Glossary of Flood Risk and Hazard Mitigation Terms

Mitigating local flood risk through nature-based solutions requires collaboration between stakeholder groups. This glossary aims to reduce barriers to participation and increase opportunities for collaboration in local planning processes by highlighting discrepancies in the ways that various fields define common flood risk and hazard mitigation terms. The compilation of definitions provides a repository for stakeholders to reference how key terms are utilized by members of the scientific community, the insurance industry, and the government, as well as risk management experts and others.

The glossary includes terms that frequently appear in flood risk reduction and hazard mitigation planning resources. Definitions were drawn from public materials produced by U.S. government agencies, reputable NGOs, and international sources currently available as of September 2025.

This resource is dynamic and non-exhaustive. If there is a flood risk or hazard mitigation term that you would like to be added to the glossary, please email your request to jlipscomb@eli.org.

Nature-Based Solutions

The term **nature-based solutions** (NBS) is widely used to describe sustainable planning practices that integrate conservation methods to benefit people and the environment. Most organizations leverage or adapt a definition similar to that of the Fifth National Climate Assessment: Actions to protect, sustainably manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits. However, this definition can vary in specificity across entities, and some different organizations prefer to use different terminology altogether. For instance, some sources including the Code of Federal Regulations and the National Oceanic and Atmospheric Administration use NBS synonymously with other terms like "green infrastructure" or "natural infrastructure," while others such as The Nature Conservancy and the U.S. EPA refer to green infrastructure as a specific *type* of NBS (see *Green Infrastructure*). Through its "Engineering with Nature" initiative, the U.S. Army Corps of Engineers employs an entirely different term to describe similar actions. What remains consistent across all definitions, despite the varying terminology and specificity, is the intention of NBS: planning to create solutions that increase resilience through human and ecosystem benefits.

For flood risk reduction planning, it is particularly important to use the term that best resonates with target audiences and ensure that the terminology used to describe a project (as NBS, green infrastructure, or otherwise) accurately reflects the project's intended outcome and its ability to mitigate hazards. With a shared understanding of terms, planners can ensure consistency, measure success more accurately, and ultimately work to facilitate more streamlined communication.

Entity	Definition & Context
FEMA	
	As defined by 44 Code of Federal Regulations §9.4.
Other Agencies	
U.S. Environmental Protection Agency	(1) EPA defines nature-based solutions as actions that protect, conserve, restore and sustainably manage natural or modified ecosystems. They use natural features or processes to address public health and environmental challenges while providing multiple benefits to people and nature... As nature is seen as a critical infrastructure that provides fundamental services to protect human health, and restore our ecosystems, the use of "nature-based solutions" across federal programs is common. Nature-based solutions can encompass a wide range of actions that may include planning, design and maintenance of engineering practices that restore, use or enhance natural processes (e.g. green infrastructure, agricultural conservation practices, coastal restoration) and/or protect natural features to preserve ecosystem function (e.g., wetlands, forests, riparian areas, coral reefs). ("Green Infrastructure Federal Collaborative")

	(2) EPA uses the term green infrastructure as defined in the Water Infrastructure Improvement Act of 2019, above. EPA also uses the term "low impact development," which "refers to systems and practices that use or mimic natural processes that result in the infiltration, evapotranspiration or use of stormwater in order to protect water quality and associated aquatic habitat." *(Opportunities to Accelerate Nature-Based Solutions: A Roadmap for Climate Progress, Thriving Nature, Equity, & Prosperity)*
Department of Commerce: National Oceanic and Atmospheric Administration	Natural infrastructure, also referred to as green infrastructure, use existing natural areas (and engineered solutions that mimic natural processes) to minimize flooding, erosion, and runoff. Additional benefits can include recreational opportunities, wildlife habitat, as well as cleaner water." NOAA has also recognized low-impact development, conservation, restoration, and implementation of living shorelines as nature-based solutions. *(Opportunities to Accelerate Nature-Based Solutions: A Roadmap for Climate Progress, Thriving Nature, Equity, & Prosperity)*
Department of Defense: United States Army Corps of Engineers (USACE)	In a USACE sponsored paper, Natural and nature-based features (NNBF) refer to "the use of landscape features to produce flood-risk management benefits. NNBF projects may also produce other economic, environmental, and social benefits known as NNBF co-benefits. These landscape features may be natural (produced purely by natural processes) or nature based (produced by a combination of natural processes and human engineering) and include such features as beaches, dunes, wetlands, reefs, and islands." Engineering with Nature, refers to "the intentional alignment of natural and engineering processes to efficiently and sustainably deliver economic, environmental, and social benefits through collaboration." *(Opportunities to Accelerate Nature-Based Solutions: A Roadmap for Climate Progress, Thriving Nature, Equity, & Prosperity)*
U.S. Agency for International Development (USAID)	Nature-Based Solutions and Natural Climate Solutions: Actions to conserve, manage, and restore ecosystems (including managed systems such as agricultural lands) that address societal challenges effectively and adaptively are called nature-based solutions when broadly referring to goals like climate adaptation and mitigation or food and water security, and are called natural climate solutions when specifically referring to climate change mitigation. *(Opportunities to Accelerate Nature-Based Solutions: A Roadmap for Climate Progress, Thriving Nature, Equity, & Prosperity)*
White House	These solutions are actions to protect, sustainably manage, or restore natural or modified ecosystems to address societal challenges, simultaneously providing benefits for people and the environment. *(Opportunities to Accelerate Nature-Based Solutions: A Roadmap for Climate Progress, Thriving Nature, Equity, & Prosperity)*
Non-government Sources	
Fifth National Climate Assessment	Actions to protect, sustainably manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.
The Nature Conservancy	• TNC defines nature-based solutions as, "project solutions that are motivated and supported by nature and that may also offer environmental,

	economic, and social benefits, while increasing resilience. Nature-based solutions include both green and natural infrastructure." • FEMA defines nature-based solutions as "sustainable planning, design, environmental management, and engineering practices that weave natural features or processes into the built environment to build more resilient communities." • The U.S. Army Corps of Engineers (USACE) uses the term "Engineering with Nature," defined as, "the intentional alignment of natural and engineering processes to efficiently and sustainably deliver economic, environmental, and social benefits through collaboration."
International Sources	
Intergovernmental Panel on Climate Change	*As defined by the IUCN.*
World Resources Institute	Broadly, nature-based solutions are actions to protect, conserve, restore, and sustainably use and manage ecosystems in a way that addresses social, economic and environmental challenges while simultaneously benefiting human well-being and biodiversity. In other words, they are interventions that use nature and the natural functions of healthy ecosystems to tackle some of the most pressing challenges of our time. By contrast, actions that simply minimize humans' impact on nature, such as reducing waste or decreasing water use, are not considered nature-based solutions.
United Nations Environment Programme	Actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits.
International Union for Conservation of Nature (IUCN) Global Programme	Nature-based Solutions are actions to protect, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human well-being and biodiversity benefits.
European Commission	Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions.
United Nations Office for Disaster Risk Reduction	Nature-based Solutions are actions to protect, sustainable manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits (IUCN). The reduction of the capacity of the environment to meet social and ecological objectives and needs is described as environmental degradation. This degradation and the associated decline of ecosystems and their invaluable services (the benefits we obtain) are driving disaster risk. ("Disasters from A to Z")
Federal Laws and Regulations	
Water Infrastructure Improvements for the Nation Act of 2016	The term ''natural feature'' means a feature that is created through the action of physical, geological, biological, and chemical processes over time. The term ''nature-based feature'' means a feature that is created by human

	design, engineering, and construction to provide risk reduction in coastal areas by acting in concert with natural processes. *(Opportunities to Accelerate Nature-Based Solutions: A Roadmap for Climate Progress, Thriving Nature, Equity, & Prosperity)*
Water Infrastructure Improvement Act of 2019	The term 'green infrastructure' means the range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspirate stormwater and reduce flows to sewer systems or to surface waters. *(Opportunities to Accelerate Nature-Based Solutions: A Roadmap for Climate Progress, Thriving Nature, Equity, & Prosperity)*
Infrastructure Investment and Jobs Act of 2021	"The term 'Natural infrastructure' means infrastructure that uses, restores, or emulates natural ecological processes and— (A) is created through the action of natural physical, geological, biological, and chemical processes over time; (B) is created by human design, engineering, and construction to emulate or act in concert with natural processes; or (C) involves the use of plants, soils, and other natural features, including through the creation, restoration, or preservation of vegetated areas using materials appropriate to the region to manage stormwater and runoff, to attenuate flooding and storm surges, and for other related purposes. *(Opportunities to Accelerate Nature-Based Solutions: A Roadmap for Climate Progress, Thriving Nature, Equity, & Prosperity)*
Code of Federal Regulations §9.4	Nature-based approaches means the features (sometimes referred to as "green infrastructure") designed to mimic natural processes and provide specific services such as reducing flood risk and/or improving water quality. Nature-based approaches are created by human design (in concert with and to accommodate natural processes) and generally, but not always, must be maintained in order to reliably provide the intended level of service. *(Opportunities to Accelerate Nature-Based Solutions: A Roadmap for Climate Progress, Thriving Nature, Equity, & Prosperity)*

Green Infrastructure

While sometimes used interchangeably with the term "nature-based solutions" (NBS) (*see Nature-Based Solutions*), several sources including FEMA's *Hazard Mitigation Assistance Program and Policy Guide* consider **green infrastructure** to be a subset of NBS focused on natural landscape preservation and stormwater management. Other groups such as Conservation International use "green infrastructure" in a different context, instead referring to the benefits and functions that ecosystems yield naturally, without any human intervention. Yet others like the The Nature Conservancy and the Intergovernmental Panel on Climate Change strike a middle ground, defining green infrastructure as the *strategically planned* or *intentionally derived* benefits of ecological systems.

In a flood risk reduction planning context, it is not only important to recognize what features the term can be used to describe, but also to understand the benefits that the term implies while acknowledging any limitations of the extent to which green infrastructure can mitigate risk.

Entity	Definition & Context

FEMA	
Hazard Mitigation Assistance Program and Policy Guide	A subset of nature-based solutions, which consists of a sustainable approach to natural landscape preservation and stormwater management that can be used for hazard mitigation activities as well as provide additional ecosystem service benefits. Green infrastructure methods use an ecosystem-based approach to replicate a site's predevelopment condition and function.
Non-government Sources	
Fifth National Climate Assessment	*As defined by IPCC.*
The Nature Conservancy	Intentional or strategic preservation, enhancement, or restoration of a natural system or semi-natural systems to provide a desired benefit (e.g. flood protection, water purification, carbon sequestration, etc.)
International Sources	
Intergovernmental Panel on Climate Change	The strategically planned interconnected set of natural and constructed ecological systems, green spaces and other landscape features that can provide functions and services including air and water purification, temperature management, floodwater management and coastal defence often with co-benefits for human and ecological well-being. Green infrastructure includes planted and remnant native vegetation, soils, wetlands, parks and green open spaces, as well as building and street-level design interventions that incorporate vegetation (after Culwick and Bobbins, 2016).
Conservation International	Green infrastructure refers to natural systems including forests, floodplains, wetlands and soils that provide additional benefits for human well-being, such as flood protection and climate regulation.

Community

In hazard mitigation planning, the term **community** often determines who is protected by a hazard mitigation plan and who is included in the planning process. Familiarity with FEMA's definition of "community" can clarify who is eligible to apply for local hazard mitigation grants.

FEMA's *Local Mitigation Planning Policy Guide* favors the term "whole community." Encompassing a broad range of groups, the term encourages multi-sector engagement and partnerships in hazard planning processes and thus permits a broad range of eligible stakeholders to apply for funding. In fact, when referring to local governments developing mitigation plans, the guide uses the terms "jurisdiction," "community," and "participant" interchangeably.

Community is defined slightly differently in the context of flood management. Rather than characterizing a community by the incorporation of different stakeholders, FEMA's National Flood Insurance Program defines community with an emphasis on shared geographical boundaries and political jurisdiction. This discrepancy highlights the variable nature of the term community and the importance of understanding the intended definition for a specific context.

Entity	Definition & Context
FEMA	
Local Mitigation Planning Policy Guide	This guide uses the terms "jurisdiction," "community" and "participant" interchangeably. These terms refer to any local government developing or updating a local mitigation plan.
Local Mitigation Planning Policy Guide	Whole community is defined as a focus on enabling the participation in national preparedness activities of a wider range of players from the private and nonprofit sectors, including nongovernmental organizations and the general public, in conjunction with the participation of all levels of government in order to foster better coordination and working relationships.
National Flood Insurance Program	(1) 1. A group of people living in the same locality and under the same government, or a political subdivision of a state or other authority that has zoning and building code jurisdiction over a particular area; 2. A political entity that has the authority to adopt and enforce floodplain ordinances for the area under its jurisdiction; 3. A network of individuals and families, businesses, governmental and nongovernmental organizations and other civic organizations that reside or operate within a shared geographical boundary and may be represented by a common political leadership *(National Flood Insurance Program Terminology Index)* (2) A political entity that has the authority to adopt and enforce floodplain ordinances for the area under its jurisdiction. (Floodsmart, "Glossary")

Flood

Definitions of **flood** vary in specificity depending on the context and the agency defining it. For example, the Code of Federal Regulations describes different levels of flood severity and likelihood, distinguishing between the 0.2 percent annual chance flood (also referred to as the 500-year flood) and the 1 percent annual chance flood (also known as the base or 100-year flood). These classifications are important for assessing hazards and planning accordingly.

The Flood Science Center references the National Flood Insurance Program (NFIP) definition of flood, which is central to determining eligibility for NFIP insurance claims based on the type and extent of inundation. Notably, the Flood Science Center mentions that local communities may adopt more expansive views than the NFIP definition when interpreting what qualifies as a flood in planning and insurance efforts, especially when there are alternative sources of water damage.

Entity	Definition & Context
FEMA	
National Flood Insurance Program	(1) A general and temporary condition of partial or complete inundation of 2 or more acres of normally dry land area or of 2 or more properties (at least 1 of which is the policyholder's property) from: Overflow of inland or tidal waters; or Unusual and rapid

	accumulation or runoff of surface waters from any source; or Mudslides (i.e., mudflows) which are proximately caused by flooding and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.; or Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above. A flood inundates a floodplain. Most floods fall into three major categories: riverine flooding, coastal flooding, and shallow flooding. Alluvial fan flooding is another type of flooding more common in the mountainous western states. *(National Flood Insurance Program Terminology Index)* (2) A general and temporary condition of partial or complete inundation of 2 or more acres of normally dry land area or of 2 or more properties (at least 1 of which is the policyholder's property) from: Overflow of inland or tidal waters; or Unusual and rapid accumulation or runoff of surface waters from any source; or Mudflow; or Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above. (Floodsmart, "Glossary")
Other Agencies	
Georgia Department of Natural Resources	A general and temporary condition of partial or complete inundation of typically dry lands from rivers, oceans, or precipitation
National Weather Service	(1) An overflow of water onto normally dry land. The inundation of a normally dry area caused by rising water in an existing waterway, such as a river, stream, or drainage ditch. Ponding of water at or near the point where the rain fell. Flooding is a longer term event than flash flooding: it may last days or weeks. ("Flood and Flash Flood Definitions") (2) Any high flow, overflow, or inundation by water which causes or threatens damage. ("Flood")
Non-government Sources	
Fifth National Climate Assessment	The overflowing of the normal confines of a stream or other water body or the accumulation of water over areas that are not normally submerged.
Flood Science Center	A community may adopt a more expansive definition of "flood" than is used by the NFIP in order to include additional sources of water damage, such as groundwater flooding of basements or local washouts associated with a drainage ditch. The NFIP definition of a flood is: (a) A general and temporary condition of partial or complete inundation of normally dry land areas from: (1) The overflow of inland or tidal waters; (2) The unusual and rapid accumulation or runoff of surface waters from any source; (3) Mudslides (i.e., mudflows) which are proximately caused by flooding as defined in paragraph

	(a)(2) of this definition and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current. (b) The collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding as defined in paragraph (a)(1) of this definition. For NFIP flood insurance claims, a flood must inundate two or more acres of normally dry land area or two or more properties.
Federal Laws and Regulations	
44 Code of Federal Regulations §9.4	Flood or flooding means the general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland and/or tidal waters, and/or the unusual and rapid accumulation of runoff of surface waters from any source. *0.2 percent annual chance flood* means the flood which has a 0.2 percent chance of being equaled or exceeded in any given year (also known as the 500-year flood). *1 percent annual chance flood* means the flood which has a 1 percent chance of being equaled or exceeded in any given year (also known as the 100-year flood or base flood). The terms "base flood," "1 percent annual chance flood," and "100-year flood" are synonymous and are used interchangeably.

Floodplain

Floodplains, characterized by their dynamic and often undefined boundaries, generally refer to the land area around a water body that is normally dry but is susceptible to water inundation during flooding. The specific classification of a floodplain can vary depending on the agency or organization defining it, which is important to consider in planning. According to FEMA's *Hazard Mitigation Assistance Program and Policy Guide*, a floodplain includes any area determined to have a 1% chance of flooding that year.

Entity	Definition & Context
FEMA	
National Flood Insurance Program	Any land area susceptible to being inundated by floodwaters from any source. *(National Flood Insurance Program Terminology Index)*
Floodplain Stream Restoration Fact Sheet	The floodplain of a riverine or stream system provides capacity for storing storm water runoff, reducing the number and severity of floods, and minimizing non-point source pollution.
Hazard Mitigation Assistance Program and Policy Guide	Any land area that FEMA has determined has at least a 1% chance in any given year of being inundated by floodwaters from any source.
Other Agencies	
Georgia Department of Natural Resources	Any area susceptible to inundation by water from any source.

NASA Earth Data	Flat or nearly flat land adjacent to a stream or river that experiences occasional or periodic flooding.
U.S. Geologic Survey	Lands bordering rivers and streams that normally are dry but are covered with water during floods.
Non-government Sources	
Flood Science Center	Nature's floodplain is the land area susceptible to being inundated by water from any source. This includes: Special Flood Hazard Areas (SFHAs) mapped by FEMA for the NFIP program; Flood-prone areas near waterbodies for which SFHAs have not been mapped; Areas outside of the SFHA that are subject to inundation by larger flood events or floods that are altered by debris or other blockages; Areas subject to smaller, more frequent, or repetitive flooding; Areas subject to shallow flooding, stormwater flooding, or drainage problems that do not meet the NFIP mapping criteria; Areas affected by flood-related hazards, such as coastal and riverine erosion, mudflows, or subsidence; and Areas that will be flooded when future conditions are accounted for, such as climate-related issues, sea-level rise, and upstream watershed development. The Special Flood Hazard Area mapped for the NFIP is only part of a community's flood risk area, with 40 percent of flood insurance claims occurring outside of the SFHA.[2] To represent a community's true flood risk, the term "floodplain" is used in this Guide instead of "SFHA."
International Sources	
Organization of American States	Floodplains are land areas adjacent to rivers and streams that are subject to recurring inundation. Owing to their continually changing nature, floodplains and other flood-prone areas need to be examined in the light of how they might affect or be affected by development.
Federal Laws and Regulations	
44 Code of Federal Regulations §9.4	Floodplain means any land area that is subject to flooding. The term "floodplain," by itself, refers to geographic features with undefined boundaries.

Flood risk

The U.S. Army Corps of Engineers (USACE) offers several comprehensive definitions of the term **flood risk** highlighting the factors that influence the likelihood of flooding in a given area. Understanding varying levels of risk is critical for hazard planning. In its public flood risk maps, FEMA categorizes flood risk using the Risk MAP process (Risk Mapping, Assessment and Planning). In addition to the USACE definitions of flood risk**,** the table below also includes the definitions of each FEMA flood risk zone.

Entity	Definition & Context
FEMA	
FEMA Flood Risk Assessment Tool	**High Risk Flood Zones (Special Flood Hazard Areas)** **Zone A, AE, AH, AO, AR, A99:** Areas with a 1% annual chance of flooding (also known as the 100-year floodplain). Flood insurance is mandatory if you have a federally backed mortgage.

	Zone V, VE, VO: Coastal areas with additional hazards associated with storm waves. These carry the highest flood insurance premiums due to elevated risk. **Moderate to Low-Risk Flood Zones** **Zone B, X (shaded):** Areas with a 0.2% annual chance of flooding (500-year floodplain). Flood insurance is recommended but not federally required. **Zone C, X (unshaded):** Areas with minimal flooding risk. While insurance rates are typically lower here, approximately 25% of all flood insurance claims come from properties in these zones. **Undetermined Risk Areas** **Zone D:** Areas where flood hazards are possible but not yet determined. These often include areas with pending levee certification or developing regions.
Other Agencies	
U.S. Army Corps of Engineers	(1) 1. The risk associated with being flooded. Risk performance indicators used in the analysis are 1) the expected annual stage exceedance probability; 2) long-term risk (a .26 probability of the .01 exceedance probability event occurring over a thirty year period); and 3) conditional probability of non-exceedance (the project as a .95 probability of containing the .01 exceedance probability event should it occur). (Reference 5); 2. Measure of the probability and severity of undesirable consequences (Reference 10); 3. The likelihood and consequences that may arise from inundation by flood water. Flood risk is determined by the following components: flood load (magnitude and likelihood of the hazard); the performance or response of any flood defense system (e.g., levee system - if such is present) to the flood load; the exposure to flood water of the item(s) at risk that might be harmed by flood water (population, property, infrastructure, etc.); the vulnerability of the items at risk to harm from flood water; and the resulting measure of the harm, i.e., consequences that result from the flooding event (number of fatalities, dollar economic damages, environmental impacts, etc.). (Reference 11); 4. The likelihood and adverse consequences of flooding. Flood risk for assets and people at any location in a floodplain is a function of flood hazard at that location and their exposure and vulnerability to the flood hazard. In areas served by flood hazard reduction infrastructure, the remaining risk is often referred to as "residual risk." (Reference 12) (*Key USACE Flood Risk Management Terms*)* (2) The likelihood and consequences that may arise from inundation by flood water. Flood risk is determined by the following components: flood load (magnitude and likelihood of the hazard); the performance or response of any flood defense system (e.g., levee system –if such is present) to the flood load; the exposure to flood water of the item(s) at risk that might be harmed by flood water (population, property, infrastructure, etc); the vulnerability of the

	items at risk to harm from flood water; and the resulting measure of the harm, i.e., consequences that result from the flooding event (number of fatalities, dollar economic damages, environmental impacts, etc.). (*Flood Risk Terminology for National Flood Risk Characterization)*

Hazard

Most organizations define **hazard** similarly, with minor variances in specificity**.** For instance, the Intergovernmental Panel on Climate Change describes a hazard as a *potential* occurrence, while others like the United Nations Office of Disaster Risk Reduction refer to a hazard as an occurrence that may cause harm.

Entity	Definition & Context
Other Agencies	
U.S. Army Corps of Engineers	1. It is important to think broadly in terms of what a hazard is. All will be familiar with natural hazards like floods and water quality that destroys habitat, anthropogenic hazards like vessel operation or dam safety. These are only some of the hazards that present risks to be managed. The challenge to Corps personnel will be to see a broader range of hazards including cost overruns, budget shortfalls, negative net benefits, other financial risks, missed milestones, and the like. (Reference 4); 2. A potential source of harm (EPA 2003). (Reference 4); 3. A thing or action that can cause adverse effects (OMAF, 1998; see Reference 4 for citing.) (Reference 4); 4. In a general sense, "hazard" is anything that is a potential source of harm to a valued asset (human, animal, natural, economic, social). It is important that one not limit the notion of a hazard to a natural hazard.; 5. The hazard is what causes the harm, in this case, a flood. The flood hazard is described in terms of frequency, stage, velocity, extent, and depth. (Reference 7); 6. A potential source of harm (e.g. fire, earthquake, flood, etc.) to a valued asset (human, animal, natural, economic, or social) or a situation with a potential to cause loss. The hazard is what causes the harm, in this manual, is a flood. The flood hazard is described in terms of frequency, stage, velocity, extent, and depth. (Reference 7; Reference 9; Reference 10); 7. The predicted probability distribution of flood water surface elevations for different locations within a floodplain expected from all possible floods. (Reference 12); 8. An event or physical condition that has the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, damage to the environment, interruption of business, and other types of loss or harm. The potential risk to life and limb and potential damage to property resulting from flooding. The degree of flood hazard varies with circumstances across the full range of floods. (Reference 13) *(Key USACE Flood Risk Management Terms*)*
U.S. Climate Resilience Toolkit	An event or condition that may cause injury, illness, or death to people or damage to assets.
Non-government Sources	

Fifth National Climate Assessment	*As defined by IPCC.*
National Association of Insurance Commissioners	Circumstance which tends to increase the probability or severity of a loss.
International Sources	
Intergovernmental Panel on Climate Change	The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.
United Nations Office for Disaster Risk Reduction	(1) A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation. ("Disaster Risk Reduction Terminology") (2) A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation (UNDRR, 2017). Hazards are often categorized by whether they are natural (sometimes termed physical) or technological (sometimes called man-made or human-induced). The term 'peril' is sometimes used instead of hazard, particularly in the insurance industry. ("Disasters from A to Z")

Hazard Mitigation

Generally, **hazard mitigation** refers to actions that reduce impacts from future hazards, but many organizations specify that mitigation refers to *sustained* action to reduce long-term risk, therefore promoting overall resilience. The Flood Science Center notes that mitigation projects often apply to existing at-risk development.

Entity	Definition & Context
FEMA	
Hazard Mitigation Assistance Program and Policy Guide	Any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazard events and their effects.
Other Agencies	
U.S. Environmental Protection Agency	Hazard mitigation refers to any action or project that reduces the effects of future disasters. Utilities can implement mitigation projects to better withstand and rapidly recover from hazard events (e.g., flooding, earthquakes, wildfires), thereby increasing their overall resilience. *(Hazard Mitigation for National Disasters)*
Non-government Sources	
Fifth National Climate Assessment	Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.
Flood Science Center	Hazard mitigation is any sustained action taken to reduce or eliminate any long-term risk to life or property from a hazard event. Mitigation is most often thought of as being applied to existing at-risk development. Examples

	of flood mitigation activities include: floodproofing, elevating, relocating or demolishing at-risk structures; retrofitting existing infrastructure to make it more flood resilient; developing and implementing Continuity of Operations Plans; structural mitigation measures such as levees, floodwalls and flood control reservoirs; detention/retention basins; and beach, dune, and floodplain restoration.

Resilience

Hazard mitigation planning aims to increase **resilience** in local environments. Oftentimes, resilience is the metric by which hazard mitigation projects measure success, meaning it is important to understand how the term is defined by a given partner or audience. While definitions of resilience vary in their degree of specificity, resilience generally implies an ability to prepare for, adapt to, and recover from disruptions.

Entity	Definition & Context
FEMA	
Federal Register	FEMA will use the longstanding National Institute of Standards and Technology (NIST) definition of "community resilience" to define "resiliency", which is the ability to prepare for anticipated hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions. This definition of resilience is similar to the definition of "resilience" used in the Presidential Policy Directive 21 (2013). FEMA provides the definition of "resilience" in policy.
Hazard Mitigation Assistance Program and Policy Guide	The ability to prepare for anticipated hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions.
Glossary	(1) Ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies. (Glossary Section: NDRF - National Disaster Recovery Framework) (2) The ability to prepare for and adapt to changing conditions and recover rapidly from operational disruptions. Resilience includes the ability to withstand and recover from deliberate attacks, accidents or naturally occurring threats or incidents. (Glossary Section: NDRF – National Disaster Recovery Framework, Continuity) (3) The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions (from the Executive Order 13653). (Glossary Section: National Dam Safety Program)
Other Agencies	
U.S. Army Corps of Engineers	1. The ability to avoid, minimize, withstand, and recover from the adverse effects of a flood. (Reference 11); 2. The ability to avoid, minimize, withstand, and recover from the effects of adversity, whether natural or man-made, under all circumstances of use. (Reference 9, Reference 13); 3. The ability of people and assets to return to pre-flood conditions and functionality in the aftermath of realizing flood damage. (Reference 12).

U.S. Climate Resilience Toolkit	The capacity of a community, business, or natural environment to prevent, withstand, respond to, and recover from a disruption.
Non-government Sources	
Fifth National Climate Assessment	The ability to prepare for threats and hazards, adapt to changing conditions, and withstand and recover rapidly from adverse conditions and disruptions.
Flood Science Center	*As defined by FEMA's Hazard Mitigation Assistance Program and Policy Guide*
National Research Council	The ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events.
The Nature Conservancy	The capacity of individuals, communities, and natural systems to survive, adapt, and grow.
International Sources	
United Nations Office for Disaster Risk Reduction	(1) The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management. ("Disaster Risk Reduction Terminology") (2) In the context of disaster risk, the ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including the preservation and restoration of its essential basic structures and functions through risk management. ("Disasters from A to Z")
Federal Rules and Regulations	
49 Code of Federal Regulations §602.5	The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions such as significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment.

Restoration

Restoration is commonly understood as the process of repairing or recovering something that has been damaged, whether this be infrastructure, an ecosystem, or otherwise. The Code of Federal Regulations specifically describes restoring a floodplain as returning it to the state where its normal functions can operate. When undergoing ecological restoration projects, it is important to recognize that they may have mitigation co-benefits and promote long-term sustainability by minimizing harm from future impacts. Likewise, nature-based solutions for flood risk reduction can contribute to ecosystem restoration.

Entity	Definition & Context
International Sources	

Intergovernmental Panel on Climate Change	In environmental context, restoration involves human interventions to assist the recovery of an ecosystem that has been previously degraded, damaged or destroyed.
Federal Laws and Regulations	
44 Code of Federal Regulations §9.4	Restore means to reestablish a setting or environment in which the natural functions of the floodplain can operate.

Risk

Risk refers to the potential or probability of a given unwanted outcome, sometimes also accounting for the severity of this consequence. While some entities frame risk as the likelihood of the event occurring, others use the term to refer to the threat itself. The way that a risk is assessed can vary based on context, but it is generally a function of hazard, exposure, and vulnerability. Environmentally-focused definitions typically describe risks as potential consequences to the well-being of humans and ecosystems.

The U.S. Army Corps defines risk most closely in the context of flooding. See *Flood Risk* for more tailored definitions that may be helpful in flood mitigation planning.

Entity	Definition & Context
FEMA Definitions	
Local Mitigation Planning Policy Guide	Risk for the purpose of hazard mitigation planning is the potential for damage or loss created by the interaction of natural hazards with assets, such as buildings, infrastructure or natural and cultural resources.
Other Agency Definitions	
U.S. Army Corps of Engineers	1. In a hydrologic context, risk is the probability that one or more events will exceed a specified value that has an estimated "true" percent change exceedance, during a specified number of years. Note that this narrow definition includes a time specification. Risk evaluation enables a probablistic statement to be made about the chances of a particular location being flooded within a specified number of years (Reference 1); 2. Risk involves exposure to a chance of injury or loss. (Reference 2); 3. The probability an area will be flooded, resulting in undesirable consequences. (Reference 3); 4. A measure of the probability of undesirable consequences." (Reference 4); 5. The probability that an area will be flooded resulting in undesireable consequences. (Reference 5); 6. A measure of the probability and severity of undesirable consequences. (Reference 6; Reference 8; Reference 9); 7. Generally, the probability and severity of undesireable consequences. In the context of flood risk, the probability that an area will be flooded, resulting in undesireable consequences. As used in this manual, risk is the function of five factors: hazard, performance, exposure, vulnerability and consequences. Risk involves exposure to a chance of injury or loss. (Reference 10); 8. The likelihood and severity of adverse outcomes; for this ER (Reference 13) the focus is on the risk from flooding. Risk is often measured as potential or

	mean loss-of-life, property damage, and/or ecosystem losses and may also include uncertainty over the benefits to be gained from a proposed or actual action taken. Usually, both the likelihood and the consequence are to some degree uncertain. (Reference 13) *(Key USACE Flood Risk Management Terms*)*
U.S. Climate Resilience Toolkit	The potential for negative consequences where something of value is at stake. In the context of the assessment of climate impacts, the term risk is often used to refer to the potential for adverse consequences of a climate-related hazard. Risk can be assessed by multiplying the probability of a hazard by the magnitude of the negative consequence or loss.
Non-government Sources	
Fifth National Climate Assessment	Threats to life, health, and safety, the environment, economic well-being, and other things of value. Risks are evaluated in terms of how likely they are to occur (probability) and the damages that would result if they did happen (consequences).
National Association of Insurance Commissioners	Uncertainty concerning the possibility of loss by a peril for which insurance is pursued.
International Sources	
Intergovernmental Panel on Climate Change	The potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems. In the context of climate change, risks can arise from potential impacts of climate change as well as human responses to climate change. Relevant adverse consequences include those on lives, livelihoods, health and well-being, economic, social and cultural assets and investments, infrastructure, services (including ecosystem services), ecosystems and species. In the context of climate change impacts, risks result from dynamic interactions between climate-related hazards with the exposure and vulnerability of the affected human or ecological system to the hazards. Hazards, exposure and vulnerability may each be subject to uncertainty in terms of magnitude and likelihood of occurrence, and each may change over time and space due to socio-economic changes and human decision-making. In the context of climate change responses, risks result from the potential for such responses not achieving the intended objective(s), or from potential trade-offs with, or negative side-effects on, other societal objectives, such as the Sustainable Development Goals (SDGs). Risks can arise for example from uncertainty in the implementation, effectiveness or outcomes of climate policy, climate-related investments, technology development or adoption, and system transitions.

Sustainable/Sustainability

In hazard mitigation planning, **sustainability** is an important consideration for the ability of projects and landscapes to withstand future impacts and changes over time.

Entity	Definition & Context
Non-government Sources	
Flood Science Center	*As defined by the United Nations.*

International Sources	
United Nations	Meeting the needs of the present without compromising the ability of future generations to meet their own needs.
Intergovernmental Panel on Climate Change	Involves ensuring the persistence of natural and human systems, implying the continuous functioning of ecosystems, the conservation of high biodiversity, the recycling of natural resources and, in the human sector, successful application of justice and equity.

Vulnerability

Vulnerability describes the assets, attributes, or conditions that render an individual, community, or environment susceptible to harm from a specific hazard. Understanding FEMA's definition of vulnerability is critical, as vulnerable features underscore the importance of hazard mitigation projects and may qualify districts for hazard mitigation planning grants. Additionally, the Code of Federal Regulations provides a definition of vulnerability for use in local mitigation plans, which emphasizes the specific factors that make a structure vulnerable.

While not included in this glossary, many organizations and resources classify and define specific *types* of vulnerability, such as climate vulnerability, social vulnerability, and others.

Entity	Definition & Context
FEMA	
Local Mitigation Planning Policy Guide	Vulnerability is a description of which assets, including structures, systems, populations and other assets as defined by the community, within locations identified to be hazard-prone, are at risk from the effects of the identified hazard(s).
Other Agencies	
U.S. Army Corps of Engineers	1. Vulnerability is the susceptibility to harm of human beings, property, and the environment exposed to the hazard. Depth-damage functions, depth-mortality functions, and other similar relationships describe vulnerability. (Reference 10; Reference 7); 2. The characteristics of people and assets that affect the likelihood that they will realize adverse consequences from exposure to the flood hazard. (Reference 12); 3. The susceptibility to life, property, and the environment to damage if a hazard manifests its potential. (Reference 13) *(Key USACE Flood Risk Management Terms*)*
U.S. Climate Resilience Toolkit	The propensity or predisposition of assets to be adversely affected by hazards. Vulnerability encompasses exposure, sensitivity, potential impacts, and adaptive capacity.
Non-Government Sources	
Intergovernmental Panel on Climate Change	The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.
International Sources	

United Nations Office for Disaster Risk Reduction	(1) The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards. Annotation: For positive factors which increase the ability of people to cope with hazards, see also the definitions of "Capacity" and "Coping capacity". ("Disaster Risk Reduction Terminology") (2) The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards (UNDRR, 2017). Vulnerability is the human dimension of disasters and is the result of the range of economic, social, cultural, institutional, political and psychological factors that shape people's lives and the environment that they live in. ("Disasters from A to Z")
Federal Rules and Regulations	
44 Code of Federal Regulations §201.6	The plan should describe vulnerability in terms of: (A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; (B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate; (C) Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

Watershed

The term **watershed** can refer to both the geographic drainage area (as defined by the Fifth National Climate Assessment, Flood Science Center, and Mississippi Department of Transportation) and to a type of planning framework that centers decision-making around the watershed boundary (as defined by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency). A shared understanding of the definition and boundaries of a watershed is critical when engaging in this collaborative planning approach.

Entity	Definition & Context
Other Agencies	
Mississippi Department of Transportation	Geographical area that drains to a specified point on a water course, usually a confluence of streams or rivers, can also be known as drainage area, catchments, or a river basin.
U.S. Army Corps of Engineers	When developing alternatives, the water resources problem being addressed should be analyzed on a watershed-based level to facilitate inclusion of a complete range of solutions, after considering the breadth of impacts across the watershed. A key aspect of the watershed approach is the analysis of information regarding watershed conditions and needs, allowing for consideration of upstream and downstream conditions and needs;

	consideration of other projects and actions in place, underway or planned by other agencies within the watershed; and the more thorough addressing of the potential impacts of a proposed action. The scale of the watershed used to develop alternatives can vary. The appropriately sized watershed for the particular need being addressed shall be a case-specific determination based on the relevant facts and circumstances. The watershed scale used to develop alternatives should encompass a geographical area large enough to ensure plans address cause and effect relationships among affected resources and activities, both upstream and downstream, and cumulative in nature, that are important to gaining public benefits or avoiding harm from the project. The watershed approach ensures that the interconnectedness of systems is evaluated to fully understand the root causes and symptoms of the water resources problem and the full range of potential public benefits. Communication starting in the scoping phase with other agencies or Tribal, territorial, State, and local government partners working in the watershed will help realize a watershed approach. In addition, other potential investments in the watershed shall also be accounted for under the watershed approach. *(Corps of Engineers Agency Specific Procedures to Implement the Principles, Requirements, and Guidelines for Federal Investments in Water Resources)*
Non-government Sources	
Fifth National Climate Assessment	An area of land that drains water to a particular stream, river, lake, bay, or ocean.
Flood Science Center	The land area that channels rainfall and snowmelt to creeks, streams, and rivers, and eventually to outflow points, such as reservoirs, bays, and the ocean. Also known as a basin or catchment area.
U.S. Environmental Protection Agency	The watershed approach is a coordinating framework for environmental management that focuses public and private sector efforts to address the highest priority problems within hydrologically-defined geographic areas, taking into consideration both ground and surface water flow. *(Watershed Approach Framework)*

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