# INTEGRATING NATURAL HAZARD MITIGATION AND CLEAN WATER ACT PLANNING AND PROJECT IMPLEMENTATION

## WORKSHOP AGENDA

**EPA REGION 8 HEADQUARTERS, DENVER, COLORADO**

September 16-18, 2025

## Welcome!

Welcome to the Integrating Natural Hazard Mitigation and Clean Water Act (CWA) Planning and Implementation Workshop! The Association of State Floodplain Managers (ASFPM), the National Association of Wetland Managers (NAWM) and the U.S. Environmental Protection Agency (EPA) are hosting this event, with funding from a U.S. Environmental Protection Agency cooperative agreement grant. **The purpose of this workshop is to facilitate the creation of collaborative partnerships to build cross-governmental relationships and awareness** across different departments, agencies, and at various levels of government in terms of hazard mitigation and water resource protection planning, program development, and implementation.

We have worked for the past several months to bring you together with a cadre of leaders in the hazard mitigation and water quality fields. Throughout the workshop, these experts will lead discussions on breaking down silos, coming to a common language, floodplains, wetlands, and green infrastructure, hazard mitigation, permitting, regulations, and funding across water quality and mitigation projects, and cost-benefit analysis for nature-based practices. We look forward to the exchange of knowledge between all in attendance, speakers and participants.

**We'd especially like to thank U.S. EPA for their generous support of this program**. We hope that the information presented and connections made during this convening will be beneficial to you and your community for years to come. **Thank you for taking the time to join us in Denver, Colorado!**

## Hotel & Transit Information

**Attendees are responsible for arranging their own hotel and transportation to/from the hotel and venue/airport.** The closest major airport serving the area is **Denver International Airport**. At a cost of $10 each way, travelers can use the A Line (see train schedule) to get from the airport to downtown Denver and vice versa, courtesy of the Regional Transportation District (RTD), metro Denver's public transit provider. The 23-mile ride takes approximately 37 minutes.

## Meeting Location & Venue Security

**The workshop will be held at the EPA Region 8 Headquarters (1595 Wynkoop St, Denver, CO 80202), located in downtown Denver.** We will be convening primarily in the Bison and Bitterroot rooms.

Please note that the following security requirements will be in effect; in summary, visitors:

- are required to report to the second-floor security area to sign in with uniformed security personnel, and must be met by their sponsoring Region 8 employee (we will have someone ready to meet you at security);
- must present a REAL ID-compliant driver's license, an Enhanced Driver's License (EDL) or another acceptable form of identification to sign in; and
- must pass through a metal detector during the screening process.

## Meals

NAWM will provide refreshments (coffee, tea, water, granola bars, fruit, etc.) each day, and lunch on Wednesday of the workshop. Lunch will not be provided on Tuesday or Thursday, so please eat before you arrive Tuesday. Dinner will not be provided either day. However, a list of Google recommended restaurants can be found here.

# AGENDA

## Tuesday, September 16, 2025

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| 12:30pm | **Greetings and opening remarks**<br>Welcome delivered by the National Association of Wetland Managers and the Association of State Floodplain Managers. Time will be set aside to set workshop goals, discuss logistics, and give the cohort a chance to introduce themselves to others. |
| 1:00pm | **Floodplains, Wetlands, and Green Infrastructure**<br>A key component of nature-based natural hazard mitigation is restoring and/or replicating the functions of naturally occurring ecological resources. This session will focus on the interplay of floodplains and wetlands within a watershed, the benefits they provide for both clean water and hazard mitigation, and how green infrastructure can be used to restore watershed functionality. Case studies will be drawn from Colorado, Montana, and New Mexico.<br>• Karen Menetrey, Director of Ecological Opportunities, Rio Grande Return<br>• Becky Pierce, Wetland Program Manager, Colorado Department of Transportation<br>• Traci Sears, CFM, MT National Flood Insurance Program (NFIP) Coordinator, Montana Department of Natural Resources and Conservation |
| 2:00pm | **BREAK** |
| 2:15pm | **Integrated Water Quality and Hazard Mitigation Planning**<br>Both hazard mitigation and Clean Water Act programs rely on strong cooperation across multiple levels of government to achieve their goals and outcomes. This session will feature presentations from federal agency professionals representing EPA and USACE discussing their integrated watershed planning efforts. Panelists will speak about their roles and experience and outline collaboration opportunities between agencies and among hazard mitigation and Clean Water Act planning.<br>• Ellie Flaherty, Biologist, U.S. Environmental Protection Agency<br>• Estella Moore, Life Scientist, U.S. Environmental Protection Agency<br>• Derek Schriner, Engineer/Nebraska Silver Jackets Coordinator, U.S. Army Corps of Engineers |
| 3:45pm | **BREAK** |
| 4:00pm | **Coming to a Common Language**<br>Often water quality and hazard mitigation professionals use their own unique terminologies and acronyms that are not readily understood outside of their respective fields. This discussion will focus on defining terminology used in both water quality and natural hazard mitigation practices and identifying the dual benefits of many projects implemented.<br>• Ian Grosfelt (facilitator) |
| 5:00pm | **State and Local Huddles**<br>Building off the last session, these state and local huddles will be an opportunity for each state and local pair to talk with one another about their work, and to then talk as a one state group about opportunities for collaboration with one another. |
| 5:30pm | **Adjourn for Day** |

## Wednesday, September 17, 2025

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| 8:30am | **Wildfires and Water Management**<br>Wildfires can cause a plethora of water quality hazards in addition to their destructive force against communities and ecosystems. They can lead to soil erosion, increased flooding risk, and water pollution from the flow of debris contaminants. This session will cover various integrated watershed strategies and programs at both state and regional levels in from a western context.<br>• Jocelyn Harimon, Nonpoint Source Program, New Mexico Environment Department<br>• Jeff Sickles, Technical Expert, Olsson<br>• Alex Funk, Director of Water Resources, Teddy Roosevelt Conservation Partnership |
| 9:30am | **Planning for Water Scarcity**<br>Water quantity and availability is a persistent issue faced by the semi-arid regions throughout the Western US. This session will delve into resources available through the National Integrated Drought Information System and what a water conservation district in Colorado is doing to plan for and mitigate the risks of water scarcity.<br>• Sean Cronin, Executive Director, St Vrain and Left Hand Water Conservation District<br>• Veva Deheza, Executive Director, NOAA National Integrated Drought Information System |
| 10:30am | **BREAK** |
| 10:45am | **Exercise #1: Barriers to collaboration and implementation (10:45-12:00pm)**<br>This exercise will engage participants in breakout roundtable discussions on successes and challenges they have faced related to collaboration around integrated planning and implementation of joint projects. Exercise worksheet attached at the end of the agenda. |
| 12:00pm | **LUNCH** |
| 1:00pm | **Permitting & Regulations Across Water Quality and Mitigation Projects (1:00-2:00pm)**<br>Understanding the permitting and regulatory requirements for constructing nature-based mitigation and water quality projects is a key element to the successful design and implementation of these strategies. This session will talk through permitting processes and resources available through the U.S. Army Corps of Engineers and will feature a conversation of how a Mile High Flood District navigated permitting.<br>• Aaron Eilers, Senior Project Manager, U.S. Army Corps of Engineers<br>• David Skuodas, Director of Design, Construction, and Maintenance, Mile High Flood District<br>• Mary Powell, Environmental Manager, Mile High Flood District |
| 2:00pm | **Mobile Tour of Project Sites Hosted by Mile High Flood District (2:00-5:00pm)**<br>The Little Dry Creek is a large watershed located in an older neighborhood at the inner northwest part of the Denver metro. Mile High Flood District's Little Dry Creek Project was a nature-based infrastructure project that converted grey infrastructure from the 1970s into a diverse plant palette of grasses, shrubs, and trees to stabilize the stream channel and create biodiversity. The project fully incorporated flood and stormwater management, along with environmental and public interests. The design exemplifies working with the inherent character of natural systems, rather than forcing a fixed single objective solution into a setting, allowing the water and system to behave naturally as much as possible. This mobile tour will stop at multiple locations along the watershed including Westminster Station.<br>• David Skuodas, Director of Design, Construction, and Maintenance, Mile High Flood District<br>• Mary Powell, Environmental Manager, Mile High Flood District |
| 5:00pm | **Adjourn for Day** |

## Thursday, September 18, 2025

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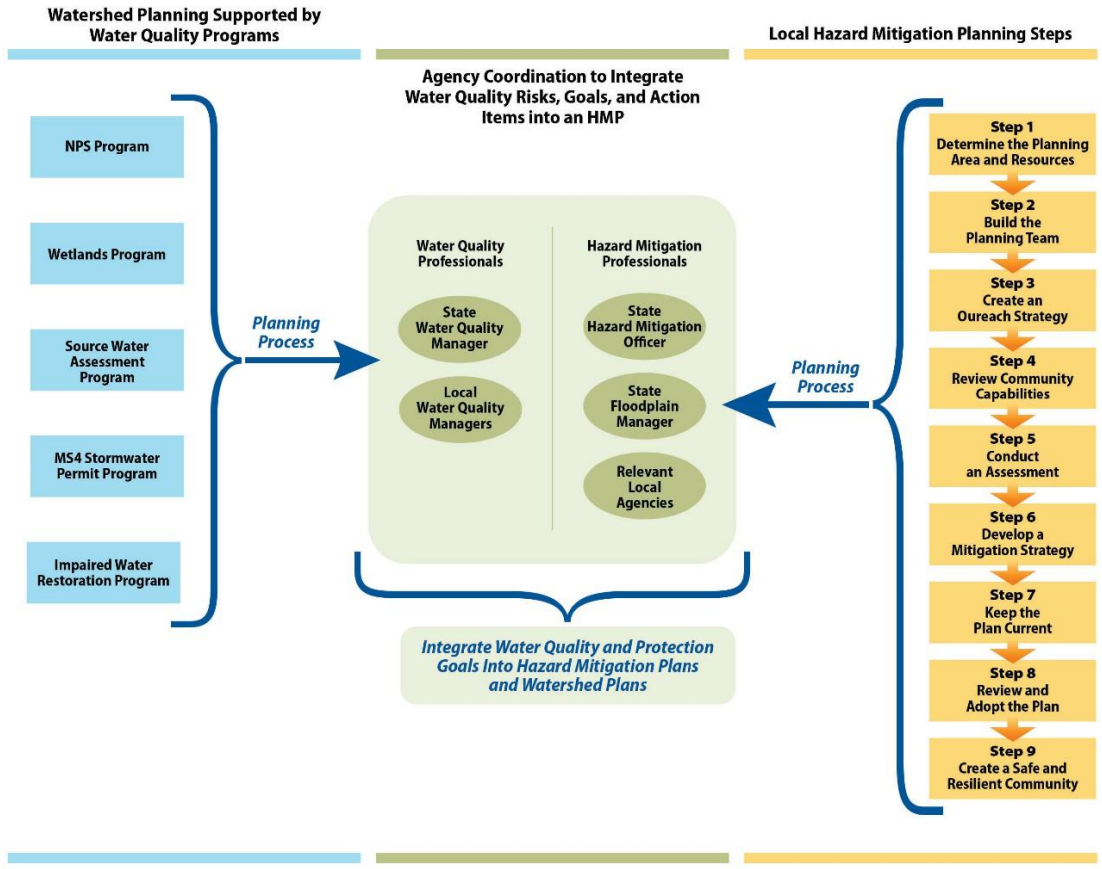
| 8:30am | **Funding Mechanisms and How to Combine Funding Sources (8:30-9:30am)**<br>There are a number of potential funding opportunities available to assist with hazard mitigation and water quality improvement project planning and construction. This session will focus on the current state of conservation finance and touch on innovative funding sources including various loan, grant, and financing programs currently being used by the Salt River Project, a utility agency in the state of Arizona. Participants will be invited to share their own project funding experiences and challenges.<br>• Collete Pansini, Water and Forest Planning Analyst, Salt River Project<br>• Katie Michaels, Director of Partnerships, Conservation Finance Network |
| 9:30am | **Exercise #2: Project development scenario to work through with your cohort**<br>Participants will break into small groups to develop a plan and process for integrating nature-based practices in and around their community to achieve flood risk reduction and water quality benefits. Discussions should take into account issues, regulations, and agencies that should be engaged. At the end, everyone will reconvene to discuss what came up in their conversations. |
| 10:45am | **BREAK** |
| 11:00am | **Building and sustaining relationships**<br>This session will focus on strategies to break down silos and strengthen relationships between water quality and hazard mitigation programs as well as between levels of government. It will include a discussion around approaches to building local coalitions for project targeting and implementation and include examples from Colorado and the western US. The goal is to be able to take lessons and connections from the entire workshop and discuss how to maintain progress towards future collaboration.<br>• Brian Murphy, River Network<br>• Katherine Rowden, USACE Silver Jackets |
| 11:45am | **State and Local Huddles**<br>Building off the Building and Sustaining Relationships session, state and local pairs will huddle to strategize as a group around how they may bolster their collaboration and actions they might take to ensure their relationships are sustained beyond this program. |
| 12:25pm | **WRAP UP** |
| 12:30pm | **ADJOURN** |

# Water Quality and Natural Hazard Mitigation Planning Processes




*Transfer of Information Among Water Quality and Hazard Mitigation Professionals*

# GLOSSARY

**Hazard Mitigation** is any sustained action taken to reduce of eliminate long-term risk to life and property from hazards. Mitigation is taking action now to prevent natural hazards from becoming disasters. Mitigation comes in many forms: plans and regulations; natural systems protection or restoration; infrastructure projects; education and outreach. The effectiveness of hazard mitigation can be enhanced when implemented under a long-term comprehensive planning process.

**Hazard Mitigation Planning** is planning that state, local, territory and tribal (SLTT) governments engage in to identify risks and vulnerabilities associated with natural disasters, and develop long-term strategies for protecting people and property from future hazard events (FEMA 2019a). SLTT entities may choose to integrate their existing water quality programs with their HMPs. The integration of water quality into hazard mitigation planning has been promoted by changes in FEMA policy, and funding is potentially available for projects that integrate wear quality and hazard mitigation.

**A Hazard Mitigation Plan (HMP)** is a plan that assesses the current and possible future risk, and the community capabilities to address risk for a given geographic area. HMPs then assign long-term mitigation strategies to address vulnerabilities (FEMA 2019b). A FEMA-approved HMP is required in order to be eligible for some FEMA grant programs.

**Nature-Based Solutions** are engineered or naturally-occurring landscape features or management practices used to provide hazard mitigation while producing environmental, economic, and social co-benefits. Examples of nature-based practices include green infrastructure, constructed waterways, living shorelines, ecosystem restoration, and some types of agricultural conservation practices. Nature-Based Solutions may be used to protect water quality, reduce natural hazards, and improve overall quality of life in areas they are implemented. They meet multiple goals by aiming to increase resilience to impacts from natural hazards while protecting, managing, and restoring natural or modified ecosystems. Many nature-based solutions focus on increasing the resilience of water resources, both with regard to quantity and quality, and can include the following principles:

- Preserving and restoring uplands, stream, and their floodplains;
- Using swales, enhanced-soil infiltration basins, trees, and other approaches control rate of flow during storm events;
- Restoring native vegetation for erosion, wildfire, and drought mitigation;
- Using trees and green roofs as green infrastructure to mitigate urban heat island effects; and
- Managing agricultural land use practices that enhance soil health and reduce excess runoff volumes.

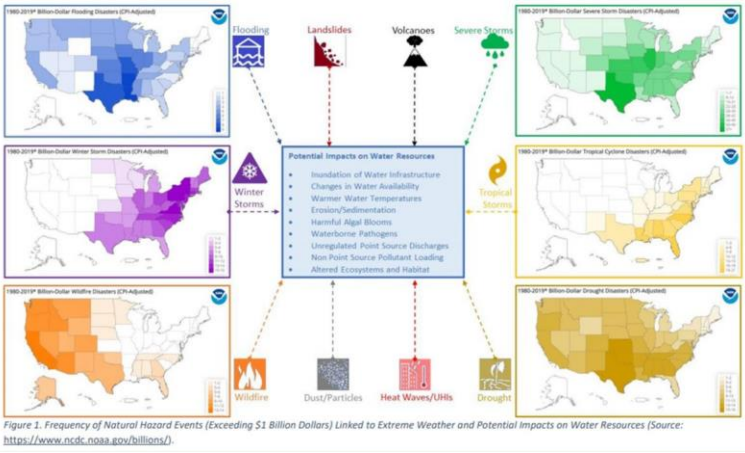


Figure 1. Frequency of Natural Hazard Events (Exceeding $1 Billion Dollars) Linked to Extreme Weather and Potential Impacts on Water Resources (Source: https://www.ncdc.noaa.gov/billions/).

*Figure 1. This figure from NOAA illustrates major natural hazards that can drive changes in water quality, and outlines regions of the country that have been at risk over the last 30 years. While it should be noted that nature-based solutions may have little mitigation effect on major natural disasters of the scale presented in this figure, these strategies can provide a buffer in less severe, recurring events, and support overall resilience.*

**Green Infrastructure (GI)** is 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 evapotranspire stormwater and reduce flows to sewer systems or to surface water.

**Green stormwater infrastructure** is another term sometimes used for green infrastructure by the stormwater management design community.

**Low impact development (LID)** is an approach to site design that strives to limit the amount of impervious area, preserve and create connected natural spaces, and use green infrastructure throughout to limit the overall functional impact to the natural landscape.

**Integrated Planning**, in this context, refers to a planning approach that recognizes the synergies and common goals between hazard mitigation and water quality programs, and works to collaborate across programs, share data, and leverage resources and expertise. The goal of this collaboration is to produce robust hazard mitigation and/or water quality plans that address multiple goals, and implement practices that produce co-benefits for hazard resilience and water quality. (Note: integrated planning for the purpose of this training is not referring to the six planning elements found in the 2012 Integrated Municipal Stormwater and Wastewater Planning Framework as defined under Section 402(s) of the Clean Water Act.)

**Types of Natural Hazards and Water Quality Issues.** Natural hazards have direct and indirect impacts to both water quality and quantity. They drive changes in water quality and quantity. There are many different types of hazards, but the six primary types that impact water quality or quantity are flooding, drought, wildfire, extreme or urban heat, landslides or mudslides, and airborne and dust particles.

- **Flooding**. When thinking of hazards associated with water, flooding is one of the first hazards that comes to mind. Different types of flood events have varying impacts on water quality.
    - **Flash or rapid flooding** can be caused by heavy precipitation events, rain-on-snow events, and/or storm surges combined with normal high tides.
    - **Slow rise flooding** and/or **storm surges** can be caused by heavy or regular rainfall (depending on the natural topography) and is characterized by steadily rising river or lake levels over a number of days.
    - **Sea level rise** or **high tidal flooding** can be seen when tides reach anywhere from 1.5 to 2 feet above the daily average high tide and start spilling onto streets or bubbling up from storm drains. As sea level rise continues, damaging floods can happen more regularly, such as during a full-moon tide or with a change in prevailing winds or currents. (NOAA)

- **Drought** can cause low stream flow volumes that deteriorate water quality and threaten drinking water sources by increasing water temperatures and concentrating contaminants, such as nutrients. In watersheds that depend on snowmelt to sustain water supplies, changes in snow quantity or snowmelt timing due to climate change can contribute to drought or low flow conditions and can impact water availability.

- **Wildfires** are another type of disaster that are becoming increasingly common and severe due to dry and hot conditions, particularly in the western United States. In addition to climate change factors, other human activities can also increase the potential wildfire risk and subsequent water quality issues. Human and non-human activities influence the potential for wildfire and result in water quality and quantity concerns. Examples of water quality and quantity impacts of wildfire include: reductions in riparian vegetation post-fire can increase light penetration to waterbodies and increase water temperature; increased rates of erosion caused by lack of upland vegetative cover can subsequently increase nutrient and sediment loading to waterbodies, which may result in impairment and destruction to aquatic habitats; and fire-driven decreases in soil permeability can lead to rapid increases in surface runoff and debris flows from post-fire storm events.

- **Extreme heat or urban heat islands** are metropolitan areas that are considerably warmer than surrounding, more rural, areas because of human activities and infrastructure (e.g., high density of impervious surfaces including buildings and parking lots). Effects from urban heat islands or extreme heat events can increase thermal inputs to waterbodies. The temperature of stormwater runoff from urban, impervious surfaces can be elevated on hot days causing spikes in the temperature of receiving waters.

- **Landslides or mudslides**. Heavy rainfall, snowmelt, changes in water levels, stream erosion, changes in groundwater, and other factors including earthquakes and human activities can initiate landslides and mudslides. Landslides and mudslides can overwhelm waterbodies and pollute them with excess sediment and other contaminants. In extreme cases, waterbodies can become dammed or relocated, resulting in major impacts to water quality and flooding.

- **Airborne and dust particles.** Acid precipitation (caused by sulfur and nitrogen oxides) and other particulate matter that impact nutrient balances can pollute waterbodies. Agricultural tilling, wildfire, and drought conditions can contribute to airborne particulate matter and/or dust storms.

- **Harmful Algal Blooms (HABs)**. Nitrogen and phosphorus pollution from point and nonpoint sources can cause eutrophic conditions and algal blooms. Toxins produced by certain harmful algae and cyanobacteria can cause water-related illnesses in humans, pets, and agricultural livestock. HABs can also cause significant economic impacts in communities with fishing and/or tourism industries. Lakes, estuaries, and large rivers are more vulnerable to HAB events when eutrophication occurs together with warmer air and water temperatures and calm water conditions (e.g., sill or slow-moving water, water with increased temperature, or summer droughts).

- **Erosion or Sedimentation**. Erosion and sediment transport from intense rainfall or channeled stormwater. Land disturbances that expose (e.g., construction, mining, timber harvest, and heavy rainfall events in areas with low vegetative cover) can increase the risk of erosion or sediment loading to waterbodies. Erosion and sedimentation are influenced by interactions with land use, topography, land management, soil properties, stormwater management and flood control infrastructure, riparian vegetation, construction, and other human activities. They often have negative impacts on water quality and aquatic life, while exacerbating water quantity issues in future storm events. They may also increase the transport of other pollutants that have been absorbed by the sediment (e.g., phosphorous and metals). Increased water quality from floods and loss of vegetated cover from wildfire or drought events can worsen erosion and sedimentation issues.

Geographically-specific environmental factors interact with weather to make different regions of the United States more vulnerable to specific natural hazards. Human activities can also exacerbate the impacts of natural hazards.

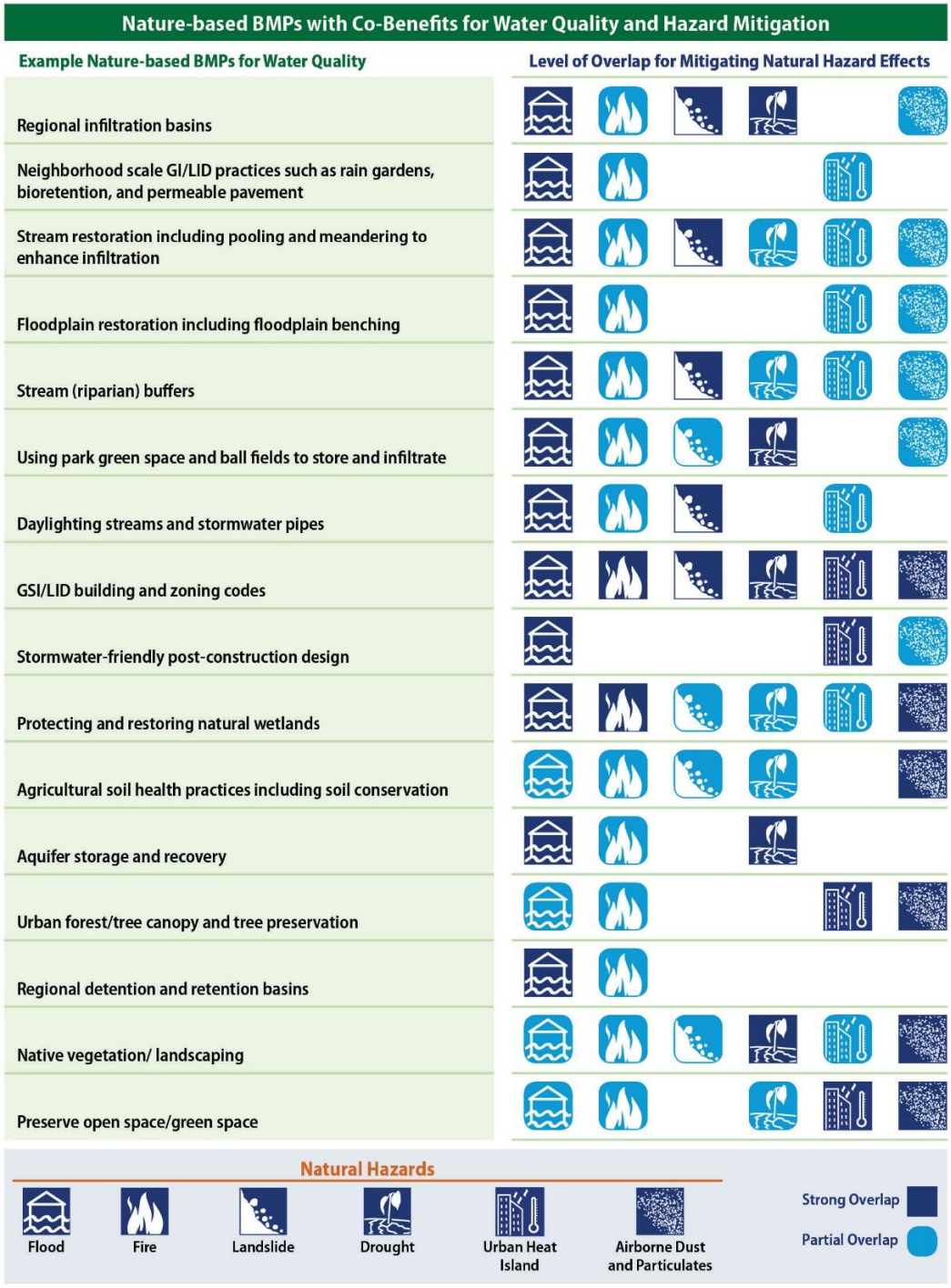
**Ecosystem goods and services**, often shortened to ecosystem services (ES), are the benefits that humans receive from nature. These benefits underpin almost every aspect of human well-being, including our food and water, security, health, and economythe additional benefits, beyond mitigating the impacts of natural hazards, that nature-based solution can provide to the environment and human populations, such as air quality, water filtration, and recreation space. The crosswalks on the following pages help to illustrate the different benefits that can be achieved through practices that are commonly implemented in EPA's water quality programs, and the different ecosystem service benefits that can be achieved through various nature-based practices. The examples of not intended to be a complete list of nature-based solutions, or a complete list of mitigation practices.

**Scales of Nature Based Solutions (NBS).** There are three primary scales at which nature-based solutions can be implemented:

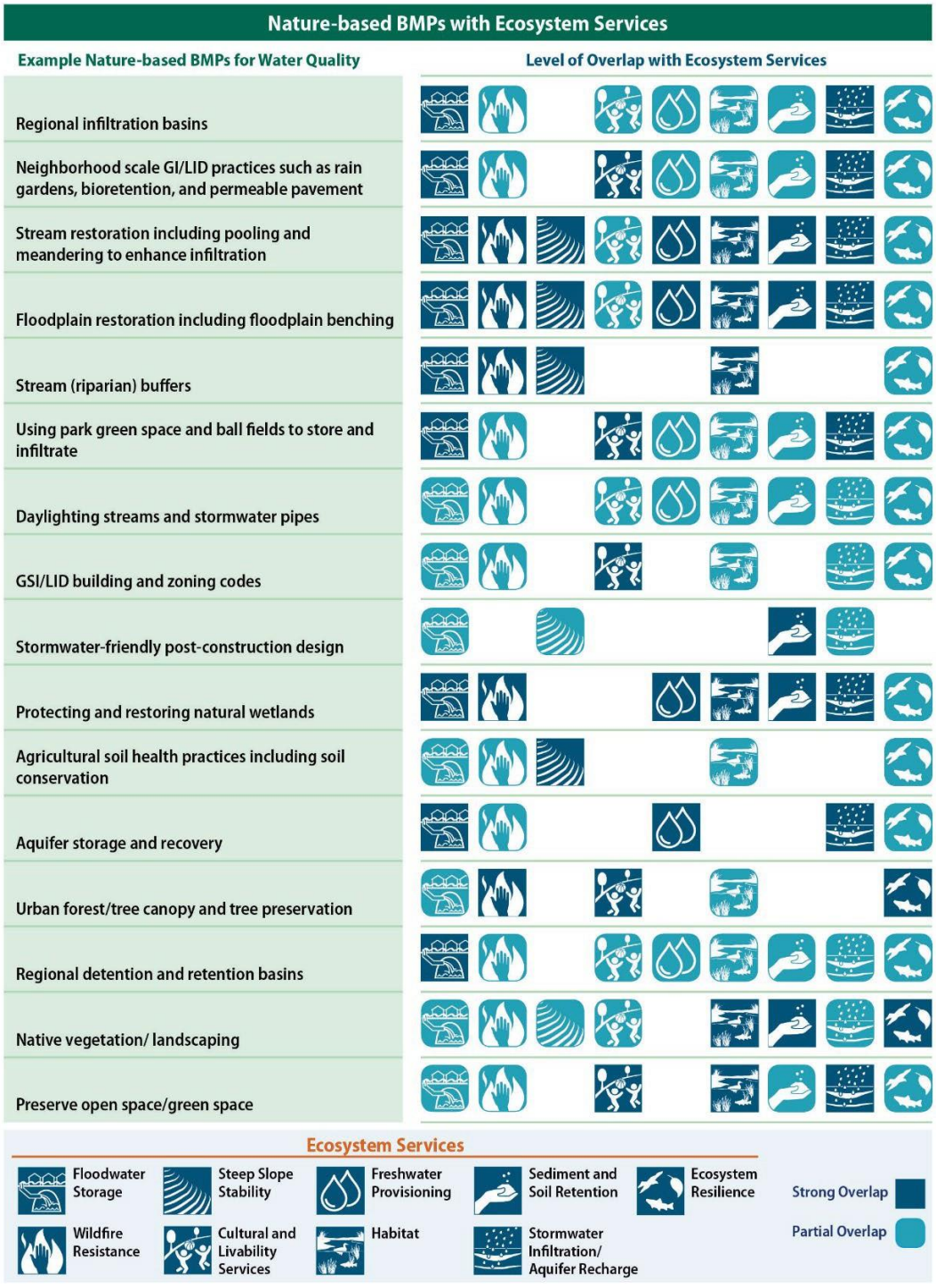
- **Watershed or landscape**, which include wetland restoration and protection, floodplain restoration, large-scale land conservation or acquisition, stormwater parks, and greenways. These are interconnected systems of natural areas or open space. They require long-term planning and coordination.
- **Neighborhood or site**, which include green infrastructure practices such as rain gardens, green roofs, permeable pavements, biofiltration systems, vegetated swales, rainwater harvesting, tree canopy protection and restoration, and green street practices. These distributed stormwater management practices manage rainwater where it falls and can often be built into a site, corridor, or neighborhood without requiring additional space.
- **Coastal area**, which include coastal wetlands, dunes, oyster reefs, living shorelines, and waterfront parks. These nature-based solutions stabilize the shoreline, reducing erosion and buffering the coast from storm impacts. While many watershed and neighborhood-scale solutions work in coastal areas, these systems are designed to support coastal resilience.

FEMA's Building Community Resilience with Nature-Based Solutions: A Guide for Local Communities, from which this information has been pulled, also provides examples of NBS practices that fall under each of these scales. This list is not exhaustive but will give a sense of the variety of practices that can be implemented to address hazards on a variety of sites. Different types of funding may be available for different types and scales of practices.

**Benefit-Cost Analysis (BCA)** is a method that determines the future risk reduction benefits of a hazard mitigation project and compares those benefits to its costs. The result is a **Benefit-Cost Ratio (BCR)**, or the present value of net project benefits divided by the project costs. A FEMA project is considered cost-effective when the BCR is 1.0 or greater.




Nature-based BMPs with Co-Benefits for Water Quality and Hazard Mitigation




Ecosystem Services for Stormwater Management Practices

*Summary of Water Quality Planning Programs and Hazard Mitigation Frameworks*

| **Local Hazard Mitigation Planning Steps** | **Water Quality Planning Steps** | | |
|---|---|---|---|
| Local Mitigation Planning Handbook (FEMA 2013) | Watershed (USEPA 2008) | Source Water Protection (USEPA 2018) | Stormwater Management (USEPA 2007) |
| **DOCUMENT PURPOSE** | | | |
| Helps local governments in developing or updating a **local hazard mitigation plan.** Provides guidance to develop/update plans to meet the requirements of 44 CFR section 201.6 for FEMA approval and eligibility to apply for FEMA Hazard Mitigation Assistance grants. Also offers practical approaches and examples for communities to engage in effective planning to reduce long-term risk from natural hazards and disasters. | **Watershed plans** are a means to resolve and prevent water quality problems that result from both point source and nonpoint source problems. Watershed plans are intended both to provide an analytic framework to restore water quality in impaired waters and to protect water quality in other waters adversely affected or threatened by point source and nonpoint source pollution. | **Source water assessments** provide water utilities, community governments, and others with information needed to protect drinking water sources. The 1996 amendments to the Safe Drinking Water Act (SDWA) outline six steps for conducting source water assessments for public water systems (PWSs). | The objectives of **stormwater management planning** are to: (1) identify potential sources of stormwater pollution on a construction, industrial and/or municipal site; (2) describe stormwater control measures and Best Management Practices (BMPs) that will be used to reduce or eliminate pollutants in stormwater discharges from the project site; and (3) identify the procedures the operator of the project site will implement to comply with the terms and conditions of the site-specific general permit. |
| **PLANNING STEPS** | | | |
| **1. Determine the planning area and resources**<br>Determine the planning area and the participating jurisdictions, who will lead the plan, and the resources needed to support the planning process.<br><br>**2. Build the planning team**<br>Assemble a planning team of representatives from each jurisdiction and partner organization. These planning partners have the expertise to develop the plan, and their organizations have the authority to implement the mitigation strategy developed through the planning process. This is the core group of people responsible for developing and reviewing drafts of the plan, creating the mitigation strategy, and submitting the final plan for local adoption.<br><br>**3. Create an outreach strategy**<br>Develop an outreach strategy that identifies what you want to accomplish through your outreach efforts, who to involve in the process, and how and when to effectively engage the community.<br><br>**4. Review community capabilities**<br>Assess your community's existing authorities, policies, programs, and resources available to accomplish mitigation.<br><br>**5. Conduct a risk assessment**<br>Conduct a risk assessment to determine the potential impacts of hazards to the people, economy, and built and natural environments of the community. | **1. Build partnerships**<br>(a) Identify key stakeholders<br>(b) Identify issues of concern for inclusion in the watershed plan<br>(c) Set preliminary goals<br>(d) Conduct public outreach<br><br>**2. Characterize the watershed**<br>(a) Collect existing data<br>(b) Analyze data<br>(c) Identify causes and sources of pollution to control<br>(d) Identify data gaps and collect additional data if needed<br>(e) Quantify pollutant loads<br><br>**3. Finalize goals and identify solutions**<br>(a) Set overall goals and management objectives<br>(b) Develop indicators/targets<br>(c) Determine load reductions needed<br>(d) Identify critical areas<br>(e) Develop management measures to achieve goals<br><br>**4. Design an implementation program**<br>(a) Develop implementation schedule | **1. Delineate the source water protection area (SWPA)**<br>States delineate (map) the land area that could contribute pollutants to the water supply for each public water system.<br><br>**2. Inventory known and potential sources of contamination**<br>This inventory can provide a list and map of facilities and activities within the delineated area that might release contaminants into the source water.<br><br>**3. Determine the susceptibility of the water supply to contamination**<br>The state combines the inventory results with other relevant information to decide how likely a water supply is to be contaminated by identified potential sources of contamination.<br><br>**4. Notify the public about threats identified in the contaminant source inventory and what they mean to the PWS.** | **1. Apply for NPDES stormwater permit coverage for the jurisdiction or entity if applicable**<br><br>**2. Follow permit requirements that can be permittee- specific. For example, for a Small MS4 there is a requirement to develop a SWMP that addresses six minimum control measures:**<br>(a) Public Education and Outreach on Stormwater Impacts<br>(b) Public Involvement/Participation<br>(c) Illicit Discharge Detection and Elimination<br>(d) Construction Site Runoff Control<br>(e) Post-Construction Stormwater Management in New Development and Redevelopment<br>(f) Pollution Prevention/Good Housekeeping for Municipal Operations<br><br>**3. Implement the SWMP using appropriate stormwater management controls, or BMPs**<br><br>**4. Develop measurable goals for the SWMP**<br><br>**5. Evaluate the effectiveness of the SWMP**<br><br>**6. Address stormwater impacts to any threatened / impaired waters (i.e., TMDLs)** |

| Local Hazard Mitigation Planning Steps | Water Quality Planning Steps | | |
|---|---|---|---|
| Local Mitigation Planning Handbook (FEMA 2013) | Watershed (USEPA 2008) | Source Water Protection (USEPA 2018) | Stormwater Management (USEPA 2007) |
| **6. Develop a mitigation strategy**<br>Describe how the community will accomplish the overall purpose, or mission, of the planning process.<br>**7. Keep the plan current**<br>Develop procedures to monitor, evaluate, and update the mitigation plan over time.<br><br>**8. Review and adopt the plan**<br>Incorporate feedback from the planning team, stakeholders, and the public on the final plan document. Accomplish final review and adoption of the plan document by the community and acquire FEMA plan approval.<br><br>**9. Create a safe and resilient community**<br>Learn about common challenges communities face in implementing their mitigation strategy, suggestions for how to overcome mitigation barriers, and some funding and resources available to help. | (b) Develop interim milestones to track implementation of management measures<br>(c) Develop criteria to measure progress towards meeting watershed goals<br>(d) Develop monitoring component<br>(e) Develop information/ education component<br>(f) Develop evaluation process<br>(g) Identify technical and financial assistance needed to implement plan<br>(h) Assign responsibility for revising the plan<br><br>**5. Implement watershed plan**<br>(a) Implement management strategies<br>(b) Conduct monitoring<br>(c) Conduct information/education activities<br>**6. Measure progress and make adjustments**<br>(a) Review, evaluate information<br>(b) Prepare annual workplans<br>(c) Report back to stakeholders and others<br>(d) Make adjustments to program | Effective programs ensure that the public has information necessary to act to prevent contamination.<br><br>**5. Implement management measures to prevent, reduce, or eliminate risks to your drinking water supply.**<br>These measures can be tailored to address each threat or array of risks specific to each PWS.<br><br>**6. Develop contingency planning strategies that address water supply contamination or service interruption emergencies.**<br>Water supply replacement strategies are important in the event of water drinking water supply disruption. | **7. Provide reports on program status** |

## About Association of State Floodplain Managers

Association of State Floodplain Managers (www.floods.org) is an organization of professionals involved in floodplain management, flood hazard mitigation, National Flood Insurance Program and flood preparedness, warning and recovery. Its mission is to promote education, policies and activities that mitigate current and future losses, costs and human suffering caused by flooding, and to protect the natural and beneficial functions of floodplains - all without causing adverse impacts.

## About National Association of Wetland Managers

The National Association of Wetland Managers (www.nawm.org) works to build capacity for state and tribal members and foster collaboration among the wetland community of practice by encouraging the application of sound science to wetland management and policy, promoting the protection and restoration of wetlands and related aquatic resources, and providing training and education for members and the general public. As a result of NAWM's work, the wetland community has access to and effectively uses sound science, policy, and private/public partnerships to preserve, protect, and restore the nation's precious and limited wetlands and related aquatic resources.

## About U.S. Environmental Protection Agency

The mission of the U.S. Environmental Protection Agency (www.epa.gov) is to protect human health and the environment. EPA works to ensure that: Americans have clean air, land and water; national efforts to reduce environmental risks are based on the best available scientific information; Federal laws protecting human health and the environment are administered and enforced fairly, effectively and as Congress intended; environmental stewardship is integral to U.S. policies concerning natural resources, human health, economic growth, energy, transportation, agriculture, industry, and international trade, and these factors are similarly considered in establishing environmental policy; all parts of society-- communities, individuals, businesses, and state, local and tribal governments--have access to accurate information sufficient to effectively participate in managing human health and environmental risks; contaminated lands and toxic sites are cleaned up by potentially responsible parties and revitalized; and chemicals in the marketplace are reviewed for safety.

## Acknowledgements

This event was developed with funding support from the U.S. Environmental Protection Agency.

## NOTES

# Exercise #1. Barriers to Collaboration and Implementation

## PROMPT #1

Step 1. Individually, create a list of the people, agencies, and/or entities with whom you currently collaborate, listing specifics in the corresponding boxes.

Step 2. Compare and discuss your list with the group. Who is missing? Identify current gaps and opportunities for collaboration between different sectors and government levels.

| EPA | FEMA |
| --- | --- |
| | |

| STATE AGENCIES | REGIONAL ORGANIZATIONS |
| --- | --- |
| | |

| LOCAL AGENCIES | STAKEHOLDER GROUPS |
| --- | --- |
| | |

| OTHER (E.G., NON-PROFITS) |
| --- |
| |

## PROMPT #2

Step 1. List the planning and/or permitting processes that you are currently involved in.

Step 2. Compare and discuss your list with the group. For the planning processes that you are a part of, are there people missing from the table that would provide valuable input? Are there plans that you or your agency are not currently involved in but relate to your work?

| HAZARD MITIGATION | NONPOINT SOURCE MANAGEMENT |
| --- | --- |
| | |
| STORMWATER MANAGEMENT | WETLAND PROGRAM |
| | |
| COMPREHENSIVE PLANNING | FLOODPLAIN MANAGEMENT |
| | |

| OTHER |
| --- |
| |

## PROMPT #3

Step 1. List the funding sources that your agency has used and/or applied for in project implementation.

Step 2. Discuss your list with the group. What successes and challenges have you had with acquiring funding? What partnerships do you have in place to secure project funding? Are there sources of funding that you have not accessed?

| EPA GRANTS | FEMA GRANTS |
| --- | --- |
| | |
| OTHER FEDERAL GRANTS | FOUNDATIONS |
| | |
| PRIVATE FINANCING | STATE OR TRIBAL PROGRAMS |
| | |
| COMMUNITY FUNDS | OTHER |
| | |

## PROMPT #4

Review the collaboration opportunities, planning processes, and funding sources that you have identified as current gaps or opportunities for future collaboration. Discuss with the group.

### NOTES ON PROCESSES AND OPPORTUNITIES

### WHAT IS BEING DONE TO BRIDGE THE GAP?

### WHAT SUCCESSES OR CHALLENGES HAVE YOU EXPERIENCED IN BUILDING COLLABORATIVE NETWORKS?

### WHAT ARE THE NEXT STEPS?

# Exercise #2. Developing integrated nature-based projects.

## INSTRUCTIONS

Thinking back on all that has been discussed, develop a plan and process for integrating nature-based practices in and around your community to achieve flood risk reduction and water quality benefits. In doing so, take into account issues, regulations, and agencies that are specific to your state/jurisdiction. When we come back together, you will have 3-5 minutes to present your ideas to the group.

## STEP 1

Choose a potential or upcoming project in your community around which you will focus this exercise. Think about project scales; listed below.

### NEIGHBORHOOD OR SITE

These distributed stormwater management practices manage rainwater where it falls and can often be built into a site, corridor, or neighborhood without requiring additional space (e.g., green infrastructure practices such as rain gardens, green roofs, permeable pavements, biofiltration systems, vegetated swales, rainwater harvesting, tree canopy protection and restoration, and green street practices).

### COASTAL AREA

These nature-based solutions stabilize the shoreline, reducing erosion and buffering the coast from storm impacts. While many watershed and neighborhood-scale solutions work in coastal areas, these systems are designed to support coastal resilience (e.g., coastal wetlands, dunes, oyster reefs, living shorelines, and waterfront parks).

### WATERSHED OR LANDSCAPE

These are interconnected systems of natural areas or open space. They require long-term planning and coordination (e.g., wetland restoration and protection, floodplain restoration, large-scale land conservation or acquisition, stormwater parks, and greenways.)

### NOTES

Exercise #2. Developing integrated nature-based projects.

## STEP 2

Once you have your project identified, think through the following questions with the project in mind:

## PARTNERS

What federal, state, local, or other agencies or organizations should be engaged and brought to the table?

What other considerations should be kept in mind when building the team?

When a team is assembled, what are the first steps to collaboration?

How might you engage the public in this process?

## EXISTING PLANS

What state or local plans are relevant to this goal and could be leveraged to further the mission?

What are the planning cycles for these documents, and where do potential synergies exist?

## STEP 3

Based on your responses to the previous questions, how you would present the project and your recommendations to decision makers (i.e., elected officials, agency head, etc.).

## STEP 4

Your group will have three to five minutes to present your project and recommendations to the larger group.

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