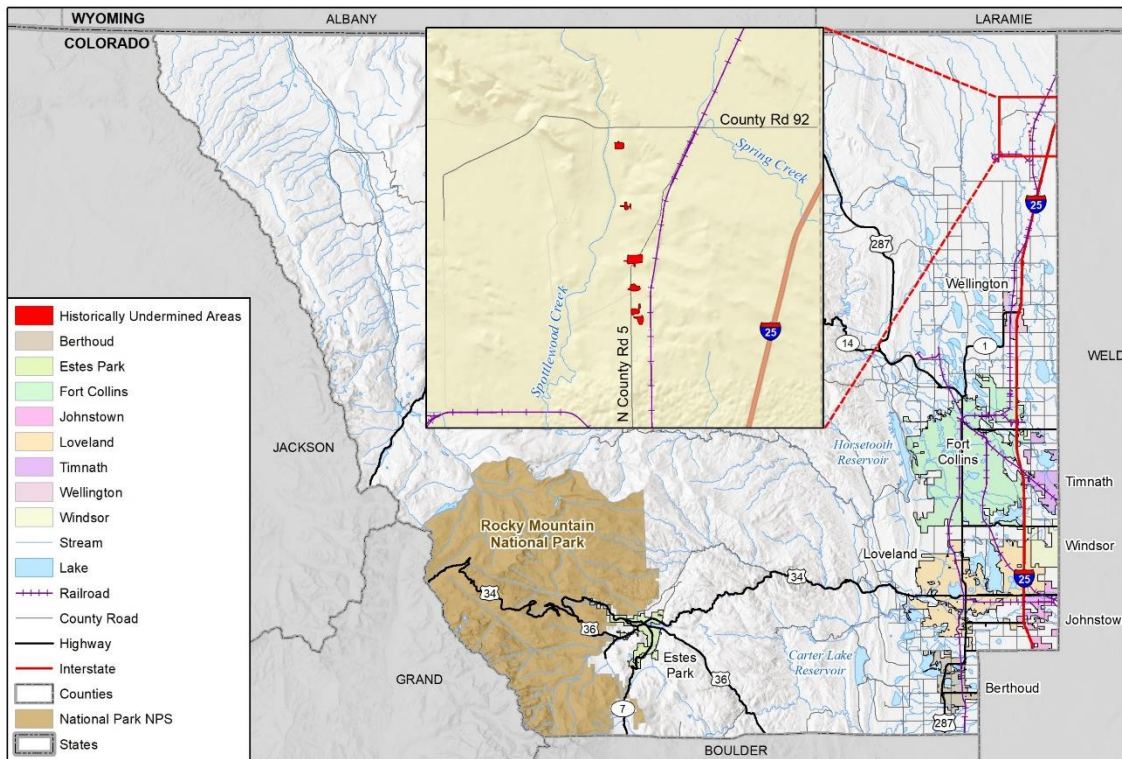
0 2.5 5 10 Miles



Erosion/Deposition

4. Historically Undermined Areas

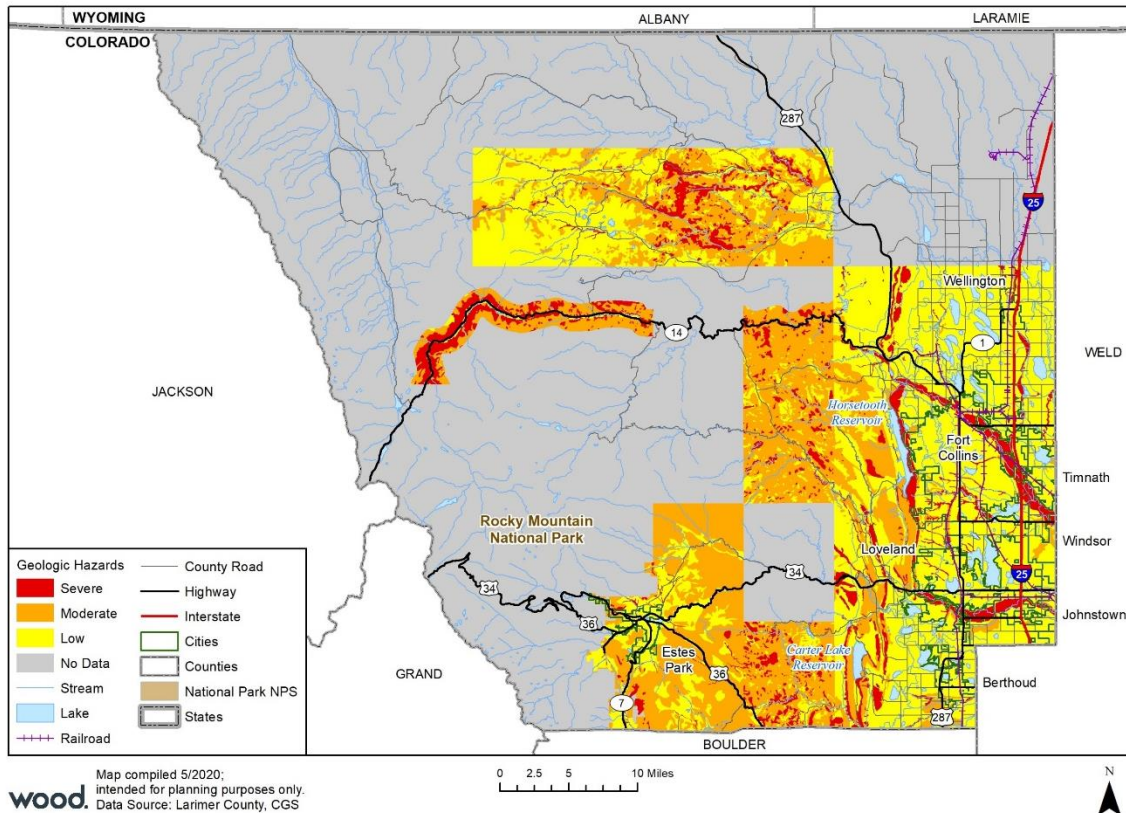
- Present in northeast
- Near County Rd 92 and N County Rd 5 west of I-25



Map compiled 5/2020;
Intended for planning purposes only.
Data Source: Larimer County, CGS



Erosion/Deposition



4. Geologic Hazards

- Severe (red)
 - Throughout county
 - CO 14 in west
 - Big Thompson
 - Poudre
- Moderate (orange)
 - Throughout county
 - West of Fort Collins
 - West of Loveland
- Low (yellow)



Erosion/Deposition

1. Southeast (Fort Collins, Loveland, Berthoud, etc...)
 - Expansive soils (moderate)
 - Collapsible soils
 - Subsidence
 - Increased instances where groundwater is pumped for irrigation in agricultural settings (more probably in eastern Larimer County)
2. Northeast
 - Undermined areas
3. Throughout
 - Geologic hazards



Erosion/Deposition

Climate change and development

- Accelerated erosion with increases in seasonal precipitation and prolonged droughts in areas of development and natural resource extraction
- Mitigation to reduce and manage erosion
 - Surface drainage management
 - Revegetation
 - Sediment catchment basins
 - Riprapping stream banks
 - Ground modification and structural solutions
 - Proper drainage



Biological Hazards/Contagion

- 2016 HMP: High Hazard
- 2020 Analysis
 - Frequency: Highly Likely
 - Extent/Area: Extensive
 - Severity: Catastrophic
 - Overall Risk: High



Biological Hazards/Contagion

- “During the 2016 planning process, pandemic flu was identified as the key public health hazard in the county.... With the increase in global transport, as well as urbanization, epidemics due to new influenza viruses are likely to occur in and around Larimer County.”
 - 2016 Larimer County HMP

Table 19. Total Workdays Lost (Pandemic Influenza)

Scenario	Workdays Lost
Most Likely Scenario	144,596
Minimum Loss Scenario	121,312
Maximum Loss Scenario	180,307

(Based on a 4-week outbreak with 25% clinical attack rate)



Biological Hazards/Contagion

- Key pandemic vulnerabilities include:
 - Children 5 and under
 - Elderly 65 and over
 - People below the poverty level
 - People without healthcare
- Five pandemics in the last ~100 years:
 - 1918-19 Spanish Flu (20M deaths)
 - 1957-58 Asian Flu (1-2M deaths)
 - 1968-69 Hong Kong Flu (34k deaths)
 - 2009 H1N1 Flu (18K deaths)
 - 2020 COVID19 (86k deaths as of 5/15/20)



Hazardous Materials Incidents

- 2016 HMP: High Hazard
- 2020 Analysis
 - Frequency: Likely
 - Extent/Area: Limited
 - Severity: Critical
 - Overall Risk: High



Photo Credit: Fox 31 KDVR Denver

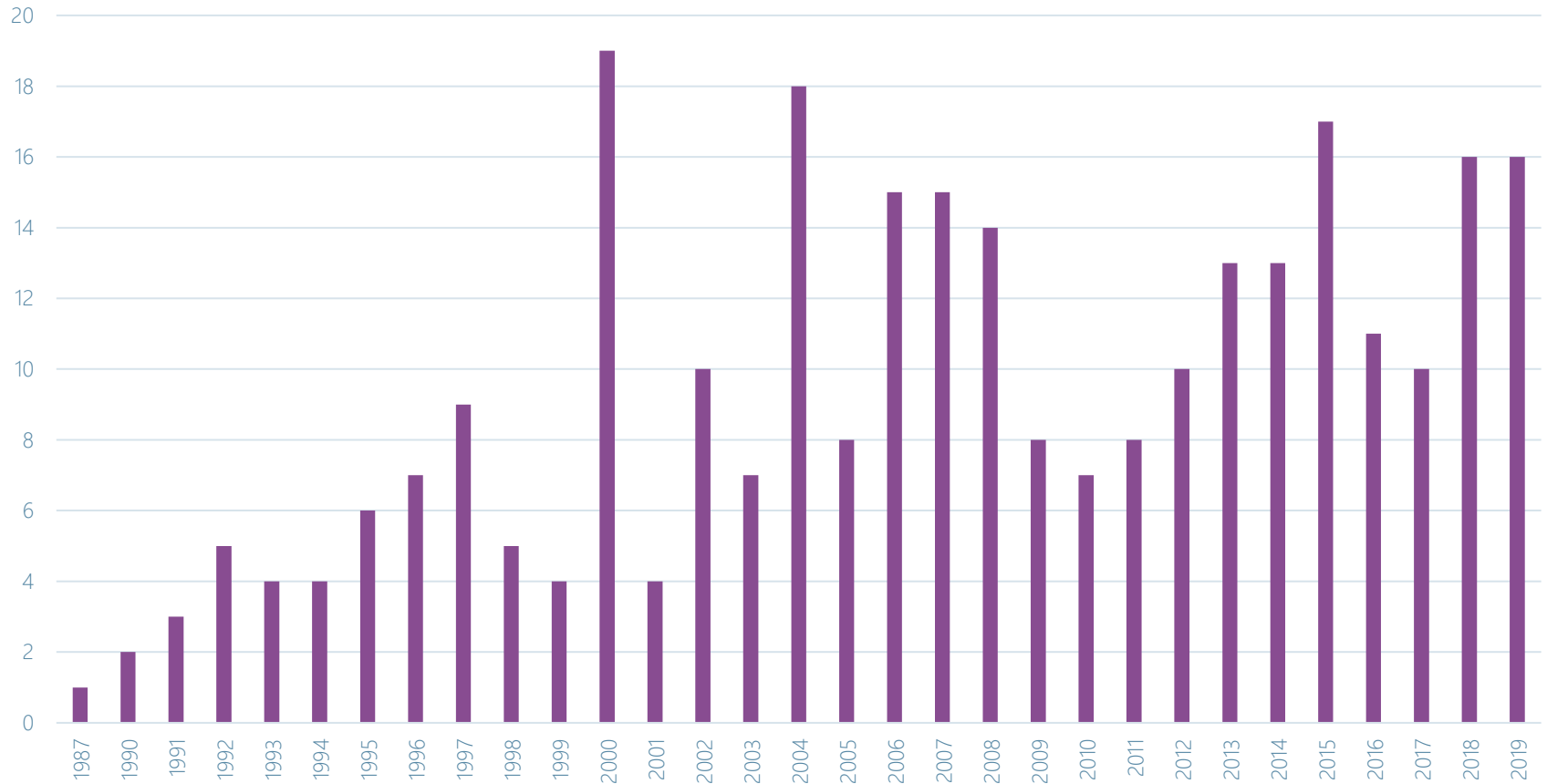
Hazardous Materials Incidents

- 10 RMP Facilities
- 289 incidents (1987-2019)
 - 10 Fatalities
 - 29 Injuries
 - 13 Evacuations
 - 5 Incidents causing damages
- Causes of Incidents:
 - 2.1% Natural Phenomenon
 - 1.4% Flood

Type of Incident	# of Incidents
Fixed	141
Mobile	98
Pipeline	16
Railroad	15
Railroad Non-Release	7
Storage Tank	6
Vessel	5
Unknown Sheen	1
Total	289



Hazardous Materials Spills: 1987-2019

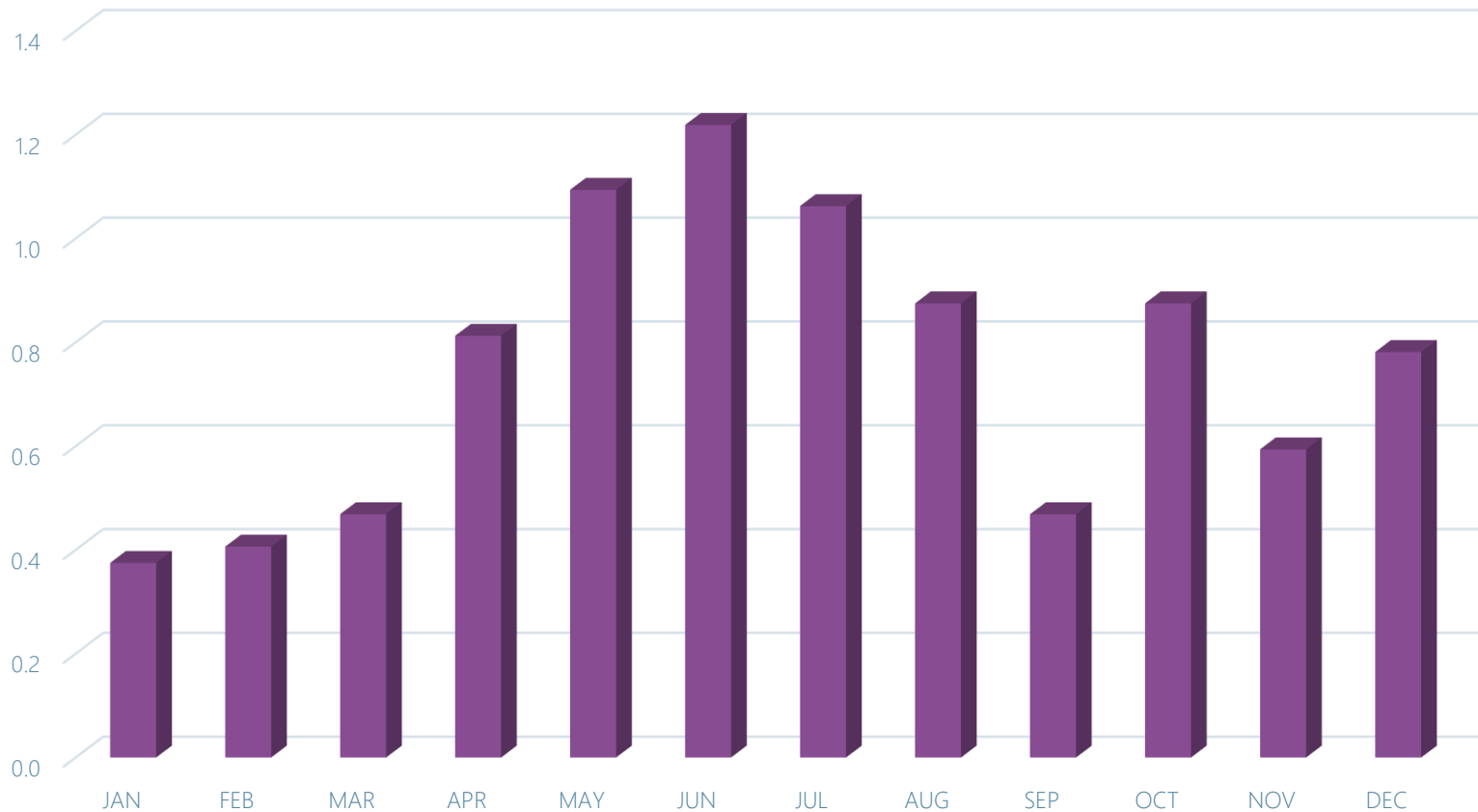


Since 2000 Larimer County averages 12 hazmat incidents per year



Hazardous Materials Spills: 1987-2019

Average Incidents by Month



Utility Disruption

- 2016 HMP: Moderate Hazard
- 2020 Analysis
 - Frequency: Likely
 - Extent/Area: Limited
 - Severity: Critical
 - Overall Risk: Moderate



Utility Disruption

- Loss of electrical, gas, water, or communications
- Most only affect a small number of people for a short time
- Outages affecting 100-1000 for limited time are fairly common
- Larger, more long-lasting outages are less common
- More severe impacts during extreme heat or cold weather
- Effects on commercial & critical infrastructure



Utility Disruption

- Small utility outages are common, but not tracked
- Recent large-scale disruptions in Colorado:
 - 1997 Blizzard – widespread power outages
 - 2008 Alamosa Salmonella Outbreak – water service disrupted
 - 2008 Tornadoes – utility outages in Windsor and area
 - 2013 floods – widespread water/wastewater outages



Civil Disturbance

- 2016 Ranking: Moderate
- 2020 Analysis
 - Frequency: Likely
 - Extent/Area: Limited
 - Severity: Limited
 - Overall Risk: Moderate
- Property damage and personal injuries possible
- Continuity of operations may be impacted
- Short-term economic disruptions
- Public confidence in government can be affected

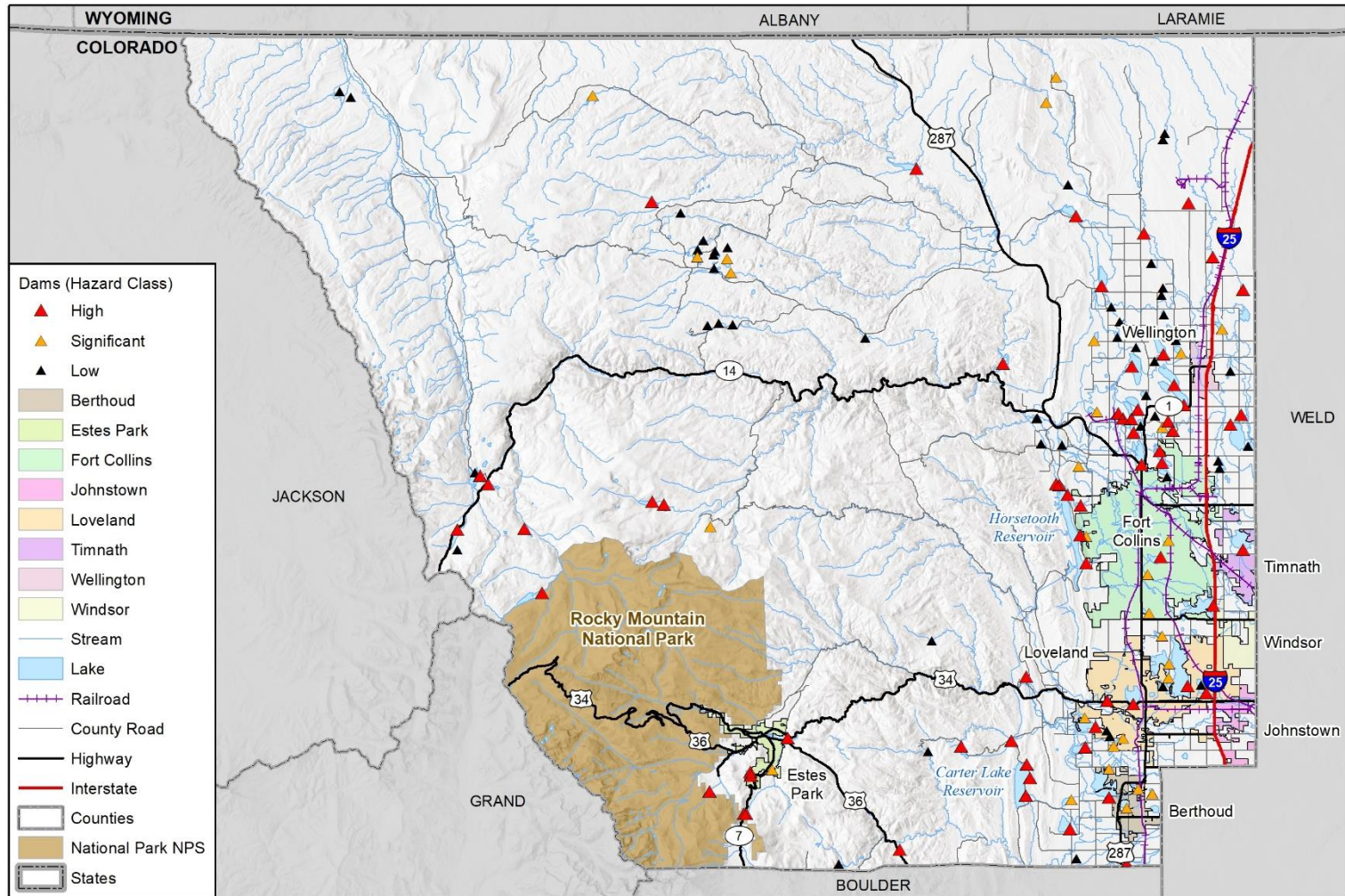


Civil Disturbance – Past Occurrences

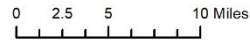
Year	Event	Details
1987	College Daze riots	10,000-12,000 college students involved in disturbance for more than three days in Fort Collins.
1988	Baystone riots	10,000 people involved in civil disturbance over three day period.
1989	Baystone riots	10,000 people involved in civil disturbance over three day period.
1995	Football riots	CSU football team wins WAC Championship, nearly 3,000 people involved in riots over two days.
1997	Whitcomb/Howes	More than 3,000 people involved in two consecutive nights of riots on and near Colorado State University campus.
1998	Super Bowl riot	3,000 to 6, 000 people involved in riots along College Ave., Mountain Ave., and Plum St. after Denver Broncos won the Super Bowl football championship
2000	Stanley Cup riot	2,000 to 3,000 people involved in riots in Old Town Fort Collins after Colorado Avalanche won Stanley Cup hockey championship
2004	CSU Student riots	Fort Collins experienced two consecutive nights of out-of-control parties, which developed into riots near the CSU campus
2013	Riots	Fort Collins experienced riots near the CSU campus after an out-of-control party
2014	Riots	Fort Collins experienced riots near the CSU campus after an out-of-control party



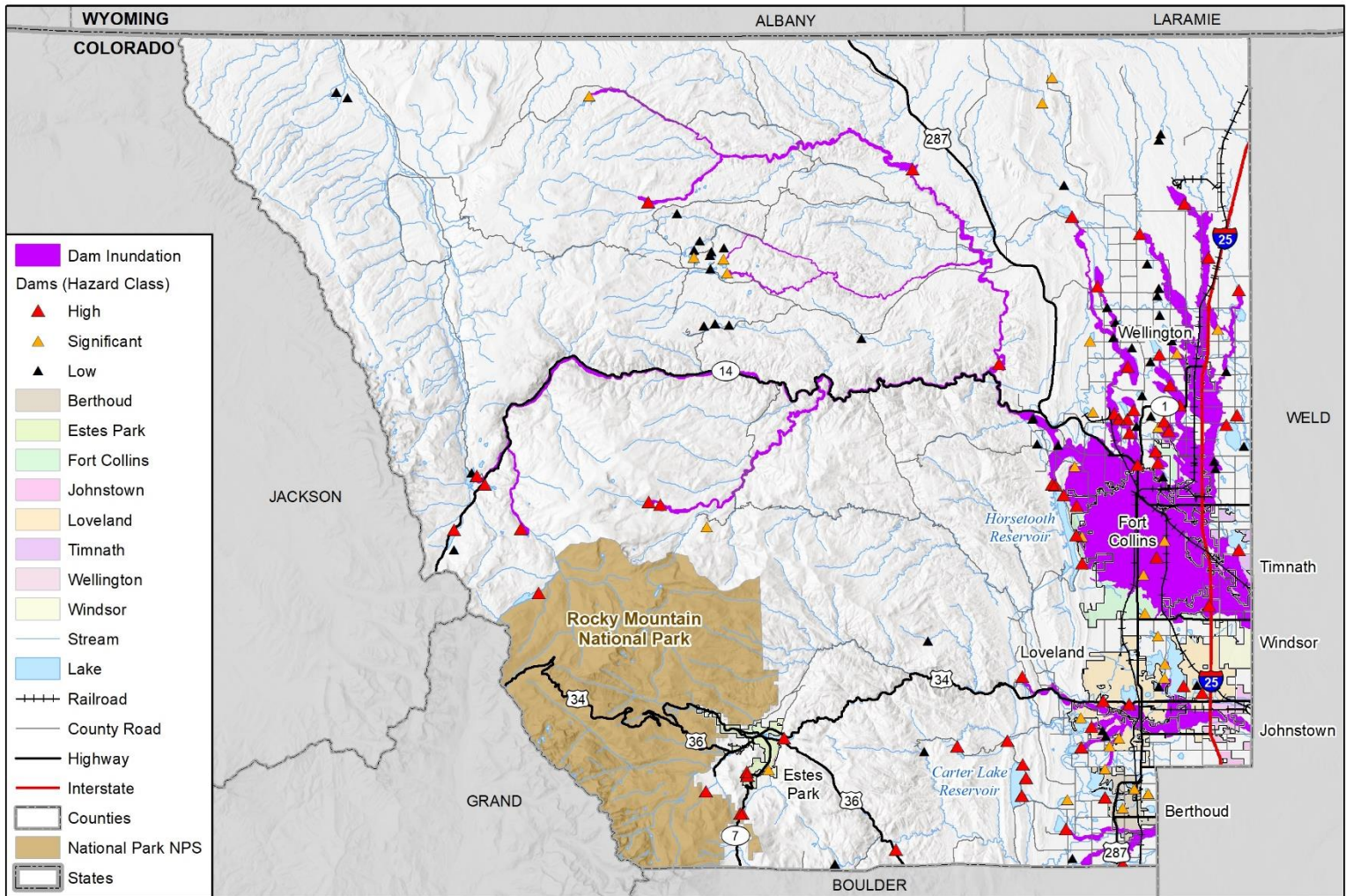
Dam Failure/Incident



Map compiled 5/2020;
intended for planning purposes only.
Data Source: Larimer County, NID



Dam Inundation Areas



2020 Hazard Summary (Draft)

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Flood – Flash & Riverine	Highly Likely	Significant	Catastrophic	High
Fire – Wildland	Highly Likely	Significant	Critical	High
Spring/Summer Storm	Highly Likely	Extensive	Critical	High
Earthquake	Occasional	Limited	Catastrophic	High
Biological Hazards / Contagion	Highly Likely	Extensive	Catastrophic	High
Tornado	Likely	Limited	Critical	High
Winter Storm	Highly Likely	Extensive	Critical	High
Hazmat	Likely	Limited	Critical	High
Landslide/Rockslide	Likely	Limited	Critical	High
Erosion / Deposition	Likely	Significant	Limited	Moderate
Utility Disruption	Likely	Significant	Critical	Moderate
Civil Disturbance	Likely	Limited	Limited	Moderate
Dam Failure/Incident	?	?	?	?



Capabilities Assessment Update

Capability Assessment Highlights

- Regulations
 - County land use codes, zoning
 - Building codes (2018 IBC/IRC)
 - Floodplain ordinance, mapping, insurance, elevation certificates
 - Fire Restrictions/burn permits
 - Erosion/sediment control program
- Plans
 - Comprehensive Plans
 - Capital Improvement Plans
 - Comprehensive Emergency Management Plan
 - Resilience Framework
 - Supply-Chain Plan
 - Climate Smart Larimer Plan



Capability Assessment Highlights

- Current programs
 - National Flood Insurance Program
 - Community Rating System (Ft. Collins & Loveland)
 - Storm Ready & Firewise
 - Cascarta critical infrastructure mapping
 - Weed Abatement Program
- Outreach and partnerships
 - Larimer Connects & Community Events
 - Larimer-Weld County Emergency Preparedness and Family Safety Expo
 - Community Emergency Response Training (CERT)
 - VOAD Zombie Apocalypse Event



Capability Assessment Highlights

- Opportunities to enhance or improve capabilities
 - Grading/stormwater permit system & additional personnel
 - Comprehensive plan updates (where needed)
 - CRS rating
 - Storm Ready and/or Firewise certification
- Data needs
 - Data Collection Guides (if not already completed)
 - Local hazard data?
 - Tier II facilities?



Mitigation Goals and Objectives Update

Mitigation Goals and Objectives

Goals

- General guidelines that explain what you want to achieve
- Usually broad policy/vision statements

Objectives

- Define strategies or implementation steps to attain goals
- Specific and measurable

Actions

- Specific projects/activities to achieve goals & objectives



Goals and Objectives Update

- Review goals & objectives from 2016 HMP
- See handout with goals from other related plans
- Do the existing goals & objectives need to be updated?
- Are any additional goals or objectives needed?



Larimer County 2016 Mitigation Goals

1. Protect people, property, and natural resources
2. Improve capability to reduce disaster losses
3. Strengthen communication and coordination among public agencies, non- governmental organizations, businesses, and citizens
4. Increase public awareness of natural hazards and mitigation options
5. Integrate hazard mitigation into other planning mechanisms



Larimer County 2016 Mitigation Objectives

1. Continue to develop and expand public awareness and information programs
2. Enhance training for hazard prevention and mitigation options
3. Incorporate risk reduction principles into policy documents and initiatives, as well as other institutional plans
4. Continue to collaborate with area partners through mutual aid agreements and long-term planning efforts
5. Reduce the vulnerability of local assets to the impacts of hazards.



Post Meeting Survey

- Risk Assessment Significance Ratings
- Goals and Objectives Suggested Revisions
- General Comments/Input on today's meeting

https://bit.ly/Larimer_HMP_Post_Mtg2_Survey

Please complete by: May 22, 2020



Next Steps

Project Schedule Update

Project Milestones	Anticipated Timeline
Public Meeting #1	May 28
Updated HIRA	June
HMPC Meeting #3 – Mitigation Strategy	June/July
HMPC Meeting #4 – Plan Review	August
HMPC Review Draft	September
Public Meeting #2 & Public Review Draft	September - October
CO DHSEM Review	October
FEMA Review	October - December
Final Approved HMP for local adoption	January



Next Steps

- Wood: Complete parcel and critical facilities analysis
- Wood: Complete updating status of 2016 mitigation actions
- All: Complete Post Meeting Survey by May 22nd
- All: Publicize Public Meeting May 28th
- All: Next HMPC meeting in June/July





wood.

Questions?

Thank you!

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