University of Kentucky

Hazard Mitigation Plan Update

Steering Committee Meeting

March 21, 2023
1:30-3:00 pm

Division of Crisis Management & Preparedness

AGENDA

Agenda

- Safety Moment
- Project Update
- Data collection
  - Data from UK Departments
  - Interviews
- Risk Assessment
- Survey
- Mitigation Strategy
  - Goals
  - Mitigation Actions

Aerial view of the UK Research and Education Center after it took a direct hit from a weekend tornado. Photo by Matt Barton, UK agricultural communications.

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SAFETY MOMENT

Safety Moment

Stop & Talk: How to Safely Use Public Wi-Fi Networks

Health, Safety, Security, & Environment

SaferTogether

Wi-Fi hotspots in coffee shops, libraries, airports, hotels, universities, and other public places are convenient, but often they are not secure. If you connect to a public Wi-Fi network and send information through websites or mobile apps, someone else might be able to see it. Here are some ways to safely use public Wi-Fi when you're out and about.

Public Wi-Fi Isn't Secure

- If the network isn't secure, and you log into an unencrypted site — or a site that uses encryption only on the sign-in page — other users on the network can see what you see and send.
- A scammer could use your account to impersonate you and scam people on your contact lists or test your usernames and passwords on other websites — including sites that store your financial information.
- If a scammer gets your personal or financial information, they could steal your identity.
- When you sign on to public Wi-Fi, you may also be sharing your data with the companies providing the Wi-Fi.

Information provided by How To Safely Use Public Wi-Fi Networks | FTC Consumer Information

Ways to Encrypt Your Information

- **Connect to websites securely.** If you see https in the web address, you have a secure connection to the website. But using https **does not** mean a website is legit.
- **Consider using a VPN app.** Some virtual private networks, known as VPNs, offer encryption.
- **Use your mobile data, as it is usually encrypted.** If you're on the go, don't have the option of using a secure website and have no VPN encryption, consider using your mobile data instead of Wi-Fi.

Protect Your Information When You Use Public Wi-Fi

- Don't access your personal or financial information.
- Log in or send personal information only to websites you know are fully encrypted.
- Don't stay permanently signed into accounts.
- Don't use the same password on different websites.
- Pay attention to warnings.
- Change your device's settings so it doesn't automatically connect to nearby Wi-Fi.
- Install browser add-ons or plug-ins that can help.

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Project Update

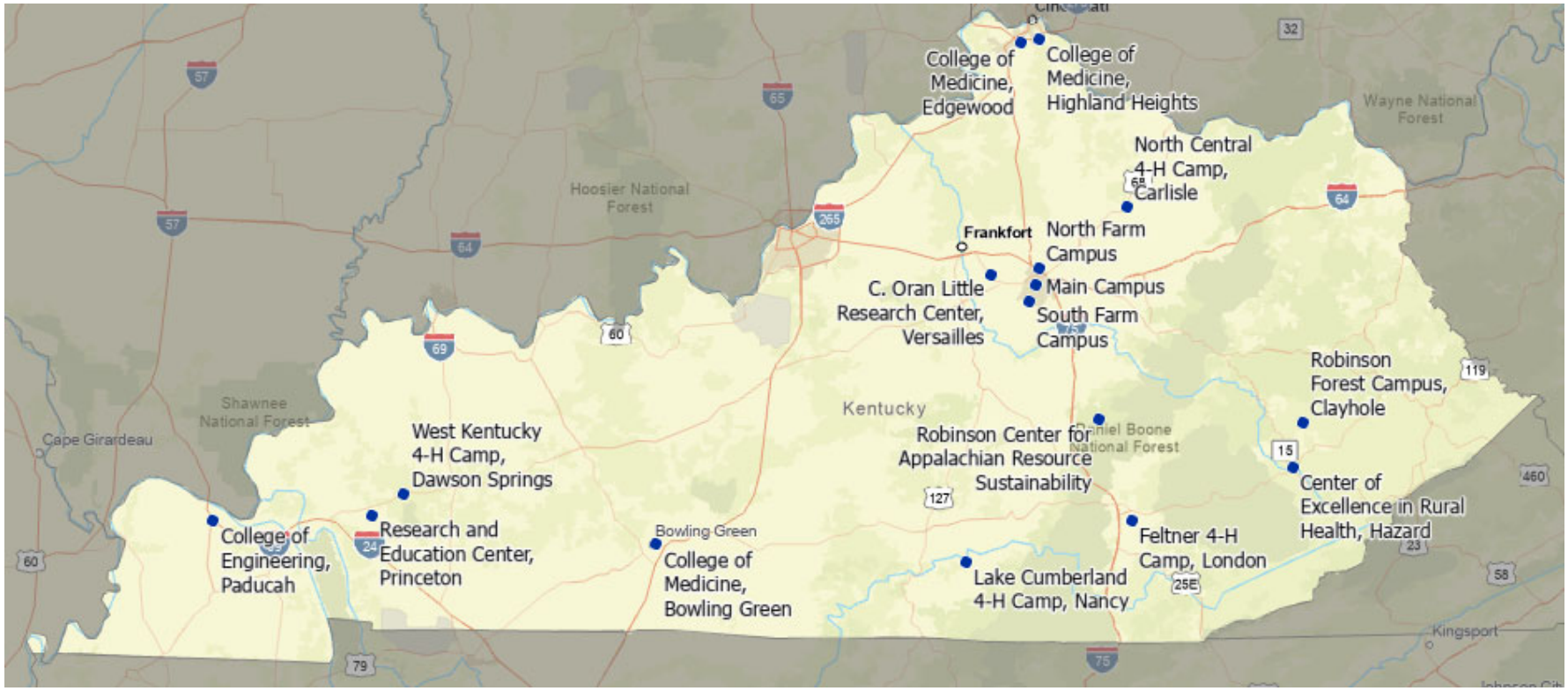
- Plan Components:
  - Critical Facilities Defined
  - Risk Assessment
  - Capability Assessment
  - 2016 Mitigation Action Workbook
    - 2016 Actions Updated
- Upcoming Meetings
  - Draft Plan Meeting (April 27 or 28, 2023)
  - Mitigation Strategy Steering Committee Meeting (TBD)

Project Update

- Completed Data Collection
- Interviews Performed:
  - Risk Management
  - Research
  - GIS
  - Facilities
  - Hazardous Materials
  - IT
  - Agriculture
  - Health Care
  - Equity – Office for Institutional Diversity
  - Kentucky Climate Consortium

The Grain and Forage Center of Excellence at the University of Kentucky Research and Education Center in Princeton was damaged by a powerful tornado last weekend.. *Matt Barton | UK College of Agriculture*

Campus Locations



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Risk Assessment – Hazards Reviewed

Weather Hazards

- Extreme Heat
- Extreme Cold
- Wildfire
- Hail
- Severe Storm
- Severe Winter Storm
- Tornado

Hydrological Hazards

- Flood
- Drought
- Dam/Levee Failure

Geological Hazards

- Earthquake
- Landslide
- Karst

Industrial Hazards

- Hazardous Materials Release

Human-Caused Hazards

- Cyber Attack
- Emerging Infectious Disease

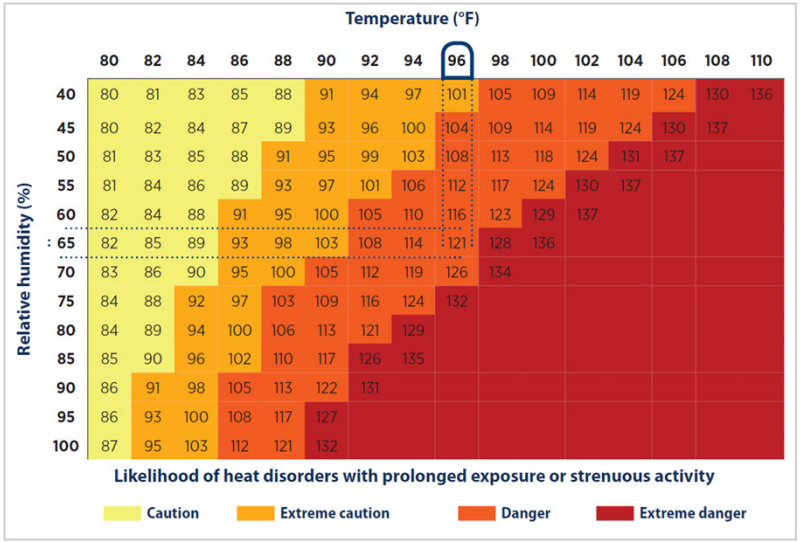
Extreme Heat

- All buildings, infrastructure and populations are considered at risk to extreme heat on UK's main campus and outlying facilities.

- Building Risks
  - Power outages
  - Stress to HVAC systems
  - Buckling/collapse in extreme cases

- Infrastructure Risks
  - Power outages
  - Pavement buckling

- Population Risks
  - Heat-related illness (heat stroke, heat exhaustion, dehydration)
  - Air quality impacts
  - Populations at higher risk: socially vulnerable, athletic teams, outdoor workers, populations in dorms without AC, outdoor sporting events



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Extreme Cold

- All buildings, infrastructure and populations are considered at risk to extreme cold on UK's main campus and outlying facilities.
- 35 extreme cold-related claims between 2012 and 2022 totaling $1.4M
- Building Risks
  - Burst pipes
  - Stress on HVAC systems
  - Power outages
  - Increased risk of fire from alternative heating sources
- Infrastructure Risks
  - Disrupted utility services
  - Broken water mains
  - Stress to asphalt and pavement
- Population Risks
  - Hypothermia and frostbite
  - Carbon monoxide
  - Socially vulnerable populations at higher risk

Severe Storm

- All buildings, infrastructure and populations are considered at risk to severe storm on UK's main campus and outlying facilities.

- Building Risks
  - Building features being blown off
  - Falling objects and debris
  - Buildings being blown off their foundation
  - Mobile and modular units are at more severe risk
  - Lightning strikes can start fires
  - Roof leaks

- Infrastructure Risks
  - Severe winds and debris can damage utilities, communications, and above ground power
  - Electrical systems, telecommunications equipment, and infrastructure in open areas are more vulnerable to lightning

- Population Risks
  - Falling objects and debris
  - People outside are at risk of being struck by lightning
  - Agricultural researchers face higher exposure

Severe Winter Storm

- All buildings, infrastructure, and populations are considered at risk to severe winter weather

- Building Risks
  - Power outages can result in limited food, supplies, and heat
  - Extreme cold leading to freezing or bursting pipes
  - Roof collapse from snow accumulation

- Infrastructure Risks
  - Road conditions
  - Limited transit operations
  - Critical staff may be unable to reach campus

- Population Risks
  - Falling while walking or removing snow
  - Heart attacks from shoveling snow
  - Falling ice, trees, or branches
  - Agricultural researchers may have more exposure
  - International students may remain on campus with only essential staff during winter breaks

Tornado Profile

- All current and future buildings, infrastructure, and populations are considered at-risk to tornadoes, including critical facilities
- Eastern, northeastern, and southeastern parts of Kentucky are far less likely to experience tornadoes than the western end of Kentucky.
- Central Kentucky has moderate tornadic and severe wind activity.
- Building Vulnerabilities
  - Buildings can be destroyed
  - Debris hurled by the wind can cause extensive damage
  - Structures most likely to suffer damage:
    - Mobile homes or units
    - Structures with crawlspaces
    - Buildings with large spans (ex. gymnasiums)
- Infrastructure Vulnerabilities
  - Damage to exposed utilities can result in hazardous material spills and leaks
- Population Vulnerabilities
  - Universities have large numbers of people present and others may seek shelter
  - People outside or driving may be struck by flying debris or picked up by tornado winds
  - Agricultural researchers may be unable to reach shelter quickly

Drought

- All buildings, infrastructure and populations are considered at risk to drought on UK's main campus and outlying facilities.

- Building / Facility Risks
  - Water shortages
  - Impacts to livestock

- Infrastructure Risks
  - Impacts to green infrastructure
  - Impacts to greenspace and outdoor facilities
  - Impacts to agricultural facilities and research

- Population Risks
  - Water use restrictions or higher pricing
  - Insufficient water supply for firefighting (extreme cases)

- Secondary Risks
  - Increased susceptibility to wildfire during drought periods

Flood Profile

- All buildings, infrastructure, and populations at risk, those in FEMA Flood Hazard Areas are considered at highest risk
- No main campus facilities within FEMA Flood Hazard Areas
- 11 facilities within the 1.0% Annual Chance Flood Hazard Area (100-yr)
  - 3 at the North Farm
  - 5 at RCARS
  - 3 at the West Kentucky 4-H Camp
- 5 facilities within the 0.2% Annual Chance Flood Hazard Area (500-yr)
  - 1 at the North Farm
  - 4 at RCARS

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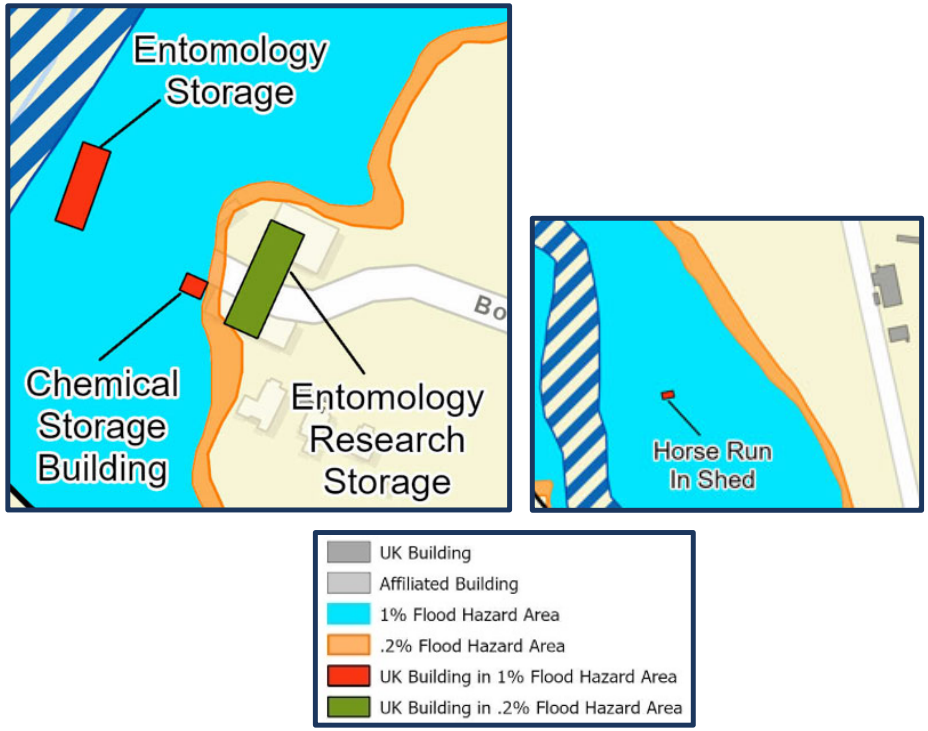
Hydrological Hazards

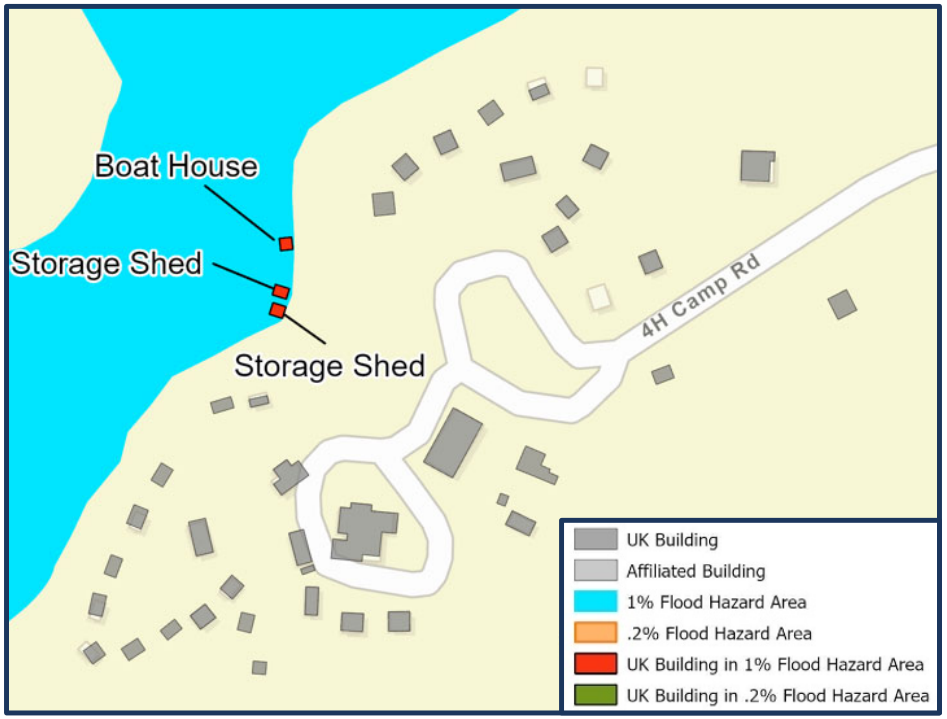
Flood Profile

➢ RCARS



➢ North Farm

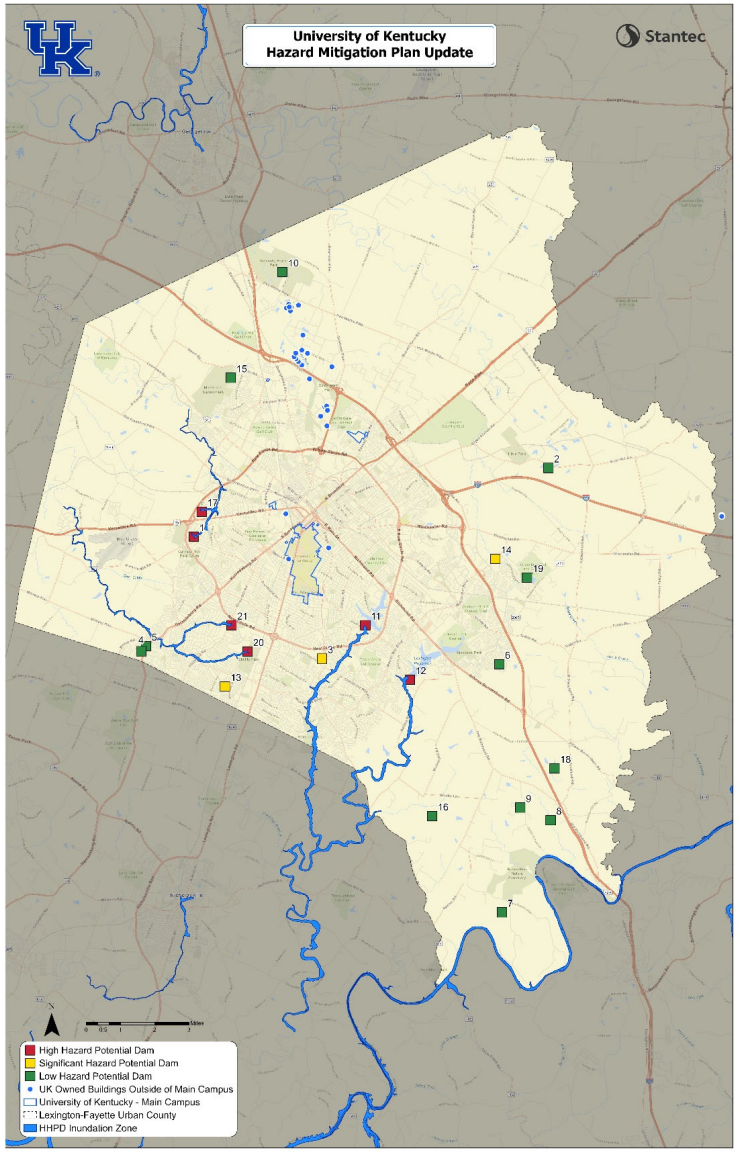
Flood Profile



- West Kentucky 4-H Camp

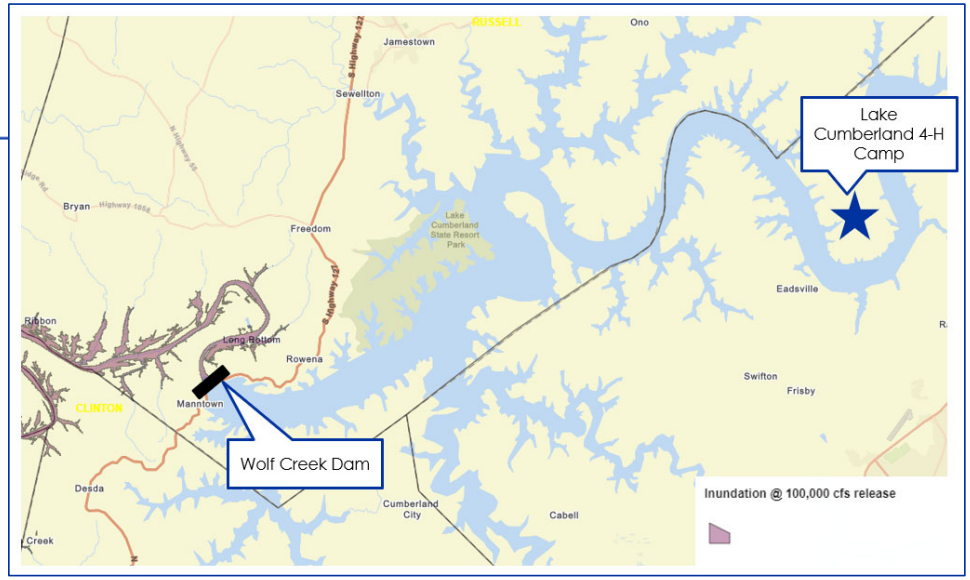
Dam / Levee Failure

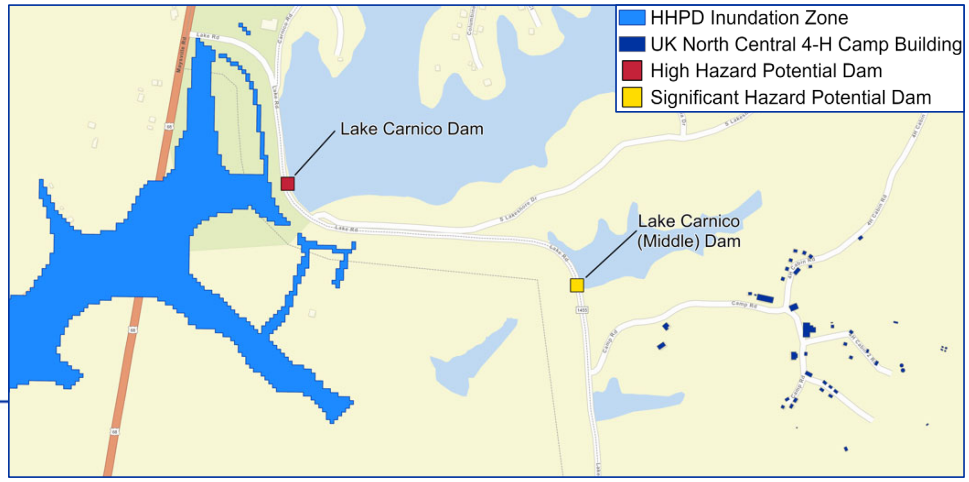
- Buildings, infrastructure, and populations in dam inundation areas or reduced flood risk levee areas are considered at risk to dam failure/ levee failure.
- No UK facilities were identified to be in or within 500 feet of a HHPD inundation area or reduced flood risk area
- Due to the topography, inundation areas in Fayette County show water flowing away from main campus



Dam / Levee Failure

- Lake Cumberland 4-H Camp
  - Reviewed in comparison to the Wolf Creek Dam
  - The camp is upstream of the dam
- North Central 4-H Camp
  - The camp is upstream from the Lake Carnico Dam (HHPD, Poor Condition)
  - No inundation area available for the Lake Carnico Middle Dam (Significant Hazard Potential, Satisfactory Condition)





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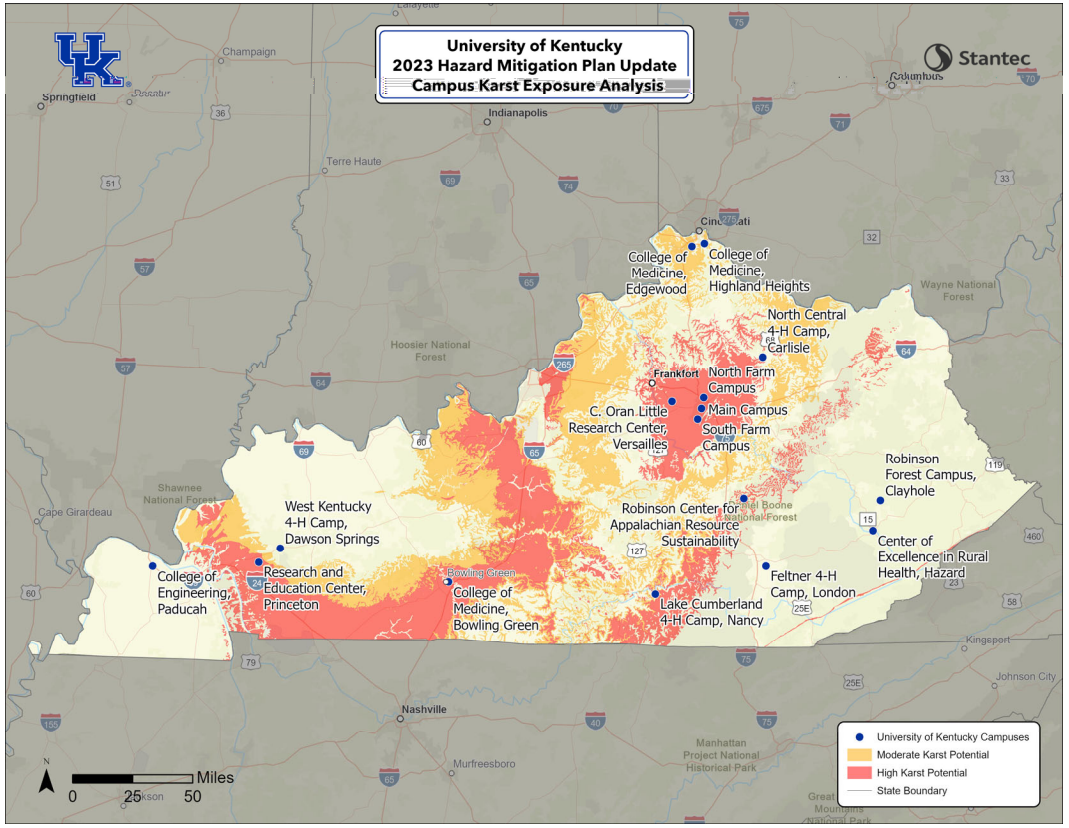
Hydrological Hazards

Karst Profile

- University buildings, populations, and infrastructure located in moderate or high karst potential are considered at risk.
- Includes all the buildings on the Main Campus, North Farm Campus, South Farm Campus, the Little Research Center, and others.
- 27 critical facilities within the high karst potential area.
  - 26 are on Main Campus
  - 1 is an affiliated building (UK Specialty Pharmacy - Wellington Patient Support Services)



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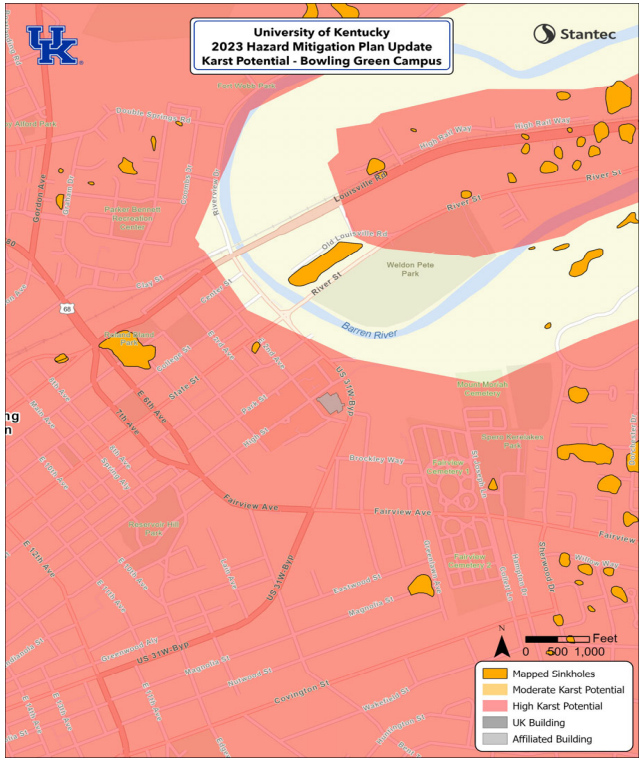
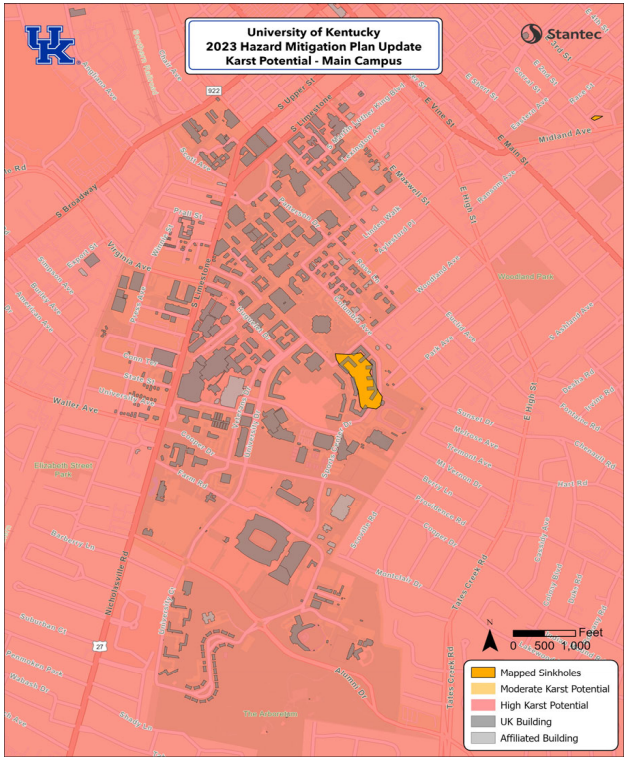
Geological Hazards

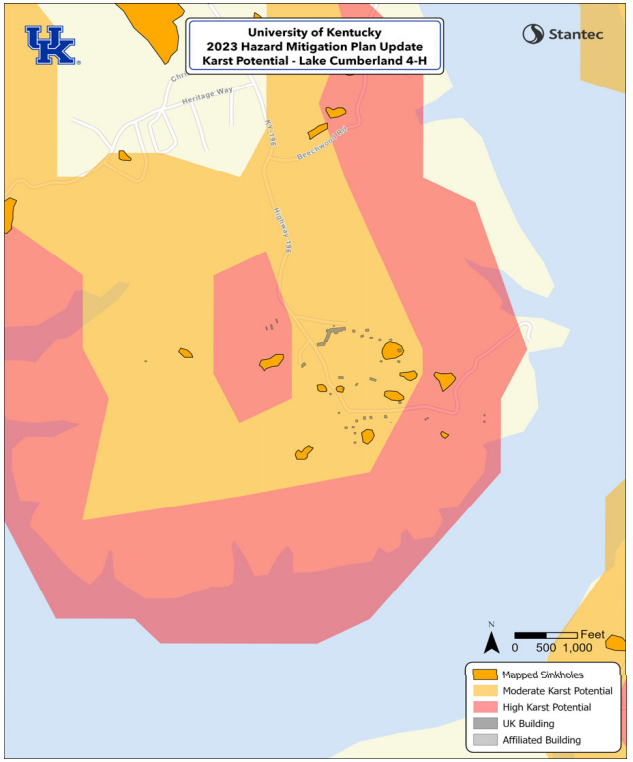
Karst Profile



➢ Bowling Green



➢ Main Campus



➢ Lake Cumberland 4-H Camp

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Geological Hazards

Cyber Attack

- All buildings infrastructure, and populations are potentially at risk, directly and indirectly, to cyber-attacks.
- Universities are especially vulnerable to Cyber Attack due to:
  - Large number of users on personal devices
  - Multiple departments with different security measures
  - Expensive and powerful computing equipment for research
- Building Risks
  - Loss of control of building systems
  - Damage to buildings from loss of control
- Infrastructure Risks
  - Loss of control of systems
  - Systems may be controlled and utilized by others for their own objectives
  - Research activities may be disrupted
- Population Risks
  - Personal information may be stolen
    - UK Healthcare
    - Admissions
  - Monetary damages
  - Loss of important research
  - Loss of trust in the University

Emerging Infectious Diseases

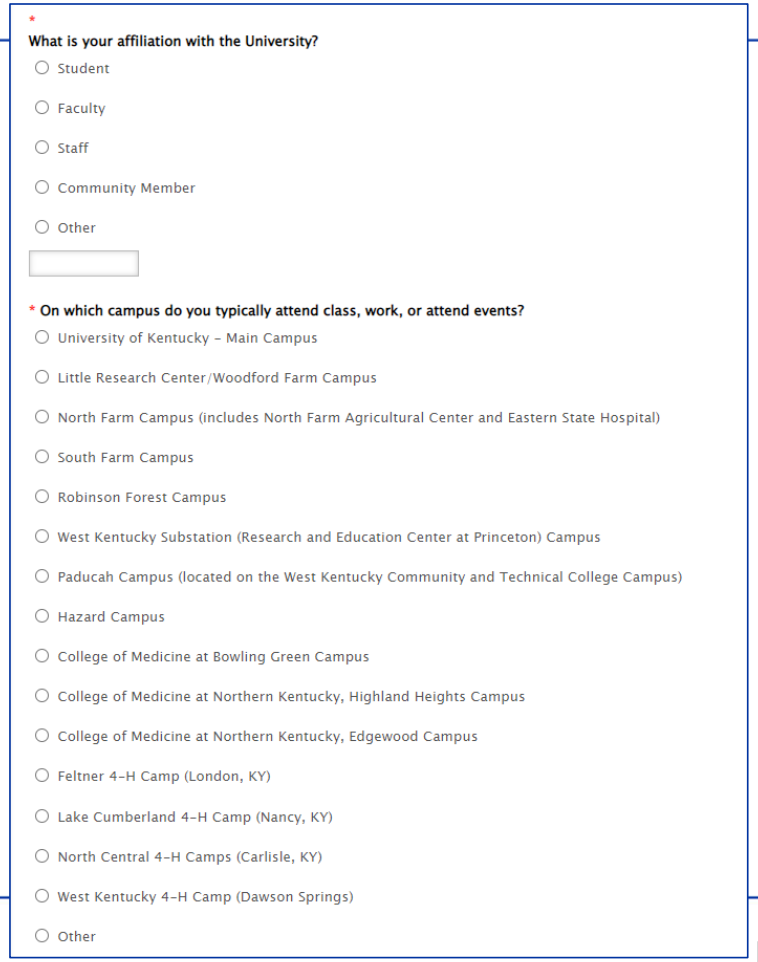
- All current and future populations on the UK campus are considered at risk to infectious illnesses
- Universities are especially vulnerable to infectious diseases due to:
  - Close living quarters and communal dining halls
  - Large number of people working in close proximity
  - Visitors from all over the world and personnel traveling all over the world
  - UK Healthcare may treat uncommon diseases
- Building / Infrastructure Risks
  - May need sterilization or decontamination
  - Use and operations of facilities may change
- Population Risks
  - Healthcare personnel face more exposure
  - Students in close living quarters face more exposure
  - Personnel traveling may be exposed to uncommon infectious diseases
- Other University Risks
  - Classes may move online
  - Operations reductions
  - The University may have to run testing facilities, quarantine facilities, and vaccine clinics.

SURVEY

Survey Summary

Viewed:	858
Started:	220
Completed:	115

Students	2.82%
Faculty	9.60%
Staff	83.62%
Community Member	2.26%
Other	1.36%



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What is your affiliation with the University?

- Student
- Faculty
- Staff
- Community Member
- Other

*** On which campus do you typically attend class, work, or attend events?**

- University of Kentucky – Main Campus
- Little Research Center/Woodford Farm Campus
- North Farm Campus (includes North Farm Agricultural Center and Eastern State Hospital)
- South Farm Campus
- Robinson Forest Campus
- West Kentucky Substation (Research and Education Center at Princeton) Campus
- Paducah Campus (located on the West Kentucky Community and Technical College Campus)
- Hazard Campus
- College of Medicine at Bowling Green Campus
- College of Medicine at Northern Kentucky, Highland Heights Campus
- College of Medicine at Northern Kentucky, Edgewood Campus
- Feltner 4-H Camp (London, KY)
- Lake Cumberland 4-H Camp (Nancy, KY)
- North Central 4-H Camps (Carlisle, KY)
- West Kentucky 4-H Camp (Dawson Springs)
- Other

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Survey: Hazards that are the biggest threat

1. Severe Winter Storm
2. Severe Storm
3. Cyber Threats
4. Tornado
5. Hazardous Materials

1. Tornado
2. Severe Storm
3. Severe Winter Storm
4. Cyber Threats
5. Emergent Infectious Diseases

Mitigation Successes – College of Agriculture and UK Health Care

- College of Agriculture
  - Western Kentucky housed 246 relief workers representing 26 organizations
  - 1,245 youth and families visited to pick-up necessities that were donated (canned food, personal hygiene items, baby formula, tools, clothes, and cleaning supplies)
  - Successfully applied for grant funding for tornado shelters.
  - Extension has emergency action plans for offices. (Action item is to streamline the process.)
  - UK Wellness Department provided mental health sessions to support staff at REC and RCARS.
- UK Health Care
  - Childcare for staff during pandemic
  - Regional vaccine distribution
  - Drive thru testing

MITIGATION ACTIONS

Offices for Institutional Diversity

- First generation and international students are vulnerable populations.
  - First generation students often do not have a road map for college
  - International students may have language barriers. Remain on campus during holidays/breaks, therefore they are on campus with essential staff
- Elderly staff members struggle with technology as a vulnerability.
- On-campus food pantry and couch-surfing
- Students and staff with disabilities struggle with mobility as a result of ongoing construction detours.
- Main campus near under resourced zip codes.
  - Bluegrass Community Foundation
  - Jewish Federation of Lexington
  - Fayette County Public Schools
- UK Healthcare
  - Health equity
  - Transform health
  - Polk-Dalton Clinic
  - Clinica Amiga

Aligning the DEI Implementation Plan with UK's Strategic Plan

The DEI Implementation Plan initiatives aligned with the university's strategic plan.

DEI and UK-PURPOSE

As Kentucky's flagship institution, the university plays a critical leadership role by promoting diversity, inclusion, economic development and human well-being. We have aligned the DEI Implementation Plan with the UK-PURPOSE Strategic Plan to accelerate inclusive excellence in all we do as we work to advance Kentucky.

LEARN MORE ABOUT UK'S STRATEGIC PLAN

'Behind the Blue': Katrice Albert discusses UK's DEI Implementation Plan | UKNow (uky.edu)

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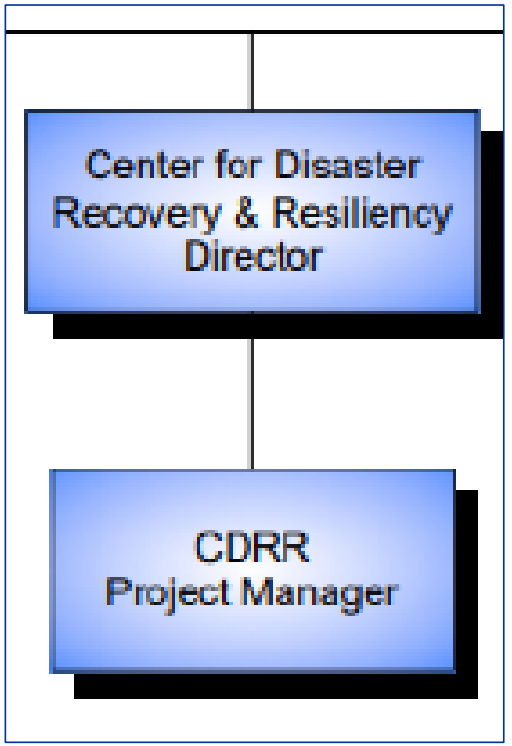
2015 Mitigation Goals

GOAL 1 Protect lives and reduce injuries from hazards and threats.
GOAL 2 Protect university property, organizational information, and research from hazards and threats.
GOAL 3 Enhance existing, or develop new University policies and practices that are designed to reduce damaging effects from hazards and threats.
GOAL 4 Build stronger partnerships between government, educational institutions, business, and the community.
GOAL 5 Build disaster preparedness and response through ~~mitigation~~ education and outreach.



2023 Mitigation Actions

- Action Name
- Action Description
- Responsible Department/Office
- Prioritization Score
- Potential Funding Source
- Project Type
- Other Partners
- Project Schedule
- Comments and Status

Action Item	Action Name	Action Description	Responsible Department/Offic	Hazards Addressed	Feasibility	Climate Resilience	Public (Project Type)	Public (Hazard of Greatest Concern)	Risk Reduction/Benefi	Costs	Total Prioritization	Potential Funding Source	Project Type	Other Partners	Implementation Schedule	Comments and Status
1	Disaster Recovery Manager	Hire Disaster Recovery Manager for the Center for Disaster Recovery and Resilience	Center for Disaster Recovery and Resilience	All Hazards	100	100	50	50	60	100	460	General Fund	Prevention	None	2023	
2	Center of Recovery and Resilience	The University will establish the Center for Disaster Recovery and Resilience. The goal of this office is to serve as the designated University entity to collaborate and streamline efforts to lessen the impact of adverse incidents to the University by developing strategic resilience and implementing mitigation actions to reduce hazards risks. In order to accomplish this, the Office will plan and facilitate long-term recovery from disasters and mitigation to hazard events that may cause an operational interruption; injury, illness, or death; damage to or loss or equipment, infrastructure services, or property; or functional degradation to social, economic, or environmental aspects of the University.	Crisis Management and Preparedness	All Hazards	100	100	50	50	60	100	460	General Fund	Public Education and Awareness	0	2023	
3	Generators	Identify locations with existing generators and distinguish the type of generator (partial vs. full load). Identify the location needs and whether current generators are sufficient for location needs or additional generators are required. As development occurs, determine the locations and needs for additional generators to acquire and install. This action includes buildings on the main campus (residence halls and medical facilities). Off-campus facilities are also included: 4-H camps, medical facilities, and Clery Act defined campuses.	Facilities Management	All Hazards	20	60	50	50	60	20	260	General Fund	Structural Projects	University Fire Marshal	2023-2028	

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2023 Mitigation Actions

Name:	Disaster Recovery Manager	Description:	Hire Disaster Recovery Manager for the Center for Disaster Recovery and Resilience		Responsible Department	Center for Disaster Recovery and Resilience

	Prioritization Metric	Weighting Factor	Scoring Criteria	Score	Points	Notes
1	**Feasibility**	20%	5 – Funding identified, easily implemented within five years 3 – Funding identified, implemented with only moderate complexity or delays 1 – Funding identified, implementation is complex and faces certain delays for implementation 0 – Not feasible, no funding identified and/or not able to be implemented	5	100	
2	**Climate Resilience**	20%	5 – Very High (Action provides multiple benefits for climate resilience or adaptive measures) 3 – High (Action provides at least one benefit for climate resilience) 1 – Moderate (Action provides limited benefits for climate resilience) 0 – Low (Action does not provide benefits for climate resilience)	5	100	
3	**Public (Project Type)**	10%	5 – Structural Projects 5 – Public Education and Awareness 3 – Natural Resources Protection 3 – Property Protection 3 – Emergency Services 1 – Prevention	5	50	
4	**Public (Hazard of greatest concern)**	10%	5 – Action addresses one or more hazards identified by the university community as being a high threat to the University 3 – Action addresses one or more hazards identified by the university community as being a moderate threat to the University 1 – Action addresses one or more hazards identified by the university community as being a minimal threat to the University	5	50	
5	**Risk Reduction/Benefits**	20%	5 – Very High (Significant losses avoided and/or significant benefits with consideration to economic, social, and environmental factors) 3 – High (Numerous losses avoided and/or numerous benefits with consideration to economic, social, and environmental factors) 1 – Moderate (Some losses avoided, some benefits with consideration to economic, social, and environmental factors) 0 – Low (No losses avoided, no public benefits with consideration to economic, social, and environmental factors)	3	60	
6	**Costs**	20%	5 – Project Costs are predominantly staff time 3 – Project Costs are estimated between $0-$100,000 1 – Project Costs are estimated between $100,001-$500,000 0 – Project Costs are estimated above $500,000	5	100	
	Total	100%	sum of parameter scores (max = 500)		**460**	

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2023 Mitigation Actions

Prevention

- University codes and design standards
- Building codes
- Open space preservation
- Stormwater management
- Capital improvements programming
- Security measures

Property Protection

- Acquisition
- Relocation
- Building elevation
- Critical facilities protection
- Retrofitting (e.g., windproofing, floodproofing, seismic design techniques, etc.)
- Safe rooms, shutters, shatter-resistant glass
- Insurance

2023 Mitigation Actions

Natural Resource Protection

- Floodplain protection
- Watershed management
- Riparian buffers
- Habitat preservation
- Erosion and sediment control
- Wetland preservation and restoration
- Slope stabilization
- Forest and vegetation management (e.g., fire resistant landscaping, fuel breaks, etc.)

Emergency Services

- Warning systems
- Evacuation planning and management
- Emergency response training and exercises
- Sandbagging for flood protection
- Installing temporary shutters for wind protection

2023 Mitigation Actions

Structural Projects

- Reservoirs
- Dams / levees / dikes / floodwalls
- Diversions / detention / retention
- Channel modifications
- Storm sewers

Public Education and Awareness

- Outreach projects
- Library materials
- Student educational programs
- Hazard expositions
- Social media campaigns
- Speaker series / demonstration events
- Hazard map information
- Real estate disclosures

Questions and Contact Information

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Thank you!

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