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Introduction

The Public Facilities Flood Mitigation Initiative (the Initiative) currently consists of five principal components:

1. Preliminary flood risk assessment, risk mapping, and risk communication for state-owned facilities
2. Development of a manual, methodology, and tools to evaluate existing public facilities
3. State-owned facility evaluations to pilot the tools and methodology provided in the manual
4. Pilot workshops to train facility operators and technical personnel to evaluate existing public facilities
5. Preliminary planning coordination for future public facilities

Efforts to complete these five components to date have been funded, in large part, through FEMA's Hazard Mitigation Grant Program, project number 1831-21-P. Additional ongoing efforts include identification and implementation of flood hazard mitigation projects for state-owned facilities, the development of a website to house all findings and resources resulting from the Initiative, as well as the potential for continued workshops and development of a training video. The Initiative fulfills the following requirements for Enhanced State Hazard Mitigation Plan (SHMP) status (emphasis added):

Requirement 201.4(c) (2) (ii): *The risk assessment shall include an overview and analysis of the state's vulnerability to the hazards described in the SHMP, based on estimates provided in the state risk assessment. The state shall describe vulnerability in terms of the jurisdictions most threatened by the identified hazards, and most vulnerable to damage and loss associated with hazard events. State-owned or operated critical facilities located in the identified hazard areas shall also be addressed.*

Requirement 201.5(b)(4)(i-vi): *The Enhanced plan must demonstrate that the state is committed to a comprehensive state mitigation program, which might include any of the following:*

- A commitment to support local mitigation planning by providing workshops and training, state planning grants, or coordinated capability development of local officials, including emergency management and floodplain management certifications
- A statewide program of hazard mitigation through the development of legislative initiatives, mitigation councils, formation of public/private partnerships, and/or other executive actions that promote hazard mitigation
- To the extent allowed by state law, the state requires or encourages local governments to use a current version of a nationally applicable model building code or standard that addressed natural hazards as a basis for design and construction of state sponsored mitigation projects
- A comprehensive multiyear plan to mitigate the risks posed to the existing buildings that have been identified as necessary for post disaster response and recovery operations.

The Initiative additionally fulfills the following goals and objectives from the 2010 and 2013 Enhanced State Hazard Mitigation Plan Updates:

- Goal 1 (present in the 2010 and 2013 Updates): Enhance and maintain state capacity to implement a comprehensive statewide hazard loss reduction strategy
 - Objective 1.1: Provide training opportunities and encourage staff to pursue professional development.
 - Objective 1.2: Pursue methodologies that will enhance mitigation successes.
 - Objective 1.3: Integrate mitigation practices throughout all state plans, programs, and policies
- Goal 4 (present in the 2010 and 2013 Updates): Support mitigation initiatives and policies that protect the state’s cultural, economic, and natural resources.
 - Objective 4.3: Seek mitigation opportunities that reduce economic losses and promote responsible economic growth
 - Objective 4.4: Retrofit existing state owned facilities
 - Objective 4.6: Coordinate effective partnerships between state agencies for floodplain management
- Goal 6 (present in the 2010 Update Only): Reduce vulnerability of state-owned facilities and infrastructure to natural hazards
 - Objective 6.1: Seek opportunity to harden existing state-owned facilities
 - Objective 6.2: Develop a strategic partnership with agencies responsible for siting, design and construction of state-owned facilities to establish practices that reduce losses from natural hazards
 - Objective 6.3: Investigate potential partnerships with risk management entities to enhance incentives for mitigation practices and viable insurance initiatives.
- Goal 7 (present in the 2010 Update Only): Foster interagency relationships for hazard mitigation across the state
 - Objective 7.1: Work to better integrate mitigation policies, programs, and practices
 - Objective 7.2: Coordinate effective partnerships between state agencies for exemplary floodplain management of state-owned land and facilities

A more detailed description of the components of the Initiative is provided herein, with resources and findings to be provided on webpage linking to www.floridadisaster.org/mitigation. Updates on the Initiative are provided at regular State Hazard Mitigation Plan Advisory team meetings.

R.1 Preliminary Flood Risk Assessment, Mapping, and Communication for State-owned Facilities

The 2010 SHMP Update indicated that there were over 21,000 state-owned facilities, at the time. The Division of Emergency Management’s Mitigation Bureau undertook an analysis in early 2013 to determine what share of these facilities were located within the Special Flood Hazard Area (SFHA) and, hence, would be at a measurably increased risk to flood hazard. In order to

better understand and communicate state-owned and operated facility flood risk, the Division undertook the following steps:

1. Identify the locations and key information about state-owned and operated facilities
2. Validate the data
3. Map the information
4. Develop an online geographical interface to allow state agencies to view their flood risk
5. Develop a screening process to allow state agencies to rapidly assess and communicate the potential degree of flood risk to any given facility

The Department of Environmental Protection (DEP) and Department of Management Services (DMS) have collaborated on the development of a legislatively required database to record and maintain the inventory of real estate properties that are “owned, leased, rented, or otherwise occupied” by any state government entity. The 2010 legislation required:

- The Department of Environmental Protection (DEP) to create a comprehensive information system of all state-owned and leased real property.
- Agencies to enter required real property information into the comprehensive real property system.
- DEP, in coordination with DMS, to provide an annual report to the governor and legislature on properties recommended for sale or other disposition actions.

DEP and DMS have implemented the new Florida State Owned Lands and Records Information System (FL-SOLARIS). It is designed with two main components:

- Facility Inventory Tracking System (FITS) - Available since April 2012
- Lands Inventory Tracking System (LITS) - Available since February 2013

In order to complete step 1, identified above, Division staff requested an export of the data provided within SOLARIS, which included facility type, agency, geographical coordinates, and other key information. Staff mapped and evaluated this information, collaborating with the Departments to update information, as needed. The final dataset, which is automatically updated as facilities are added or removed from the database, has been integrated with floodplain data provided by FEMA and uploaded to a password protected website for state agencies to access. This website allows agencies to review their facilities within the SFHA and was showcased at the Pilot Workshops, described below, in September 2014.

As of June 2014, over 4,000 state facilities, operated by 53 separate agencies, many of which are universities, are located within the SFHA. See **Figure R.1** for a visual representation of state facilities within (red dots) and outside (green dots) of the SFHA. It is important to note that facilities located outside of the mapped SFHA should not be considered to be free of flood risk. These facilities may be located within the .2% annual chance floodplain, which has a 6% chance of being flooded in any given 30-year period. In addition, such facilities could be subject to flooding from sheet flow due to poor drainage and impervious surface or ponding due to depressions in the landscape. Furthermore, facilities within the mapped SFHA may already be mitigated against flood hazard due to elevation or floodproofing.

Further evaluation is necessary to understand flood risk for any given facility. As such, the Division developed a rapid screening process and tool to allow agencies and jurisdictions to screen their facilities for flood risk based on limited information. This tool uses flood risk information and/or basic historical loss information coupled with topographical or lowest floor information to assign a potential risk score to a facility. This score can be a helpful tool for agencies and jurisdictions to identify facilities for the purposes of further evaluation. The tool can also be used, after further evaluation, to generate a score that can be used to help prioritize projects for implementation. The tool is described in the Public Facilities Flood Mitigation Assessment Manual and provided on the Bureau's website.

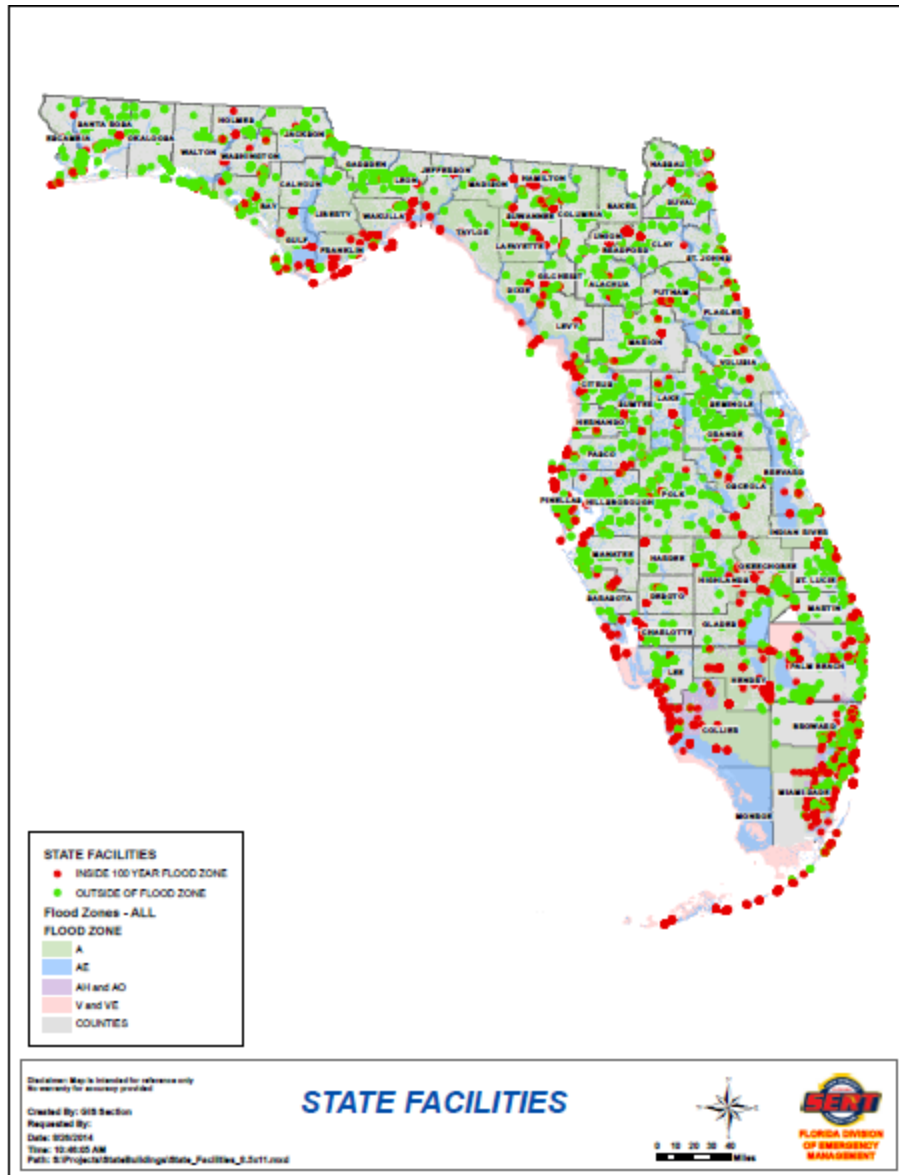


Figure R.1 State Facilities in the Special Flood Hazard Area

(This image a placeholder. Full page map to be used in PDF)

R.2 Manual, Methodology, and Tools

A key and lasting component of the Initiative has been the development of a Public Facilities Flood Hazard Mitigation Assessment Manual (the Manual) that provides information that will support efforts to improve the resiliency of public facilities at risk of flooding and to provide methodologies flexible enough to apply to most any type of public facility, in addition to state facilities.

The Manual provides a step by step framework for state agencies responsible for the maintenance of public facilities to identify and prioritize existing flood prone facilities, conduct cursory and detailed flood risk evaluations, understand potential consequences of inaction, and to identify and evaluate mitigation measures to reduce that risk. The final outcome of following the Manual is a Mitigation Assessment Report (the Report) that could form the backbone of a mitigation funding pursuit or application and the basis for more detailed project design. The information provided by the Report could be considered as part of a comprehensive resiliency strategy, and provide information that can support the development of emergency response plans. Tools provided within the Manual are as follows:

1. Inspection forms: The Manual provides blank inspection forms that can be used during desktop and field evaluation of a facility's grounds, structures, systems, and assets.
2. Record of Historical Losses (the Record): The Manual provides a blank record of historical losses form that can be used to record important information. The Record has been developed to include all information that would be relevant in completing funding applications and Benefit Cost Analyses (BCA) using FEMA's BCA Toolkit to support funding applications.
3. Scoring methodology: The Manual provides a scoring method that can be used to either screen a facility to determine whether further evaluation is needed, prioritize many facilities for further evaluation, or to quantify flood risk once a detailed evaluation has been completed. Decision makers may choose to use scores as part of a method to prioritize public facility mitigation projects for implementation. A scoring tool has also been developed, is available in Microsoft Excel format, and will be provided on the Mitigation bureau's website.
4. Mitigation Assessment Report template: The Manual provides a template that be used to develop a concise Report intended to clearly outline flood risk, as well as mitigation recommendations. A Report completed using the template, along with appropriate backup documentation, should be able to form the backbone for most funding applications.

The Manual is comprised of two major parts, to accommodate two major stakeholder groups necessary to recommend appropriate mitigation measures for public facilities: a) facility planners, operators, managers, and other stakeholders, and b) technical specialists, such as engineers, planners, and floodplain management professionals. As a result of feedback from the Pilot Workshops, short sections have also been added to explain the process' value to high level decision makers, such as Emergency Management Directors and funding gatekeepers. The methodology provided by the Manual is provided in several broad strokes designed to facilitate efficient use of resources:

- Inventory screening - answers the questions, “Which facilities are most critical to ensure continued operation and avoid damage? What facilities are at risk to flooding and may warrant further evaluation?”
- Facility screening/scoring – can be conducted using only online resources and seeks to help stakeholders decide whether investment in a more detailed desktop or field evaluation is warranted.
- Desktop evaluation – compares flood risk data to facility plans and drawings to identify vulnerabilities and begin understanding, more specifically, the consequences of those vulnerabilities and the scale of mitigation that may be needed.
- Field evaluation – confirms the results of the desktop evaluation, identifies additional vulnerabilities, and collects on-site data for further evaluation.
- Mitigation option identification – compares the results of the flood risk assessment to potential mitigation options that may help reduce risk long-term.
- Mitigation option evaluation – evaluates measures based on social, technical, administrative and operational, political, legal, economic, environmental, and other considerations to identify specific recommendations.

The Manual draws from the Florida Building Code (FBC) to recommend facility prioritization based on FBC Risk Categories, identify criteria to consider when determining potential mitigation options, and when providing details regarding how to identify a goal level of protection and final proposed mitigation design elevation.

Feedback and suggestions from workshop attendees, as well as Division employees, professionals in the field, pilot evaluations, and local government officials were incorporated into the Manual.

R.3 Pilot State-owned Facility Evaluations

Three pilot studies, varying in facility function and flood source, were conducted using the methodologies presented in the Manual in order to ensure tool utility and clarity of message. The three pilot studies indicated to the analysis team the importance of preliminary desktop research, but also how valuable site visits are to wholly understand the flood risk to facilities and assets.

The pilot studies solidified that field evaluations provide an opportunity for interaction with on-site staff that are capable of providing insight into past experiences and vulnerabilities that may not be immediately evident through desktop evaluation or independent field evaluation. In addition, facility staff are experts on the day-to-day operations of a facility and can provide insight necessary to identify the most appropriate mitigation measures.

The pilot studies confirmed the flexibility of the manual to assess a variety of types of public facilities. Each pilot facility served a different purpose to the local community, was impacted by a different type of flooding (riverine, coastal, and ponding), varied in degree of flood-risk, and provided a wide variety of structure and asset types for evaluation.

High level information about these facilities is provided in **Table R.1**.

Table R.1 Pilot Facility Evaluations

Pilot #	Pilot 1	Pilot 2	Pilot 3
Agency	Department of Health	Department of Economic Opportunity	Florida State University
Region	North Florida	South Florida	Florida Panhandle
Site Description	The site has recorded historic flood losses. The site has multiple buildings, including vital records storage, public labs, and a historic structure. The site is vulnerable to flooding from a riverine source found at the north and northeastern end of the campus.	Employment Center office complex in an AH Zone. Site vulnerable to flooding by a variety of sources. A large canal to the north and a retention basin to the south are the primary threats to the facility from flooding, as well as frequent ponding at the northwestern and southwestern corners due to poor stormwater drainage.	The site is located in both Zone AE and Zone VE and has recorded historical losses. The elevations on site slope gradually from the northeast down to the southwest corner from 15 feet to 0 feet entering the water. The primary flooding source is the Gulf of Mexico and the site is subject to wave action.
Short Description of Findings	Water damage was extensive throughout the facility. Due to previous flood events, the majority of critical functions were moved to upper floors, where possible. Many of the critical assets and systems have been mitigated above the 1% annual chance flood event, but a number of penetrations and vulnerabilities still existed. Overall recommendations were provided but, due to time constraints at the site, a second visit is necessary to finalize recommendations.	The facility has been affected previously by flooding, but only minimally. Two hurricanes and one severe rainstorm reveal ponding in the northwestern and southwestern corners of the facility. Water previously reached doorways of two of the structures and resulted in less than an inch of standing water in the building. Several assets and systems have been elevated to avoid floodwaters, but further improvements were recommended by the evaluation team in order to reduce flood risk.	Because of the varying elevations on site and proximity to the coastline, a majority of the facility is subject to wave action. Those buildings vulnerable in the VE Zone have been elevated to the BFE but additional measures, such as flood doors and window shields, are recommended. The most critical systems on the campus were the floating docks and sea water intake pumps. Floodproofing is recommended for these systems.

R.4 Pilot Training Workshops

Three pilot workshops based on the Manual were conducted in September 2014. Attendees were asked to complete evaluation forms of both the Manual and the workshop material. All actionable items were reviewed by the Initiative team and incorporated, as appropriate into the materials. Workshop materials and evaluations are attached to this Appendix R and available on our website. Participant organization representation is presented in **Table R.2**.

R.5 Preliminary Planning Coordination for Siting of Future State Facilities

A key element of the Initiative involved coordination with agencies regarding the future siting of their facilities. Preliminary research revealed that the responsibility for locating, managing, and maintaining state facilities lies with the Department of Management Services Division of State Lands Bureau of Public Lands Management.

Division staff met with Bureau of Public Lands Management staff in March 2014 as a coordination meeting for the “State Facility Risk Identification and Prioritization for Mitigation” project. The Division of State Lands Bureau of Public Lands Management is in the planning stages for establishing regular inspections of State property. The Mitigation Bureau of the Division of Emergency Management will work with the Bureau of Public Lands Management to identify opportunities to integrate flood risk evaluation into these inspections.

Division staff have developed preliminary reference material concerning the State authorities and responsibilities for management of properties related to floodplains and flood resiliency that will be further developed as part of this Initiative.

It is clear, from the findings of the Initiative, that agencies are unified in their concerns about the condition and long term resiliency of state facilities. Mitigation Bureau staff developed a handout with contact information to facilitate future coordination (attached).

R.6 Next Steps

This initial effort has been funded through FEMA Hazard Mitigation Grant Program allocation 1831-21-P. There has been continued demand for the workshops and a potential training video based on the pilot evaluations (for which footage has been gathered). The Division is currently evaluating the feasibility of continuing, and potentially expanding, several portions of the Initiative. In addition, the Division is currently sponsoring the development of federal funding applications to potentially implement mitigation measures for the three pilot facilities. The Division is evaluating the feasibility of continuing a Division-sponsored effort to evaluate and mitigate high priority state facilities. Planning for future facilities in conjunction with other state agencies is still in development and will continue beyond the life of this grant.

Table R.2 Workshop Participation - Organizations Represented

Workshop 1	Workshop 2	Workshop 3
City of Cocoa Beach City of Cocoa City of Flagler Beach City of Kissimmee City of Orange City City of Sebring City of Tampa Division of Emergency Management Flagler County New College of Florida Osceola County Osceola County EM South Florida WMD Treasure Coast Regional Planning Council University of South Florida - Sarasota University of South Florida - St. Petersburg University of South Florida - Tampa	Citrus County EM City of Edgewater Environmental Services City of Palm Coast City of Sanford Fire Department Division of Emergency Management Glades County EM Hernando County EM Highlands County EM Lake County EM Osceola County EM Pasco County EM Seminole County EM University of Central Florida Volusia County EM	AECOM Agency for Health Care Administration ARPC City of South Pasadena City of St. Augustine Beach City of Tallahassee Department of Children and Families Department of Environmental Protection Department of Highway Safety and Motor Vehicles Department of Management Services Department of Education Department of Law Enforcement Department of Corrections Department of State Division of Emergency Management Emergency Disaster Strategies Federal Emergency Management Agency Florida School for the Deaf and Blind Lafayette County Building & Zoning Nature Coast EMS Naval Facilities Engineering Command (NAVFAC) SE NFWFMD Pensacola Public Works St. Johns County Suwannee River Water Management District University of West Florida

List of Attachments

Public Facilities Flood Mitigation Assessment Manual

Public Facilities Flood Mitigation Assessment Workshop Materials

Pilot Public Facilities Flood Mitigation Assessment Workshop Evaluation Results

Public Facility March 2014 Planning Meeting Flier

Public Facilities September 2014 Pilot Workshops Invitation

Public Facilities Flood Hazard Mitigation Assessment Manual



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Rick Scott, Governor
Bryan Koon, Director
Miles Anderson, State Hazard Mitigation Officer

THE FLORIDA PUBLIC FACILITIES FLOOD MITIGATION INITIATIVE

The Florida Public Facilities Flood Mitigation Initiative is sponsored by the Florida Division of Emergency Management and State Hazard Mitigation Plan Advisory Team member agencies with funding from the Federal Emergency Management Agency. The purpose of the initiative is to develop a planning process that will encourage and enable owners and operators of public facilities to increase the resiliency of their facilities against future flood risk. The goal is to ensure continued service to the populations reliant upon them. This manual has been developed after analyzing previous disasters, applying lessons learned, and testing through workshops and pilot assessments.

THE PURPOSE OF THIS MANUAL

The purpose of the Public Facilities Flood Mitigation Assessment Manual is to provide information necessary to assess and improve the resiliency of public facilities at risk to flooding. It is the intent of this manual to provide methodologies flexible enough to be applied to a variety of types of public facilities, including those owned and operated by state agencies.





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- 2.0 Selecting a Mitigation Strategy

Part II Guide to Facility Assessment

- 3.0 Flood Risk and Vulnerability Assessment
- 4.0 Developing Design Criteria
- 5.0 Identifying and Evaluating Mitigation Options

References and Resources

Appendices

- A. Assessment forms
- B. Mitigation Assessment Report Template

A Sample Mitigation Assessment Report is available on the Florida Division of Emergency Management Mitigation Bureau Website at <http://www.floridadisaster.org/mitigation>.

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A description of current findings of the full
Florida Public Facilities Flood Mitigation
Initiative, which includes recommendations
for new facilities, has been incorporated
into the Florida Enhanced State Hazard
Mitigation Plan.

The pilot reports and workshop materials,
the accompanying annex to the State
Hazard Mitigation Plan, and links to more
information can be accessed through the
FDEM project web page at [http://www.
floridadisaster.org/mitigation](http://www.floridadisaster.org/mitigation)).

The website is also a source for information
on future related projects and materials to
complement this manual.

Pilot State Facilities

Three state facilities were selected for case studies to present the material in this Manual. Findings from the assessments are integrated throughout the Manual, including select material from reports. These reports, as this Manual, were financed using Florida Division of Emergency Management (FDEM) and Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program funds through the State of Florida. Pilot assessments were completed in August 2014. Appendix C contains a series of flood mitigation assessment reports to provide templates for facility managers and engineers when developing their own.

Pilot #	Pilot 1	Pilot 2	Pilot 3
Agency	Department of Health	Department of Economic Opportunity	Florida State University
Location	Duval County	Broward County	Franklin County
Site Description	The site has recorded historic flood losses and has multiple buildings, including vital records storage, public labs, and a historic structure. The site is within an AE Zone and is vulnerable to flooding from a riverine source found at the north and northeastern end of the campus.	The office complex is located in an AH Zone. This site is vulnerable to flooding by a variety of sources. A large canal to the north and a retention basin to the south are the primary threats, as well as frequent ponding at the northwestern and southwestern corners due to inadequate stormwater drainage.	The facility straddles both AE and VE Zones on the Gulf of Mexico. Topography slopes gradually, changing fifteen feet from the northeast to the southwest corner. The site is subject to wave action and many assets important to the function of the facility are located well below BFE.
Short Description of Findings	Due to previous flood events, the majority of critical functions across the facility have been moved to upper floors, above the Base Flood Elevation (BFE). Nevertheless, a number of vulnerabilities still exist on the site, including points of potential water intrusion. Overall recommendations include dry floodproofing and further elevation of assets but, due to time constraints at the site, a second visit was requested and investigation is ongoing.	The facility has been affected previously by flooding, but only minimally. Two hurricanes and one severe rainstorm have caused ponding in the identified northwestern and southwestern corners of the facility, and water has reached the doorways of two of the structures, resulting in about one inch of standing water to enter the building. Several assets and systems have been elevated to avoid floodwaters, but additional improvements were recommended by the design team to mitigate future flood risk.	The site has seen significant flooding in the past as a result of coastal storms and accompanying surge. Most buildings are elevated, but some additional measures, such as elevation of mechanical and electrical assets and dry floodproofing, are recommended to increase the level of protection. The most critical systems on the campus were the floating docks and sea water intake pumps. These systems are vulnerable and mitigation actions are recommended to protect against flood loss.

Pilot Mitigation Assessment Workshops

Three workshops were held in September 2014 to pilot the material in this Manual. Feedback and suggestions from workshop attendees, as well as FDEM employees, state agency representatives, contractors and consultants, and local government officials has been incorporated into the Manual, along with the results of the pilot assessments. Workshop materials are available on the Mitigation Bureau website at <http://www.floridadisaster/mitigation>.

Acronyms

ASCE	American Society of Civil Engineers
BCA	Benefit-Cost Analysis
BFE	Base Flood Elevation
CFR	Code of Federal Regulations
DFE	Design Flood Elevation
FDEM	Florida Division of Emergency Management
FBC	Florida Building Code
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FMA	Flood Mitigation Assistance (FEMA Grant Program)
HMA	Hazard Mitigation Assistance (FEMA Grant Programs)
HMGP	Hazard Mitigation Grant Program (FEMA Grant Program)
LiMWA	Limit of Moderate Wave Action
MEP	Mechanical, Electrical, and Plumbing
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
PDM	Pre-Disaster Mitigation (FEMA Grant Program)
PMDE	Proposed Mitigation Design Elevation
SFHA	Special Flood Hazard Area
SLR	Sea Level Rise
USACE	U.S. Army Corps of Engineers

Terms and Definitions

Where a term is defined in the Florida Building Code (FBC), or referenced by the FBC, the definition is copied here. Other sources include ASCE 24, various FEMA publications, and the FDEM *Floodplain Management in Florida Quick Guide*.

Asset - A component of a critical system that could be either a particular equipment item, a portion of the system required for function, or a human action that is required to provide function to the critical system.

Base Flood - The flood that has a 1-percent chance of being equaled or exceeded in any given year (commonly called the 100-year flood).

Base Flood Elevation (BFE) - The elevation of the base flood, including wave height, relative to the National Geodetic Vertical Datum (NGVD), North American Vertical Datum (NAVD), or other datum specified on the Flood Insurance Rate Map (FIRM).

Coastal Flooding - Influenced largely by storm surges associated with tropical cyclonic weather systems (e.g., hurricanes, tropical storms, tropical depressions, typhoons, extratropical storms [nor'easters]); tsunamis (surge induced by seismic activity); and wind-driven wave action; this type of flooding occurs when normally dry, low-lying land is flooded by sea water.

Coastal A Zone - The area within a Special Flood Hazard Area (SFHA), landward of the V Zone or landward of an open coast without mapped V Zones. In a Coastal A Zone, the principal source of flooding must be astronomical tides, storm surges, seiches, or tsunamis, not riverine flooding. During the base flood conditions, the potential for breaking wave heights shall be greater than or equal to 1.5 feet.

Design Flood - The flood associated with the greater of the following two areas:

1. Area within a flood plain subject to a 1-percent or greater chance of flooding in any year; or
2. Area designated as a flood hazard area on a community's flood hazard map, or otherwise legally designated.

Design Flood Elevation (DFE) - The elevation of the "design flood," including wave height, relative to the datum specified on the community's legally designated flood hazard map.

Essential / Critical Facility - Facilities that are needed for response activities before, during, and after a flood (e.g., hospitals, nursing homes, police stations, fire stations, and emergency operation centers); public and private utility facilities that are vital to maintaining or restoring normal services to flooded areas before, during, and after a flood; and structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, and/or water-reactive materials.

Flood Insurance Rate Map (FIRM) - The official map of a community on which FEMA has delineated both the SFHAs and the risk premium zones applicable to the community.

Flood Insurance Study (FIS) - The official report provided by FEMA containing the FIRM, the Flood Boundary and Floodway Map (FBFM), the water surface elevation of the base flood, and supporting technical data.

Floodway - The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Communities must regulate development in floodways to ensure that there are no increases in water surface elevation during the base flood. For streams and other watercourses where FEMA has provided BFEs, but no floodway has been designated, the community must review floodplain development on a case-by-case basis to ensure that increases in water surface elevations do not occur, or identify the need to adopt a floodway if adequate information is available.

Florida Building Code (FBC) - The family of codes adopted by the Florida Building Commission, including: *Florida Building Code, Building*; *Florida Building Code, Residential*; *Florida Building Code, Existing Building*; *Florida Building Code, Mechanical*; *Florida Building Code, Plumbing*; and *Florida Building Code, Fuel Gas*. Excerpts of flood provisions in the FBC can be found online at http://www.floridadisaster.org/Mitigation/SFMP/lobc_resources.htm.

Freeboard - A margin of safety usually expressed in feet above a flood level for purposes of floodplain management. "Freeboard" tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, blockage of bridge or culvert openings, and the hydrological effect of urbanization of the watershed.

Grounds - For the purposes of this Manual, an area of land designated by legal boundaries upon which a single structure or multiple structures are housed.

Local Floodplain Manager - The principal community administrator in the daily implementation of a given community's flood loss reduction activities including enforcing the community's flood damage prevention ordinance; updating flood maps, plans, and policies of the community; and any of the activities related to administration of the National Flood Insurance Program (NFIP).

Mitigation Measure - Any sustained action taken to reduce or eliminate long-term risk to life and property from future hazard events.

National Flood Insurance Program (NFIP) - Federal program with three main elements: flood hazard identification and mapping, floodplain management criteria applicable to the development of SFHAs, and flood insurance.

Proposed Mitigation Design Elevation (PMDE) - The goal level of protection used to understand vulnerability at a site, along with the BFE. More detailed analysis involves looking at vulnerability to varying probabilities of flooding. The PMDE is the design elevation that is determined through the evaluation process to be practicable and appropriate for design of proposed mitigation projects.

Riverine Flooding - The accumulation of runoff from rainfall or snow melt, such that the volume of flow exceeds the capacity of waterway channels and spreads out over the adjacent land.

Special Flood Hazard Area (SFHA) - The land area subject to flood hazards and shown on the NFIP maps. The SFHA is the area in which construction of buildings and structures must comply with the flood provisions of the FBC. The SFHA includes Zones A, AO, AH, A1-30, AE, A99, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, VO, V1-30, VE, and V.

State Floodplain Management Office - In Florida, the State's Division of Emergency Management, Bureau of Mitigation houses the State Floodplain Management Office. Floodplain Management Specialists work with Florida's communities, assisting them to successfully manage development in their floodplains, as well as monitoring these efforts to assure compliance with the NFIP.

Substantial Damage - Damage of any origin sustained by a structure whereby the cost of restoring the structure to its pre-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

Substantial Improvement - Any repair, reconstruction, rehabilitation, addition, or improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair is started. If the structure has sustained substantial damage, any repairs are considered substantial improvement, regardless of the actual repair work performed. The term does not, however, include either: 1. Any project for improvement of a building required to correct existing health, sanitary, or safety code violations identified by the building official and that are the minimum necessary to assure safe living conditions; or 2. Any alteration of a historic structure, provided that the alteration will not preclude the structure's continued designation as a historic structure.

System - A collection of assets that is required to provide either the essential facility function or life-safety functions necessary to continue operations.

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Introduction



Flood Risk and Mitigation in the United States and Florida

Although flooding is a natural process, floods have the potential to threaten both life and property. Flood events become disasters when they impact human settlement in the form of dwellings and infrastructure. Damage from flooding events often results in physical, environmental, economic, and social impacts and costs to agencies, communities, states, regions, and the country as a whole.

Flooding is recognized as the most costly reoccurring natural hazard in the State of Florida and the United States. Between the years 2000 and 2014, Florida experienced 23 Presidential Disaster Declarations due to flooding. Florida has sustained severe flood damage from major hurricanes, tropical storms and, most recently, heavy rainfall.¹ Tropical Storm Fay and Hurricanes Gustav, Ike, and Hanna all hit Florida in 2008, causing billions of dollars of damage to private property, as well as public facilities and infrastructure.

While we can prepare for, respond to, and recover from flood-related disasters, mitigating risk from flooding may prevent flood disasters altogether. Mitigation measures are any sustained action taken to reduce or eliminate long-term risk to life and property from future hazard events, and are implemented proactively. A 2005 study showed that for every dollar spent on mitigation, society saves approximately four dollars in prevented loss of property and life.²

While mitigation actions have typically been implemented during the disaster recovery phase, the ideal time to plan for and implement flood protection measures is during “blue skies,” otherwise referred to as the pre-disaster period. The image at the bottom right illustrates that mitigation planning and implementation can and should take place as a constant effort, consistently reducing risk to flood hazard events.

Driven by the Robert T. Stafford Disaster Relief and Emergency Assistance Act and the Disaster Mitigation Act of 2000, Chapter 252 of the Florida Statutes delegates responsibility for carrying out and overseeing state mitigation activities to the Florida Division of Emergency Management (State Emergency Management Act, 2009). The FDEM created the State Hazard Mitigation Plan Advisory Team (SHMPAT), an inter-agency group, to serve as a source of guidance. This SHMPAT is comprised of both state and local agencies that oversee the development of the State Hazard Mitigation Plan and many mitigation activities performed throughout the state.

In partnership with FEMA and state agencies, Florida is aggressively implementing and administering federal funding to reduce post-disaster impacts. A preliminary study conducted by the Division has indicated that a large number of existing state-owned facilities are currently located within floodplains. In addition, Local Mitigation Strategies developed by all Florida counties in cooperation with municipalities indicate many local and privately operated public facilities are also at risk to flooding. As a leader in flood mitigation, Florida is seeking to reduce that risk long term.

Example Local Mitigation Strategies can be found at <http://www.floridadisaster.org/Mitigation/Local/>

¹ FEMA Major Disaster Declarations http://www.fema.gov/disasters/grid/state-tribal-government/47?field_disaster_type_term_tid_1=All

² Multi-hazard Mitigation Council. (2005). Natural Hazard Mitigation Saves. National Institute of Building Sciences. Washington, D.C.

³ American Public Works Association *America's Public Infrastructure Fact Sheet* <http://www2.apwa.net/documents/Advocacy/Infrastructure%20Facts.pdf>



According to the Flood Hazard Research Centre, published in the journal *Nature Climate Change*, Tampa-St. Petersburg and Miami are among the top 20 global cities most vulnerable to flooding based on Average Annualized Losses.

Annual United States flood losses 1900-2002 averaged \$5.3 billion.³



Protecting Public Facilities

Types of Public Facilities

Public facilities may provide essential services (such as emergency operations centers, water, utilities, or hospitals); may house local government, non-profit, and state office records; may provide services such as healthcare or unemployment assistance; and may be recreational or educational. These facilities may be state-owned, owned by local governments, or owned or operated by private non-profit or for-profit entities.



The Importance of Protecting Critical/Essential Facilities

Public facilities are constructed to provide for specific needs within the community. The need for these services becomes more pronounced and critical as we actively prepare for, respond to, and recover from an event—whether, for example, through the provision of essential utilities, to provide shelter, or to help restore a sense of normalcy after an event. Significant disruption of civil and public life can occur when facilities that provide services to the public are damaged. The loss of these systems from flood hazard impacts can not only immediately impact current occupants but also the surrounding service population.

Consequences of loss can vary greatly, depending on the criticality of the facility and the operations housed within. While some public facilities may serve minor purposes, many provide important life functions crucial during a flood event. For example, consequences of loss to public facilities may include power loss, water supply disruptions, or hospital evacuations, and may result in cascading impacts in the form of lost life, property damage, and civil discord. Proactive mitigation of flood risk can limit or prevent such consequences in the short and long term.

Considerations when Protecting Public Facilities

While we want to ensure the highest level of protection possible for public facilities, complete elimination of long-term risk is not possible. Mitigating existing facilities can be more complicated than planning for new facilities, as limitations based on the existing grounds, structures, systems, and other assets must be taken into consideration. Engineering and construction requirements or practices may have changed and the understanding of flood risk in the area may have evolved since the time of construction.

This Manual focuses on mitigation planning for existing facilities. Nevertheless, the lessons provided also apply for new facilities.

The Public Facilities Flood Mitigation Assessment Manual guidance can be applied to both NEW and EXISTING structures.

Reasons to Mitigate Public Facilities

- ✓ Reduce risk to life and property
- ✓ Maintain important public and critical services
- ✓ Reduce public expenditures required to repair property damage
- ✓ Speed recovery from disasters

Public Facility Mitigation Guiding Principles

Successful long-term mitigation of flood risk requires clear leadership and stakeholders who share an understanding of certain guiding principles:

Every flood risk and vulnerability scenario is different – Understanding the type, source, and probability of flooding; the exposed assets; and their vulnerabilities are all essential to identify the appropriate risk mitigation measures. The suitability of any given measure to its surrounding context is crucial to successful mitigation actions.

Those evaluating and designing mitigation measures should consider a changing risk context and some uncertainty about the future – It is important to realize that even the best flood models and climate change predictions are not certain. In addition, development activities near a facility can alter flood risk.

A full range of potential mitigation measures should be considered – Mitigation to grounds, structure, specific systems, or mitigation through some larger actions may be used in isolation or complementary in flood risk reduction.

It may not be possible to eliminate flood risk – There will likely remain some degree of risk that should be anticipated. Mitigation for a facility should carefully consider this risk and identify actions that will reduce this risk as much as possible. Emergency action plans should be developed in anticipation of potential future impacts.

What is the National Flood Insurance Program?

The National Flood Insurance Program (NFIP) was created by Congress in 1968 to protect lives and property and to reduce the financial burden of providing disaster assistance. The NFIP is administered by the Federal Emergency Management Agency (FEMA). Nationwide, over 20,500 communities participate in the NFIP— almost 460 of Florida's counties, cities and towns participate.

The NFIP is based on a mutual agreement between the Federal Government and communities. Communities that participate agree to regulate floodplain development according to certain criteria and standards. The partnership involves:

- **Flood hazard maps.** FEMA produces flood maps, in partnership with water management districts, communities and the State, in accordance with FEMA standards. The maps are used by communities, insurance agents, and others.
- **Flood insurance.** Property owners and renters in participating communities are eligible to purchase Federal flood insurance for buildings and contents.
- **Regulations.** Communities must adopt and enforce minimum floodplain management regulations so that development, including buildings, is undertaken in ways that reduce exposure to flooding.



Mitigation Measures can be implemented through...

Grant Applications
Low Interest Loans
Capitol Improvement Programs
Asset Management Programs
Regular Maintenance and Repair Schedules
Local Multi-Hazard Mitigation Strategies
Future Land Use and Comprehensive Planning
Specific Appropriations

To learn more about the NFIP, including your potential flood risk and the approximate cost of a flood insurance policy, go to FEMA's FloodSmart website www.floodsmart.gov.

Excerpt from the State of Florida's Floodplain Management Quick Guide. A valuable resource to understand the requirements of the NFIP, as well as flood risk and floodplain management concepts.

Case Studies of Public Facility Flood Impacts and Mitigation Public Building Impacts



Volusia County Museum of Arts and Sciences, Florida

The Volusia County Museum of Arts and Sciences (MOAS) is the primary art, science, and history museum in Central Florida and it renders

educational and cultural service to the local community and the wider region. The MOAS was impacted four times between 1994 and 2009, resulting in over \$13 million in structural damage and over \$12 million in content damage. In order to protect the MOAS from additional flood damage, mitigation measures are being implemented at the site, including reconstructing the museum's west wing (a total of over 23,000 square feet) 30 inches above the original floor elevation. The elevation is bringing the west wing to the elevation of the newer portion of the facility. The MOAS is scheduled to reopen in the fall of 2015. The mitigation project cost is approximately \$6 million with a \$4.4 million grant from FEMA and a \$1.6 million grant from Volusia's Environmental, Cultural, Historical, and Outdoor Recreation (ECHO) program.

Wastewater Treatment Facility Impacts Emerald Coast Utilities Authority, Florida

Emerald Coast Utilities Authority (ECUA) experienced loss at the Main Street Water Reclamation Facility as a result of Hurricane Ivan in 2004. This facility



was inundated by storm surge and needed millions of dollars in rehabilitation to return it to acceptable condition. In lieu of repairing and protecting the existing at-risk facility, ECUA recommended relocating the plant outside of the floodplain as the best long-term solution for its ratepayers and local citizens. A \$320 million program was put in place, including the design and construction of a new Central Water Reclamation Facility. The schedule for design and construction of the new facility and associated systems was predicated on the availability of funds, including \$150 million from FEMA.

Using this Manual

This Manual has been prepared to aid in the development of mitigation alternatives for existing facilities. The activities will help decision-makers and technical experts identify proactive and conscientious solutions that reduce flood risk long term. Vulnerability to flood loss can be a liability for local, regional, and state officials—not only due to high costs from damage, but also due to the obligation to protect public, and often critical, services.

Proactive flood mitigation is a best practice and generally represents prudent stewardship of public investment. It should be noted, however, that mitigation of existing facilities against flood hazard is not prescribed by law unless a structure has incurred substantial damage or will be subject to substantial improvements.

State facilities are required to comply with NFIP standards in accordance with 44 CFR 60.12.

To give this Manual the flexibility to work for the variety of types of public facilities, the materials and procedures were piloted at three public facilities and three workshops were conducted with state agency and community representatives, engineers, and facility operators. The finished Manual incorporates findings from the pilot studies and workshops, feedback from subject matter experts, as well as lessons learned from previous flood events and mitigation assessments.

Decision-Makers and Technical Experts

The perspectives of both **facility decision-makers** and **technical experts** are critical in conducting evaluations, as well as the successful implementation of appropriate and effective flood-mitigation measures. As such, this Manual is organized to provide descriptions of both high-level concepts and detailed information for use by technical experts, such as engineers. The Manual does not seek to duplicate detailed information available elsewhere. Supplementary resources are referenced throughout the Manual and are listed in the Resources section.

In order to delineate information between the decision-making audience and the engineering audience, the Manual has two parts. These two parts include briefings at the beginning of each section to provide a quick understanding of the material to be learned:

Part I - Guide to Facility Decision-Making

1. High-level descriptions of concepts that may already be familiar to engineers
2. A focus on what the decision-maker should understand about flood risk and potential consequences
3. The decision-making process that will assist in evaluating and prioritizing mitigation alternatives

Part II - Guide to Facility Assessment

1. Technical and engineering appropriate expansion of information presented in Part I
2. Information necessary to evaluate and communicate flood risk at the facility, identify and communicate potential mitigation options, and support the decision-making process

Use of this Manual will result in flood risk scores for the facility and help the assessor to develop a Mitigation Assessment Report. The report can be used as the foundation of a funding application and as the basis for more detailed design and implementation of mitigation measures.

Additionally, design professionals, construction managers, and property managers should consider use of this Manual in the identification and the design of new and reconstruction projects.

Manual Audience

Facility Decision-Makers

- ✓ Emergency Management Directors
- ✓ State and local officials / Agency heads
- ✓ Facility managers
- ✓ Others interested in assessing and improving facility capability

Technical Experts

- ✓ Facility planners
- ✓ Structural engineers
- ✓ Mechanical, electrical, and process engineers

Value of the Manual

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is designed to help directors and professionals understand flood risk, recognize and evaluate potential flood mitigation strategies, and ultimately select opportunities for flood mitigation that are most appropriate for public facilities. Using this Manual, emergency managers can begin taking steps toward providing the justification necessary to pursue outside funding for mitigation measures.

The breadth of knowledge provided within the Manual can be applied across many areas of professional emergency management. A large part of the Manual appeals to technical workers by covering what is required to quantify flood risk at a public facility. The Manual also provides a methodology to conduct desktop and field assessments, prioritize mitigation alternatives, and choose the best mitigation measures and design criteria for public facilities. Emergency managers and state agency directors can take this a step further by applying these methods at the agency or community level, prioritizing public facilities for assessment and developing a comprehensive mitigation strategy for an entire community or agency.

...to Local Emergency Management Directors

The processes described in the Manual to quantify risk can be scaled to the level of a community, county, or even region, where public facilities can be treated as individual assets that can be scored and ranked according to criticality, consequence of failure, and vulnerability. In an environment of limited resources, using this methodology at the community level will ensure that funds are best allocated to reduce the risk of flood hazards to public services. Methods can be used to develop a comprehensive mitigation strategy for public facilities within the jurisdiction. This will reduce flood risk to public facilities over the long term and promote more resilient communities for all Floridians.

A community-level assessment can be incorporated into the Local Mitigation Strategy and a plan to reduce the risks associated with natural hazards, and can support local entities efforts to receive federal grant money through the Disaster Mitigation Act of 2000 (DMA 2000).⁴ If municipalities and counties coordinate their mitigation strategies for critical public facilities, entire regions of Florida will become more resilient to flood hazard events.

...to State Agency Decision Makers

State agencies can use the information provided in this Manual to improve compliance with the NFIP, as dictated by 44 CFR 60.2, as well as enhance State Land Management Plans, required under Section 253.034, F.S. For example, state land management plans would benefit from including flood insurance rate map (FIRM) panels to identify flood prone areas where existing development and proposed development are identified on agency future land use plans.

⁴ <http://floridadisaster.org/Mitigation/Local/Index.htm>

Emergency managers and state agency decision makers can leverage the knowledge gained from this Manual to create initiatives that address solutions for their municipality, county, or region.

APPLICATION OF THE MANUAL WITHIN THE COMMUNITY RATING SYSTEM

The Community Rating System (CRS) program is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, **flood insurance premium rates are discounted** to reflect the reduced flood risk resulting from the community actions taken.

Activities laid out by CRS are organized into four categories:

1. Public Information Activities
2. Mapping and Regulations
3. **Flood Damage Reduction Activities**
4. Warning and Response

Several CRS-eligible activities can be completed through the implementation of this Manual, and may help contribute **points** towards the community's overall rating.

44 CFR 60.12 Minimum compliance with floodplain management criteria establishes that State facilities must be compliant with NFIP standards.

Getting Started - A Guide Walkthrough

Each section of this Manual contributes to the development of the Mitigation Assessment Report described on the next page. Below is a brief outline and description of the two parts and associated sections of the Manual. Each part concludes with a section on Next Steps, not described here.

Part I Guide to Facility Decision-Making

1.0 Understanding Flood Risk Concepts

What This Will Do For You: Help you understand flood risk and the findings of assessment reports.

2.0 Selecting a Mitigation Strategy

What You Will Do: Recognize a range of mitigation measures available to reduce flood vulnerability. Determine the mechanism by which each action would help a specific facility reach the desired level of protection.

How You Will Do It: Evaluate applicable social, technical, administrative, political, legal, economic, environmental, and operational implications of mitigation measures.

What This Will Do For You: Select mitigation actions most appropriate to the facility.

Part II Guide to Facility Assessment

3.0 Flood Risk and Vulnerability Assessment

What You Will Do: Inventory public facilities to be assessed and begin the process of determining local or agency importance, criticality, and risk of flooding. Conduct desktop and field assessments to identify structural, grounds, system, and asset vulnerabilities.

How You Will Do It: Apply a variety of tools provided by the Manual, or otherwise available.

What This Will Do For You: The vulnerability assessment will help you to identify probability of impact, as well as possible “weak links” in a facility. This portion of the overall evaluation will be the main driver in providing information about individual equipment, building, and grounds vulnerabilities.

The information developed from this section will additionally supply the engineer with the tools necessary to create accurate risk and vulnerability scores that can be used to compare risk at multiple facilities and prioritize those facilities for mitigation.

4.0 Developing Design Criteria

What You Will Do: Interpret the information gathered during the desktop review and field assessment to understand the consequences of flood impacts to a facility. Develop a design criteria by which to base your mitigation decisions.

How You Will Do It: Review assessment information and scores for the grounds, structure, systems, and assets to begin assessing the overall impacts a facility may experience during a flood event at different recurrence intervals.

What This Will Do For You: Identify a preferred level of protection that will serve as a basis for mitigation project scoping.

5.0 Identifying and Evaluating Mitigation Options

What You Will Do: Identify potential mitigation options to address flood risk and provide recommendations to decision-makers.

How You Will Do It: Compare site-specific factors to potential mitigation measures to determine which may be feasible and appropriate for addressing risk. Evaluate the various potential mitigation options from a technical perspective using considerations provided in the Manual.

What This Will Do For You: Provide a battery of options and recommendations for further consideration and possible implementation.

A NOTE ON SCORING

The Manual provides scoring methods to prioritize vulnerabilities and mitigation options, as well as guide decision-making processes. Although scoring is not required, it is recommended to aid communication and decision-making when multiple facilities have been evaluated by providing a mechanism for comparison.

Mitigation Assessment Report

The report documents the planning process and provides the foundation for development of feasible mitigation measures. A sample report and templates have been provided in Appendix B and Appendix C. These documents can be downloaded online at <http://www.floridadisaster.org/mitigation>.

Mitigation Assessment Reports include a description of the facility evaluated, identification of the flood risks and vulnerabilities to the facility at the grounds, structure, system, and key critical assets scales. Reports also document evaluation of potential mitigation measures, and conclude with recommendations.

Report Contents

Section One - Executive Summary and Methodology: It is important to assemble a brief overview of both the methodology used to complete the assessment and the findings of the assessment. This section should be able to stand alone as a briefing to key decision-makers.

Section Two - Facility Characterization: This section outlines the importance of the facility within the context of the facility's location, use, size, capacity, and service population, as well as provides basic construction characteristics, .

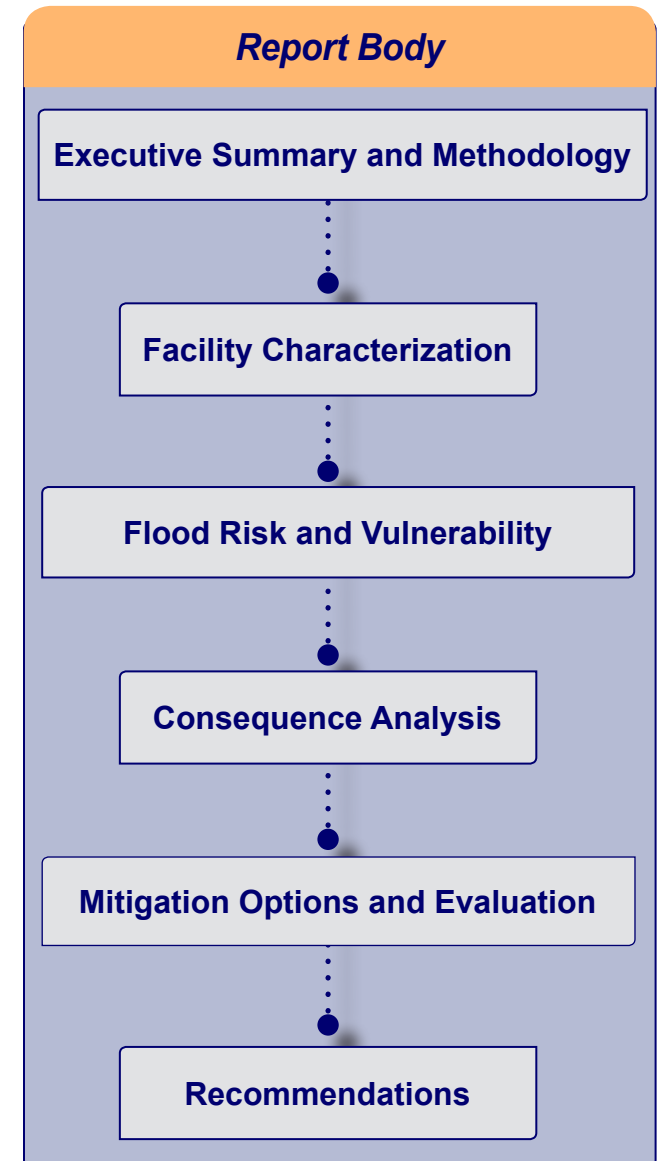
Section Three - Flood Risk and Vulnerability: This section is a technical review of flood risk and vulnerability and will likely be the largest section of the report. This section should first outline the need for mitigation within the context of historical impacts, if any. A facility that has experienced flood damage and associated service loss in the past has a higher likelihood of being considered for mitigation funding than those vulnerable to flooding but with no historical record of flooding. An explanation of the existing mitigation measures is also important to incorporate within this section, if applicable.

This section also outlines the probability of flooding, as well as flood sources and key vulnerabilities to flood events of varying magnitude. In addition, this section of the report identifies desired performance criteria and a Proposed Mitigation Design Elevation (PMDE) for potential mitigation measures.

It is necessary to understand and communicate both the financial and societal consequences of impacts to public facilities. As such, this section evaluates the potential extent of loss from both a physical damage and loss of function perspective. Optionally, the section will provide the overall flood risk score of the facility.

Section Four - Mitigation Options and Evaluation: A range of potential mitigation options that appear reasonable and feasible for a facility are identified. This section of the report provides a preliminary evaluation of these options against performance criteria, as well as applicable social, technical, administrative, political, legal, economic, environmental, operational, and other considerations.

Section Five - Recommendations: The basic scope of work for recommended mitigation action is provided, along with magnitude of costs and a preliminary discussion of the benefits of implementing mitigation measures, as compared to a rough estimate of associated project costs.



Tools and Resources

Assessment forms, Templates, and Workbook

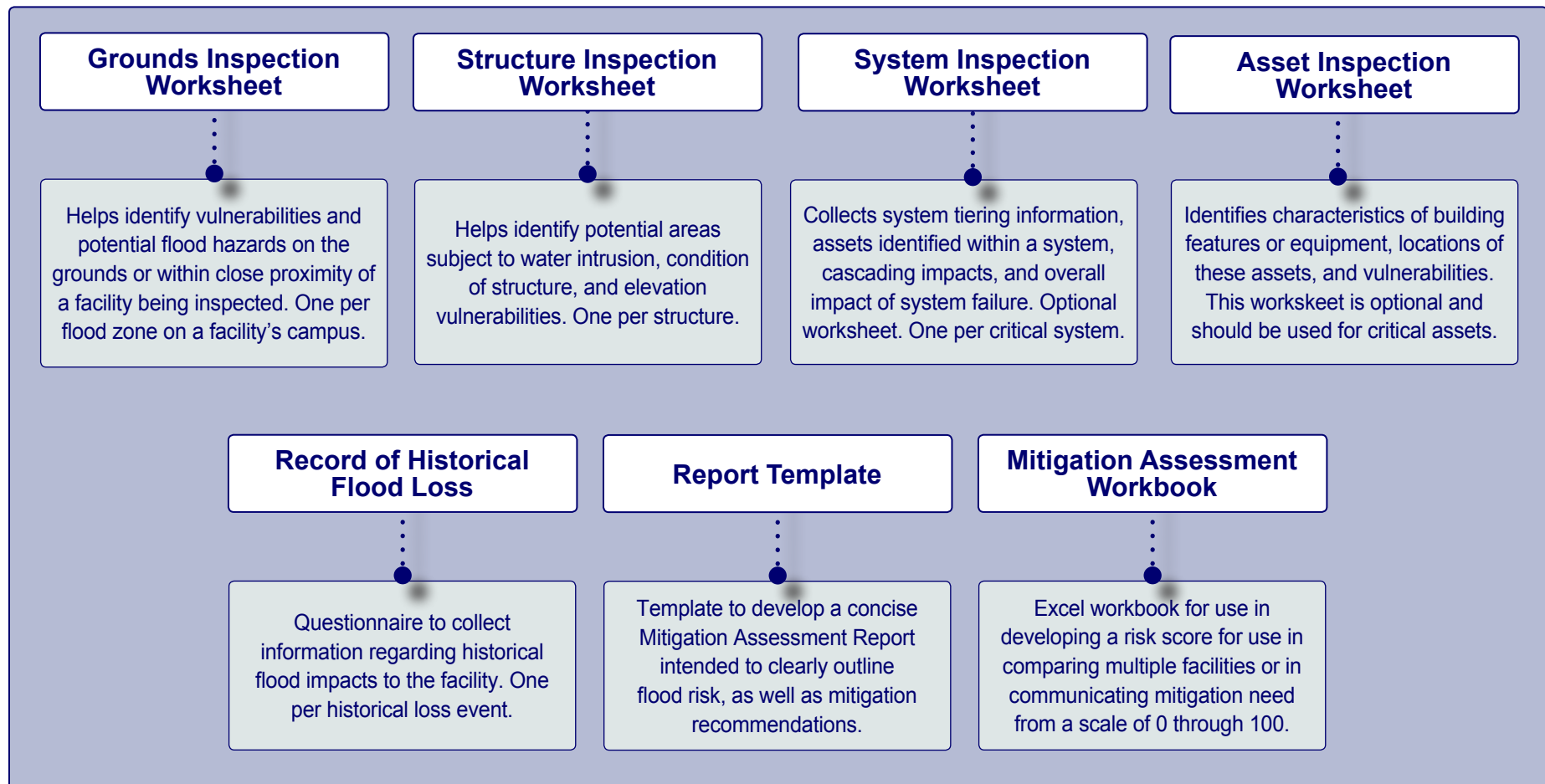
To facilitate and simplify data collection, assessment forms, a report template, and a Microsoft Excel score tabulation workbook are available for use with this Manual. The forms are provided in Appendix A. Electronic versions of these forms, along with the workbook, are available on the website indicated to the right. The workbook is a supplementary and optional tool and can be used to communicate flood risk in a simple numerical form, on a scale of 1 to 100. There are **six** individual forms, each serving a different purpose in the assessment process.

Not all forms may be necessary in each evaluation. It is expected that at least one grounds assessment form and one structure assessment form will be used for each facility. Nevertheless, in cases where facilities include multiple structures, critical systems, and critical assets, multiple copies of specific worksheets may be needed.

The worksheets are only one of many tools and resources that can be used throughout an assessment. References to additional resources are provided throughout the Manual and on the Resources page.

Public Facilities Mitigation Website

The Florida Division of Emergency Management hosts a website that provides access to the electronic version of this Manual, as well as a number of the Tools and Resources mentioned or provided in the Manual. This website can be accessed at <http://www.floridadisaster.org/mitigation>.





Part I Guide to Facility Decision-Making

Part I of the Manual is designed to inform facility decision-makers of the concepts behind flood risk and considerations in the development of a flood mitigation strategy.

*For more technical detail on the concepts in this part, see **Part II Guide to Facility Assessment.***



1.0 Understanding Flood Risk Concepts



- 1.1 Understanding Risk** introduces the risk equation and the factors that contribute to understanding flood risk.
- 1.2 Understanding Historical Losses** provides an explanation of the Record of Historical Losses Worksheet and the importance of completing it.
- 1.3 Understanding Flood Hazards** discusses the common types of flooding and flood risk resources to determine a flood zone.
- 1.4 Understanding Vulnerability** explains the method for determining flood probability, as well as understanding vulnerability to flooding at your facility.
- 1.5 Understanding Criticality** introduces facility Risk Categories and how they can inform how we prioritize our facilities, structures, systems, and assets for mitigation.
- 1.6 Understanding Consequences** provides a mechanism to score expected loss and understand the results of the Risk and Vulnerability Assessment for the facility.



1.0 Understanding Flood Risk Concepts

Flood risk cannot be eliminated, but it can be reduced. Understanding factors that contribute to risk will help reduce risk long term. It is particularly important that facility managers and decision-makers have a realistic understanding of the flood risk context for facilities under their purview. This part of the Manual orients decision-makers to flood risk concepts and aids in understanding the risk and vulnerability assessment findings included in Mitigation Assessment Reports. With the support of the findings of technical experts, decision-makers will ultimately decide which mitigation measures to pursue with what degree of urgency.

This section additionally guides facility managers and decision-makers familiar with the specific history of a facility toward the completion of a very important element of the Mitigation Assessment Report—documenting historical losses. In fact, after a short introduction on the concept of risk, we will begin there.

1.1 Understanding Risk

RISK = PROBABILITY X CONSEQUENCE

The probability of flooding is generally correlated with the associated depth of flooding. Flood events due to excess impervious surface and drainage issues are often correlated with probabilities based on rainfall intensity and duration.

As the expected magnitude of a flood event increases, the probability decreases. The greater the magnitude of an expected flood event, the less likely the event is expected to occur. Unfortunately, even high-probability (frequent) flood events can result in loss when public facilities are in the way. FEMA has developed mapping systems, described further in this section, that correlate flood depths in certain areas to probability of flooding. The National Oceanographic and Atmospheric Administration (NOAA) has developed maps with Intensity Frequency Duration curves that provide rainfall probabilities based on inches of rain over a given timeframe.

Consequence of impact could include many factors, ranging from property damage to regional economic loss, such as might occur as a result of industry disruption and small business collapse. For public facilities, consequences increase with the increased importance of a facility to the community, particularly as the community prepares for, responds to, or recovers from a hazard event. Most, if not all, of these consequences can be quantified should decision makers find it necessary or helpful to do so. All expected consequences should be described, at the least, in order to support the decision making process.

Once probability and consequence of flood impact are known and understood, it is then possible to begin the process of determining whether and to what extent mitigation is appropriate, as well as to begin prioritizing potential mitigation actions.

Part II delves into the technical elements of such processes.

The Florida Division of Emergency Management has developed a Facility Flood Risk Evaluation Tool to streamline the process of determining and consolidating flood risk scores. This tool is available on the Public Facility Mitigation website at <http://www.floridadisaster.org/mitigation>.



Potential Consequences of Flood Impacts

- ✓ Structural damage
- ✓ Contents damage
- ✓ Emergency response costs (e.g., equipment, labor, emergency contracts, debris hauling, hazard and overtime pay)
- ✓ Disruption of public services
- ✓ Injuries, casualties, loss of life
- ✓ Lost wages
- ✓ Lost revenue
- ✓ Evacuations
- ✓ Local and regional economic disruption
- ✓ Increased operating costs
- And more...

1.2 Understanding Historical Losses

While it is possible to develop an understanding of the flood risk context of a site through evaluation of the facility alone, records of historical losses provide a practical foundation on which to base the evaluation. Further, public expenditure to implement mitigation projects can often be more easily justified through the lens of historical loss, as opposed to expected loss determined through modeling or professional judgment.

A key element of the Mitigation Assessment Report is developed through information gathered on the Public Facility Record of Historical Flood Loss (provided in Appendix A). This worksheet should be provided to stakeholders with working knowledge of historical impacts to the facility. All flood impacts, no matter how small, should be captured. Frequently recurring small flood events indicate a high probability of repeated flooding. These events can be used by technical specialists to better understand flood risk at the site. Once mitigation measures are identified, funding experts can use this information to justify public expenditure.

The Record of Historical Flood Loss should be completed as a summary of flood loss with any available backup documentation attached or referenced and easily accessible. While backup documentation will only be required for the Mitigation Assessment Report in order to understand certain types of loss (e.g., in the case of understanding the extent or degree of service loss), this backup documentation will support grant applications should the facility choose to pursue outside sources of funding to implement mitigation measures (see Chapter 2.0).

Historical loss information can be gathered independent of, and in tandem with, flood risk information described on the following pages. For facilities new to this process, we recommend beginning this activity early in the assessment process, and ideally as soon as a decision is made to evaluate the facility.

Pilot Example - The Variation in Historical Losses

Each facility has been affected by a different type of flooding and has experienced a different level of historical flood loss.

Department of Health Facility

This facility has suffered the greatest amount of historical losses of the three campuses analyzed. Multiple events have severely impacted the facility, requiring relocation of many of the critical functions to the second and third floors of their respective structures. The largest event to affect the site flooded four of the main structures with up to 4 feet of water. The source of flooding is riverine.

Department of Economic Opportunity Facility

This facility, at risk to flooding as a result of ponding and inadequate drainage, had few reported historical losses upon the date of inspection. Two hurricane events brought water to the door of two buildings located on the western end of the facility, resulting in an inch of flooding on the floor and carpet damage.

Florida State University Facility

The facility, located on the Gulf of Mexico, has experienced a number of severe coastal weather events, with one causing severe flooding of the site. In 2005, the coastal storm surge from Hurricane Dennis flooded the base of the main laboratory, completely destroying several greenhouses and storage units.



Recommendation: Develop a file folder for your facility to document flood loss. When a flood event occurs, complete a Record of Historical Flood Loss and file it along with all material that will substantiate the claims on the form. This material can include insurance and federal aid records, receipts, staff labor logs, and any records of expenditure or loss of service you may possess. In the absence of such material, obtain the contact information for witnesses and ask that they sign the record as an affidavit.

Types of Information Requested on the Worksheet

- ✓ Event date and name / type
- ✓ Flood source (e.g., river, rain, sea)
- ✓ Flood depths and locations on site
- ✓ Duration of flooding
- ✓ How water entered structures
- ✓ Site access issues
- ✓ Loss of facility function
- ✓ Assets damaged
- ✓ Any and all consequences from the event to the facility, occupants, and service population (e.g., How many people lost power?)
- ✓ Emergency protective measures
- ✓ Insurance proceeds or federal aid
- ✓ Any subsequent mitigation
- ✓ Available backup documentation

1.3 Understanding Flood Hazards

The most commonly referenced sources of flooding are riverine and coastal flooding, though public facilities are also at risk to flooding from run-off as a result of ponding and sheet flow. Floods may be slow to rise or happen quickly, as in a flash flood event.



Riverine Flooding. The accumulation of runoff from precipitation, such that the volume of flow exceeds the capacity of waterway channels and spreads out over the adjacent land.

Coastal Flooding. Influenced largely by storm surges associated with tropical cyclonic weather systems (e.g., hurricanes, tropical storms, tropical depressions, typhoons, extratropical storms [nor'easters]); tsunamis (surge induced by seismic activity); and wind-driven wave action; this type of flooding occurs when normally dry, low-lying land is flooded by sea water.



Ponding. Flooding as a result of depressions in the landscape that collect runoff in the depression.*

Sheet Flow. Flooding from runoff resulting from a combination of inadequate drainage and impervious surface. Sheet flow is an overland flow of water that takes the form of a thin, continuous film and is not concentrated into channels larger than rills.*



*Areas subject to ponding and sheet flow may not be depicted on local or FEMA flood maps and may best be determine through a review of topography, historical losses, or analysis by a technical expert.

Flood Risk Resources

The following resources are provided through the NFIP and are sources of valuable information to identify and understand the flood hazard, as well as determine the appropriate flood elevation information required to perform a successful facility evaluation. The FIRM and the Flood Insurance Study (FIS) will be further discussed in Part II.

Local Floodplain Administrator

FEMA requires communities that participate in the National Flood Insurance Program (NFIP) to designate a local floodplain administrator. The administrator is a valuable asset in determining in which floodplain the facility is located and what flood maps are available, determining whether all flood maps are up to date, and dictating what local restrictions could impact flood mitigation. Information for contacting your local floodplain administrator can be obtained through your local planning or zoning department.

Flood Insurance Study

The Flood Insurance Study (FIS) identifies flood risk for watercourses, lakes, and coastal flood hazard within a community. The FIS provides important flood source information, such as flood elevation data from flood profiles, streambed elevations, flood discharges, and wave information for coastal zones.

Flood Insurance Rate Maps

A FIRM is an official map of a community that delineates flood boundaries and quantifies the associated risk by zone. FIRMs are regularly updated and illustrate the areas of a community affected by the Special Flood Hazard Area (SFHA) and may delineate other zones depending on the year of release and information available. Depending on the flood zone, the Base Flood Elevation (BFE) can be read directly off the map.

Recent FIRMs in Florida provide aerial imagery, identify the BFE, delineate the 500-year floodplain, and provides the Limit of Moderate Wave Action.

Atlas 14 for Rainfall

In 2013, NOAA developed a useful tool, Atlas 14, to determine the recurrence intervals for precipitation events. Just select the state and enter latitude and longitude for the site of interest (<http://dipper.nws.noaa.gov/hdsc/pfds/>). This information is important for sites with historical losses due to urban drainage issues and sheet flow.

Examples of Other Technologies (discussed in more detail in Part II)

A variety of technological resources can facilitate an understanding of flood risk for a particular facility or community. The list below presents several examples of resources that can be used:

ArcGIS: Most flood modeling has now been converted to a digital format that can be viewed within ArcGIS (e.g., Digital FIRMs).

Google Earth: Google Earth now has an add-on feature that provides flood mapping information.

Hazus: FEMA has developed a program add-on to ArcGIS to model flood scenarios and consequences, for planning purposes only.

Hydrologic Engineering Center tools: The U.S. Army Corps of Engineers (USACE) has developed several tools that support modeling and understanding the consequences of flood risk (e.g., HEC-RAS, HEC-FIA).

Note

It is important to use the most up-to-date FIRMs. Current effective maps are available online in the FEMA Map Service Center (<http://www.msc.fema.gov>). Nevertheless, FEMA will sometimes release “preliminary” or “advisory” maps immediately following a disaster. Additionally, the area or site may be subject to map amendments or revisions not published on the FIRM. The presence of this updated and best available data can be confirmed by contacting your Local Floodplain Administrator.

Frequently Asked Questions

What is a Base Flood?

The flood that has a 1-percent chance of being equaled or exceeded in any given year. The Base Flood is also sometimes referred to as the “100-year flood.” The term “100-year flood” is somewhat of a misnomer because a 1-percent annual chance event can occur multiple times within a 100-year period. See the illustration on the following page for a demonstration of how probabilities present themselves over time.

What is a Base Flood Elevation (BFE)?

The elevation of the base flood, including wave height, relative to the datum specified on the FIRM.

Why is the BFE important?

When structures are built above the BFE, they are less likely to experience damages from flooding. Most building codes reference the BFE as a reference point for construction purposes. For some facilities and in some circumstances, the event having the 0.2-percent annual chance of occurrence will be the flood of interest for new construction and substantial improvements.

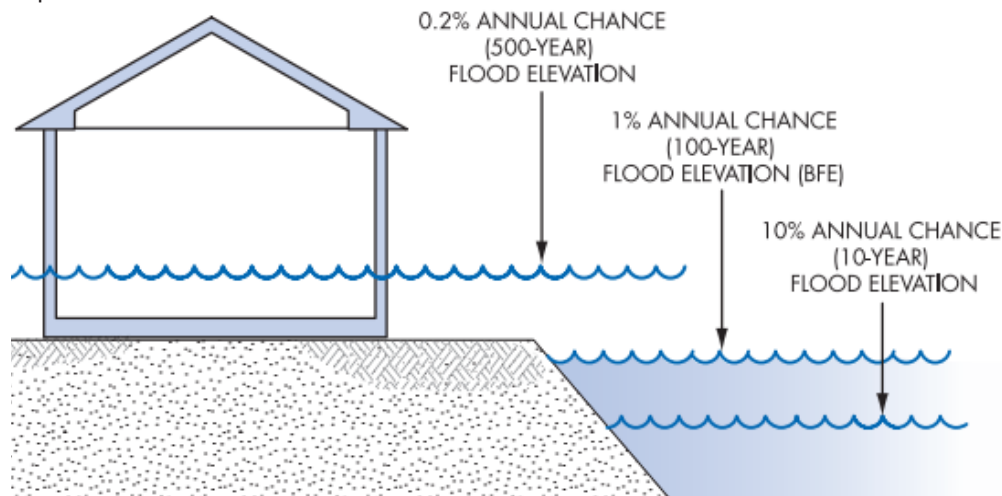
1.4 Understanding Vulnerability to Flood Hazard

Example factors that contribute to a facility's flood vulnerability include age and condition of buildings, construction type, location, structure elevations, as well as site flood probability and type of flooding (for example, fast-moving water will cause different damage compared to standing water). The simplest way to determine facility's vulnerability to overland flooding is by determining whether it is in a Special Flood Hazard Area (SFHA). Quantifying vulnerability begins with cataloging elevations that correlate to various flood probabilities on the site and comparing this with the lowest elevations of the facility itself. Flood elevations for the 1-percent annual chance event are available on recent FIRMs. Elevations that correlate to additional flood probabilities can often be located within the Flood Insurance Study (FIS) or the local floodplain administrator can provide flood elevations.

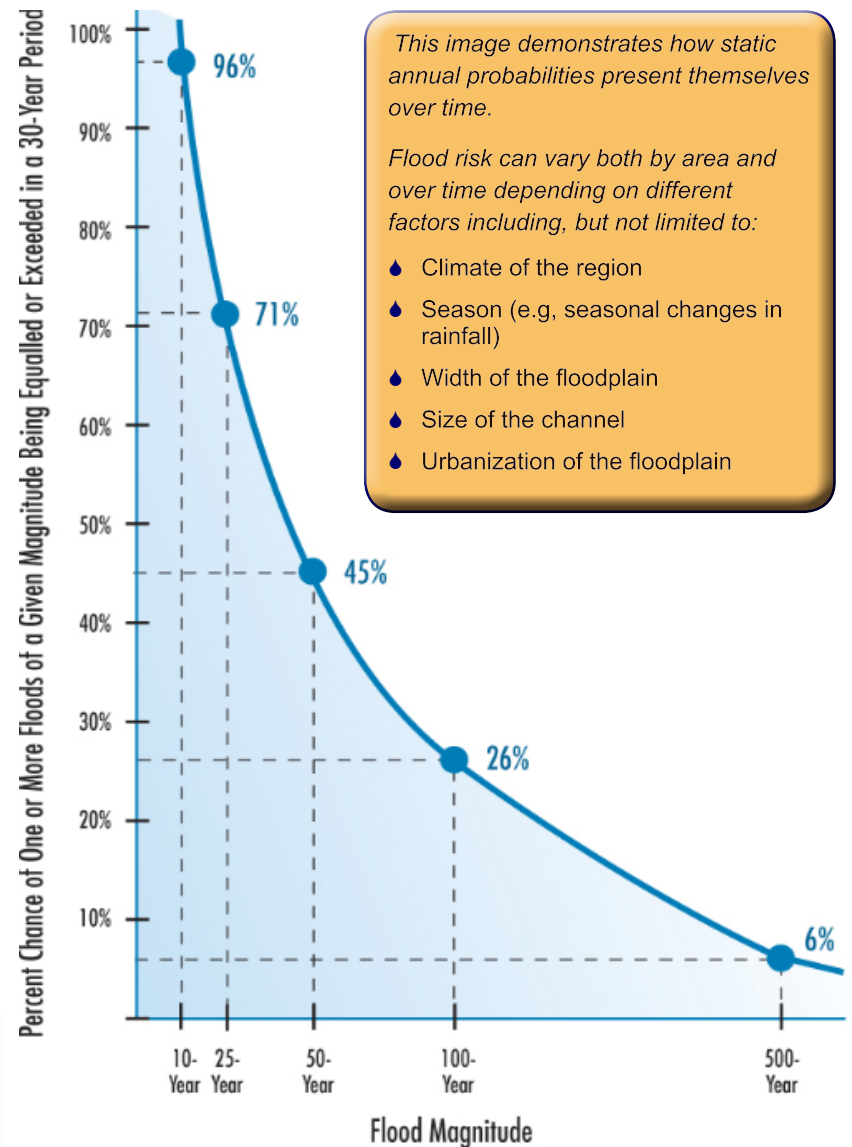
Probability of Flooding

Flood probability is a best estimate of the likelihood that a flood of a certain elevation, or depth, and magnitude will be equaled or exceeded in any given year at a specific location. Flood probabilities may be determined based on a combination of historical loss records and high water marks, modeling, and statistical analysis. The probability of flooding at a facility is a clear indicator of flood risk.

Flood probability can be converted to recurrence interval, or probability communicated in terms of years. For instance, the 1-percent chance annual flood is commonly referred to as the 100-year flood. The greater the magnitude of a flood, the lower the probability that it will occur at any given time. The illustration below provides an example of how flood impacts can change based on magnitude of flooding. As mentioned above, the first step to understanding a facility's risk to overland flooding is by determining whether the site is in a flood zone. Risk to ponding and sheet flow are best determined through a review of historical losses, topographical depressions in the landscape, or confirmed by a technical expert.



Source: *Floodplain Management in Florida Quick Guide, Florida Division of Emergency Management, 2012*



This image demonstrates how static annual probabilities present themselves over time.

Flood risk can vary both by area and over time depending on different factors including, but not limited to:

- ◆ Climate of the region
- ◆ Season (e.g, seasonal changes in rainfall)
- ◆ Width of the floodplain
- ◆ Size of the channel
- ◆ Urbanization of the floodplain

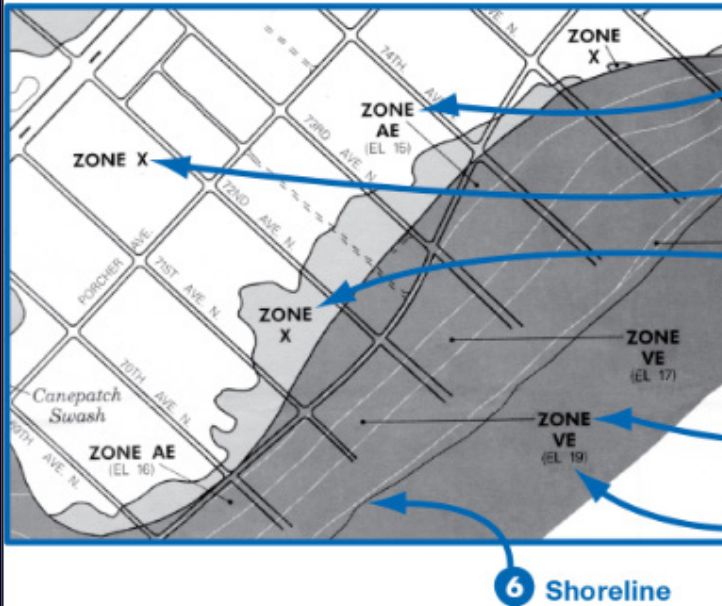
Source: *US Geological Survey, Guidelines for Determining Flow Frequency, Bulletin 17B (Appendix D)*

Example FIRM Features

The image at right provides example features on a FIRM extracted from *The Florida Quick Guide to Floodplain Management*.

The Florida Quick Guide to Floodplain Management is an illustrated overview of flood maps, regulations, and construction requirements, available through the State Floodplain Management Office or online through <http://www.floridadisaster.org/mitigation>.

FEMA Flood Insurance Rate Map (Coastal)



COASTAL FLOOD HAZARD ZONES

- 1 **Zone A** and **Zone AE** are subject to flooding by the base or 100-year flood (1% annual chance), and waves less than 3 feet (formerly called Zones A1-A30).
- 2 **Unshaded Zone X** is the area of minimal flood risk outside the 500-year floodplain, formerly called Zone C.
- 3 **Shaded Zone X** is subject to flooding by the 0.2-percent-annual-chance (500-year) flood) and the 1-percent-annual-chance (100-year) flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; also o designates areas protected from the 1-percent-annual-chance (100-year) flood by levees.
- 4 **Zone V** and **Zone VE** are where waves are expected to be 3 feet or more.
- 5 **Base Flood Elevation (BFE)** is the estimated water surface elevation (in feet above datum).

6 **Shoreline**

FEMA Flood Insurance Rate Map (Riverine)



- 1 **Zone A** (approximate) is the flood hazard area without BFEs.
- 2 **Cross Section** location.
- 3 **Shaded Zone X** is the 0.2% annual chance (500-year) floodplain (formerly Zone B).
- 4 **Base Flood Elevation (BFE)** is the water surface elevation of the base flood rounded to the nearest whole foot (consult FIS profiles and tables for more accurate elevations).
- 5 **Zone AE** is the 1% annual chance (100-year) floodplain with BFEs (formerly Zones A1-A30).
- 6 The **Floodway** is the cross-hatched area.
- 7 **Unshaded Zone X** is all other areas considered low risk (formerly Zone C).

Flood Insurance Rate Map and Flood Insurance Study Evaluation

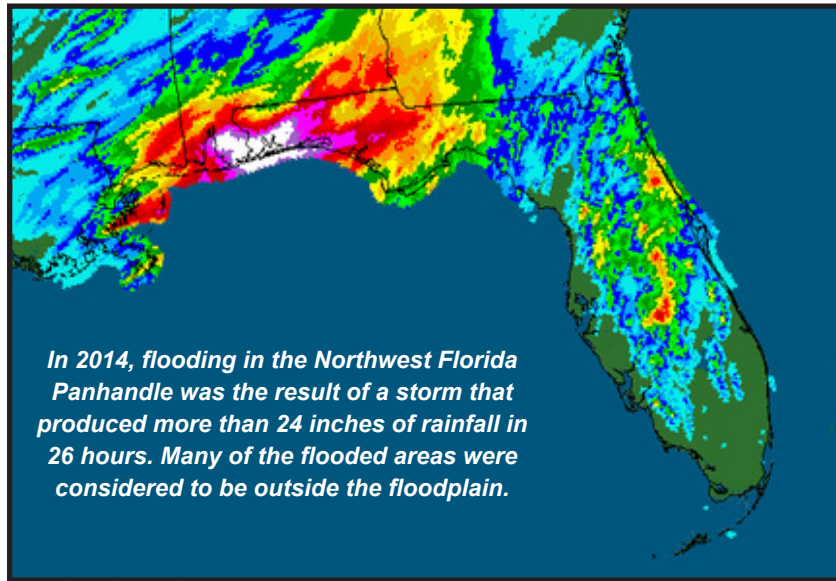
To determine the varying flood elevations of a facility's site, an analysis of the FEMA FIRM and FIS should be performed. Three important pieces of information can be derived:

- ✓ **Flood Zone** (identifies the extent and type of flood risk)
- ✓ **BFE** (elevation of the 1-percent annual chance [base] flood)
- ✓ **Other flood elevations** (for floods of different recurrence intervals)

The Florida Building Code (FBC) bases its freeboard requirements on two principal factors: **flood zone** and **building risk category**, described in Section 1.5 Understanding Criticality.

Many FIRMs were prepared using computer models and methods that are more than 15 or 20 years old and may not reflect current conditions. The probability and magnitude of flooding can be increased by man-made (e.g., floodplain development) or natural causes. Larger floods can and will occur in areas not shown as SFHAs, particularly as a result of inadequate drainage in developed areas; FEMA states that nearly 20 percent of annual flood damage claims are from property owners outside the mapped floodplain.⁴

Most new development in un-numbered A zones occur using the fall-back method which is 2 feet (3 feet with 1-foot freeboard for some communities) above the Highest Adjacent Grade (HAG). For those facilities in the SFHA without a BFE, it is important to identify these appropriate flood depths before beginning the evaluation.



FEMA and most building codes

- have selected the 1-percent annual chance floodplain as the floodplain of interest for new and substantially improved construction.
- This is why the elevation of the flood with a 1-percent annual probability is referred to as the Base Flood Elevation. For critical facilities funded with federal monies, the 500-year floodplain (0.2-percent annual chance) is the floodplain of interest. In future iterations of the FBC and in the current ASCE24, the 500-year floodplain will be the floodplain of interest for the most critical facilities.

Who Uses FIRMs?

Engineers, Surveyors, and Architects use Flood Maps to identify vulnerabilities and risks at site locations.

Floodplain Managers use Flood Maps to develop effective uses of floodplain resources and flood mitigation.

Planners use Flood Maps to determine suitability of available land and how development can likely proceed on specific properties.

Property Owners use Flood Maps to determine the level of development that can be allowed within a flood-prone area.

Insurance Professionals and Lenders use Flood Maps to govern level of discounts and insurance rates applicable to the community and site within the floodplains.

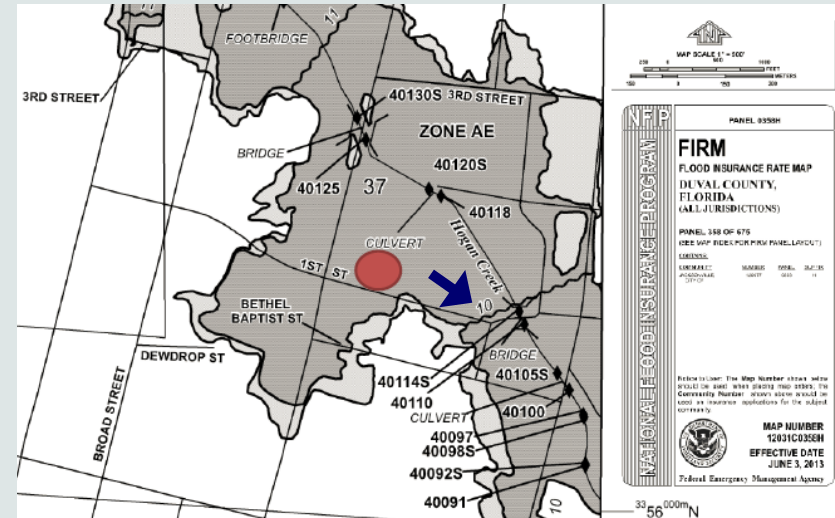
⁴ FEMA's FloodSmart website, www.floodsmart.gov. August 1, 2014.

Pilot Example - Evaluation of Flood Insurance Rate Maps

As is seen below, FIRMs can take a variety of different forms. FEMA is actively engaged in digitizing FIRMs and providing this information to local communities through the Map Service Center and through local floodplain administrators. As new studies are completed, FIRMs are updated, along with mapping and digitization methods.

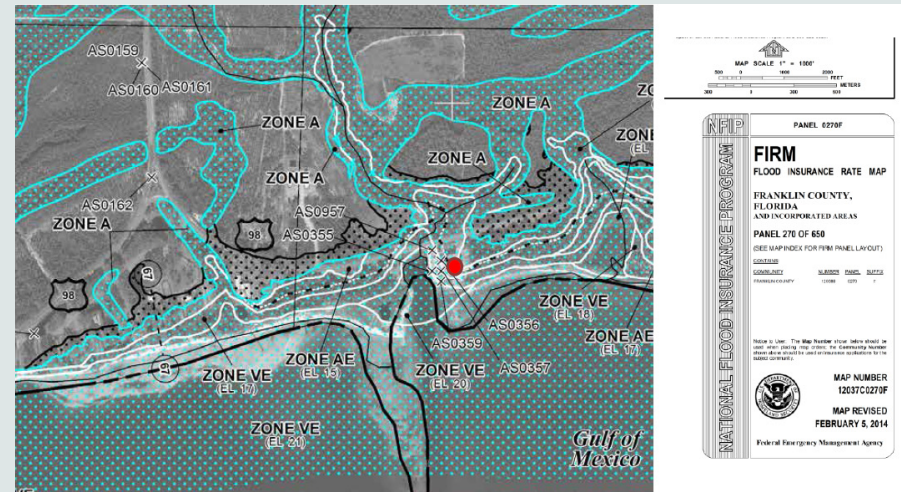
Department of Health Facility

The Duval County FIRM seen to the right was produced in June 2013. The facility analyzed is located within the AE Zone as shown on the map. The "10" identified by the arrow represents the BFE. To gain a more accurate understanding of the BFE and varying flood depths, an analysis of the Flood Insurance Study (FIS) should be performed.



Department of Economic Opportunity Facility

Broward County completed new Digital FIRMs as of August 2014. These FIRMs can be accessed online via the county website and allow for the user to see a digital base map with the flood zones transposed on top. Only a portion of the facility is vulnerable to flooding within the AH Zone at a BFE of 6 feet (identified with the arrow).



Florida State University Facility

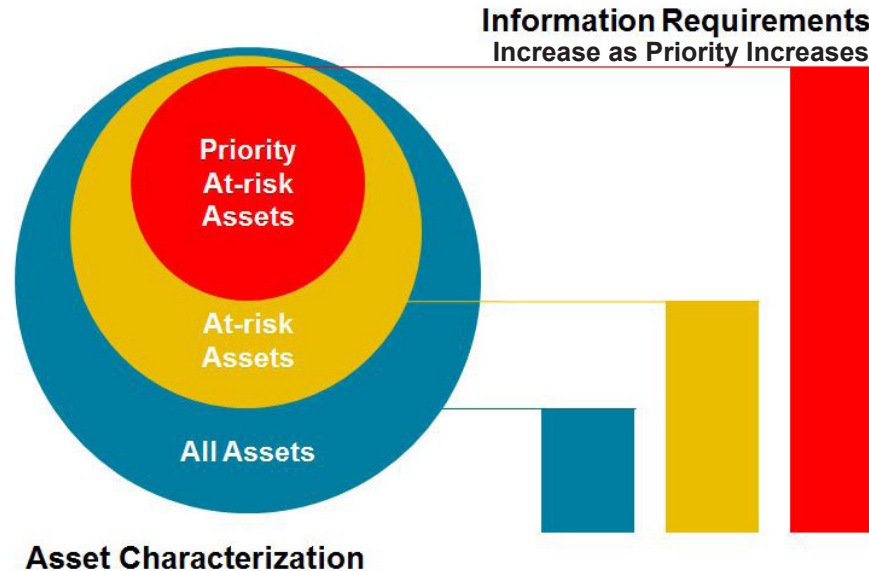
The site sits straddles Coastal V and AE Zones in Franklin County, and includes the Limit of Moderate Wave Action (LiMWA) line (dashed line). Because this facility is located along the coast, the FIS should be researched to better understand wave action and flood elevations on the site.

1.5 Understanding Criticality

Criticality refers to the relative importance of a facility or service. This Manual uses the following occupancy categories established in the FBC and ASCE 24 to assign criticality for facilities, as well as to help prioritize facilities. These occupancy categories are referred to as Risk Categories in the FBC. A more in-depth description of the application of Risk Categories is provided in Part II of this Manual.

Risk Categories and their descriptions are identified in the table below. Note the Risk Category for each structure at your facility. If multiple structures are present, take note of the highest Risk Category. This information will be entered on the Grounds and Structure Worksheets.

As facilities become a higher priority for mitigation assessment, a greater understanding of the characteristics of the facility, as well as its assets, is necessary (see Part II). Information needs may progress from basic information about the type of service provided, to elevations of specific critical assets.



Prioritizing Sites and Structures and Pre-Screening for Further Evaluation

If your agency or community has multiple facilities or structures to prioritize for evaluation, prioritizing facilities and structures can be easily completed in a spreadsheet.

1. Compile a list of facilities into a spreadsheet that includes information such as the location, latitude and longitude, facility use, size, key contacts, and other important information for each facility.
2. Include a column for Risk Category and list the highest for each facility.
3. Download the Digital FIRM and cross-reference the facility location with flood zones. Note flood zone and BFE in your spreadsheet for each facility. Optional - Consider adding the average site elevation from topographic data to gauge the degree of risk relative to the BFE or add the number of historical loss events.
4. Prioritize the list based on risk category, a high-level review of flood risk, and importance to the agency.

Risk	Nature of Occupancy
Category IV	<ul style="list-style-type: none"> - Buildings and other structures designated as essential facilities - Buildings and other structures, the failure of which could pose a substantial hazard to the community - Buildings and other structures (including but not limited to, facilities that manufacture, process, handle, store, use, or dispose of such substances as hazardous fuels, hazardous chemicals, or hazardous waste) containing sufficient quantities of highly toxic substances where the quantity exceeds a threshold quantity established by the authority having jurisdiction to be dangerous to the public if released and is sufficient to pose a threat to the public if released - Buildings and other structures required to maintain function of other Risk Category IV structures
Category III	<ul style="list-style-type: none"> - Buildings and other structures, the failure of which could pose a substantial risk to human health - Buildings and other structures, not included in Risk Category IV, with potential to cause a substantial economic impact and/or mass disruption of day-to-day civilian life in the event of a failure - Buildings and other structures not included in Risk Category IV (including, but not limited to, facilities that manufacture, process, handle, store, use, or dispose of such substances as hazardous fuels, hazardous chemicals, or hazardous waste) containing toxic or explosive substances where their quantity exceeds a threshold quantity established by the authority having jurisdiction and is sufficient to pose a threat to the public if released
Category II	- All buildings and other structures except those listed in Risk Categories I, III, and IV.
Category I	- Buildings and other structures that represent a low risk to human health in the event of failure

Prioritizing Your Systems and Assets

Similar to categories for buildings, a categorized tiering system can be established for systems and assets that can help to pinpoint the most critical elements of a facility.

For critical or particularly large public facilities at risk to flooding, it is often useful to categorize and prioritize certain individual assets (e.g., emergency generators, motor control centers). This is done to help technical assessors determine what portions of a facility are most exposed and whether mitigation can or should be accomplished at the asset or system scale, as opposed to the larger scale of structure or campus.

A more in-depth look into facility system and asset prioritization is included in Part II of the Manual. Please note that the tiering system is an example of one method to characterize assets for assessment and is not intended to be prescriptive.

Certain components of a facility may serve crucial functions before, during, and after flood events.

To ensure these components remain operational, it is important that mitigation actions protect such crucial assets.

Risk Category	Category Heading	System and Asset Category Explanation
Category IV	Critical Equipment and Systems/ Historic and Cultural Resources	This category includes all assets/systems that serve life safety purposes, hazardous material-storage purposes, and provide significant value to historic or cultural understanding. These systems and assets may include fire-protection systems, electrical systems, ventilation equipment, IT systems, and historic/cultural artifacts or displays. These assets may be irreplaceable or will result in high to very high costs to the facility if damaged or destroyed. High priority for protection.
Category III	Important Equipment/ Systems	This category consists of assets that provide important functions/services to the facility but do not serve as critical facility equipment. Examples of important equipment and systems include security systems, vital storage, major molding risks, elevators and escalators for evacuation, and lighting. In addition, damage or destruction of assets in this category would result in moderate to high costs to the facility. Moderate to high priority for protection.
Category II	Minor Importance Equipment/Systems	This category consists of assets and systems providing non-vital services to the facility. Examples such as furniture, office equipment, and minor molding risks. These assets will result in minor to moderate costs to the facility if damaged or destroyed. Low to moderate priority for protection.
Category I	Non-Essential Equipment	This category consists of lowest priority assets at the facility and represents minimal cost to the facility if damaged. Lowest priority for protection.

Pilot Example - System and Asset Prioritization

Department of Health Facility

This facility is large and complex, with many structures and important functions. Due to the size of the facility and high number of critical assets, many assets were grouped for evaluation based on location. This allowed for the identification and prioritization of important rooms within the facility. Such an approach helped simplify the mitigation planning process for this site.

Department of Economic Opportunity Facility

The majority of the important assets and systems on this site were located outside and immediately adjacent to the structures they served. Therefore, those assets and systems were prioritized based on the function they provided to the specific structures rather than the facility as a whole. This allowed for an analysis specific to the individual structures residing in the identified floodplain.

Florida State University Facility

While the site does house important research and educational facilities, it does not provide a critical service to the local population. As such, system and asset prioritization was completed relative to the function of the facility, itself. Assessors worked with facility staff to prioritize those systems and assets necessary to maintain functionality of the facility for employees and students and to maintain the health and well-being of the sea life housed and being researched.

1.6 Understanding Consequences

Consequence analysis is valuable to obtain a better understanding of a facility's hazards and may be used as a basis for identifying ways to mitigate those hazards. When combined with the flood probability, vulnerability of the facility, and criticality of the service provided, the facility risk has been comprehensively assessed.

Consequence analysis involves evaluating and quantifying, where possible with available resources, potential flood impacts to a facility. Example consequences include damage to property, employee job interruption and loss, negative impacts to the environment, injuries or loss of life, and service interruption. The consequence of a flood event is determined independently of its probability. Potential consequence considerations are discussed on the next page.

FEMA defines loss of service as “Cost and direct economic impacts that occur when physical damages are severe enough to interrupt the function of a building or other facility.”⁵

Loss of service is often the most important cost to consider and can be characterized as a function of time down, such as hours or days. Service loss can be estimated through historical service loss, FEMA depth damage functions, and professional judgment.

Consequence scores can be recorded on worksheets based on impacts at the BFE and the Proposed Mitigation Design Elevation (PMDE), described in Part II. A more detailed analysis may include consequence score evaluation at a variety of flood depths with associated probabilities. The most common probabilities evaluated are the 10-percent, 2-percent, 1-percent, and 0.2-percent annual chance flood events.

Score	Consequence Description
5	Service disrupted for 7+ days / Damage costs would exceed 50% replacement value
4	Service disrupted for 1-7 days / Damage costs would exceed 25% replacement value
3	Service disrupted and restored within 24 hours / Damage costs less than 10% replacement value
2	Service is maintained; however, ingress and egress is lost / Costs limited to emergency protective measures only
1	Service is maintained without interruption / Minimal costs

Pilot Example - The Consequence of Loss

Department of Health Facility

The facility serves a critical function to the State of Florida by providing official records of death, birth, marriage, and dissolution of marriage for all citizens. These records are essential for just administration of law and for the protection of individual rights. During the pilot assessment, the point of contact stated that due to the repetitive flooding at the identified flood source, most of the critical record storage had been relocated to the upper floors of the facility. This is due to a flood event that inundated the facility, with nearly 4 feet of water and resulting in destruction of important records.

⁵FEMA BCA Reference Guide, 2009.

Additional Consequence Considerations

Stakeholders should weigh the considerations presented below, which include both traditional and less well known consequences of flood impacts, when determining the desired performance level of a public facility during the flood risk analysis. Performance criteria and the PMDE will be discussed in more detail in Part II, but it is important that the decision-maker consider the types of potential flood impacts early in the assessment process.

The following example consequences may be quantified for such purposes as completing benefit cost analyses to justify public expenditure for mitigation measures. Capture this information along with other records of historical flood loss.

Structure

The value of a structure, or its replacement value, can be estimated using a reputable construction estimating source, such as RSMeans. Once the level of damage to a structure reaches 50-percent, some agencies assume a total loss, so at all flood depths beyond the 50-percent damage threshold, the damage to structure is assumed to be 100-percent.

Contents

The value of contents varies widely, from furnishings and supplies to computers and heavy equipment. The value of contents can be assessed at individual facilities based on the value of insurance coverage of contents, or a detailed inventory. For estimating these values, FEMA provides a set of standard values for contents of different types of facilities, represented as a percentage of the building value.

Emergency Measures

Emergency measures should be included as costs when considering mitigation measures. The costs of staff (e.g., overtime, volunteer), materials (e.g., sandbags, tarps), and equipment (e.g., generators, pumps, fuel) incurred before, during, and immediately following a disaster are avoided by effective mitigation. Such costs are best estimated for future expected flood events based on costs during past flood events, when this information is available.

Public Service

At any facility, it is important to identify mission or purpose, the general service population, and whether the facility is critical. This could be straightforward (as in the case of a hospital emergency room) but is sometimes more challenging (e.g., for a museum with cultural artifacts or a part-time child-care facility). Additionally, some services may not be completely disabled during a flood, but will remain partially operational. For example, a flooded police precinct building may not lose all functionality if officers in the field can rely on neighboring precincts for communications and other support functions. In such cases, loss of service should be described as the resulting loss in efficiency.

Operating Budget

For many non-critical government facilities (e.g., libraries, offices), the simplest way of measuring the value of the service is to measure what the community pays for that service, which can be represented by a facility's operating costs—including staffing levels, inventory, and maintenance—among other factors. An annual operating budget allows an approximate cost-per-day for the public service, which can be multiplied by the time-duration of the loss to estimate consequences. This is perhaps the simplest method of quantifying a facility's loss of service.

Employee Impacts

An important aspect of mitigation planning is to establish the number of employees required to maintain service, as well as their safety and accessibility to the facility. Some methods to quantify employee impacts may come from payroll costs associated with the budget if employees are unable to perform their jobs during a flood or the cost of any additional labor required during a disaster. If employees are threatened during a disaster, this should be considered when evaluating the cost of historical or expected flood events.



Benefit Cost Analysis: Most

- FEMA hazard mitigation grants require benefit cost analyses (BCA) in order to be eligible for funding. BCAs for public facilities, particularly critical infrastructure, are notoriously difficult to complete.
- Collecting the below information for historical flood events, even in the form of narrative descriptions, will go a long way to facilitate the process of completing a BCA and posing a powerful justification to expend funds to implement mitigation measures.

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2.0

Selecting a Mitigation Strategy

2.1 Understanding Mitigation Options introduces the basic categories of options available to public facilities.

2.2 Developing a Mitigation Strategy explains the basic process for evaluating the social, technical, administrative, political, legal, economic, and environmental implications of a project.

2.3 Moving Forward introduces potential funding mechanisms and next steps.



2.0 Understanding the Scale and Type of Mitigation Needed

The results of the risk and vulnerability assessment inform decision-makers of the urgency, scale, and extent of mitigation actions necessary.

Urgency: What is the probability and consequence of impact? Is it acceptable to take the appropriate time to plan a more long-term solution, or do you need a “band-aid” or stop gap measure to prevent near-term loss? For example, an emergency protective measure is any action to protect against a 5-year or less hazard event, the event with a 20-percent chance of being met or exceeded in any given year. In the case of an imminent threat, an emergency protective measure may be needed before long-term mitigation can be implemented.

Scale: At what scale do you have risk and at what scales might mitigation be appropriate? Do you have a couple critical assets at risk or will the entire campus be under water?

Extent: How high do you need to go to the desired level of protection? Is only an increase of 6 inches necessary or is an increase of several feet necessary to meet the desired level of protection? See **Section 4.0** for more on this.

Once these factors are understood, the next step is to determine how to address the issues of flooding. Mitigation options will be identified, explored, and presented by technical experts. The role of the decision-maker will be to evaluate these options in conjunction with stakeholders and technical experts to determine which alternatives are most appropriate to the needs of the facility and which are expected to be most effective in reducing risk at the site.

2.1 Understanding Mitigation Options

One of the objectives of this Manual is to help stakeholders and technical experts understand the wide range of available mitigation actions and discuss together the benefits, drawbacks, and limitations of those considered for a particular facility. This section discusses the particular focus on the scale of the mitigation effort, whether an option is active or passive, and, if active, what level of human intervention is required for the measure to be successful before and during the event. Pros and cons of each mitigation option can be found in **Section 5.0**.

It is best to consult with local building officials and floodplain management personnel before beginning a hazard mitigation project. Work with them to ensure an adequate understanding of NFIP requirements (for state facilities), the latest Florida Building Code and any additional local requirements (for all other public facilities). In addition, the State Floodplain Management Office is a valuable resource through this process.

Contact information for local floodplain management officials and the State of Florida Floodplain Management Office is available at <http://www.floridadisaster.org/Mitigation/SFMP>.

Passive vs. Active Mitigation Options

Flood-mitigation options are typically considered passive or active, depending upon whether human intervention is required for successful protection during a flood event.

Active Measures: Requires proper warning time and human intervention to set up, lock down, or assemble the mitigation solution to be able to protect against a flood event.

Example active measures: Temporary floodwalls, vehicular flood gates, ingress/egress protection/gates within a permanent floodwall, retractable floodwalls, submersible doors, relocation of emergency equipment

Passive Measures: Requires little or no warning times and little or no human intervention. The measures are already capable of withstanding an event as constructed.

Example passive measures: Elevated structures/systems/assets, relocation of structures/systems/assets, drainage solutions, submersible equipment

Example Mitigation Options by Scale

Grounds Options

- Permanent floodwalls / levees
- Temporary floodwalls
- Berms / fill solutions
- Drainage solutions

System/Asset Options

- Elevation of assets
- Submersible assets
- Compartmentalization
- Hardening in place

Structure Options

- Dry floodproofing
- Wet floodproofing
- Elevation of buildings
- Relocation of structures
- Mitigation reconstruction (demolish and rebuild)

Grounds Mitigation Options

These options often involve global site solutions to flood risk. The primary objective of grounds mitigation solutions involve mitigating the risk of flooding before it ever reaches the structure(s) being protected. These mitigation options include, but are not limited to, permanent and permanent floodwalls, levees, berms, fill solutions, and drainage solutions. These options may be integrated with green infrastructure to improve flood control, aesthetics, and environmental value.

Permanent Floodwalls and Levees are effective when there is adequate space to construct the mitigation measure and there is a large area that requires protection. These measures are primarily passive solutions but include active measures for closures of ingress/options areas. These options typically require backup power and stormwater pumping systems to handle rainfall during a flood event.

These walls stand as part of a series of levees, floodwalls, floodgates, and natural berms to provide protection for the City of New Orleans.



FEMA P-936: Floodproofing Non-Residential Buildings

FEMA P-936 is a recommended publication when determining floodproofing measures on existing non-residential buildings in riverine and coastal areas that are not subject to wave action.

It is encouraged that facility decision-makers and engineers reference this manual during the discussion of the chosen mitigation options.

Temporary Floodwalls can provide protection without impacting the aesthetics or normal everyday function of a facility.

Temporary floodwalls are an active mitigation measure and require ample notification / warning, storage, maintenance and staff training in order to ensure reliable deployment.

St. Paul Airport, Minnesota - With ample lead time, the facility is able to deploy the aluminum stop logs for the temporary wall prior to the flood event. As an airport, the facility requires ingress/egress at all times during normal operation.



Grein, Austria - Temporary flood walls were constructed to aid in protection against flooding while keeping the aesthetics of the river view. The photograph shows a flood event in 2013 where the city escaped flooding following a heavy rain event.

Berms / Fill Solutions can aid in protecting against flood events and below ground water flow. These solutions require geotechnical design to ensure they are capable of preventing breaches and directing the flow appropriately, and are built to handle any other additional uses of the area, such as roadways, parking lots, and transportation tracks. These are considered primarily passive options but may require some active measures depending upon their design and use.

Netherlands Coastline - With flooding annually and portions of the coast susceptible below sea level, berms are an important part of the Netherlands infrastructure. A roadway was constructed on top of the berm to maximize the function to the community.



Watson, Missouri - Geotechnical designs when considering fill solutions are crucial to the performance of berms. Breaching, as shown in the photograph, can have devastating consequences.

Drainage Solutions can be the ideal solution for flooding caused by inadequate drainage, ponding, sheet flow from stormwater runoff. The goal of drainage solutions is to improve the removal of flood waters from the site. While effective against stormwater, these measures have limited effectiveness during coastal or riverine flood

Structure Mitigation Options

These options lessen flood risk directly to the structure in question. Mitigations options within this category include, but are not limited to, dry floodproofing, wet floodproofing, elevation of structures, relocation of the facility, and mitigation reconstruction.

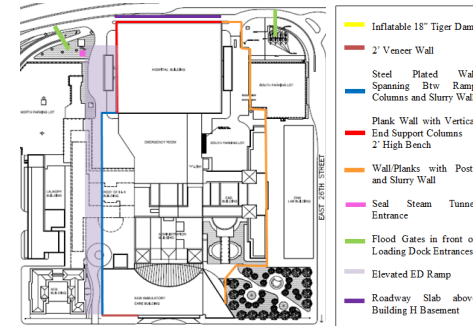
Dry Floodproofing reduces the potential for damage from flooding by sealing and / or strengthening walls and all openings into the structure to prevent water intrusion. As a rule of thumb when floodwaters are expected to reach an elevation of 3 feet or higher on the walls, dry floodproofing requires structural analysis due to the hydrostatic and hydrodynamic loads expected during a flood event. Dry floodproofing is typically an active mitigation measure as doorways, windows, louvers, and conduit penetrations all need to be sealed prior to the flood event.

Wet Floodproofing provides protection by preventing waters from entering the facility until the depth that walls would require additional reinforcement. At this point, measures allow water to enter and the hydraulic forces to equalize. This measure typically requires limiting the usage of low lying areas to minimize the impacts of the flooding should the water get in. Wet floodproofing can be either a passive or active mitigation measure depending on implementation. Nevertheless, it's important to realize that cleanup will be required in the case of flood.

Elevation of Structures is a passive mitigation option as the structure will stand above the expected flood level and no work is required to prepare the area for flood. It is important to note that the construction and materials of the walls within the structure may eliminate elevation as a potential solution due to cost. Additionally, buildings or structures elevated in-place often trigger substantial improvement requirements and must meet the same performance standards set for new construction.

Mitigation Reconstruction of Structures provides protection by demolishing an existing damaged facility and rebuilding the structure such that it is no longer vulnerable to the expected flooding. This options is also referred to as demolish and rebuild.

Relocation of Structures is a passive mitigation option as the structure will stand above the expected flood level and no work is required to harden/prepare the area. Relocating the structure is a potentially expensive solution and should be reviewed for cost effectiveness.



This figure illustrates how a variety of different measures can be utilized in unison to provide protection around the entire exterior of the structure.



This photograph illustrates a method for floodproofing, whereby water is only permitted to enter once the hydraulic forces are strong enough to push past the stopping mechanism.



Jefferson Parish Pumping Station, New Orleans - This pumping station was elevated to provide a shelter to employees monitoring and servicing the pump station during severe weather events.



Bay Park WPCP in Long Island, New York - The plant briefly considered relocating to the golf course immediately adjacent to the existing site because the golf course location was at a grade elevation above the 500-year storm event.

System and Asset Mitigation Options

These options exist in order to allow targeted mitigation to individual systems and assets. It is important that mitigation actions designed to protect targeted assets and systems take into account potential for cascading impacts. Mitigation options within this category include, but are not limited to, elevation of assets, submersible assets, compartmentalization, and hardening in place.

Cascading Impacts

It is important to consider Cascading Impacts when evaluating a facility's vulnerabilities. The Manual defines Cascading Impacts as a series of secondary impacts that are triggered by the primary loss of a specific function or service. Commonly referred to as the "domino effect," these impacts should play a significant role in determining the mitigation options for a facility.

Examples of Cascading Impacts:

A fuel oil tank gets contaminated with flood water. The fuel oil pumps send contaminated water to the generator. The generator cannot combust the contaminated fuel oil. Emergency power falls out of service. Equipment relying on that emergency power can no longer operate.

Two structures are connected by a common basement. Both structures are dry floodproofed; however, human error caused one door to be improperly secured. Now that improperly closed door leaves one building at risk, and the common basement causes the other to be at risk.

Elevation of Assets provides the same benefits and concerns as elevation of structures. This action is meant to serve as a passive mitigation option by placing the asset above the expected flood level. Depending upon the size of the asset, elevation may not always be a practical alternative. Additionally, if the asset is contained within a structure, elevation may also be an impractical alternative. It is important to consider operational impacts when considering asset elevation.



This photograph illustrates a method of elevating an asset using a steel framed platform. Other options exist, such as expanding a pre-existing concrete pad.

Submersible Assets prevent flooding internal to the asset, but do not prevent entry of flood waters into the facility. As such, cleanup costs resulting from a flood event are likely to continue. In addition, this measure must often be combined with other measures in order to ensure adequate protection of the system as a whole.



Industrial submersible pumps and other systems are available from a number of companies easily accessed online. Although these options will protect specific assets, it is important to consider the possibility of cascading impacts.

Compartmentalization is a method of isolating flood waters and assets from one another. This mitigation option essentially constructs a small waterproof compartment around the individual asset to prevent water from entering. It is important to note that, although this is an effective option to prevent flooding, implementation may be logistically complicated (i.e., if the asset is located within an existing building). This measure must often be combined with other measures.

Hardening in Place protects the asset from flood damage in its place. This is essentially dry floodproofing of a specific asset or system. Generally, this option will require frequent maintenance to ensure proper functioning of the system/asset.

2.2 Developing a Mitigation Strategy

With an understanding of risk and vulnerability, as well as the potential mitigation options available, decision-makers can develop a high-level mitigation strategy. This strategy should answer specific questions about the level of risk stakeholders find acceptable at a high level, whether active measures are acceptable for consideration, whether multiple lines of defense against flood risk should be considered, and how the urgency to mitigate may affect the projects ultimately accepted.

Risk Category III and IV facilities should be protected to the highest level feasible.

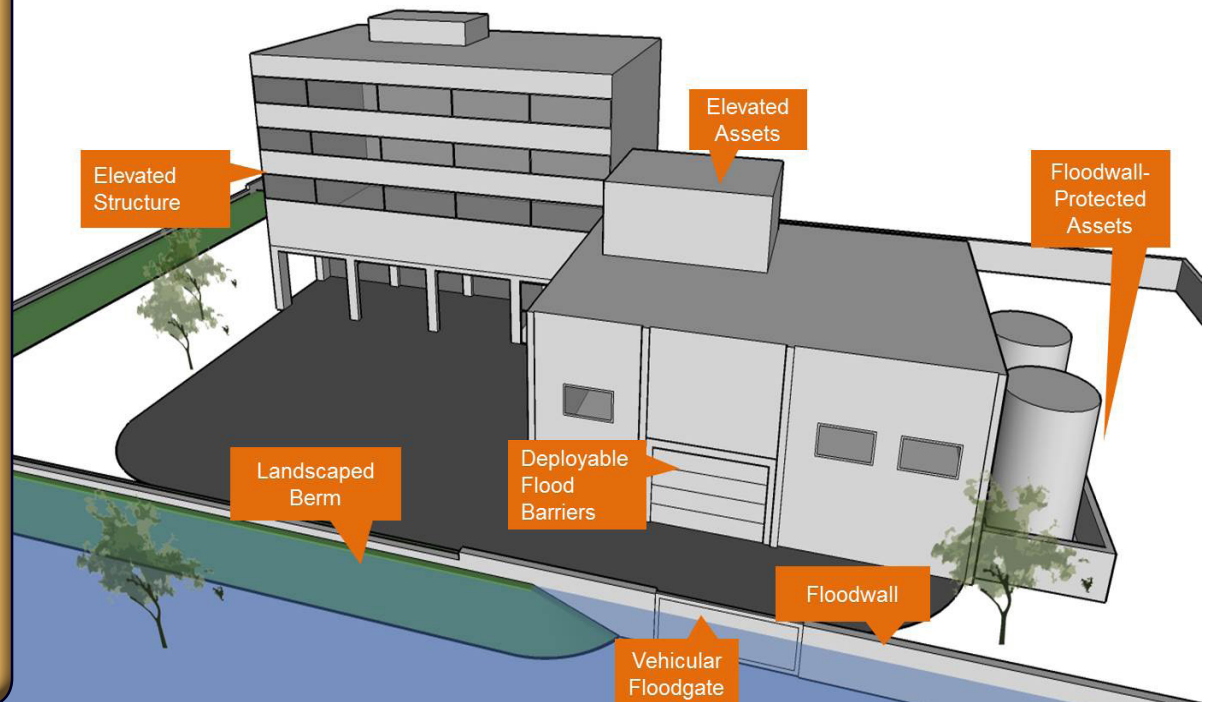
Pilot Example - Risk Category

Each of the three pilot facilities fell within the Risk Category III and IV identified by ASCE 24. Nevertheless, most on-site structures, systems, and assets did not fall within this categorization. Determining the most critical functions required by the facility to remain fully operational facilitates the development of an appropriate and efficient mitigation strategy. Additionally, identifying portions of the site that will be more susceptible to flooding during a storm is also valuable. The following page will discuss each mitigation strategy proposed for the pilot inspections and the reasoning behind these decisions.

Multiple Lines of Defense Mitigation Strategy

The Multiple Lines of Defense (MLD) strategy, developed after Hurricane Katrina, considers the combination of multiple lines of flood defense in order to increase redundancy and lower the residual risk in case of a complete or partial failure of one flood prevention measure. In the event that the first line of defense fails or is overtopped, the second line of defense takes over as the primary line of defense. This means that the total solution can consist of a set of measures implemented in a comprehensive plan. MLD may be appropriate, particularly for critical or high priority facilities.

For example, a critical facility could be dry floodproofed but also have critical mechanical, electrical, and plumbing systems elevated to a second floor. This would ensure that even in the event that the building envelope was breached, losses to the facility could be minimized. The illustration to the left shows examples of mitigation measures in a comprehensive MLD configuration.



Example Mitigation Strategy Questions

- ✓ Are active measures acceptable?
- ✓ To what level of protection are we aiming?
- ✓ Are we seeking a localized or global approach for the facility?
- ✓ Should we consider a Multiple Lines of Defense Strategy?
- ✓ Does the facility need to be operational during a flood event?
- ✓ Is access to the site critical during a flood event?
- ✓ How long of a planning process are we willing to accept?

Pilot Examples - Developing the Mitigation Strategy

The mitigation strategy developed for each of the pilot inspections reflects vulnerabilities identified on site. A variety of mitigation options were recommended and then analyzed against the STAPLEE method discussed on the following page to determine the most appropriate option. As of September 2014, these options are currently being evaluated along with facility stakeholders. Below are the mitigation recommendations for two of the three facilities analyzed.

Department of Health Facility

Based on the results of the assessment, two different types of mitigation alternatives were considered—protection measures that service the full site and protection measures that service individual buildings or service areas. Many of the major assets and systems important to basic facility operation had been raised on concrete pads or steel frames to deter water entry and several others (including electric panels and conduit work) had been installed at a height at or above the 100-year flood elevation. Nevertheless, there were still a large number of assets and systems untouched by mitigation actions and recommendations focused in those areas.

As a result of the August 2014 flood risk analysis, the inspection team presented the following mitigation measures to stakeholders for further consideration:

- To prevent the flow of water onto the site, installation of a permanent floodwall around the perimeter of the site with electronically activated flood gates
- To alleviate pooling of water observed in the southwestern corner of the site, installation of a sump pump to remove any stored water that may flow to this location and analysis of whether this water can be drained to alternate locations
- Installation of backflow preventers on drains found in the first floor restrooms throughout the facility buildings to prevent sewage backup
- To prevent the flow of water through existing entry points, installation of removable flood panels at a number of entry points around the facility
- To prevent flood damage to buildings, dry floodproofing measures on various locations on the building structures, in addition to some wet floodproofing

Department of Economic Opportunity Facility

During the inspection, the team identified inadequate stormwater management and retention pond flooding as sources of flood risk. There have been previous incidents during which inadequate stormwater management at the facility have resulted in ponding throughout the site, putting a number of structures, systems, and assets at risk.

The majority of critical assets and systems are located outside and immediately adjacent to structures they serve. These assets have been raised on concrete pads or steel frames to reduce flood-related damage. Nevertheless, a review of the equipment against the PMDE illustrates these assets are still at risk from flooding.

As a result of the August 2014 flood risk analysis, the inspection team presented the following mitigation measures to stakeholders for further consideration:

- Installation of submersible exterior single, double, and elevator access doors
- Installation of flood shields or waterproof window units
- Improvement of the existing stormwater collection system by improving site runoff and collections piping
- Installation of a second emergency backup generator to service multiple structures on site
- Installation of backflow preventers on drains, toilets, and sinks found in the first floor restrooms throughout the facility buildings
- Elevation of critical assets located outdoors onto stainless-steel, OSHA-compliant platforms or concrete pads
- Installation of removable aluminum flood stop logs around at risk exterior equipment that cannot be elevated

STAPLEE Analysis of Mitigation Actions

When researching and evaluating potential mitigation options, many different factors (in addition to overall effectiveness) can be considered. A commonly accepted method of evaluation for potential actions is the STAPLEE action evaluation method developed by FEMA. STAPLEE involves the consideration of a number of factors that may otherwise go overlooked during the analysis process. This model focuses on the following factors, which can be considered at various scales, such as conversationally among stakeholders or through detailed and quantified alternatives evaluations, depending upon the needs of the facility:

Social - Will the community accept the project? Will the project negatively impact any particular portion of the population disproportionately? An example mitigation measure that is often rejected for social reasons is the floodwall due to its potential to impact the aesthetic feel of a neighborhood.

Technical - Is this mitigation option technically feasible? Feasibility requires that the project provides adequate levels of protection and is expected to be reliable, that the professional / technical expertise on the project is up to the task, and that the project take an acceptable amount of time. Ultimately, will the action cause more problems than it solves?

Administrative - Can the project be staffed properly throughout its lifespan and can it be maintained with existing or a realistic increase in resources? A failure to maintain mitigation actions, as needed, may result in inadequate or absent protection by a project after implementation.

Political - Is there a project champion to help steward the project through bureaucratic and political processes? If a project does not have a local champion or public support, it may be unlikely to proceed to implementation, depending on the project type. Generally, the more visible a project is, the more important it becomes to have a politically sound plan. This is very much tied to Social acceptance.

Legal - Does the project fall in line with local, state, and federal codes/ordinances/regulations? Under what authority will the plan be implemented? What permits and permissions are required to proceed?

Economic - Do the potential benefits of the project outweigh the costs? The economic scope can be broad, ranging from the costs of the project to the impact on the local economy (e.g., increased local jobs, increased taxes). Are there funds available to implement the project?

Environmental - How will the mitigation alternative affect the environment, both natural and built? Environmental considerations often intersect with legal, economic, social, and political considerations.

Substantial improvements or repairs to a structure may trigger compliance with current codes and standards (if a structure is not already compliant). In addition, actions to systems within specific structures may trigger additional code compliance specific to that structure type. For this reason and a variety of others, it is important to develop the mitigation options for a facility with the help of trained Registered Design Professionals.

STAPLEE Considerations

Social

- Community acceptance
- Social justice

Technical

- Technical feasibility
- Long-term solution
- Secondary impacts

Administrative

- Adequate staffing
- Funding allocations
- Maintenance/operations

Political

- Political support
- Local champion
- Public support

Legal

- State authority
- Existing local authority
- Potential legal challenge

Economic

- Benefit of action
- Cost of action
- Contributes to economic goals
- Outside funding required

Environmental

- Effect on land/water
- Effect on endangered species
- Effect on HAZMAT/waste sites
- Consistent with community goals
- Consistent with environmental goals
- Consistent with federal laws

2.3 Moving Forward

Once the Mitigation Assessment Report has been developed (see Part II) and the preferred mitigation alternatives are identified, decision-makers can begin thinking about steps to project implementation. Often, the most important factor in project implementation is available funding. While this Manual does not provide a comprehensive analysis of available funding options and considerations, this section allows the decision-makers an opportunity to begin contemplating these options.

Flood mitigation options for public facilities can be integrated into capital improvements plans, master planning efforts, asset management programs and regular repair and maintenance schedules, as well as local and regional hazard mitigation plans and efforts. Funding for mitigation measures can come in the form of federal and state grants, no and low interest loans (e.g. the State Revolving Loan Fund), and appropriations. Grants for mitigation are available through the Environmental Protection Agency, the United States Army Corps of Engineer, Housing and Urban Development, and more. FEMA also provides funding for hazard mitigation measures of public facilities. The primary source of assistance is found in the Hazard Mitigation Assistance (HMA) programs, which include:

- Hazard Mitigation Grant Program (HMGP, also referred to as 404) provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The HMGP can fund mitigation measures to protect public or private property, as long as measures are in compliance with the program's guidelines.
- Pre-Disaster Mitigation (PDM) Program is annually available through Congressional appropriation. Project requirements are similar to the HMGP, but grants are nationally competitive.
- Flood Mitigation Assistance (FMA) Program provides grants annually for certain flood-mitigation projects to facilities that are currently NFIP insured. Projects prioritized for funding are those that mitigate repetitive loss to properties.

The programs are authorized by Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, Section 203 of the Stafford Act, 42 U.S.C. 5133, and Section 1366 of the National Flood Insurance Act. These programs are subject to change in statutory requirements and amounts of authorized assistance.

Additional sources are available in a post-disaster context that can support hazard mitigation actions:

- Public Assistance and Section 406 Mitigation Funding- Public Assistance funds allow an eligible applicant to incorporate mitigation measures into the repair of an existing damaged structure and infrastructure if the measures are cost-effective or required by code. Mitigation funded under Public Assistance is only for public structures and infrastructures damaged by the disaster.
- Community Development Block Grant Funding for Disaster Recovery, known as CDBG-DR

More information about these sources can be obtained from the Division's Mitigation Bureau website at <http://www.floridadisaster.org/mitigation>.

***** All mitigation actions performed must take into consideration the full understanding of substantial improvement and how this will apply to the facility.*****

Substantial Improvement: Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures that have incurred "substantial damage," regardless of the actual repair work performed. The term does not, however, include either:

- Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications that have been identified by the local code enforcement official and that are the minimum necessary to assure safe living conditions; or
- Any alterations of a "historic structure," provided that the alteration will not preclude the structure's continued designation as a "historic structure."

Floodplain management requirements for new construction apply to substantial improvements, including those in line with the Florida Building Code (FBC).

Pilot Examples - Decision-Making Process

The hazard mitigation planning process is one that requires collaboration among stakeholders and technical experts in order to identify and implement the most effective and long-term solution for the facility. Below is a brief discussion on how a consensus was reached, or is in progress as of September 2014, at each of the three pilot facilities.

Department of Health Facility

Upon completion of the initial assessment, a discussion was held between facility management staff and the assessment team present on site. As the engineers began to evaluate the mitigation options for the facility, facility staff identified security concerns as a key issue.

The Department of Homeland Security (DHS) is engaged in the day-to-day operations of the site, ensuring that critical records and laboratories function properly and safely. The installation of a new park adjacent to the facility became a major concern for the DHS staff, as the site is secured only by a chain-link fence.

Once the facility management team expressed this information to the mitigation assessment team, stakeholders considered the possibility that a flood wall surrounding the site might serve the dual purpose of providing security and protecting the entirety of facility assets and systems. A return visit was scheduled for further analysis.



Department of Economic Opportunity Facility

After finalizing the field evaluation, the assessment team and facility management staff met to discuss the various options for the campus. The team identified inadequate stormwater management and nearby pond retention as sources of flood risk, putting a number of structures, systems, and assets at risk.

The most appropriate mitigation action does not appear to be directly related to the buildings, systems, or assets, but rather to the grounds. Based on the information available at the time of evaluation, stakeholders determined that improved drainage measures, in combination with elevating a few specific systems and assets, were identified for further evaluation.



Florida State University Facility

The campus resides within multiple flood zones and is primarily a research and educational facility.

After analysis of the facility, it was determined that, while most of the buildings were set below the PMDE, only minimal mitigation would be needed for the larger structures. Collaboration with stakeholders confirmed that flood risk to the greenhouse and storage shed was tolerable. The most critical assets and systems on site were the floating dock and saltwater-intake system. Mitigation actions recommended after much discussion with facility management staff and the assessment team involve relocation of specific assets above the PMDE, as well as upgrades to the floating dock used to harbor boats.





Part II Guide to Facility Assessment

Part II of the Manual supports technical staff to identify, understand, and communicate flood risk to a facility, determine design criteria, identify appropriate mitigation options, and compile this information into a report.

*For an overview of the concepts in this part, see **Part I Guide to Facility Decision-Making.***



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3.0 Flood Risk and Vulnerability Assessment

3.1 Evaluating Risk and Vulnerability - Desktop Evaluation provides an overview of the work required to begin the facility assessment.

3.2 Facility Characterization assists in developing an understanding of the facility and the extent of its exposure to flooding. It provides methods to prioritize facilities and assets.

3.3 Identifying Flood Elevations assists in identifying flood elevations of interest for the site.

3.4 Evaluating Risk and Vulnerability - Field Evaluation describes the work that must be completed to confirm information gathered during the desktop evaluation.

3.5 Optional - Developing Facility Risk Scores provides a mechanism to quantify a facility's risk to flooding in order to aid decision making and compare risk among multiple facilities or components within a facility.



3.0 Flood Risk and Vulnerability Assessment

Section 3.0 walks through the details of conducting a flood risk and vulnerability assessment to support the mitigation planning process. Both desktop and field evaluations are recommended and detailed in this section. The flow chart to the right details the steps.

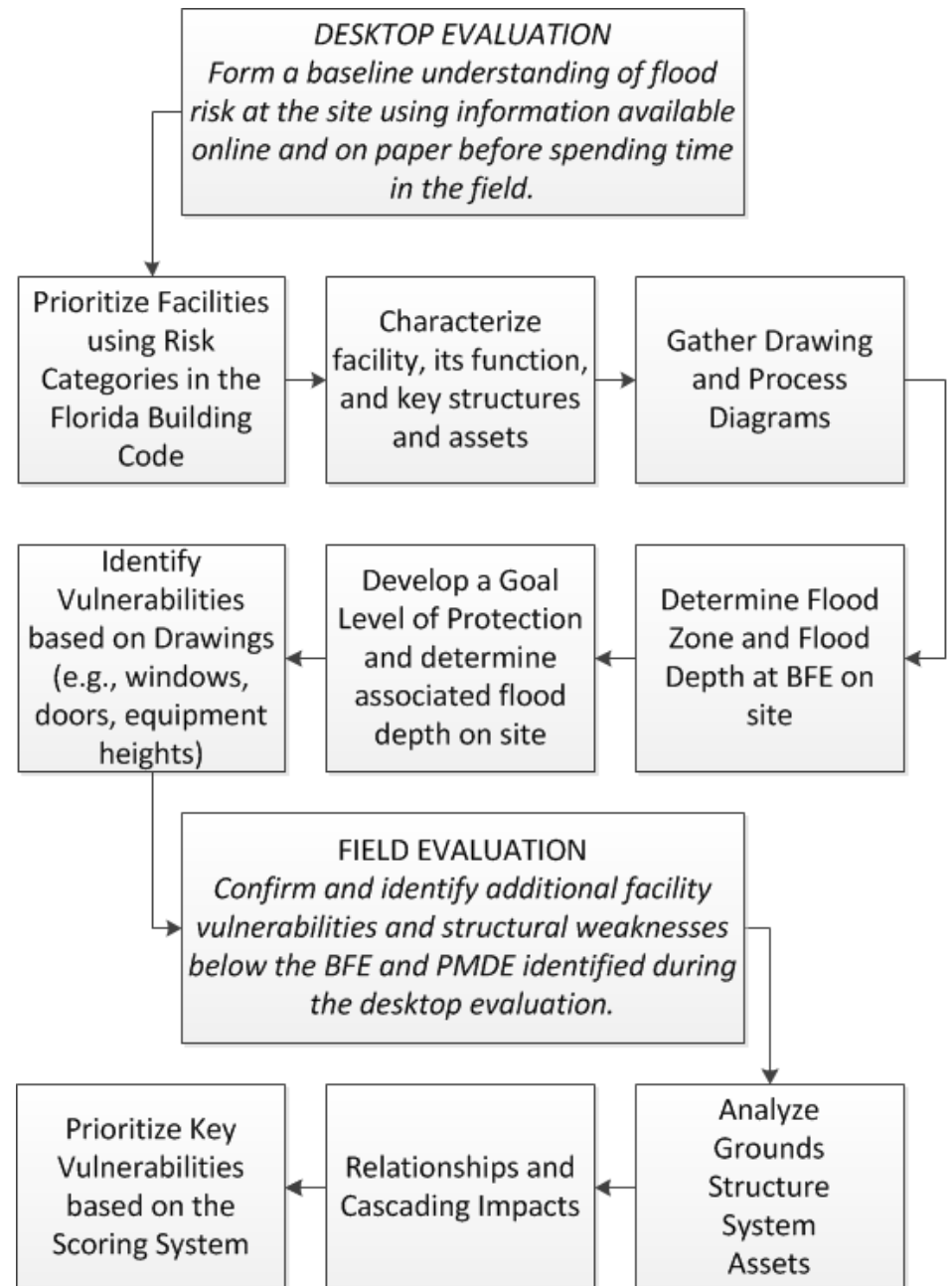
The desktop evaluation truly begins with screening for flood risk based on information that is available online, then moves to identify vulnerabilities and cascading impacts that may be clear through plans, drawings, and other information available on the facility.

The purpose of the field evaluation is not only to confirm the vulnerabilities identified during the desktop evaluation, but also to establish an understanding of potential structural weaknesses, determine relationships between facility vulnerabilities, and take note of issues that may not be apparent on drawings. Drawings can often be out of date or do not provide a full and accurate representation of the state of the facility and its assets.

The combination of the two evaluations results in a thorough assessment that effectively reveals optimal mitigation solutions at any given facility. In order to ensure these inspections meet appropriate needs, Inspection Forms have been provided both in Appendix A of this manual and online at <http://www.floridadisaster.org/mitigation>.

Screening for Flood Risk

State agencies, local communities, and private facility operators may not have the resources available to conduct a full flood risk evaluation for every facility within their operational purview. As such, facilities should be screened for flood risk and a determination should be made in conjunction with appropriate stakeholders regarding whether and how to proceed with further evaluation. Likewise, at each phase of evaluation, stakeholders may decide whether and to what extent further evaluation is necessary. See Section 1.5 for more on this.



3.1 Evaluating Risk and Vulnerability - Desktop Evaluation Overview

The desktop evaluation is the work required before the user can efficiently go out into the field and complete the full assessment. The steps listed below guide the user to gather important and informative data in the **Desktop Evaluation** portions of the evaluation forms.

Step 1: Identify Vulnerabilities Based on Historical Losses

If a facility has been flooded before, an important step is to analyze past events to understand how similar damage can be avoided in the future. Often, mitigation assessments are completed after a storm event has affected a facility. If this is the case, learning how and why water entered specific facility areas and the damage it caused (or lack thereof), is crucial for developing an understanding of the facility's risk and in helping identify vulnerabilities that might otherwise be overlooked. For this step, the assessor records past event flood levels, flood entry points, and any critical damaged systems or equipment. Analyzing damage assessments and reports written by facility staff is particularly useful.

If a facility has no record of prior flood loss, the assessment will rely on flood hazard data and facility information that illuminate flood risk at the site.

Step 2: Review Assessment Forms

Four specific assessment forms are supplied in Appendix A that facilitate gathering information required to complete a full evaluation. The forms each have a desktop evaluation portion and field evaluation portion.

1. Grounds
2. Structure
3. System (e.g., electrical, communications)
4. Asset (e.g., pump, generator)

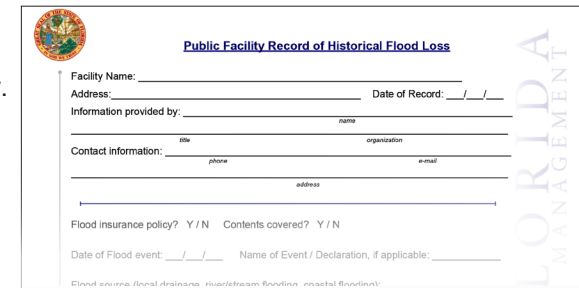
Review the desktop evaluation portion of the appropriate assessment forms provided in Appendix A and record responses regarding facility characterization and flood risk. For example, flood elevations, building elevations, building location, and building characteristics (e.g., number of floors foundation type, year built) need to be gathered and recorded.

Information that can be determined without a field evaluation should be completed first and entered into the forms to be confirmed later during the site visit. Record responses in pencil if the form is not completed electronically. This will allow for later adjustments from the field.

Step 3: Combine Facility Characterization with Flood Hazard Data

This step identifies flood depths at the facility that would correlate to the BFE and the goal level of protection and also involves analyzing structural elevation certificates, building drawings, photographs, and maps available to develop a basic understanding of the building and ground flood risks before visiting the field. It is important for the reviewer to understand expected flood depths at the facility during the design flood event, and what equipment or systems may be submerged at this height. The reviewer should also note any openings (e.g., window, louvers, doors), visible in drawings, that represent vulnerabilities.

The method for establishing goal level of protection is explained in Section 4.0.



The form is titled "Public Facility Record of Historical Flood Loss" and includes fields for Facility Name, Address, Date of Record, Information provided by (name), Contact information (title, phone, organization, email, address), Flood insurance policy? (Y/N), Contents covered? (Y/N), Date of Flood event, and Name of Event / Declaration, if applicable. It also has a section for Flood source (flood drainage, river/stream flooding, coastal flooding).

This Manual contains a Public Facility Record of Historical Flood Loss form to assist in obtaining historical flood loss data from facilities. This form should be provided to facility managers before the flood risk assessment process is initiated (see Part I and Appendix A).



State Buildings in the Flood Zone Map

The majority of flood hazard data can be easily obtained online or through your local floodplain manager and the FEMA Map Service Center found at <http://msc.fema.gov>. State Facilities can quickly determine whether they are in the floodplain by referring to the map provided at <http://bit.ly/1qsNSq5>. When using the State Buildings in the Flood Zone Map, the information below will need to be provided to gain access:

User Name: statebuildings
Password: floodzone

Step 4: Record Questions and Vulnerabilities

When completing the above steps, take note of any questions, confusion, or inconsistencies. Drawings and reports can be inconsistent, and when analyzing past events, there can often be multiple versions of the event recorded. Answers to these questions should be pursued in the field evaluation, which should also corroborate findings of the desktop evaluation.



There are tools available that can facilitate completion of the desktop evaluation, even in the absence of elevation certificates, drawings, and process diagrams. For example, topographical information can usually be downloaded from sources online. Map service sites can provide aerial photographs that help illustrate site layout. In addition, information about public facilities can often be found online and on property appraiser websites.

Pilot Example - Desktop Evaluation

Florida State University Facility

The facility presented a challenge for field evaluation, as the campus resides within multiple flood zones. The desktop evaluation portion of the assessment forms allowed the assessment team to identify what structures/systems/assets resided in each of the different zones to facilitate evaluation.

Summarizing the Desktop Review

The desktop evaluation should allow the assessor to summarize available materials and understand the facility's vulnerabilities to better focus the field evaluation. Example questions that should be answered through desktop evaluation are as follows:

What is the primary function of the facility?

What high priority assets/systems exist on site?

What, if any, drawings are available and when were they completed?

What is the goal level of protection for the facility?

What, if any, key structures/systems/assets are below the proposed mitigation design elevation?

What would the expected flood depth be at the BFE and proposed mitigation design elevation?

Are there basements, crawl spaces, or other below-grade areas on site?

What are the exterior walls, interior walls, and floors made of? What reinforcement is present?

What are all of the vulnerabilities to the site as taken from the drawings?

Facility Drawings and Elevation Certificates

The first step in desktop evaluation is to gather and organize the useful tools listed below, as available.

Elevation Certificates or Surveys

Elevation certificates provide structure elevations and their associated datum. These allow the user to pinpoint exactly which structures are at risk of flooding at both the BFE and the elevation that correlates to the goal level of protection. With this tool, the user can determine the flood depth, or the expected water height above grade, that correlates to these elevations. In the absence of an available elevation certificate, the assessor can use surveys and architectural plans.

Note: The State Floodplain Management Office recommends developing an elevation certificate for every structure. Contact your local floodplain administrator for more information on how to obtain one.

Site Plans

Site plans identify structure locations, sizing of the facility, and interconnections between structures.

Structural Drawings

Structural drawings illustrate wall construction, wall reinforcement, and the materials of the exterior wall, interior walls, and floors.

Mechanical, Electrical, and Plumbing (MEP) Drawings

MEP drawings provide asset-specific information—such as location, capacity, type, and function within the system.

Process Diagrams

While not all facilities have process diagrams, they are valuable during the site assessment and for prioritizing assets for mitigation (see Section 3.2).

3.2 Facility Characterization

Facility Information Gathering

Certain facility information is necessary to conduct an efficient and effective risk and vulnerability assessment. Information concerning the facility owner, employees, and facility function streamlines the assessment process.

It is useful to begin gathering the below information as soon as a decision has been made to perform desktop evaluation for a facility.



FEMA provides estimates of the economic value of critical facilities to the public. Examples of critical facilities include hospitals, water and wastewater utilities, and police, fire, and emergency medical services. The most up-to-date values can be located in Appendix C of the *FEMA BCA Reference Guide* found at <http://www.fema.gov/resource-document-library>.

Information Need	Potential Source(s)	Notes
Facility Name / Address / Type / Purpose Facility Owner / Chain of Command / Point of Contact Information Number of Day and Night Facility Employees Facility Size and Capacity Number of Structures on Grounds Status (Active, Inactive, Temporarily Inactive)	Facility Owner Tax Records Building Records Facility Website Facility Master Plan	Required to gain a basic understanding of the facility and for communication purposes
Service Area / Population	Facility Master Plan, Census Data	Contributes to understanding consequences of flood impact
Economic Service Value (see call-out box)	FEMA Standard Values	Contributes to understanding consequences of flood impact
Site Groundwater Information	Facility Master Plan, Site Review	For use in understanding water table for flood risk and mitigation evaluation (this may be difficult to find)
Aerial Photo and Map	Google Earth, Facility Master Plan	For use in understanding flood source and general locations of assets
Historical Losses from Previous Flood Events	Interview with Facility Staff / Operators, News Articles, Damage Assessments, Damage Cost Estimates, Previous Repair Contracts and Invoices	Used to understand flood risk and justify mitigation expenses
Points of Ingress and Egress	Aerial Photo, Site Plan	For use in understanding flood risk, prioritizing vulnerabilities, and evaluating mitigation options
Elevation data	Elevation certificates, Topographic maps, LIDAR data, Site Surveys, Site plan	It is important to know the range of elevations on the site and to include highest and lowest elevations adjacent to structures, elevations at ingress/egress, at structures, and at critical assets. This information will contribute directly to the risk and vulnerability assessment and highlights the importance of having elevation certificates available.
Critical Systems and Locations Critical Assets and Locations Hazardous Materials and Locations	Facility Master Plan, As-built construction drawings, Interview with Facility staff / operators, Building plans	For use in understanding flood risk, prioritizing vulnerabilities, and evaluating mitigation options
Structure Details, such as risk category, address, size, capacity, number of stories, construction features, first floor elevation, below grade features / uses and elevations, above grade features / uses and elevations	Interview with Facility staff / operators, Building plans, elevation certificate	For use in understanding flood risk, prioritizing vulnerabilities, and evaluating mitigation options

Facility and Structure Risk Category

Assessors should always understand the relative criticality of the facility and its structures being evaluated. While a facility can be evaluated for criticality relative to other facilities within a jurisdiction or under a state agency or private entity's operational purview, facilities can also be assigned criticality based on the relative importance of individual structures on the site. Identifying the criticality of a particular facility or structure helps the assessor to understand potential consequences of unmitigated flood vulnerability, identify goal and minimum levels of protection for the structure or facility, and helps decision makers to rank structures and facilities against one another for allocation of resources for mitigation measures or further evaluation.

The Florida Building Code (FBC) dictates construction standards for new projects and substantial improvements in the State of Florida in order to protect life safety and property. The FBC uses Risk Categories, also provided in ASCE 24, to rank criticality of structural and functional occupancy. Risk Categories help to identify the appropriate minimum level of protection that should be applied based on associated risk to life safety. For consistency and ease of communication, this manual proposes the use of Risk Categories for prioritizing facilities and structures for mitigation. Using this method, a facility's risk category will be the equivalent of the highest structural risk category on the site.

Risk Category	Nature of Occupancy
4	<ul style="list-style-type: none"> - Buildings and other structures designated as essential facilities - Buildings and other structures, the failure of which could pose a substantial hazard to the community - Buildings and other structures (including, but not limited to, facilities that manufacture, process, handle, store, use, or dispose of such substances as hazardous fuels, hazardous chemicals, or hazardous waste) containing sufficient quantities of highly toxic substances where the quantity exceeds a threshold quantity established by the authority having jurisdiction to be dangerous to the public if released and is sufficient to pose a threat to the public if released. - Buildings and other structures required to maintain function of other Risk Category IV structures
3	<ul style="list-style-type: none"> - Buildings and other structures, the failure of which could pose a substantial risk to human health - Buildings and other structures, not included in Risk Category IV, with potential to cause a substantial economic impact and/or mass disruption of day-to-day civilian life in the event of a failure - Buildings and other structures not included in Risk Category IV (including, but not limited to, facilities that manufacture, process, handle, store, use, or dispose of such substances as hazardous fuels, hazardous chemicals, or hazardous waste) containing toxic or explosive substances where their quantity exceeds a threshold quantity established by the authority having jurisdiction and is sufficient to pose a threat to the public if released
2	- All buildings and other structures, except those listed in Risk Categories I, III, and IV
1	- Buildings and other structures that represent a low risk to human health in the event of failure

Source: American Society of Civil Engineers. (2005). *Flood-Resistant Design and Construction*. ASCE Standard ASCE 24.

Building Code Application in Mitigation

Requirements within the building code will only legally apply in the case of new construction or substantial improvement. Nevertheless, the FBC provides a benchmark for establishing a proposed minimum level of protection for mitigation of existing facilities, even if such activities do not reach the substantial improvement threshold. For structures where it is not feasible to protect to the building code, lower levels of protection should be considered on a case-by-case basis.



- **Identifying** both a minimum and the goal (preferred) levels of protection
- provides benchmarks for evaluating vulnerabilities and mitigation options.
- The design elevation ultimately selected will be determined based on a variety of considerations (e.g., structure risk category, technical feasibility, and cost considerations).
- This process is detailed in Section 4.0.

FBC Design Influences

NFIP Standards

Good mitigation begins with the requirements spelled out in the National Flood Insurance Program. The FBC meets or exceeds these requirements in all cases.

ASCE 7

ASCE 7 is a recognized engineering standard that provides minimum load requirements for the design of buildings and other structures that are subject to building code requirements. The FBC recognizes these standards and incorporates these throughout the series.

ASCE 24

ASCE 24 was developed through a consensus process to address designing buildings in flood hazard areas. It is a referenced standard in the FBC. ASCE 24 uses a Risk Category to identify minimum elevation requirements for new and substantially improved facilities.

Facility Asset and System Prioritization

Individual facility systems and building features, equipment, or objects (referred to collectively as assets in this Manual) may result in disproportionate costs or consequences in the case of flood impacts. As such, risk tolerance for different systems and assets may vary widely within the same facility. Risk Categories allow the assessor and stakeholders to weigh the relative importance of a facility or structure and the consequences of flood impacts. Using this same premise, systems and assets can also be categorized and prioritized for both evaluation and mitigation.

The list below provides recommended methods for prioritizing systems and assets within a public facility. It should be noted that this is not a comprehensive list of all possible assets and systems, and categorization will be based on the best judgment of facility stakeholders in coordination with the assessor.

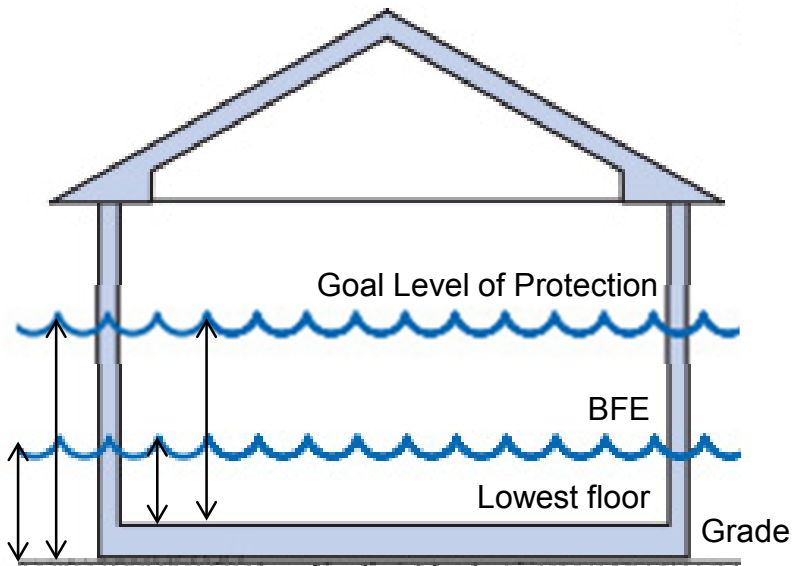
Risk Category	Heading	Systems	Example Key Assets
4	Critical Equipment/ Hazardous Materials Systems	Ventilation Equipment, Heating and Cooling	Odor Control, Fans, Air-Handling Units, Chillers, Boilers, Heat Exchangers
		Exterior Architecture (structural)	Load bearing and structural features
		Backup Systems/Water Removal	Fuel Oil System, Portable Generators, Sump Pumps
		Hazardous Materials, Chemicals, or Supplies	Hazardous Materials, Chemicals, or Supplies
		I.T. Equipment	I.T. Equipment/Servers
	Life Safety Systems	Fire Protection and Life Safety Systems	Fire Pumps/Fire Detection Equipment/Life Safety
		Potable Water	House Pumps, Booster Pumps, Controls Equipment
		Electrical Systems (Normal and Emergency)	Switchgear, Emergency Generators, Automatic Transfer Switch, Motor Control Center, Distribution Panels, Emergency Lighting
		Critical/Dangerous Gas Systems	Oxygen Tanks and Associated Equipment, Gas Detection for Noxious Gases
	Historic and Cultural Resources	Historic and Cultural Resources	Prehistoric/Historic Artifacts, Archaeological Resources, Museum objects, Ethnographic Resources, Architectural Resources (e.g. the exteriors of historic structures, Artwork, Archives, Writings)
3	Important Equipment/ Systems	Transportation	Elevators, Escalators
		Security Systems	Cameras, Door Access Protection, Alarm Systems
		Site Lighting/Telephone	Site Lighting/Telephone
		Vital Storage (medicine)	Vital Storage (medicine)
		Major Molding Risks	Carpet, Drapes, Sheetrock
		Equipment Necessary to Maintain Natural Resources	Agricultural equipment, Laboratory and biological sampling equipment
		Wastewater	MSPs, Conveyance Equipment, Backflow Preventers
2	Minor Importance Equipment/ Systems	Exterior Architecture (aesthetics)	Aesthetic features of a structure
		Office Equipment	Desk Computers, Kitchen Equipment
		Molding Risks	Chairs, Desks, Food
1	Non-Essential	Non-Essential Equipment	Non-Essential Equipment, Non-vital storage

3.3 Identifying Flood Elevations and Flood Depths

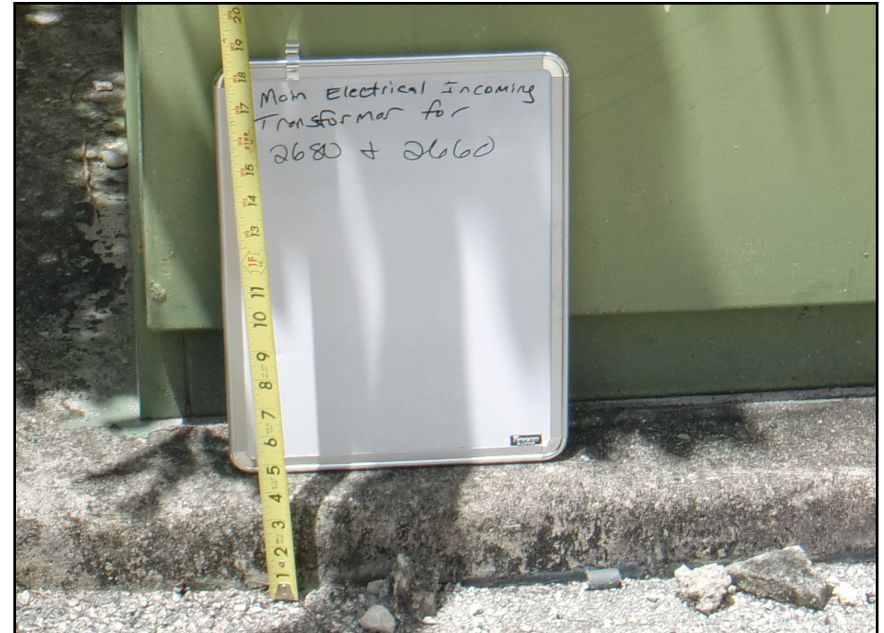
In order to appropriately focus time spent during the field evaluation, it is important to develop a frame of reference during the desktop evaluation. In order to do this, the assessor will identify flood elevations for the BFE and goal level of protection (see Section 4.0). The assessor will then use the best topographical data available to determine corresponding flood depths for structures and key assets at the site. Elevation certificates or a recent site survey are the ideal sources for site-specific elevation data.

The assessor will simply subtract the grade elevation from the flood elevation for the goal level of protection and the BFE (or other appropriate flood elevations), separately. The results should be recorded in the desktop evaluation portions of the mitigation assessment forms. During the field evaluation, the assessor will record vulnerabilities that lie within these two referenced flood depths.

Flood Elevation - Ground Elevation = Flood Depth



The goal level of protection is the desired recurrence interval to which a facility should be protected. The Proposed Mitigation Design Elevation (PMDE) is the elevation identified to correlate with the level of protection technically feasible for the site. Identifying flood depths that correlate with the goal level of protection supports the planning process. These concepts are described in Section 4.0 and are not duplicated here.



Assessor compares the height of critical equipment above grade to expected flood depths at Florida Department of Economic Opportunity's facility.

It can also be helpful to determine flood depth above floor elevations.

FIRMs will typically display BFEs. Nevertheless, stakeholders may desire to understand flood risk to additional elevations, such as those correlating to the 10%, 2% and 0.2% annual chance flood events. To obtain these values, the assessor should use the corresponding Flood Insurance Study (FIS) for the site.

The following pages will describe how to gather this information for both coastal and riverine flood data.

A Note on Datums: The datum is, essentially, the language used to describe . The assessor must ensure that the datums match for flood elevation and site elevation data. Recently released FIRMs typically provide elevations according to the North American Vertical Datum of 1988 (NAVD88). Many older FIRMs use the National Geodetic Vertical Datum of 1929 (NGVD29). Topographic data can come from any number of sources, and the datum may not match flood elevation data. Information on how to convert datums to match can be found by searching online.

DATUM conversions can differ based on geographical area. Contact the local building department or use NOAA's website to determine appropriate conversions for the facility site in question.

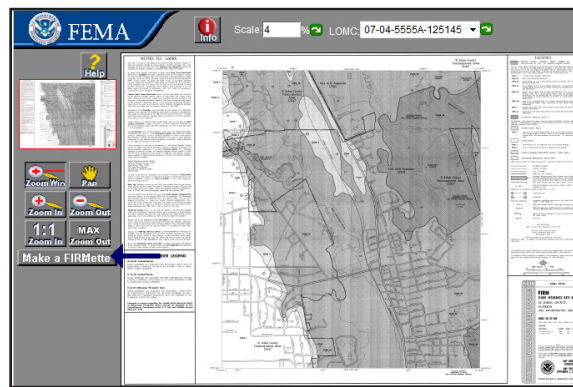
Obtaining FIRM Information

There are multiple ways to collect appropriate flood hazard data for a site. The process detailed below walks you through the method of developing a FIRMette for a facility and determining the BFE using the FEMA Map Service Center.

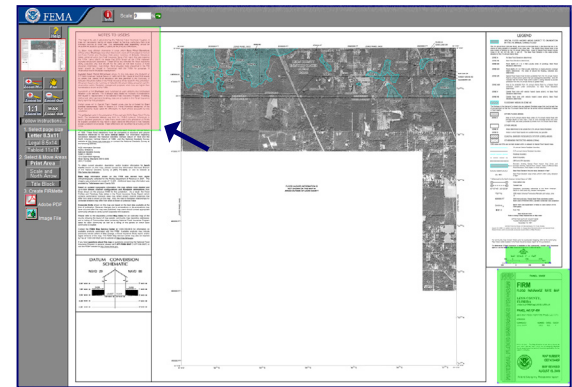
Step 1: Begin by searching the address of your site within FEMA's Map Service Center (MSC).

Step 2: Generate an electronic version of the FIRM and save it to your computer. A tutorial on the process of generating a FIRMette from the online resource or from your desktop is available on the MSC website.

FEMA provides online training and resources to understand and interpret flood risk data available on FIRMs and within the FIS. Local floodplain managers can also assist in determining which flood zone applies. Contact information for local floodplain administrators can be found at www.floridadisaster.org/mitigation/sfmp.

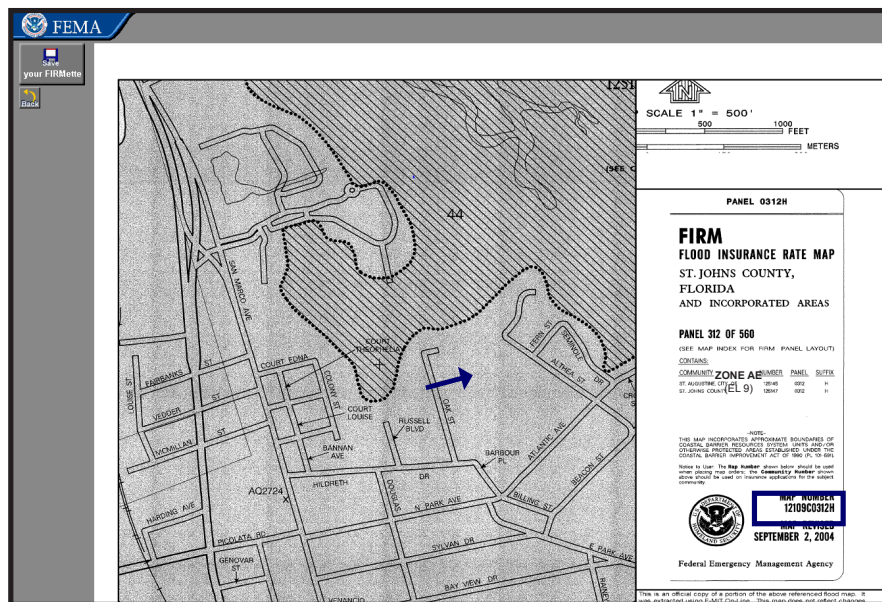


Step 2.1: Click on the "Make FIRMette" Button.



Step 2.2: Click and drag the pink box to cover the area of the map that you want to be included on the FIRMette.

Step 3: Using the information provided on the FIRMette, record the BFE and flood source specific to the grounds, structure, system, or asset being evaluated on the Desktop Evaluation portion of the appropriate form(s) provided in Appendix A. The BFE will sometimes vary across larger sites and sites with complex topography.



Note

It is important to use the most up-to-date FIRMs. Current effective maps are available online in the FEMA Map Service Center (<http://www.msc.fema.gov>). Nevertheless, FEMA will sometimes release "preliminary" or "advisory" maps immediately following a disaster. Additionally, the area or site may be subject to map amendments or revisions not published on the FIRM. The presence of this updated and best available data can be confirmed by contacting your Local Floodplain Administrator.

Limitations of Flood Insurance Rate Maps

Although excellent tools for floodplain management and suitable for the purposes of this Manual, FIS and FIRMs are not adequate for detailed engineering design. For detailed engineering design, it is recommended that site-specific engineering or flood models be used to supplement the FIRMs. Flood forces should be estimated for a range of events and the full spectrum of wave directions, wind speeds, and flood durations that may impact the structure over its useful life. **Below are a few examples of the design limitations of FIRM data:**

- Over time, significant changes can occur to the floodplain that may not be captured on an existing older FIRM. For instance, conversion of natural landscapes to suburban and urban landscapes result in a greater proportion of paved and impervious ground, which can significantly alter timing and magnitude of flooding. Construction of channelization projects and levees may alter the distribution of flood waters. Land subsidence, increasing shoreline erosion, and destruction of protective dunes, marshes, and wetlands are also occurring across many parts of the coast.
- Like all maps, the FIRMs are a graphical method for simplifying and visualizing data. The flood and wave estimates are computed at finite locations, rounded to the nearest whole number, and interpolated across floodplains or extrapolated for an entire community. The maps are based on the best available topographic mapping. Thus, small-scale variations can be missed. In addition, a flood map is an ensemble of overall flood risk rather than a representation of an individual flood. During any real flood event, there will be a range of water depths, hydraulic gradients, flow velocities, and wave heights. Such variations are relevant to site-specific evaluation and design of infrastructure.
- FIRMs often employ approximations and rules of thumb. For instance, when estimating the erosion of coastal dunes, FEMA's methodology applies a consistent 540 square feet of dune face erosion. This empiricism is based upon a national average and does not reflect the variability of dunes across the coast. In addition, the transect-based approach to estimating inland waves is a one-dimensional approach that neglects the multi-dimensional complexity of real wave conditions.
- Climate changes and sea level rise introduce new uncertainty. Future storms may deviate in size, strength, timing, and frequency from previous storms.

FEMA'S RISK MAP PROGRAM

In 2010, FEMA began a new program called "Risk MAP," an acronym for risk mapping, assessment, and planning. Through this effort, flood maps around the country are being updated with specific attention to five goals:

1. Evaluating and updating flood hazard data
2. Increasing public awareness of flood risk
3. Mitigation planning that addresses flood vulnerability
4. Enhancing the digital mapping platform to improve data sharing
5. Aligning decision-making capabilities and management of risk communication

These activities are designed to produce updated maps and new map products that more clearly identify future flood risk so that communities and agencies have better planning tools for building stronger and safer.

Additional Technical Resources

Today, advanced hydrodynamic software and wave models are regularly being deployed on computers to provide designers with tools that can resolve realistic flow dynamics around, through, and between buildings, piers, and other structural elements. Moreover, site-specific models can be developed to explore implications of stronger and larger storms, waves, and flood levels. Use of advanced modeling can remedy some of the limitations inherent in the FIS and FIRMs as related to detailed engineering design. Nevertheless, using these programs can be difficult without an experienced program operator.

✓ **Hazus MH** - Hazus uses Geographic Information System (GIS) technology to estimate physical, economic, and social impacts of disasters. Hazus is not useful for site-specific analysis and should only be used to compare relative risk among several facilities.

✓ **HEC-FIA (Flood Impact Analysis)** - This package analyzes the damage to structures and contents, losses to agriculture, and estimates for potential loss of life during an event.

✓ **HEC-RAS (River Analysis System)** - As the first of HEC's "Next Generation" software, HEC-RAS allows the user to perform one-dimensional steady flow, unsteady flow, sediment transport/mobile bed computations, and water temperature modeling of individual waterways.

✓ **HEC-FDA (Flood Damage Reduction Analysis)** - This software provides the capability to perform an integrated hydrologic engineering and economic analysis during the formulation and evaluation of flood risk management plans.

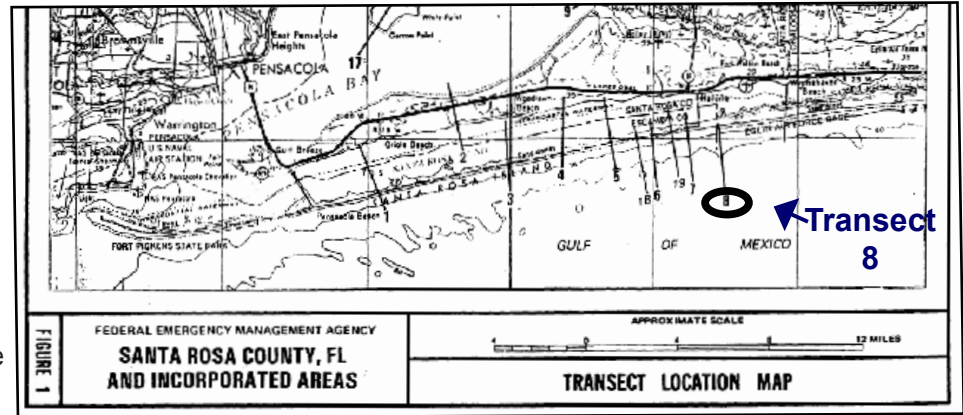
✓ **Coastal Hazard Analysis Modeling Program (CHAMP)** - With CHAMP, the user can import digital elevation data; perform storm-induced erosion treatments, wave height analyses, and wave run-up analyses; plot summary graphics of the results; and create summary tables and reports in a single environment.

Flood Insurance Study Evaluation

An FIS is a compilation and presentation of flood-risk data for specific watercourses, lakes, and coastal flood hazard areas. Once a study is completed, the information and maps are assembled into an FIS. For areas studied with detailed methods, the FIS report contains detailed flood elevation data in flood profiles and data tables.

Coastal Flood Data

The figure to the right is an example Transect Location Map from Santa Rosa County, Florida. The user locates the facility in question on the map and determines the two closest transects. Should the BFE for both transects differ, the user can interpolate elevation based on relative distance to the two transects.



Transect data is taken perpendicular to the shoreline and extends inland. Along each transect, wave heights and flood elevations consider changes in ground elevation and physical features. The image below depicts several terms related to coastal flood hazard.

To identify the stillwater and wave crest elevations at a facility located near transect number 8 (identified on the map), reference the Transect Table in the Santa Rosa FIS (to right). Once the 1-percent stillwater and wavecrest elevations (underlined) are gathered, the assessor identifies the range of the BFE on the Stillwater Elevation summary table. For this example, the range indicates that in a 100-year flood, it is likely that wave heights will not peak over 14 feet in the VE Zone and over 11 feet in the AE Zone.

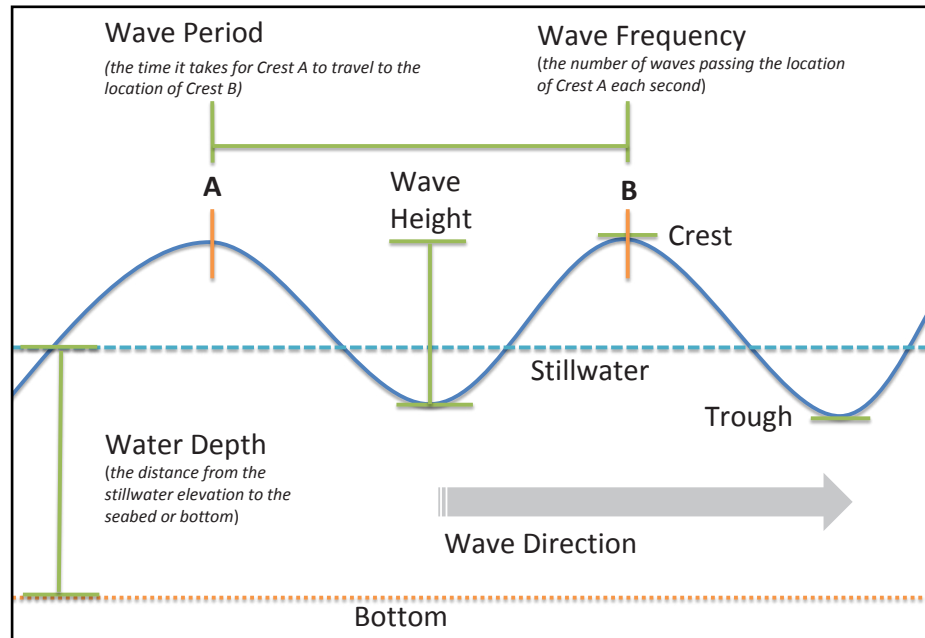


TABLE 9 - TRANSECT DATA

FLOODING SOURCE	STILLWATER ELEVATIONS (feet NAVD*)				ZONE	BASE FLOOD ELEVATION (feet NAVD*) ¹
	10-PERCENT	5-PERCENT	1-PERCENT	0.2-PERCENT		
PENSACOLA BAY Transect 17	2.5	4.7	5.5	6.9	VE AE	6 4-5
GULF OF MEXICO Transects 18 ² -19 ²	3.8	6.6	10.33	10.8	VE AE	9-14 6-10
GULF OF MEXICO/ SANTA ROSA SOUND Transect 8	3.8	6.6	10.3 ³	10.6	VE AE	11-14 9-11

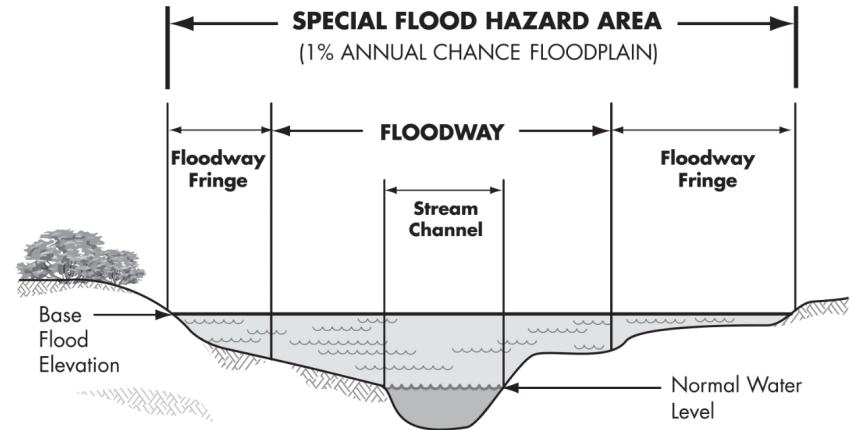
TRANSECT	LOCATION	ELEVATION (feet NAVD*)	
		1-PERCENT STILLWATER	MAXIMUM 1-PERCENT WAVE CREST ¹
5	Approximately 2,500 feet south of the intersection of Pelican Lane and Water Street, extending northwest into incorporated areas of Santa Rosa County from Santa Rosa Sound	7.8	12.1
6	Approximately 2,400 feet south of the intersection of Bayou Street and Sandstone Road, extending northwest into incorporated areas of Santa Rosa County from Santa Rosa Sound	7.8	12.1
7	Approximately 1,700 feet south of the intersection of 4th Street and San Paolo Place, extending northwest into incorporated areas of Santa Rosa County from Santa Rosa Sound	7.8	12.0
8	Approximately 3,800 feet southeast of the intersection of State Route 399 and State Route 87, extending northwest across Santa Rosa Island	10.3 ²	15.9

Riverine Flood Data

Watercourses that flow downhill under the force of gravity are called “riverine.” Discharge is the volume of water within the channel and is measured as a rate in cubic feet per second. Cross-sections are taken at locations along the waterway representative of local conditions. A cross-section is a graphical depiction of the stream taken at a right angle to the flow of the stream displaying each of the flood heights (see figure to the right). If there are large changes in topography (e.g., ridgebanks changing to large flat overbank areas), more cross-sections are needed to accurately define the floodplain. The image at right illustrates common terms related to riverine flood hazards.

The floodway data table provides a summary of the results of the analysis (see table to the right). The first two columns identify the stream name and cross-sections used in the FIS, and the distance of the cross-section from some reference point. The next three columns under “Floodway” provide data concerning the hydrology at each cross-section. Of the last four columns under “Base Flood Water Surface Elevation,” the analyst should be primarily concerned with the first column because this column represents the 100-year flood elevation.

If a site is between cross-sections, site-specific elevations need to be determined. Using the FIRM, determine the site location above a cross-section (measure along the stream centerline). Then, use the flood profile to determine the BFE, as illustrated on the next page. It is recommended that you use the next higher BFE for cases in which the plotting does not result in a whole number for the BFE.



Source: *Floodplain Management in Florida Quick Guide*, State of Florida Division of Emergency Management, 2012.

The FIS can be downloaded from FEMA's Map Service Center on the Internet and hard copies may be purchased. The local floodplain manager will also have copies of the FIS and FIRMs available to the public.

Flood Hazard Areas without BFEs

The FIS and FIRMs in many rural areas show the SFHAs without BFEs, called “approximate A Zones.” In the absence of data from other sources, site-specific analyses can be prepared or flood depth can be approximated. It is acceptable to assume the flood depth is 2 or 3 feet above grade, provided there is no evidence that actual flooding has been or may be deeper.

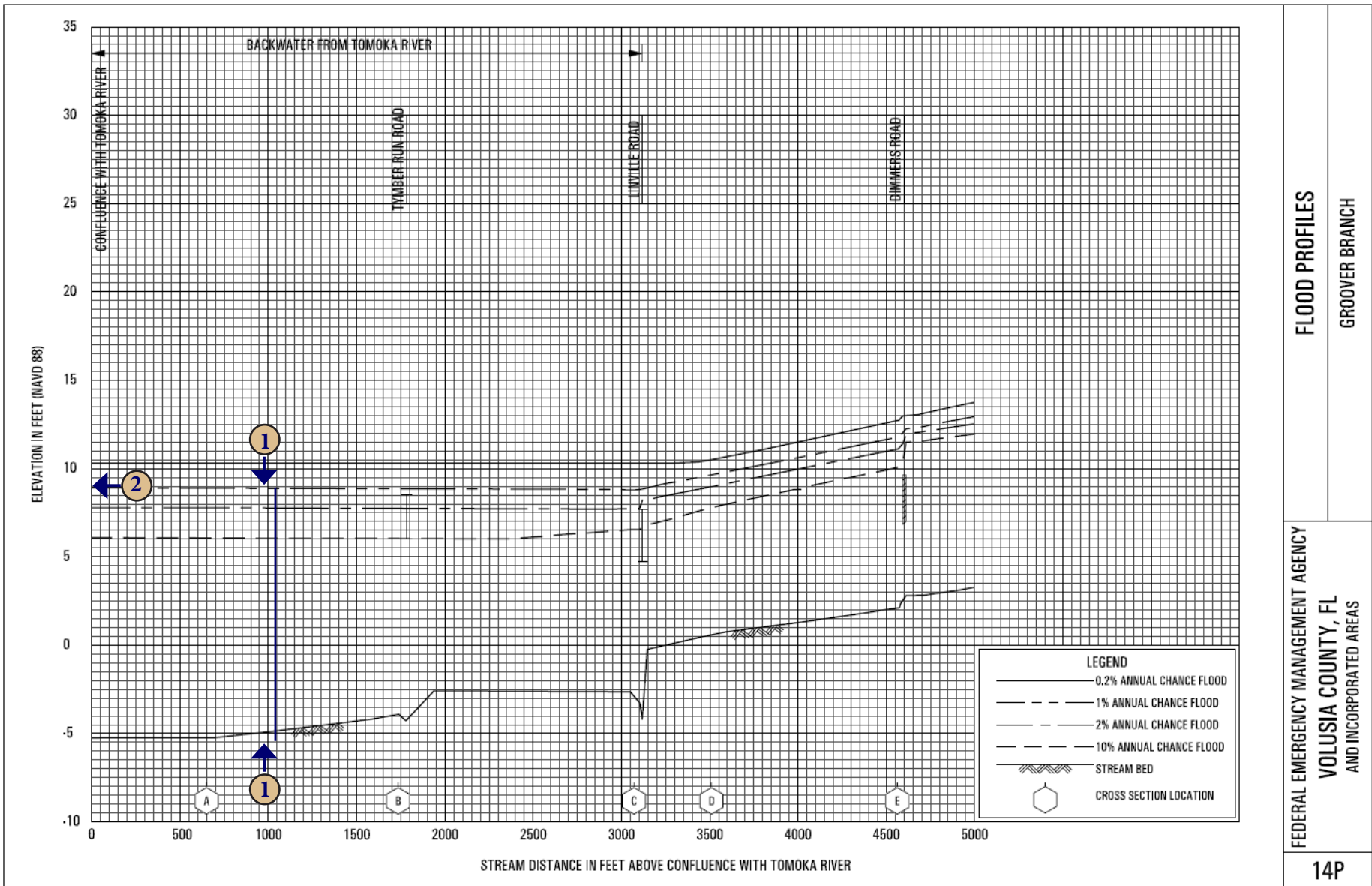
FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
B-19 Canal Tributary No. 7								
A	1,004	46	359	0.4	28.6	28.6	29.6	1.0
Bulow Creek								
A	10,830	328	1,449	1.9	2.9 ²	2.5 ³	3.4	0.9
B	12,000	600	2,637	1.0	2.9 ²	2.8 ³	3.8	1.0
C	16,702	538	3,181	0.9	4.9	4.9	5.8	0.9
D	21,649	834	4,835	0.5	5.2	5.2	6.2	1.0
Groover Branch								
A	650	385	2,547	1.2	8.9	5.5 ⁴	6.5	1.0
B	1,735	77	541	5.5	8.9	7.0 ⁴	8.0	1.0
C	3,071	77	698	4.2	9.0	9.0	10.0	1.0
D	3,510	122	802	3.7	9.8	9.8	10.7	0.9
E	4,562	176	1,534	1.8	12.3	12.3	13.1	0.8
F	5,858	109	1,081	2.7	16.7	16.7	17.3	0.6
G	7,207	51	583	4.7	18.8	18.8	19.8	1.0

¹Feet above mouth

²Coastal flooding elevation; extracted from FIRM

³Elevation computed without consideration of storm surge from Halifax River/Intracoastal Waterway

⁴Elevation computed without consideration of backwater effects from Tomoka River



FLOOD PROFILES
GROOVER BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY
VOLUSIA COUNTY, FL
AND INCORPORATED AREAS

14P

Source: Volusia County, Florida Flood Insurance Study, 2014

1 On the FIRM, locate the site by measuring the distance along the centerline of the stream channel from a cross-section (for example, cross-section A or B)

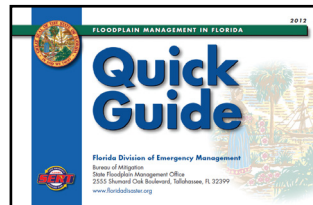
2 Scale the distance on the Flood Profile and read up to the profile of interest, then across to determine the elevation. (Answer: 9 feet)

Additional Guidance

Elevation Certificates

Elevation certificates are a valuable resource in understanding flood risk and will expedite the desktop evaluation process. Florida's State Floodplain Management Office recommends that all public facilities obtain Elevation Certificates.

Florida's Floodplain Management Quick Guide is a valuable resource to understand basic flood risk and floodplain management concepts.



FEMA-designated flood zones and definitions are described below:

FEMA Flood Zone	Definition
A Zones, AE, A1-30, AO, AH, A	Areas subject to inundation by the 1-percent-annual-chance flood event (100-year flood). There are variations of Zone A that each communicate different information about flood risk. For example, AO represents areas at risk for sheet flow. In coastal areas, A zones are subject to less than 1.5 feet of wave action.
Coastal A Zone	Zone A seaward Limit of Moderate Wave Action (LiMWA), 1.5 to 3 feet of waves and similar risk to Zone V. These areas are not labeled on FIRMs, but are delineated by the LiMWA.
V Zones, Zone V, VE, V1-30	Areas along coasts subject to inundation by the 1-percent-annual-chance flood event (100-year flood), where waves are expected to be 3 feet or more.
Shaded X (or Zone B)	Areas subject to inundation by the 0.2-percent-annual-chance flood event (500-year flood) and are considered to be high-risk areas.
Unshaded X (or Zone C)	All other areas considered low risk.

Florida's Floodplain Management Quick Guide provides specific guidance regarding the Coastal A Zone.

What is the Elevation Certificate and How is it Used?

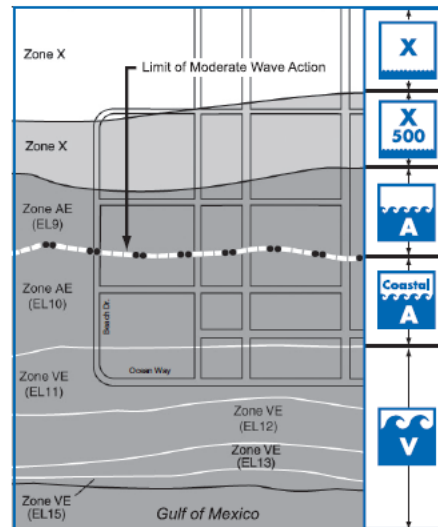
- The Elevation Certificate (EC) is a FEMA form. Go to www.fema.gov and search for "Elevation Certificate."
- The EC must be completed and sealed by a Florida licensed surveyor.
- The property owner, owner's representative or the community official may complete the EC for sites in Approximate Zone A and Zone AO (see Section G of the EC).
- It can be used to show that the grades of building sites are above the Base Flood Elevation (see page 19).
- It is used to verify building and equipment elevations (see page 29).
- Insurance agents use the EC to write and rate flood insurance policies.
- See page 61 for online EC training and State workshop information.

By itself, the EC cannot be used to waive the requirement to obtain flood insurance. See page 20 to learn about FEMA's Letter of Map Amendment process.

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The Coastal A Zone (CAZ)



For illustration purposes only. Some FIRMs published after 2009 may show the Limit of Moderate Wave Action.

- Post-flood evaluations and laboratory tests confirm that breaking waves as small as 1.5 feet high cause damage to walls and scour around foundations.
- The Limit of Moderate Wave Action may be shown on revised FIRMs.
- CAZ conditions are found inland of Zone V and along shorelines without Zone V.
- CAZ conditions occur where stillwater depths are between 2 and 4 feet, which can support 1.5 to 3-foot waves.
- By reference to ASCE 24, the Florida Building Code requires Zone V construction methods in CAZs. If the CAZ is delineated, the FBC requires dwellings to be elevated at least one-foot above the BFE.
- Scour and erosion should be considered in CAZ if soils are sandy and erodible.
- Federal flood insurance in CAZs is rated using Zone A rates (lower than Zone V rates).

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3.4 Evaluating Risk and Vulnerability - Field Evaluation

The field evaluation provides confirmation of information gathered during the desktop evaluation and fills in informational gaps. The steps listed below will help the assessor gather necessary information and fill out the Field Evaluation portion of the applicable forms provided in Appendix A.

Always remember health and safety practice in the field and be sure to use the proper protective equipment.

Step 1: Review Items Included in the Assessment Forms

The first step is to review the forms and record information that can be field verified or evaluated. Use photographs, measuring tape, and facility employees to help record equipment heights, expected flood depths on structures and important equipment, wall materials and potential points of water intrusion, and other form-requested information. Record all data and document any assumptions. The forms also include space for sketching the facility and surrounding area, structural features and equipment, as well as any inconsistencies with the plans. Field sketches are particularly useful for facilities that do not have available structural, architectural, or other drawings, and can record locations of major equipment. When drawings are unavailable, it is recommended to be as specific as possible in the drawing section of the form. Label all equipment; the cardinal directions; locations of windows, doors, and external openings; and provide a drawing for each vulnerable floor of the facility (e.g., lowest floor and basement).

Step 2: Field Confirm Data from Desktop Evaluation and Address Questions

Review the Desktop Evaluation form and confirm that portions of the drawings and reports relevant to critical equipment and evaluating flood vulnerability are correct. Sometimes, equipment has been relocated or improvements have been made to facilities without updated plans. Talk to employees on site to make sure that your understanding of flood entry points is correct. If staff members are present who were on site during past flood events, confirm flood depths and historical loss record details, as well as the status of damaged equipment. Use the field visit to gather additional records that could not be obtained during desktop evaluation, but may be available on site. Address any questions or inconsistencies that were found during the Desktop Review, and record the answers.

Step 3: Record Below-Grade Activities and Openings

When on site, pay special attention to below-grade areas, systems, openings, and other points of water intrusion. Note structural vulnerabilities, deterioration of equipment that could exacerbate flood risk, small openings not clearly visible on drawings, and drainage openings.



ALWAYS call ahead before performing a field evaluation. This will ensure that facility security is informed and also allow for the facility to plan for your arrival. Ideally, staff and managers will be present and available for questions. Additionally, confirm that photos and/or video is approved by facility staff prior to use.

Field Evaluation	
(Optional) COMPLETE THIS SECTION IF EVALUATION COMPLETED AFTER THE SYSTEM IMPACTED BY FLOOD EVENT	
Temporary or Emergency Repair Measures: _____	

Potential Hazard Mitigation Action: _____	

Scoring Evaluation	
Condition Evaluation Please indicate score / cause <i>For use with condition evaluation below</i> (5) Destroyed or Damaged / Failing > 50%. Likely Requires replacement. (4) Damaged or Failing. Major repair / upgrades necessary. (3) Clear evidence of Wear/Damage. Can be repaired. (2) Further evaluation necessary to determine condition. (1) Undamaged and fully operational (N/A) Not Applicable	Concrete/Asphalt ____ / ____ Drainage System ____ / ____ Landscaping ____ / ____ Other ____ / ____ Other ____ / ____ Other ____ / ____ Other ____ / ____
Vulnerability Evaluation Please indicate score / cause Please indicate the score for the site both at the BFE and the 500-year flood recurrence interval elevation 1. What percentage of the site will be impacted at BFE of ____ and 500-year ____? Score BFE: ____ Score 500-year: ____ (5) 76-100% (4) 51-75% (3) 26-50% (2) 11-25% (1) <10% 2. How many feet of flooding can be expected on the site for areas that contain buildings, are necessary for access, or contain any critical assets at the BFE of ____ and 500-year ____? Score BFE: ____ Score 500-year: ____ Assets Affected: <input type="checkbox"/> Occupied Structures <input type="checkbox"/> Unoccupied, Critical Structures <input type="checkbox"/> Unoccupied, Noncritical Structures <input type="checkbox"/> Access <input type="checkbox"/> Other _____ (5) 4+ (4) 2-3 (3) 1-2 (2) <1 (1) 0 Notes: _____ _____ _____	

Field Evaluation (continued)

Step 4: Photographs

Photographs are important for evaluation follow up and confirming records during later review. Security allowing, walk around the facility's exterior and take photos of all exterior walls, foundation elements, and entrances. Close-up photos should also be taken of any doors, windows, or openings. Use a tape measure to determine the elevation of openings or critical equipment from the exterior grade or facility floor, and then photograph the tape measure next to the equipment to record its height. Once inside, photographs should be taken of all possible flood entry points, and potential vulnerabilities. It is helpful to record the number of photos being taken on site, and their subject matter. Identifying information can be written on a small dry-erase board and included in the photographs, as upon returning to the office, pumps, piping, and other equipment often look similar.

Recommended Field Evaluation Checklist

- | | | |
|---|--|--|
| ✓ Personal Protective Equipment, as appropriate | ✓ Appropriate Inspection Forms (see Appendix A of this Manual) | ✓ Camera |
| ✓ Hard hat | ✓ Grounds | ✓ Small Dry Erase Board |
| ✓ Reflective vest | ✓ Structure | ✓ Marker |
| ✓ Steel toed boots | ✓ System | ✓ List of questions from the desktop evaluation |
| ✓ Gloves | ✓ Asset | ✓ Historical loss documentation that may need confirmation |
| ✓ Relevant Facility Drawings | ✓ Tape Measure | |

The purpose of the field review is to verify vulnerabilities revealed in the desktop evaluation and assess the site for other vulnerabilities or flood-related risks.

What are the true consequences of flooding?

Have ALL vulnerabilities been determined below the BFE and goal level of protection on site?

Have ALL vulnerabilities been recorded that do not appear on site drawings?

What is the field condition of the site's most critical equipment?

What, if any, submersible equipment is on site?

What, if any, mitigation options are present on site? Do they require maintenance to install or secure them before the flood event to protect the facility?

What are the exterior walls, interior walls, and floors made of? What is their reinforcement, if any?

What Cascading Impacts affect the facility? What Cascading Impacts affect the service population?

IMPORTANT: Proper personal protection equipment (PPE) is required for field evaluations. Always ask the facility what special equipment may be necessary.

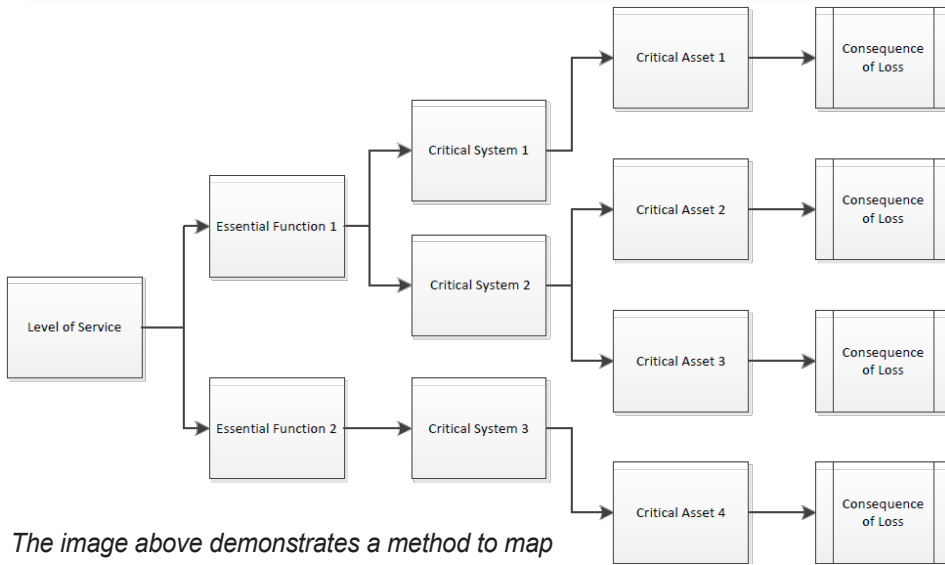
Pilot Example Department of Health Facility

Desktop evaluation results did not reflect actual conditions observed during field evaluation. Systems and assets identified as already being elevated above the goal level of protection remained vulnerable. For example, the desktop evaluation indicated that the primary emergency backup generator at the facility was elevated 6 inches above the goal level of protection. Upon field evaluation, it was noted that the batteries and electrical supply to the generator were located on the floor next to the generator and, thus, at risk to flooding. This could ultimately lead to cascading impacts and render the generator useless in an emergency situation.



Cascading Impacts

It is important to remember Cascading Impacts when evaluating a facility's vulnerabilities—both at the desk and out in the field. This Manual defines Cascading Impacts as a series of secondary impacts that are triggered by the loss of a specific function or service. Commonly referred to as the “domino effect,” these impacts should play a significant role in determining the mitigation options for a facility. Cascading impacts can occur from a break in the critical path, as occurs when assets critical to systems or functions are impacted, or when assets of functions are connected physically or are functionally inter-reliant in some way. The images and examples below illustrate this concept.

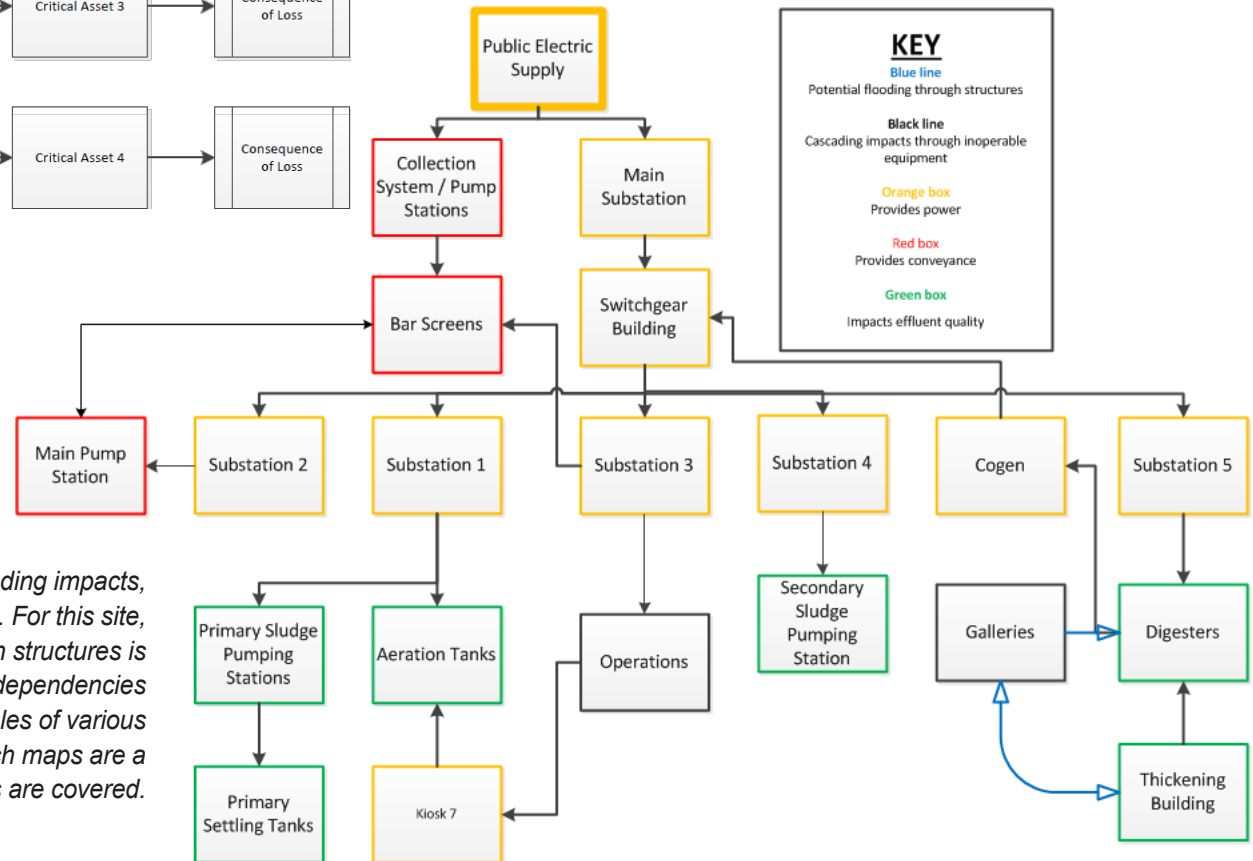


The image above demonstrates a method to map critical path. The assessor would begin by defining the service or public function of the facility, then identify individual functions, systems, and assets that must operate to meet the facility's level of service. This activity can be completed for anything from a library, for example, (which needs access, books, and employees to operate), to a complicated critical facility.

Examples of Cascading Impacts:

Main power supply is out and the facility is relying on a generator. A fuel oil tank gets contaminated with flood water. The fuel oil pumps send contaminated water to the generator, which cannot combust the contaminated fuel oil. Emergency power fails. Equipment relying on that emergency power can no longer operate.

Two structures are connected by a common basement. Both structures are dry floodproofed. Nevertheless, human error caused one door to be improperly secured. The building with the unsecured door floods and results in flooding to the other through the common basement.



The image at right is one way to illustrate cascading impacts, using a wastewater treatment facility as an example. For this site, cascading impacts as a result of flooding between structures is indicated by blue connecting lines. Functional interdependencies are illustrated through black connecting lines. The roles of various components are illustrated with colored boxes. Such maps are a useful planning tool, to ensure all bases are covered.

3.5 Optional - Developing Flood Risk Scores

Flood Risk Scores can be developed for facility structures, systems, assets, and the facility as a whole. During both the desktop and field evaluations, the assessor can gather the information needed to develop risk scores; the Mitigation Assessment Forms each contain relevant sections. Flood Risk Scores are useful for prioritizing facilities, structures, systems, or assets for mitigation and for communicating the urgency for mitigation to decision-makers. The Flood Risk Scoring process may not be relevant for organizations that have dedicated funding to a particular facility, or have only one facility with no need to prioritize individual facilities for mitigation. The process of developing a flood risk score is optional and is just one more way to quantify, understand, and communicate risk at a facility or relative risk among multiple facilities. Assessors should decide ahead of time, in conjunction with stakeholders, whether and to what extent scoring should be completed.



- Flood risk scores
- can be used at the facility
- level as a screening tool to
- help support the decision
- to proceed with further
- evaluation or to prioritize
- facilities for further action.

In order to obtain a Flood Risk Score for an individual facility or facility component, the assessor will complete the three-step scoring process located near the end of each assessment form. The figure to the right displays an example Scoring Evaluation, used for the Structure Mitigation Assessment Form.

The total flood risk score for the component being analyzed follows a simple formula:

FLOOD RISK SCORE =

VULNERABILITY SCORE

X CRITICALITY SCORE

X CONSEQUENCE SCORE

SCORING EVALUATION

<p>Flood Vulnerability Evaluation: <i>Point where flood waters would reach the lowest vulnerable point at the facility</i></p> <p>(5) Vulnerable to the 10% Annual Chance (10-Year) Flood Elevation OR Multiple Historical Losses Recorded with Significant Consequences</p> <p>(4) Vulnerable to the 2% Annual Chance (50-Year) Flood Elevation OR At Least One Record of Loss with Moderate to Significant Consequences</p> <p>(3) Vulnerable to the 1% Annual Chance (100-Year) Flood Elevation with Moderate to Significant Consequences</p> <p>(2) Vulnerable to the 0.2% (500-Year) Flood Elevation</p> <p>(1) Vulnerable above the 0.2% (500-Year) Flood Elevation</p> <p>Score: _____</p>	<p>Consequence (Service Loss) Evaluation <i>Estimated number of days/hours the given entity would remain out of service</i></p> <p>(5) Use of the facility or service is lost and inoperable for 7+ days / Damage costs would exceed 50% replacement value Estimate: _____</p> <p>(4) Use of the facility or service is lost and inoperable for 1 – 7 days / Damage costs would exceed 25% replacement value</p> <p>(3) Use of the facility or service is lost and restored within 24 hours / Damage costs total less than 10% replacement value</p> <p>(2) Use of the facility or service is maintained; however ingress or egress is lost / Costs limited to emergency protective measures only</p> <p>(1) Service is maintained without interruption / Minimal costs</p> <p>Score: _____</p>	<p>Criticality Evaluation: <i>Determine the Risk Category of the System based on the Categories established in the Public Facilities Flood Hazard Mitigation Assessment Manual (refer to Page _____)</i></p> <p>(4) Life Safety / Critical Equipment / Hazardous Materials Systems / Historic and Cultural Resources</p> <p>(3) Important Equipment and Systems</p> <p>(2) Minor Importance Equipment and Systems</p> <p>(1) Non-Essential Equipment</p> <p>Score: _____</p>
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Inspection forms include sections for scoring evaluation.

The following pages describe the facility risk score, a risk range, a criticality matrix, and how they are related.

A score of one reflects lowest risk to a facility, with little incentive for mitigation actions. A score of five represents imminent threat and instituting protective measures should be of the highest priority. Nevertheless, score definitions are suggestions only and assessors should exercise professional judgment in identifying the appropriate risk score, being sure to record and communicate all assumptions to decision makers.

The screenshot shows the top of a web-based tool. At the top are the Florida State Seal and the 'SENT' logo (State Emergency Notification System). Below the logos is the text: 'State of Florida: Division of Emergency Management Facility Flood Risk Screening Tool'. There is a form field for 'I will be evaluating: The Facility' with a dropdown menu and a 'Select One and Click Begin' button. Below that is a field for 'Enter the name of the Facility, Structure, System, or Asset:' with a text input box and a 'Florida Department of Economic Opportunity - Broward County' label. At the bottom is a blue 'BEGIN' button.

The Florida Division of Emergency Management has developed a Facility Flood Risk Assessment Tool to help screen facilities for flood risk. This tool is available on the Public Facility Mitigation website at <http://www.floridadisaster.org/mitigation>.

Vulnerability Score

Probability: Using flood depth information gathered during the desktop evaluation and vulnerabilities confirmed during the field evaluation, determine whether the facility, structure, system, or asset being evaluated is vulnerable to the 10-percent, 2-percent, 1-percent, 0.2-percent, or above the 0.2-percent annual chance flood depth.

Historical losses: For facilities without access to 10-, 50-, and 500-year flood elevations, historical losses can be used to estimate vulnerability. Assessor judgment should be applied to determine the appropriate score and all assumptions should be recorded, with a score of 1 representing very low vulnerability and a score of 5 representing very high vulnerability.

In the absence of this information, professional judgment will be needed. An example of such a scenario would be a facility outside of the floodplain, with no records available to evaluate historical loss, but the assessor believes may be subject to flooding due to inadequate drainage. Another example may be a site in a ponding zone, such as in the case of the Department of Economic Opportunity pilot facility, and probability flood information is not available beyond the BFE.



Vulnerability can be quantified based on modeled probability of impact to the facility (such as found in the FIS), historical losses, or based on engineer judgment where such information is not available.

Vulnerability Score	Vulnerability Range
5	Vulnerable to the 10% Annual Chance (10-Year) Flood Elevation OR Multiple Historical Losses Recorded with Significant Consequences
4	Vulnerable to 2% Annual Chance (50-Year) Flood Elevation OR At Least One Record of Loss with Moderate to Significant Consequences
3	Vulnerable to the 1% Annual Chance (100-Year) Flood Elevation OR at Least One Record of Loss with Minor to Moderate Consequences
2	Vulnerable to the 0.2% Annual Chance (500-Year) Flood Elevation
1	Vulnerable above the 0.2% Annual Chance (500-year) Flood Elevation

Consequence Score

Consequence scoring involves quantifying potential flood impacts, which may include physical damage to property, negative impacts to the environment, loss of life, or prolonged loss of function. The consequence score is based on impacts to the community, in the form of lost use of the facility or lost service, physical damages to the facility, and emergency preparedness and response costs. In this analysis, the consequence of a flood event is determined independently of its probability, and all consequence of loss estimates will be made based on impacts at the flood depth correlating to the BFE.

The following criteria can be used as a guideline to apply a consequence category. As always, assessor judgment will be necessary and all assumptions should be noted.

Consequence Score	Consequence Description
5	Use of the facility or service is lost and inoperable for 7+ days / Damage costs would exceed 50% replacement value
4	Use of the facility or service is lost and inoperable for 1-7 days / Damage costs would exceed 25% replacement value
3	Use of the facility or service is lost and restored within 24 hours / Damage costs total less than 10% replacement value
2	Use of the facility or service is maintained; however, ingress or egress is lost / Costs limited to emergency protective measures only
1	Service is maintained without interruption / Minimal costs

Criticality Score

The final multiplier used to produce a Flood Risk Score is the Criticality Score. Criticality refers to the importance of a facility, structure, system, or asset or service that could potentially be lost or directly affected during and after a flood event. Depending upon the component being analyzed, one of two scoring systems will apply.

Facility and Structure Criticality

In order to apply an appropriate Criticality Score for the facility or structure being assessed, the assessor will simply use the corresponding Risk Category, discussed in Part I of the Manual. If the professional judgment of the engineer determines that a structure's category is ambiguous, the highest appropriate Category should be selected. For evaluation of a facility, the highest Risk Category on the site should be used.

Criticality Score	Structure Risk Category
4	Risk Category IV
3	Risk Category III
2	Risk Category II
1	Risk Category I

System and Asset Criticality

Using the system and asset criticality prioritization discussed earlier in Section 3.0, assign individual scores to systems and assets being analyzed. It is important to note that just because a system may receive a specific criticality score, each asset may not be a vital portion of the system to maintain full functionality.

Conversely, though some assets may not seem critical or important upon initial analysis, the engineer may reconsider providing higher asset scores based on the potential for cascading impacts.

If the system or asset falls between two categories, the highest of the two should be selected.

Criticality Score	System and Asset Category Explanation
4	Critical Equipment / Hazardous Materials Systems / Life Safety / Historic and Cultural Resources
3	Important Equipment and Systems
2	Minor Importance Equipment and Systems
1	Non-Essential Equipment and Systems

Pilot Example - Summary of Flood Risk Analysis

Department of Economic Opportunity Facility

Vulnerability

The facility is located within an AH Zone with an identified BFE of 6 feet NAVD88. During the desktop analysis, it was established that each of the structures within the campus is located below the BFE, between 5 and 6 feet. Additionally, a series of assets and systems were elevated by concrete pads but not above the BFE and would, therefore, remain vulnerable. Scores ranged from 2-3 for assets and structures.

Consequence of Loss

Because the first floor elevation of all the buildings on the site is below the BFE of 6 feet, it is likely all buildings and a number of assets/systems would experience damage during the 100-year flood event. In particular, the HVAC, main incoming transformer, and emergency generator would be affected, causing extended outage times. Consequence scores for the facility ranged between 4 and 5.

Criticality

General consequences of impact to the facility include property damage and operational disruption. In addition, the Department of Economic Opportunity maintains an important service housing critical records, aiding in employment opportunities, and assisting with unemployment funding. Although the loss of this facility would not put anyone in immediate danger, the provision of this service is crucial to county citizens. Scores ranged from 2 to 4, depending on the item evaluated.

Finalizing and Interpreting Flood Risk Scores

$$\text{FLOOD RISK SCORE} = \text{VULNERABILITY SCORE} \times \text{CRITICALITY SCORE} \times \text{CONSEQUENCE SCORE}$$

Score results will correspond with risk ranges in the figure below. Scores are biased toward more critical items (those with higher criticality scores), as risk tolerance is naturally lower for items with higher criticality. On the following page, the assessor will find a series of tables correlating risk score ranges to criticality scores, along with examples. Assessors and decision makers should consider this bias when interpreting scores. Scores should be used as an informational tool only, and one of many discussed in this Manual to support decision making. The decision of whether and how to mitigate should not be unilateral and should be made in conjunction with stakeholders, considering the range of factors important to the particular facility.

	Flood Risk Score Range	
Severe Risk	50-100	RED
High Risk	25-49	ORANGE
Moderate Risk	10-24	YELLOW
Residual Risk	1-9	GREEN

Severe (Risk Score 50 - 100)

Flood risk scores between 50 and 100 only occur if the criticality of the entity is 2 or higher and both the vulnerability and consequence must be relatively high. IN such cases, both the consequence and vulnerability should be reduced, where possible. Consider relocation as an option.

High (Risk Score 25 - 49)

Flood risk scores between 25 and 49 indicate conditions that could lead to significant negative outcomes from a flood event. A high level of vulnerability or high consequence score indicates the asset in question would likely lose service for an extended period of time. For the specific sites/systems/structures/assets, this level of risk may be unacceptable and decision makers may decide action is required. Actions should be taken to reduce vulnerability, such as elevating or dry/wet floodproofing the asset, to help reduce risk.

Moderate (Risk Score 10 - 24)

Flood risk scores between 10 and 24 indicate moderate to serious consequences; however, mitigation action may be a lower priority due to the criticality of the asset. Cascading Impacts should be considered. A combination of measures may be prescribed to reduce consequence and/or vulnerability.

Residual (Risk Score 1 - 9)

Flood risk scores between 1 and 9 occur when both consequence and vulnerability are relatively low. This situation suggests floods would inflict relatively minor or infrequent consequences. Nevertheless, a vulnerability score of 3 may not be acceptable for some critical facilities or high-value assets, because the owner cannot afford to be without these services, even on an infrequent basis. Note that risk is never completely eliminated. Some residual risk remains even after mitigation measures have been implemented. Monitor conditions and adapt as necessary.

Pilot Example - DEO Facility

All four inspection forms were completed at the site and example results are summarized below.

	Vulnerability Score	Consequence Score	Criticality Score	Flood Risk Score
Grounds	3	4	2	24
Structure 2680	3	4	2	24
System: Chillers	2	5	3	30
System: MEP	2	4	4	32
Asset: A/C Unit	3	5	3	45

Risk scores range from moderate to high across the site. It is important when evaluating options that the range of scores, as well as historical impacts, be considered. Since critical assets on site are more vulnerable than the structures themselves, the facility may choose to take a phased approach to mitigation - budgeting to protect assets at highest risk, first.

Risk Score Ranges

Criticality Score = 4

Vulnerability	5	20	40	60	80	100
	4	16	32	48	64	80
	3	12	24	36	48	60
	2	8	16	24	32	40
	1	4	8	12	16	20
		1	2	3	4	5
Consequence						

Criticality Score = 3

Vulnerability	5	15	30	45	60	75
	4	12	24	36	48	60
	3	9	18	27	36	45
	2	6	12	18	24	30
	1	3	6	9	12	15
		1	2	3	4	5
Consequence						

STRUCTURE EXAMPLE

Structure at the 50-Year Flood Elevation (Vulnerability Score = 4)

Use of the facility or service is lost and inoperable for 7+ days / Damage costs would exceed 50% replacement value (Consequence Score = 5)

Water Treatment Plant (Criticality Score = 4)

Flood Risk Score = $4 \times 5 \times 4$

Flood Risk Score = 80 (SEVERE RISK)

ASSET EXAMPLE

Asset located 2 feet above the 100-Year Flood Elevation but 1 foot below the 500-Year Flood Elevation (Vulnerability Score = 2)

Use of the facility or service is lost and inoperable for 1-7 days (Consequence Score = 4)

Electrical Switchgear - Life Safety System (Criticality Score = 4)

Flood Risk Score = $2 \times 4 \times 4$

Flood Risk Score = 32 (HIGH RISK)

Criticality Score = 2

Vulnerability	5	10	20	30	40	50
	4	8	16	24	32	40
	3	6	12	18	24	30
	2	4	8	12	16	20
	1	2	4	6	8	10
		1	2	3	4	5
Consequence						

Criticality Score = 1

Vulnerability	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
Consequence						

4.0

Developing Design Criteria



4.1 Codes and Standards assists in developing an understanding of the applicable state requirements pertaining to flood-resistant construction.

4.2 Requirements Based on Flood Zone describes the freeboard criteria based on risk category and flood zone.

4.3 Industry Standard Performance Criteria Guidance details additional relevant resources to be considered in the overall design criteria.

4.4 Additional Considerations elaborates on the importance of considering both additional freeboard and sea level rise in design criteria.

4.5 Establishing the Proposed Mitigation Design Elevation outlines the parameters to be considered when establishing a Proposed Mitigation Design Elevation.



4.0 Developing Design Criteria

This section describes key criteria and concepts used to determine the goal level of protection for mitigation options, as well as the Proposed Mitigation Design Elevation (PMDE) that will ultimately be selected for mitigation project design and implementation.

The goal level of protection is a benchmark used to understand vulnerability at the site, along with BFE. More detailed analysis involves looking at vulnerability to varying probabilities of flooding. It is important to understand both the flood risk below the goal level of protection, as well as the feasibility of implementing projects that succeed in reaching the goal level of protection. When the goal level of protection is coupled with an identified preferred operating capacity at the corresponding elevation, this is referred to as design criteria.

The PMDE is the design elevation that is determined through the evaluation process to be practicable and appropriate for design of proposed mitigation projects.

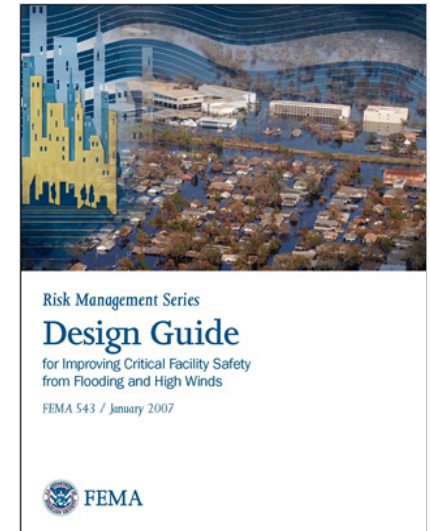
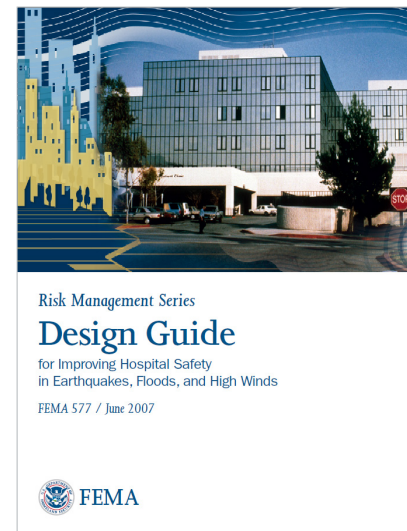
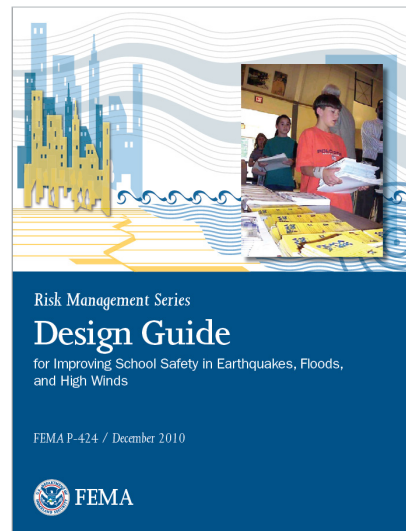
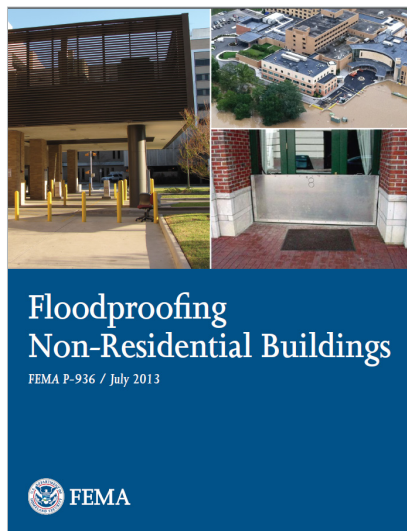
This section will outline concepts, processes, and federal, state, local, and consensus standards used during the evaluation process to identify the goal level of protection and PMDE for public facilities.



- FEMA 543 is an excellent tool and presents a series of actions that can
- be applied to new structures as well as
- rehabilitation of existing critical facilities.
- The *Public Facilities Flood Mitigation Assessment Manual* builds on FEMA
- 543 by providing a scoring process to
- compare risk within and across facilities,
- as well as evaluate mitigation options.

FEMA has released several Design Guides in its Risk Management Series that support both the development of design criteria and identification of appropriate mitigation options. The primary objective of these resources is to assist decision-makers in adopting and implementing sound mitigation measures that will decrease the vulnerability of facilities to major disasters. State and local requirements provide specific guidelines in building certain facilities against industry standards.

FEMA's P-936 Floodproofing Non-Residential Buildings will support development of the PMDE and identification of mitigation options discussed in Section 5.0.



When considering flood risk and vulnerability, as well as potential mitigation actions, it is important to identify a goal level of protection. The goal level of protection is the flood elevation at which assets would not be damaged and, ideally, mitigation measures would be designed to limit damage and service interruption. This flood elevation should, where feasible, correlate to the flood probability that is in accordance with industry standards and federal, state, and local regulations. Level-of-protection decisions should ultimately be based on a number of factors including, but not limited to:

- ➔ Specific codes governing new and existing buildings; these requirements provide the freeboard (safety factor) appropriate to the assigned risk category
- ➔ Appropriate Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS), which indicate the flood zones, as well as BFE and recurrence interval flood elevations (10-, 25-, 50-, 100-, and 500-year elevations)
- ➔ Guidance that outlines performance criteria
- ➔ Additional factors that may exacerbate flood risk at the site, including expected sea level rise (SLR) or increased rainfall due to climate change, and wave height

Technical and financial considerations will inform the ultimate PMDE for the facility, its structures, and any evaluated systems or assets.

4.1 Codes and Standards

State Requirements

Florida Building Code

The State of Florida adopts a comprehensive building code in several volumes, five of which contain requirements pertaining to flood-resistant construction. The Florida Building Code (FBC) incorporates all building design and construction-related regulations for public and private buildings, other than those specifically exempted by Section 553.73, Florida Statutes. Starting with the 2010 edition, the FBC includes flood provisions that are consistent with National Flood Insurance Program (NFIP) requirements for buildings and structures. All counties, cities, and towns are required to enforce the FBC, though some Florida communities enforce higher standards in flood hazard areas.

Florida Building Code: *Building* - Flood provisions are primarily in Section 1612 Flood Loads, which refers to ASCE 24. Table 1612.1 in this standard provides cross references to all of the flood provisions in Florida codes.

Florida Building Code: *Existing Building* - Flood provisions are found in sections on repairs, alterations, additions, and historic structures, as well as in sections on prescriptive and performance compliance methods.

Florida Building Code: *Plumbing, Mechanical, and Fuel Gas* - Flood provisions are in a number of sections to ensure proper installation of systems and equipment.

The FBC includes special detailed requirements for hospitals (Section 419) and nursing homes (Section 420) in Special Flood Hazard Areas (SFHAs), including: Lowest floors shall be elevated to or above the higher of the BFE + 1 feet or the height of the Hurricane Category 3 (Saffir-Simpson scale) surge inundation elevation. Required elevations for additions to existing facilities, even if the additions do not constitute substantial improvements.



It is impossible to eliminate risk, but by using a systematic decision-making process, risk can be significantly reduced to a level that may be acceptable.

Goal level of Protection: The flood elevation correlating to a specific recurrence interval or other set of factors at which to measure a facility's existing vulnerability against and to guide decision-making around mitigation actions.

Think: How high do flood waters have to get before there is impact?

Performance Criteria: The preferred level of operation for a facility before, during, and after a flood event as defined by requirements and standards specific to the community or agency and facility type.

Think: Does the facility need to remain fully operational during a flood event? Should we be evacuating? Will critical personnel remain at the facility to retain functionality?

PMDE: What is a technically and financially feasible level of protection for the site?

Consensus Standards

The FBC references two ASCE standards for minimum design loads of buildings (ASCE 7) and flood-resistant design and construction (ASCE 24). Even if a mitigation project is not required to comply with the FBC, use of ASCE 7 and ASCE 24 is recommended.

ASCE 7: Minimum Design Loads for Buildings and Other Structures - This standard provides minimum load requirements for the design of buildings and other structures that are subject to building code requirements. The standard offers loads, appropriate load combinations, set strength designs, and allowable stress design. The standard also provides a variety of information considerations for flood loads and hydrostatic pressure.

ASCE 24: Flood Resistant Design and Construction - This standard provides the minimum requirements and expected performance for the design and construction of buildings and structures in flood hazard areas. It is not a restatement of all of the NFIP regulations, but offers additional specificity, some additional requirements, and some limitations. Buildings are required to be designed according to ASCE 24 so that they will be better able to resist flood loads and flood damage.

Federal Regulations

The State of Florida and its communities participate in the NFIP. Participating states and communities must adopt and enforce floodplain management regulations that meet or exceed the minimum NFIP standards and requirements. FEMA deems the FBC to meet or exceed the minimum requirements of the NFIP for buildings and structures.

The NFIP minimum requirements are in Chapter 44 of the Code of Federal Regulations (44 CFR). Most of the requirements related to community ordinances placed on facility remediation and construction can be found in 44 CFR, Parts 59 and 60. State agencies are required to comply with the NFIP, in accordance with 44 CFR 60.2.

44 CFR Part 59: National Flood Insurance Program, Definitions - Includes definitions that apply to all elements of the NFIP, including flood insurance, flood hazard mapping, and land management and use.

44 CFR Part 60: Criteria for Land Management and Use - Sets forth minimum requirements for development, including buildings, in flood hazard areas based on the nature of the flood risk.

Executive Order 11988: Floodplain Management was also prepared to enforce the position that all federal and state agencies must avoid, to the extent possible, the long- and short-term adverse impacts associated with occupying floodplains. The first requirement set forth in this Executive Order states, "An agency must determine if a proposed action is in the base floodplain (the area which has a 1-percent or greater chance of flooding in a given year). If a proposed action is within the base floodplain, reevaluate any alternatives applicable." This policy is implemented through 44 CFR Part 9.

Local Regulations

Local governments in Florida may enforce floodplain management requirements that exceed the minimum standards of the FBC. When evaluating facilities subject to local authority, consult with the local building department and floodplain manager before implementing mitigation measures.



Critical and Essential Facilities

- Communities should be aware that Presidential Executive Order 11988 on floodplain management requires federal agencies to complete a deliberative decision-making process when they undertake or propose to provide federal funding for certain critical actions in SFHAs, including the construction, upgrade, or repair of critical facilities.

Hierarchy of Policies and Guidelines

Federal Regulations

- 44 CFR Part 59: National Flood Insurance Program, General Provisions
- 44 CFR Part 60: Criteria for Land Management and Use
- EO11988 and 44 CFR Part 9

State Requirements

- Florida Building Code
- ASCE 7: Minimum Design Loads for Buildings and Other Structures
- ASCE 24: Flood Resistant Design and Construction

Local Requirements and Guidance

- Local Ordinances and Code Amendments

Note: Local governments in Florida may enforce requirements that exceed the minimum standards in the FBC. Always consult with the local building department and floodplain manager before implementing mitigation measures.

4.2 Requirements Based on Flood Zone

According to the FBC and ASCE 24, freeboard is required for new and substantially improved structures based on the risk category and flood zone.

It should be noted that ASCE 24 now requires Category IV buildings to be elevated to or above BFE + specified freeboard, the Design Flood Elevation (DFE), or the 500-year flood elevation, whichever is higher. Revised in 2014, it is a referenced standard in the 2015 International Codes, which are the basis for the 6th Edition of the FBC (expected in 2018). This recent change has been integrated into the table below.

		Category I	Category II	Category III	Category IV
Elevation of Lowest Floor	All A Zones not identified as Coastal A Zones: elevation of lowest floor	BFE	BFE + 1 ft or DFE, whichever is higher	BFE + 1 ft or DFE, whichever is higher	BFE + 2 ft, DFE, or the 500-year flood elevation, whichever is higher
Elevation of Bottom of Lowest Horizontal Structural Member	All V Zones and Coastal A Zones: where the lowest horizontal structural member is parallel to direction of wave approach	BFE	BFE	BFE + 1 ft or DFE, whichever is higher	BFE + 1 ft or DFE, or the 500-year flood elevation, whichever is higher
	All V Zones and Coastal A Zones: where the lowest horizontal structural member is perpendicular to direction of wave approach	BFE	BFE + 1 ft or DFE, whichever is higher	BFE + 2 ft or DFE, whichever is higher	BFE + 2 ft or DFE, or the 500-year flood elevation, whichever is higher
Elevation Below Which Flood Damage-Resistant Materials Shall be Used	All A Zones not identified as Coastal A Zones	BFE	BFE + 1 ft or DFE, whichever is higher	BFE + 1 ft or DFE, whichever is higher	BFE + 2 ft or DFE, or the 500-year flood elevation, whichever is higher
	All V Zones and Coastal A Zones: where the lowest horizontal structural member is parallel to direction of wave approach	BFE	BFE + 1 ft or DFE, whichever is higher	BFE + 2 ft or DFE, whichever is higher	BFE + 2 ft or DFE, or the 500-year flood elevation, whichever is higher
	All V Zones and Coastal A Zones: where the lowest horizontal structural member is perpendicular to direction of wave approach	BFE	BFE + 2 ft or DFE, whichever is higher	BFE + 3 ft or DFE, whichever is higher	BFE + 3 ft or DFE, or the 500-year flood elevation, whichever is higher
Minimum Elevation of Utilities and Equipment	All A Zones not identified as Coastal A Zones	BFE	BFE + 1 ft or DFE, whichever is higher	BFE + 1 ft or DFE, whichever is higher	BFE + 2 ft or DFE, or the 500-year flood elevation, whichever is higher
	All V Zones and Coastal A Zones: where the lowest horizontal structural member is parallel to direction of wave approach	BFE	BFE + 1 ft or DFE, whichever is higher	BFE + 2 ft or DFE, whichever is higher	BFE + 2 ft or DFE, or the 500-year flood elevation, whichever is higher
	All V Zones and Coastal A Zones: where the lowest horizontal structural member is perpendicular to direction of wave approach	BFE	BFE + 2 ft or DFE, whichever is higher	BFE + 3 ft or DFE, whichever is higher	BFE + 3 ft or DFE, or the 500-year flood elevation, whichever is higher
Dry Floodproofing of Non-Residential Structures and Non-Residential Portions of Mixed-Use Buildings	All A Zones not identified as Coastal A Zones: elevation to which dry floodproofing extends	BFE + 1 ft or DFE, whichever is higher	BFE + 1 ft or DFE, whichever is higher	BFE + 1 ft or DFE, whichever is higher	BFE + 2 ft or DFE, or the 500-year flood elevation, whichever is higher
	All V Zones and Coastal A Zones: dry floodproofing not allowed	Not Permitted	Not Permitted	Not Permitted	Not Permitted

Source: American Society of Civil Engineers. (2005). *Flood-Resistant Design and Construction*. ASCE Standard ASCE 24.

4.3 Industry Standard Performance Criteria Guidance

Public facilities should also consider applying additional guidelines to the overall design criteria based on facility type and the services provided. FEMA has developed a significant amount of guidance to aid in the design of mitigation actions and can be found in a number of resources such as those listed to the right.

If the facility is critical, consider more stringent levels of protection. For example, Category III critical facilities are not held to the new ASCE 24 standard that incorporates the 500-year, but this level of protection should be considered, where appropriate.

FEMA 543 states, "Even if there is no specific requirement to use the 0.2-percent-annual-chance flood for siting and design purposes, it is strongly recommended that decision-makers take into consideration the flood conditions associated with this lower probability event or from other floods of record."

FEMA has also recently released policy indicating that the agency will enforce compliance of ASCE 24 Flood Design and Construction standards with the purpose of ensuring national consistency in **minimum** design criteria for all structure elevation, dry floodproofing, and mitigation reconstruction projects funded by the FEMA Hazard Mitigation Assistance Programs in flood hazard areas.

Wave Action in Coastal Zones

Wave action is included in the BFE for coastal zones. Nevertheless, the FIS does not typically provide expected wave action for the 500-year flood elevation or other recurrence intervals. If a detailed wave analysis is not available for the site, a conservative rule of thumb may be used to estimate potential wave action for a site, should the facility wish to mitigate to the 500-year flood elevation. This method should be used for planning purposes only and the local floodplain administrator should be consulted on the application of this methodology for any particular site due to the complexities of site-specific analysis. The estimated calculation for 500-year wave elevations follows a simple three-step process. If wave action is taken into account, it is important to also consider flood loads and how this will impact a facility. See ASCE 7 for more information on calculating structural loads.

1. Compute the difference in stillwater between the 100-year and 500-year events

Example Values: 100-year stillwater elevation = 11 feet

500-year stillwater elevation = 15 feet

Formula: 15 feet - 11 feet = 4 feet of difference

2. Multiply that difference by a depth limited breaking factor of 0.78*

**Note:* Always round this value to the nearest whole number

Formula: 4 feet of difference x 0.78 depth limited breaking factor = 3

3. Add that to the 100-year wave height.

Example Value: 100-year wave height = 2 feet

Formula: 3 feet of calculated wave height + 2 feet of 100-year wave height = 5 feet

Relevant Resources

ASCE Multidisciplinary Assessment of Critical Facility Response to Natural Disasters.

FEMA 543: *Design Guide for Improving Critical Facility Safety from Flooding and High Winds: Providing Protection to People and Buildings*

FEMA 577: *Design Guide for Improving Hospital Safety in Earthquakes, Floods, and High Winds*

FEMA 259: *Engineering Principles and Practices of Retrofitting Floodprone Residential Structures, Third Edition*

FEMA P-424: *Design Guide for Improving School Safety in Earthquakes, Floods, and High Winds*

FEMA P-936: *Floodproofing Non-Residential Buildings*

FEMA P-55: *Coastal Construction Manual: Principles and Practices of Planning, Siting, Designing, Constructing, and Maintaining Residential Buildings in Coastal Areas*

FEMA *Using the Hazard Mitigation Plan to Prepare Successful Mitigation Projects: State and Local Mitigation Planning How-To Guide*

FEMA *Local Mitigation Planning Handbook*

USACE EM-1110-2-1100, *Coastal Engineering Manual*

4.4 Additional Considerations

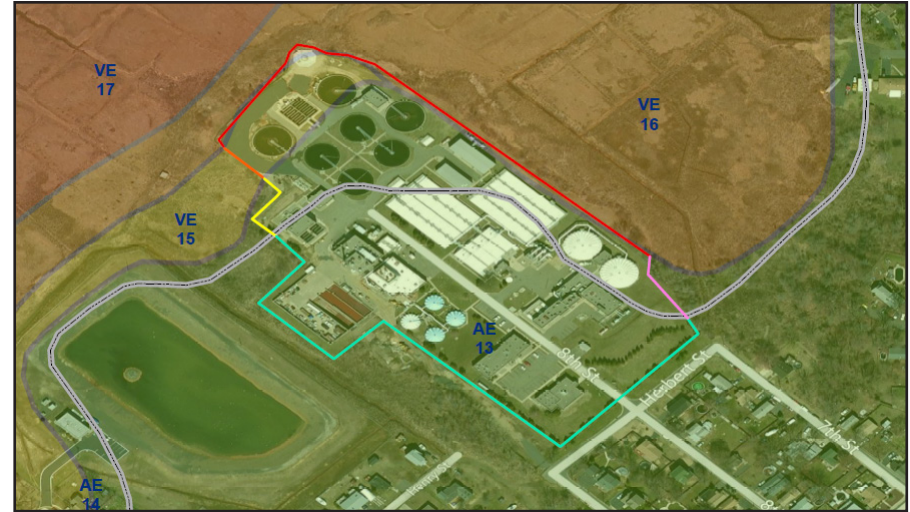
Added Freeboard to Account for Analysis Uncertainty or Adjacent Flood Zones

There is a margin of error that can be expected with any FIS or FIRM, and the older the study, the larger the margin of error may be. After Hurricane Sandy, the State of New Jersey issued an Executive Order stating that prior BFEs had been as much as 8 feet low in some areas.¹ As such, the FBC and Federal Government require freeboard of a foot or more to account for potential error when considering flood risk for critical facilities. In addition, facilities may often abut multiple flood zones that indicate greater flood risk and have varying BFEs. In such cases, it is important that the facility always uses the highest BFE to perform analysis.

Sea Level Rise

Facility assessors may wish to incorporate anticipated SLR into the goal level of protection. FEMA has begun to accept SLR as a component of mitigation designs in conjunction with its 2011 “Climate Change Adaptation Policy” statement, and has provided guidance on the subject. In order for projects to use the increased risk of SLR to demonstrate cost-benefit, FEMA requires that it be incorporated into the design elevation *in addition* to any freeboard.

Projections vary widely and it is important to note that SLR projections are not uniform geographically, even among same sources. Three basic principles exist for incorporating SLR into an optimal design level of protection:



This facility straddles four flood zones, including VE zones.

Year	NOAA Low	USACE Low	NOAA Int Low	USACE Int	NOAA Int High	USACE High	NOAA High
2010	0.14	0.14	0.17	0.17	0.23	0.26	0.31
2015	0.18	0.18	0.23	0.23	0.33	0.37	0.45
2020	0.22	0.22	0.29	0.29	0.44	0.51	0.62
2025	0.26	0.26	0.35	0.35	0.57	0.66	0.81
2030	0.30	0.30	0.42	0.42	0.71	0.83	1.03
2035	0.33	0.33	0.50	0.50	0.86	1.02	1.28
2040	0.37	0.37	0.58	0.58	1.03	1.23	1.55
2045	0.41	0.41	0.66	0.66	1.21	1.45	1.85
2050	0.45	0.45	0.75	0.75	1.41	1.70	2.17
2055	0.49	0.49	0.84	0.84	1.62	1.96	2.52
2060	0.53	0.53	0.94	0.94	1.85	2.24	2.89

Example SLR Projection Table, through 2060

Source: United States Army Corps of Engineers

- ✓ The projections used must come from a reputable source. The U.S. Army Corps of Engineers (USACE) and National Oceanic and Atmospheric Administration (NOAA) have published SLR projection curves for different timescales that can be used for design purposes.
- ✓ Location-specific data should be considered when available. Some state and local governments have produced region-specific SLR projections (e.g., the New York Panel on Climate Change [NPCC] Projections); and this type of data may help to narrow the range of possible design heights. Local and regional predictions may actually provide more accurate information than national predictions.
- ✓ The projection should reflect the intended useful life of the mitigation measure in question; SLR projections typically involve low, medium, and high projections. A useful way of narrowing the potential range of options is to select the projection that corresponds to the useful life of the project being considered. It is safest to use the highest SLR prediction, but it is acceptable to lower the prediction to the medium projection if the DFE becomes unreasonable, too costly, or unfeasible. With that said, high projections are heavily emphasized for use by critical facilities.

¹ 24 CFR 55, Executive Order 11988, Floodplain Management Regulations

4.5 Establishing the Proposed Mitigation Design Elevation

As described in Section 3.0, individual structures and components of the facility should be evaluated to identify vulnerability up to the goal level of protection. It is likely that neither the original facility, nor its capacity expansions and improvement projects, were designed for flood elevations at the goal level of protection. The range of mitigating techniques available and practical for retrofitting the existing structures against higher flood elevations may be limited, depending on the circumstances, and those that are both available and practical could be relatively costly. As such, the goal level of protection should be evaluated for technical and financial feasibility to determine the PMDE, which may differ based on structure, system, and even asset.

A recommended and minimum design standard can be identified with incremental improvements in between, based on what is feasible. An evaluation of factors, such as the below, can be used to determine the final design elevation for mitigation measures.

- ✓ Constructibility obstacles, such as limited space for new construction on both the interior and exterior
- ✓ Structural limitations of the existing structures caused by increased crushing and buoyant flood loads
- ✓ Underground utilities throughout the site
- ✓ Building code requirements that may be triggered by mitigation activities
- ✓ Environmental regulatory restrictions
- ✓ Maintenance and operations considerations

An example of the incremental approach to determining PMDE is provided below:

Factor	Incremental Increase (feet)	Proposed Mitigation Design Elevation (feet)
BFE (AE Zone)	-	14
FBC Required Freeboard for Category II	1	15
50-year Intermediate SLR	2	17
500-year flood elevation (FIS)	-	17
50-year Intermediate SLR	2	19



The PMDE elevation can, essentially, be any number vetted with engineers, floodplain managers, and other stakeholders, but will ideally meet current building code requirements for new construction.

A critical facility may have specific level of service requirements during or following a flood event, as specified by federal, state, and local regulators or industry standard.

In the absence of such service requirements, facility decision-makers should identify appropriate performance criteria for their facility based on the needs of the service population and the nature of the facility. For example, is the goal to remain open and fully operational, or is evacuation with a rapid restart acceptable? Such decisions should be made with extreme caution and consider safety risks to those who may remain, along with risks in evacuation.

Implications of the FBC and Mitigation to Existing Structures

Existing structures that were not built to current flood standards may be vulnerable to damage and structural failure when exposed to floodwaters simply because engineering practices may have changed, building materials may have been different at the time of construction, or general building practices may have varied.

The activities outlined in this Manual represent proactive and conscientious solutions to potential future flood risk. While the intent of the *Public Facilities Flood Mitigation Assessment Manual* is to provide guidance that can be applied to both NEW and EXISTING structures, it should be noted that mitigation of flood risk at existing facilities is not required unless a building is proposed to be substantially improved or has incurred substantial damage.

Some mitigation measures, particularly on smaller structures or higher level of protection measures, may qualify as substantial improvement. Building code requirements triggered by substantial improvements can significantly increase project costs and should be considered when identifying a PMDE.



The FBC Existing Building is the

- primary resource that should be used
- when determining approaches to achieve
- compliance with minimum requirements.
- The purpose of this code is to provide
- flexibility to permit the use of alternative
- approaches when performing updates to
- buildings.

Substantial Damage - *Damage of any origin sustained by a structure whereby the cost of restoring the structure to its pre-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.*

Substantial Improvement - *Any repair, reconstruction, rehabilitation, addition, or improvement of a building or structure—the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair is started. If the structure has sustained substantial damage, any repairs are considered substantial improvement, regardless of the actual repair work performed.*



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5.0 Identifying and Evaluating Mitigation Options

5.1 Engineering Principles presents a number of general practices basic to all retrofitting projects.

5.2 Grounds Mitigation Options identifies mitigation options to protect the site as a whole.

5.3 Structure Mitigation Options identifies mitigation options that protect the building directly.

5.4 System/Asset Mitigation Options identifies mitigation options that protect an individual system or asset at the facility.

5.5 Weighing the Mitigation Options identifies criteria that should be considered when selecting mitigation measures for a facility.

5.6 Mitigation Assessment Report provides a high level description of the contents of the report, provided in more detail in Part I.

5.7 Moving Forward with Mitigation Actions identifies the requirements needed to develop and implement mitigation actions.

5.0 Identifying Mitigation Options

Once an assessor understands why flood risk analysis is important, the next step is determining how to address the issues of flooding. This part will discuss a variety of potential options and the pros and cons of each of these options within specific scenarios. Remember to consider a mitigation strategy that employs multiple lines of defense if this is applicable to the facility being analyzed.

It is important to note that any substantial improvements or repairs to a structure may trigger compliance with current codes and standards (if a structure is not already compliant). In addition, actions to systems within specific structures may trigger additional code compliance specific to that structure type. For this reason, and a variety of others, it is important to develop the mitigation options for a facility with the help of trained engineering professionals.

Local building officials and floodplain management personnel should always be consulted before beginning a hazard mitigation project. Work with them to ensure an adequate understanding of the latest Florida Building Code (FBC) and any additional local requirements. In addition, the State Floodplain Management Office will be a valuable resource throughout this process.

Contact information for local floodplain management officials and the State of Florida Floodplain Management Office is available at <http://www.floridadisaster.org/Mitigation/SFMP>.

Mitigation Actions to be Discussed

Grounds Options

- Temporary floodwalls
- Permanent floodwalls
- Fill
- Drainage solutions

System/Asset Options

- Elevation of assets
- Submersible assets
- Compartmentalization
- Hardening in place

Structure Options

- Dry floodproofing
- Wet floodproofing
- Elevation of buildings
- Relocation of the facility outside the floodplain
- Mitigation Reconstruction (Demolish and Rebuild)



Passive/Active Measures:

- Floodproofing measures are either **passive** or **active**, depending on whether human intervention is required to ensure successful protection in the case of a flood event.
- Active measures (also known as emergency protective measures) require human intervention and are effective only if there is enough warning time to mobilize required labor and equipment. Passive measures are effective without any action and are preferred whenever possible.

FEMA P-936: Floodproofing Non-Residential Buildings

FEMA P-936 is a recommended publication when determining floodproofing measures on existing non-residential buildings in riverine and coastal areas that are not subject to wave action.

It is encouraged that facility decision-makers and engineers reference this Manual during the discussion of the chosen mitigation options.

Benefit-Cost Analysis

In many circumstances, several different flood-mitigation options may be viable to address improving flood risk of a facility. A Benefit-Cost Analysis should be performed to determine which mitigation option, or combination of options, will result in the most cost-effective mitigation measures.

5.1 Engineering Principles

The mitigation design process begins with general practices that are basic to all retrofitting projects (evaluation of grounds-specific risk, field investigation, and analysis of the existing structure), and then consideration of retrofit measures (elevation, relocation, dry floodproofing, wet floodproofing, and floodwalls and levees). These practices help guide the designer through the process of determining the appropriate mitigation measure and provide the tools to tailor each mitigation measure to applicable requirements and owner's preferences.

The evaluation and design of appropriate mitigation measures is a straightforward but technically intensive approach that will result in the generation of construction plans intended to mitigate potential flood hazards.

General Design Premise

Mitigation options must provide or maintain a continuous load path for anticipated flood loads and other loads.

Evaluate whether to "Resist" or "Avoid" hazards

**Note that a design to avoid hazards provides a greater level of assurance to reduce risk (e.g., building elevation). However, this methodology may not be technically feasible or may be too expensive, resulting in the option being cost prohibitive.*

Evaluate potential for greater than required "design" conditions and consider mitigation of other hazards (e.g., wind).

Determining how the "Building Use" Affects Options

Layout - The layout of a structure can impact the feasibility of certain types of mitigation measures.

Function - The function of structure (such as critical use) can require more robust or stringent mitigation measures.

Evaluate Locations

Potential Hazards - Assess the potential hazards to the facility as a whole and the individual structures.

Evaluate Construction Materials

Limitations of Existing Construction - Evaluate the condition of the existing construction and its adequacy for integration into possible mitigation measures.

Durability - Construction materials must be suitable for the intended use and conditions they will be subjected to (e.g., inundation and potential for impact loads).

Appearance - Local communities may restrict or limit mitigation measures and construction materials based on local standards for aesthetics.

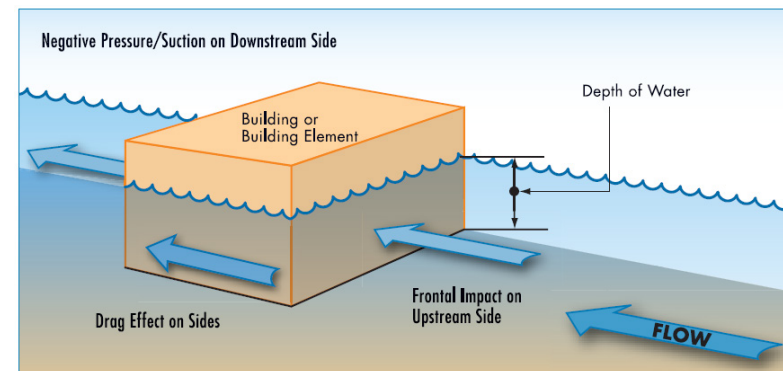
Maintenance - Materials selected should be easily maintained and replicable to ensure the full useful life of the project.

Constructibility - Special attention should be taken during the grounds investigation phase to note available space to employ possible mitigation measures. For example, mitigation via elevation typically requires large equipment and space for staging. Structures with limited available space adjacent to the structure can result in elevation being cost prohibitive.

Evaluate Flood and Impact Loads

The limits to mitigation imposed by the structural integrity of the existing structures to design flood elevations which exceed the original design conditions particularly demand a careful and thorough assessment to determine what is practical, viable, implementable, and cost effective.

See the FBC and ASCE 24 for information regarding flood and impact loads.



5.2 Grounds Mitigation Options

When grounds mitigation options are considered, careful observation of site access and potential restrictions should be part of the evaluation process. Depending on the topography, construction of barriers to floodwaters may require special access points. Access points may be protected with manually installed stop-logs or engineered gates that drop, slide, or float into position. Whether activated by automatic systems or manually, access protection requires sufficient warning time.

Floodwalls/Berms/Levees

Floodwalls can be permanent, hybrid, or removable (temporary). A **permanent floodwall** is typically constructed of reinforced concrete and anchored into the ground. As these structures can obstruct views and limit access to the structures/sites they surround, there are potential social concerns. However, permanent floodwalls can also be integrated into sites with landscaping.

A **removable (temporary) floodwall**, as the name suggests, is installed only when a potential flood event is identified. When there is no concern of flooding, the temporary floodwall is removed and stored away until the next potential flood event.

Temporary Floodwalls

Pros

- ◆ Address flooding of structures within floodwall boundary
- ◆ Maintains aesthetics and may be more acceptable to the community than a permanent floodwall

Temporary Floodwall - St. Paul, Minnesota



Cons

- ◆ Flooding may still occur from other sources, such as through conduit and piping from areas of the facility not within the floodwall, or an extreme rain event
- ◆ Requires maintenance and deployment, which requires dedicated staff
- ◆ Requires advance warning of a flood event with a significant amount of time for deployment, which may not always be available or accurate
- ◆ Must pump out rainwater that accumulates within the floodwall boundary in order to remain effective
- ◆ Must be stored and kept operable
- ◆ May impact normal operations when the wall is being installed prior to an expected flood event

Plans to mitigate the grounds of an existing facility require careful examination by an experienced professional engineer.

Determining the suitability of a specific measure requires a complex evaluation of many factors, including the nature of the flooding and of the grounds. Some flood characteristics may make it difficult to apply grounds-modification measures to an existing facility, such as:

- Location in a floodway
- Significant flood depths
- High velocities
- Rapid rate of rise
- Duration of flooding
- Waves

Other significant constraining factors include poor soils and insufficient land area.

Additionally, rainfall accumulation behind floodwalls must be accounted for, whether through stormwater storage basins or pumping systems to move the collected water to the water side of the barrier.

Permanent Floodwalls/Levees

Pros

- Effective at addressing flooding of structures within surrounding flood barrier
- Largely passive with lower maintenance, requiring less dedicated staff
- Offer more potential for architectural or aesthetic integration with surroundings

Padukah, Kentucky
Floodwall, 2007



Cons

- Flooding possible through conduit and piping from areas of the facility not within the floodwall, or an extreme rain event
- Creates a physical barrier between the facility and its community
- Requires active response to close certain access points (ingress/egress portions)
- May impact facility operations during construction
- Depends upon proper function of entrance closures, internal stormwater pumping systems, and backup power

Berms/Fill Solutions refer to the process of placing ground into areas where floodwaters may need to be diverted.

Pros

- Effective at preventing/impeding surface and groundwater flow
- Largely passive, requiring no dedicated staff
- Lower maintenance, though regular inspection is required

Cons

- Requires ample space to install or fill areas
- Required in conjunction with additional mitigation measures
- Requires significant geotechnical design to ensure effectiveness of solution

Drainage Solutions refer to the process of installing systems to provide more sufficient drainage. Drainage solutions can be integrated with green infrastructure measures to provide beneficial impacts to the environment.

Pros

- System will remove flood waters away from built environment and convey it to retention area
- Provide flood protection to several structures, as opposed to just one structure
- Lower maintenance, though regular inspection is required

Cons

- Flooding still possible if draining capacity is exceeded
- Typically applies to precipitation and not floodwaters
- Required in conjunction with additional mitigation measures

Grand Rapids Floodwall Case Study

On April 21, 2013, the Grand River, running through downtown Grand Rapids, Michigan, crested at a record 21.85 feet. The surrounding low-lying neighborhoods escaped major flooding and damage thanks to a flood wall constructed 1 foot above the 100-year flood level of 25.3 feet. While some flooding did occur along the Grand Rapids stretch of the river, the consequences were far better than those faced by nearby communities such as Comstock Park and Grandville. These communities saw severe flooding that resulted in extensive damage to homes and businesses. The \$12.4 million project, along with its 1.25-mile emergency wall, also proved instrumental in preventing the city's wastewater treatment plant from contaminating the river and the surrounding area.



Flood and Stormwater Drainage Mitigation Using Green Infrastructure

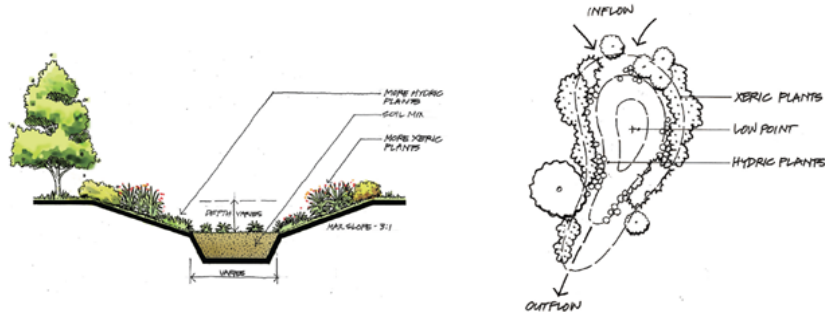
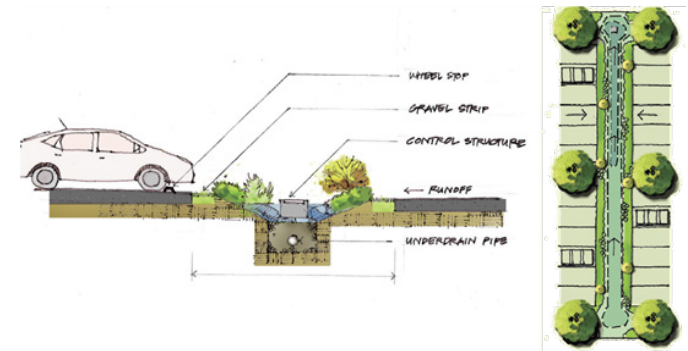


Green infrastructure provides multiple benefits that public facilities can employ to help mitigate the risk and severity of flooding. Green infrastructure measures work with nature’s capacity to absorb or control flood impacts both in urban and rural areas. These measures may help mitigate riverine flooding, coastal flooding, and stormwater across the range of magnitudes. Common green infrastructure practices used for flood mitigation include green roofs, bio-retention, swales, and infiltration basins or trenches. While green infrastructure measures are primarily effective at controlling localized stormwater flooding, they may also significantly reduce the impact of large scale riverine flooding events. The ability for green infrastructure to address flooding at a variety of scales can ultimately lead to significant reductions in flood loss.

The specific green infrastructure strategy will depend on site location and conditions. Nonetheless, maximum preservation and enhancement of existing green infrastructure such as wetlands, wooded areas, open green space, landscaping, and soils should be coupled with new green infrastructure practices that capture, store, treat, infiltrate, evapo-transpire, and otherwise mitigate flooding.

Bioswales

Bioswales or vegetated swales are a form of bioretention used to partially treat water quality, attenuate flooding potential and convey stormwater away from critical infrastructure. They are often used as an alternative to, or an enhancement of, traditional stormwater piping. The purpose of a bioswale is to increase the function of conveyance systems by integrating features that improve water quality, reduce water runoff volume, and enhance landscape aesthetics. Small storm volumes may be captured and allowed to infiltrate within the bioswale. For larger flow events, vegetation within the swale helps stabilize soils and reduce erosion potential.¹

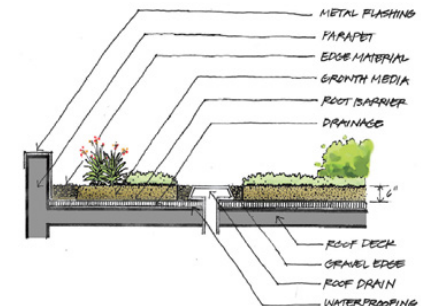


Bioretention Basins

Bioretention areas are planted depressions designed to retain to detain stormwater before it is infiltrated or discharged downstream. They retain, filter, and treat stormwater runoff using a shallow depression of conditioned soil topped with a layer of mulch or high carbon soil layer and vegetation tolerant of short-term flooding. Depending on the design, bioretention areas may provide retention or detention of run-off water and will trap and remove suspended solids and filter or absorb pollutants. The size of the bioretention area will determine the volume of runoff that can be stored or reduced. Where the volume of runoff exceeds that of the bioretention area, additional stormwater devices will be required to handle the design storm.¹

Green Roofs

Green roofs are planted roof tops that provide benefits of water harvesting, stormwater management, energy conservation, pollution abatement, and aesthetic value. They reduce total stormwater runoff volume and peak flows, improve building insulation properties, and extend the expected life of the roof’s base material. By intercepting, retaining, detaining, and filtering rainwater, green roofs can play an important role in source control stormwater management, reducing stress on downstream conveyance systems.¹



¹ University of Florida - Program for Resource Efficient Communities, Low Impact Development Fact Sheets, 2008

5.3 Structure Mitigation Options

Facilities considered for structural mitigation should be analyzed for structural integrity to determine if measure is feasible or if modifications may be required.

The FBC and the regulations of the National Flood Insurance Program (NFIP) specify that when work is determined to be “substantial improvement,” the building is required to be brought into compliance with the flood-resistant requirement for new construction.

Structural Floodproofing

Floodproofing of a building can be implemented using two separate options.

Dry floodproofing creates a barrier against floodwaters by sealing walls, floors, and closing openings to keep water from entering the structure. An important note with dry floodproofing is that if walls and floors are not already sufficient to resist flood loads, additional strengthening may be required.

Wet floodproofing involves modifying buildings to allow floodwaters to enter in order to minimize structural damage. This requires flood-resistant materials for all areas below the Proposed Mitigation Design Elevation (PMDE), while any utilities (electrical/mechanical) and important assets are sealed or elevated above the PMDE.

Dry Floodproofing refers to the process of making a structure/system/asset watertight using flood resistant materials.

Pros	Cons
<ul style="list-style-type: none"> Effective at addressing damage to structures/assets at lower levels Assets can be operated during event 	<ul style="list-style-type: none"> May create unbalanced hydrostatic/hydrodynamic forces that could result in structural damage to buildings Not all structures are suitable for dry floodproofing Does not protect against infiltration into the basement through walls and piping

Spray-On Waterproof Membrane used for Dry Floodproofing



Wet Floodproofing refers to modifying a structure/system/asset to allow floodwaters to enter it and minimize damage.

Pros	Cons
<ul style="list-style-type: none"> Effective at addressing damage to structures/assets at lower levels Equalized hydrostatic/hydrodynamic forces; no structural concerns Potentially the least costly mitigation measure 	<ul style="list-style-type: none"> Cleanup costs associated with contaminated water entering buildings (i.e., blackwater) Loss of potential space for operations and revenue in area effected Must ensure all critical assets are raised above the DFE or install submersible assets

Pilot Example Dry Floodproofing

The Florida Department of Health analysis indicated that a critical equipment building was below the PMDE. This building contained multiple coolers, climate-control systems for the labs, switchgear and MCC cabinets, and boilers.

Because many of these assets and systems were contained within a single structure, it was the recommendation of the inspection team to dry floodproof the building rather than perform mitigation on each individual function. This would not only protect the systems and assets but also allow for a large portion of the facility to maintain functionality during a flood event.

Structural integrity inspections would need to be performed to ensure the building could resist flood loads and remain serviceable if a dry floodproofing option was selected.

Structural Change/Adaptation

Within the context of this Manual, structural change/adaptation refers to the actions taken to either rebuild, remove, or elevate an existing facility. While these options may not seem like the most cost effective up front, long-term benefits may outweigh these costs.

Elevation of Structures refers to raising a structure on a new, higher foundation to a level in which it is no longer directly impacted from a flood event.

Pros	Cons
<ul style="list-style-type: none"> Effective at addressing damage to buildings and assets If elevated above design elevation, flood risk to structures and assets is greatly reduced 	<ul style="list-style-type: none"> Some physical damage to structures could still be experienced, depending on the height of the foundation May present significant cost Depending on the size of facility structures and systems, elevation may not be practical or feasible (e.g., wastewater treatment plant pumps cannot be raised)

Relocation refers to moving the structure/system/asset outside of the floodplain or to an area above the expected flood level designated in your design criteria.

Pros	Cons
<ul style="list-style-type: none"> Most effective measure for reducing flood risk to all structures and assets Potential for full passive protection of the facility 	<ul style="list-style-type: none"> Appropriate receiving site may not be available or affordable May present significant cost Relocation may remove a critical service from the community

Mitigation Reconstruction (Demolish and Rebuild) refers to demolishing a building and rebuilding it in its current location fully compliant with flood-resistant construction requirements.

Pros	Cons
<ul style="list-style-type: none"> Significantly reduces flood risk to all structures and assets Multiple ways the ground floor can be used (infill to the DFE and build on top, dry/wet floodproof the ground floor, or use the ground floor as additional parking) 	<ul style="list-style-type: none"> Phasing considerations—if the facility operations must be kept in service at all times, the construction period must be phased appropriately, which may present logistical or cost problems If infill option is chosen for ground floor, cost can be significant and a much larger footprint would be required for construction May present significant costs



Buildings or structures elevated in-place must meet the same performance standards set for new construction.

When relocating a facility, the original site is typically abandoned or demolished and a new facility is built outside the floodplain.

Relocation not only allows for the opportunity to locate outside of a floodplain but also requires conformance with code.

“Any relocated buildings must be placed in conformance with all applicable Federal, State, and local land-use regulations” (FEMA 543).

5.4 System/Asset Mitigation Options

If dry floodproofing the building proves unfeasible, wet floodproofing combined with system/asset mitigation can reduce damage. If systems/assets are protected, recovery is likely to be much faster if the building is flooded. The intent of the mitigation is to ensure full functionality of the identified at-risk system/asset, and if only a portion of the complete system is mitigated, then the system/asset still has a high potential of failing.

Be sure to determine where the most at-risk assets are and also how these assets integrate into the larger system as a whole. From here, an assessor can identify what mitigation options are appropriate to provide the highest level of protection to the systems and assets in question.

Elevation of System/Assets refers to raising a system/asset on a new, higher foundation.

Pros	Cons
<ul style="list-style-type: none"> ◆ Flood risk to system/asset is greatly reduced ◆ Assets can be operated during floods ◆ Allows for prioritization or protection of most critical systems/assets (take into consideration Cascading Impacts) 	<ul style="list-style-type: none"> ◆ Physical damage to buildings not reduced ◆ May require construction of a platform or displace assets/functions in other areas of facility

Submersible System/Assets refers to using systems and assets that can spend extended periods of time under water.

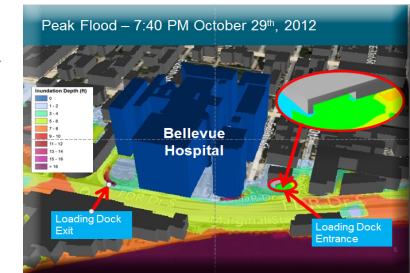
Pros	Cons
<ul style="list-style-type: none"> ◆ Even when system/asset is submerged, there is no damage ◆ Asset can be operated during floods 	<ul style="list-style-type: none"> ◆ To be effective, the full system must be mitigated with similar submersible functions ◆ Equipment will need to be checked for compatibility with the existing systems

Compartmentalization refers to creating barriers for certain systems/assets to control floodwaters.

Pros	Cons
<ul style="list-style-type: none"> ◆ Even when structure is submerged, there is no damage ◆ Can be paired with additional mitigation options ◆ System/asset can be operated during floods 	<ul style="list-style-type: none"> ◆ Related assets outside compartmentalization may still be affected by floodwaters ◆ Only protects assets inside compartment ◆ Typically required to be installed in conjunction with other mitigation measures ◆ Implementation may be logistically complicated

Hardening in Place refers to using flood resistant materials on an individual system/asset but not fully replacing the system/asset.

Pros	Cons
<ul style="list-style-type: none"> ◆ System/asset can be operated during floods ◆ Prevents damage to the assets 	<ul style="list-style-type: none"> ◆ Does not protect asset against more severe flooding ◆ Generally requires frequent maintenance to ensure proper functioning



At Bellevue Hospital in New York, the emergency generator failed during Hurricane Sandy in October 2012. The generator is located on the 13th floor roof, well above the DFE. However, the fuel pumps providing fuel to the generator are located in the basement. During Hurricane Sandy, the basement was flooded, including the fuel pumps. With the failure of these pumps, fuel could no longer be transferred to the generator. Therefore, the power to the facility was lost. Although the generator is elevated, the system is still at risk because components of the system are below the DFE and vulnerable to flooding. In order to prevent this from reoccurring, the fuel pumps will be compartmentalized, allowing continued operation during a flood.

5.5 Weighing the Mitigation Options

The facility assessor must also consider a number of additional factors when determining which mitigation measures should be recommended, such as engineering feasibility, the impact on maintenance and normal operation of the existing facility, and cost-effectiveness. The implications of potential mitigation measures regarding such factors must be clearly communicated to stakeholders in order to facilitate the decision making process.

Engineering Feasibility

The proposed mitigation measures for each system and facility must demonstrate proper engineering feasibility. Example considerations that should be noted by the facility assessment teams include:

Timeline - Can the mitigation option identified by the party be completed within a feasible and reasonable amount of time?

Engineering Standards - Is the mitigation procedure technically feasible given the existing resources to the respective state agency and the engineering standards required?

Level of Protection - Can the identified mitigation action reduce the level of vulnerability to the component or facility to an acceptable level of protection (preferably above the 500-year flood level)?

Useful Life - What is the overall expectation of the designated mitigation action in terms of length of design life and number of expected uses? How frequently does the state agency anticipate flooding to the facility and how long do they expect the mitigation action to perform acceptably?

Impact on Normal Operations and Maintenance

Maintenance and operations are an important consideration when identifying mitigation measures for a complex facility such as a hospital, school, or treatment plant. Potential impacts on normal operations within the facility may affect certain decisions about mitigation procedures and options available. As such, the assessment team must carefully weigh the benefits and obstacles of any measures that could complicate provision of that service during reconstruction, replacement, or upgrade of the facility or components within the facility. Certain mitigation options may also require existing personnel or newly hired specialized staff to maintain the new construction, replacement, or upgrade, or may necessitate training for current staff to deploy or use the new flood mitigation. Consideration of how a mitigation action might impact current operations is critical for selecting an appropriate measure.



Benefits are simply

- measured as future damage avoided if the mitigation measures are implemented.
- **Costs** are the expenses associated with implementing the identified measures to eliminate or reduce exposure to flooding.

Cost-Effectiveness

Once facility decision-makers and assessment team have selected a mitigation strategy that fulfills the mitigation objective and design criteria for each facility, stakeholders may wish to subject the strategy to a preliminary or detailed Benefit-Cost Analysis (BCA). Fundamentally, this process is a determination of whether the benefits of a proposed project, or series of projects, outweigh the costs of implementation and long term project maintenance. A good tool to consider using is the FEMA BCA Toolkit. The purpose of this tool is to support the development of a Benefit-Cost Ratio (BCR) for proposed mitigation measures. The inputs for the tool include a combination of facility characteristics, historical impacts or engineering assessments, and statistical determinations of likely occurrences and associated damage during future events to develop a BCR. A BCR over 1 is considered cost-effective.

5.6 Mitigation Assessment Report

Part I of this Manual includes a suggested outline for Mitigation Assessment Reports with descriptions of the eight report sections.

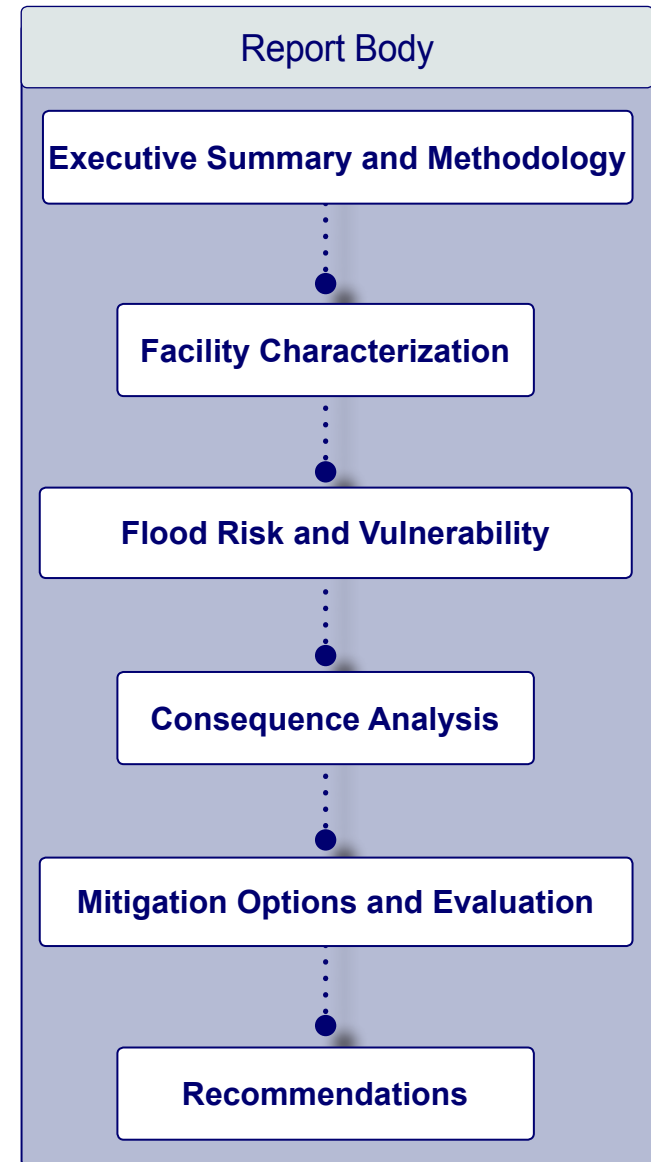
In Section 3.0, we completed a facility characterization, identified flood elevations, and completed both desktop and field evaluations. All of this information now needs to be summarized into a Mitigation Assessment Report so that findings can be easily communicated.

The Executive Summary of the report should summarize findings from a high level and provide adequate justification so a decision-maker can quickly orient him or herself with risk and practicable mitigation options. Within each report body section, there should be a written description explaining the technical details of the methodology used to complete the assessment, the reasoning behind any decision-making, estimations or assumptions made during the analysis, and details concerning any difficulties that arose during the process and how they were resolved. The reader should be able to turn to any section of the document and know exactly why the process was completed in a certain manner.

For example: A site's first floor and grade elevations were unavailable and estimations were made using national elevation datasets downloaded from online. The written methodology should cite which dataset was used, how it was obtained, which datum it was in, and how accurate the data are assumed to be. The report should also outline how the estimation could affect future steps in the project (e.g., Is an elevation survey needed before fully designing mitigation measures?) and any information necessary to solidify final recommendations.

All data sources (e.g., documents, drawings, field notes, photos) used by the assessor to complete the assessment should be identified in the report. Photos and drawings can be included to help clarify the written report. Documents that are not included directly can be referenced or included as appendices. Similarly to the written portion, all data should be cited appropriately. In addition, all authors and any facility employees, system operators, or facility owners that were consulted should be quoted and their contact information included.

A sample report is provided on the Public Facility Mitigation website at <http://www.floridadisaster.org/mitigation>.



5.7 Moving Forward with Mitigation Actions

This Manual has been designed to support facility stakeholders and technical specialists to understand flood risk and evaluate mitigation options. Once a mitigation option or series of options have been identified, several additional decisions are needed to move forward with implementation. This is a collaborative process and requires parties to coordinate efficiently and effectively. The first task in this step forward is developing a conceptual project schedule and scope of work that defines and documents all associated tasks, costs to perform mitigation, and benefits (effects) of the project's completion.

Although project implementation specifics will depend upon the nature of the project, there are several commonalities found in every completed scope. These include:

Detailed Project Description

A detailed description must include a full explanation of each and every task required to complete the project, supplementary information (e.g., concept drawings) that can be used to further communicate what needs to be done, and an explanation of who will do the work (e.g., contractors, subcontractors) and where it will occur.

Timeline/Work Schedule

In general, this project timeline should identify significant milestones and timeframes for delivery. Milestones are major accomplishments, such as design, notice to proceed, and site clearing. The anticipated work schedule should be designed in a way that allocates a reasonable amount of time to each major task and component of the project.

Detailed Cost Estimate

The cost estimate should provide an itemized project budget showing, for example, the costs of labor, engineering costs, materials, and supplies required to complete the project; equipment needed; transportation costs; and communications. A high level cost estimate should be all that is needed, as project design is not yet complete at this juncture, but all costs must be justified and pertinent to completing the project. It is important to also include the sources used to develop the estimate for the project.

Maintenance Description

Although not typically a requirement in developing a scope of work, a funding agency may be reluctant to fund a project if the facility does not demonstrate the ability to maintain the project in the long term. As such, technical specialists and facility stakeholders should offer solutions and indicate existing capacity to provide any needed upkeep of the mitigation measures after initial implementation.

FEMA has developed sample scopes of work to assist applicants applying for funding through the Hazard Assistance Grant Programs. The purpose of these sample scopes is to guide the collection of administrative and technical data required by FEMA to ensure project consideration. These documents are available directly from the FEMA website at <http://www.fema.gov/application-development-process>.

An appropriate process for implementation is not only important for the respective state agency to keep track of projects taking place, but can also become useful if the agency elects to pursue grant funding.

Detailed Project Description

The detailed description should be made up of multiple parts that include, but are not limited to:

The Problem

This Manual guides the assessment team to clearly identify and define flood risk (Part II). Additionally, the Manual also assists in the preparation of existing condition analysis from the use and occupancy of the building to details about construction of the structure and information about damage sustained in the past. This information is all used to define the problem that would be solved by the proposed mitigation action(s).

The Decision-Making Process

The process undertaken in making the decision to implement this project should include the alternatives considered for mitigation, the reasons why one alternative was selected over the others, and the findings of alternatives evaluation and feasibility reviews.

The Scope of Work

The description of work to be done on the site including the full street address, latitude and longitude, maps displaying the project location, features that may affect project development, project dimensions, concept drawings, a list of materials needed to successfully complete the project, and any other information pertinent to project completion.

If the process in this Manual is followed, most information described above should be easily accessible and compiled.

References and Appendices

References

Appendix A – Assessment Forms

Appendix B – Mitigation Assessment Report Template



Photo Credit: NASA Earth Observatory



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References and Resources



References and Resources

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Appendix A

Assessment Forms

A.1 Public Facilities Record of Historical Flood Loss analyzes the previous flood losses to the project area.

A.2 Grounds Assessment Form analyzes the risk to the grounds and surrounding areas of the project.

A.3 Structure Assessment Form analyzes the risk to structures on the project area.

A.4 System Assessment Form analyzes the risk to critical systems that service the project area.

A.5 Asset Assessment Form analyzes the risk to components of critical systems.



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Public Facility Record of Historical Flood Loss

Facility Name: _____

Address: _____ Date of Record: ___/___/___

Information provided by: _____

name

organization

title

Contact information: _____

phone

e-mail

address

Latitude: _____ Longitude: _____

_____ **EVENT INFORMATION** _____

Flood insurance policy? Y / N Is the facility self-insured? Y / N Contents covered? Y / N

Date of Flood event: ___/___/___ Name of Event / Declaration, if applicable: _____

Flood source (local drainage, river/stream flooding, coastal flooding): _____

Flood depth: Outside, immediately adjacent to building: _____ Inside building: _____

How did water get into the building? _____

Was there evidence the water moving rapidly? Y / N Evidence of waves? Y / N

Did the floodwater contain a lot of mud, oil/chemicals or debris? Y / N

How long did water stay inside building:

less than 6 hours 6-12 hours 12-24 hours longer than 24 hours other

Did water drain or have to be pumped from the building? Drain / Pumped

How much warning did you have before the flooding? _____

Site access interrupted? Y / N How long?

Were employees prevented from coming to work by the event? Y / N How long?

Was there debris damage/risk at the site? Y / N Source of debris: _____

Was service provided by the facility interrupted (e.g., public electricity halted, library closed)? Y / N
For how long?

Injuries or casualties? Y / N

Emergency protective measures deployed? Y / N

Damage to grounds? Y / N Description; estimated cost to restore

Damage to structures? Y / N Description; estimate cost to restore

Damage to critical systems / assets? Y / N Description; estimated cost to restore

Damage to contents or inventory? Y / N Description; estimated cost to restore

Other damage? Y / N Description; estimated cost to restore

Was there any recorded revenue loss? Estimated amount? (If any portion of the facility is leased, include estimated loss of rent).

Were any Public Assistance Project Worksheets written for this loss? Y / N

PW Category:	
PW Number	PW Amount

Have you done anything to the building to reduce future flood damage? Y / N To the site? Y / N
Describe:



List back up documentation attached:

_____ **PREVIOUS EVENTS** _____

Previous flood events recorded:

Name/ Declaration of Event (if applicable)	Date of Event	Total Amount Lost	Comments



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Grounds Mitigation Assessment Form

Facility Name: _____
Structure Descriptor: _____ POC Name: _____
Title: _____ POC Phone: _____
POC Email Address: _____
Location (Address): _____ City _____ state _____ zip _____
Inspector Name: _____
Date(s) of Field Inspection: _____ Area of Inspection: _____
Related Inspection Form(s): Structure Form, ID# _____, _____, _____, _____, _____, _____
Latitude: _____ Longitude: _____

DESKTOP EVALUATION

A. Site Description

Site Location: _____ Site Description: _____
Number Employees on Site: _____ Day: _____ Night: _____
Primary Occupancy/Purpose: _____ Year Developed: _____ Size: _____
Highest Building Code Risk Category for Site: _____ Notes: _____
 Active Temporarily Inactive Anticipated Date: _____ Permanently Inactive Date: _____
 Scheduled Repurposing Date: _____ Notes: _____

B. Flood Risk Evaluation

Proximity to Water: _____ Water Body: _____ Type: _____
Floodplain Manager: _____ Contact Info : _____
Flood Data Resource: FIS FIRM RAMPP-RI GIS NOAA USACE Other _____
Flood Map Panel Number and Date : _____ Notes: _____
Applicable Flood Zone(s): A AE, (A1-30) _____ AH AO V VE, (V1-30) _____
 B, Shaded X X
Stillwater Recurrence Interval Elevation: 10-year: _____ 50-year _____ 100-year _____ 500-year _____
BFE: _____ Proposed Mitigation Design Elevation: _____ Datum: NAVD88 NGVD29 Other _____
Anticipated Sea Level Rise: 50 Year _____ 100-year _____ Source: _____
Access Elevation(s): _____ Site Access Notes: _____
Datum : NAVD88 NGVD29 Other _____

Structures on Site:

ID	FFE	Grade EL	Description

Above ground or underground storage tanks on site? Underground Above Ground,

Contents: _____
 At the BFE is any portion of the site predicted to flood?: Yes No _____% Describe: _____

At the PMDE, what percentage of the Site is predicted to be flooded: _____% Describe: _____

Is runoff from higher elevations expected to impact the grounds or any buildings?: Yes No
 Describe: _____

Are there potential ponding locations onsite?: Yes No Describe: _____

Is the Site affected by a regulatory Floodway?: Yes No Describe: _____

Is the site expected to flood if a dam, levee or floodwall fails?: Yes No Describe: _____

Could sewage or stormwater piping back up and flood any part of the facility?: Yes No
 Describe: _____

Could sewage backup into the facility? Structures?: Yes No Describe: _____



Will the site experience limited vehicle access during a flood event?: Yes No Describe: _____

Existing flood reduction measures on site: Flood walls or Gates Pumps Stocked Sandbags or equivalent Backflow Prevention Other _____
Preparation for Flooding: Informal Emergency Plan Formal Emergency Plan Describe briefly: _____

Has there been any previous damage from flooding? Yes No If yes, complete Record of Flooding Form, ID# _____ Other Notes: _____

_____ **FIELD EVALUATION** _____

Are there any noticeable ground features that you had not recognized in the desktop evaluation? _____

Is there potential for debris risk?: Y / N Source: _____

(Optional) COMPLETE THIS SECTION IF EVALUATION COMPLETED AFTER THE SYSTEM IMPACTED BY FLOOD EVENT

Temporary or Emergency Repair Measures: _____

Potential Hazard Mitigation Action: _____

Condition Evaluation Please indicate score / cause

For use with condition evaluation below

- (5) Destroyed or Damaged / Failing > 50%. Likely Requires replacement.
- (4) Damaged or Failing. Major repair / upgrades necessary.
- (3) Clear evidence of Wear/Damage. Can be repaired.
- (2) Further evaluation necessary to determine condition.
- (1) Undamaged and fully operational
- (N/A) Not Applicable

Concrete/Asphalt _____ / _____

Drainage System _____ / _____

Landscaping _____ / _____

Other _____ / _____

Other _____ / _____

Other _____ / _____

Other _____ / _____

Other _____ / _____

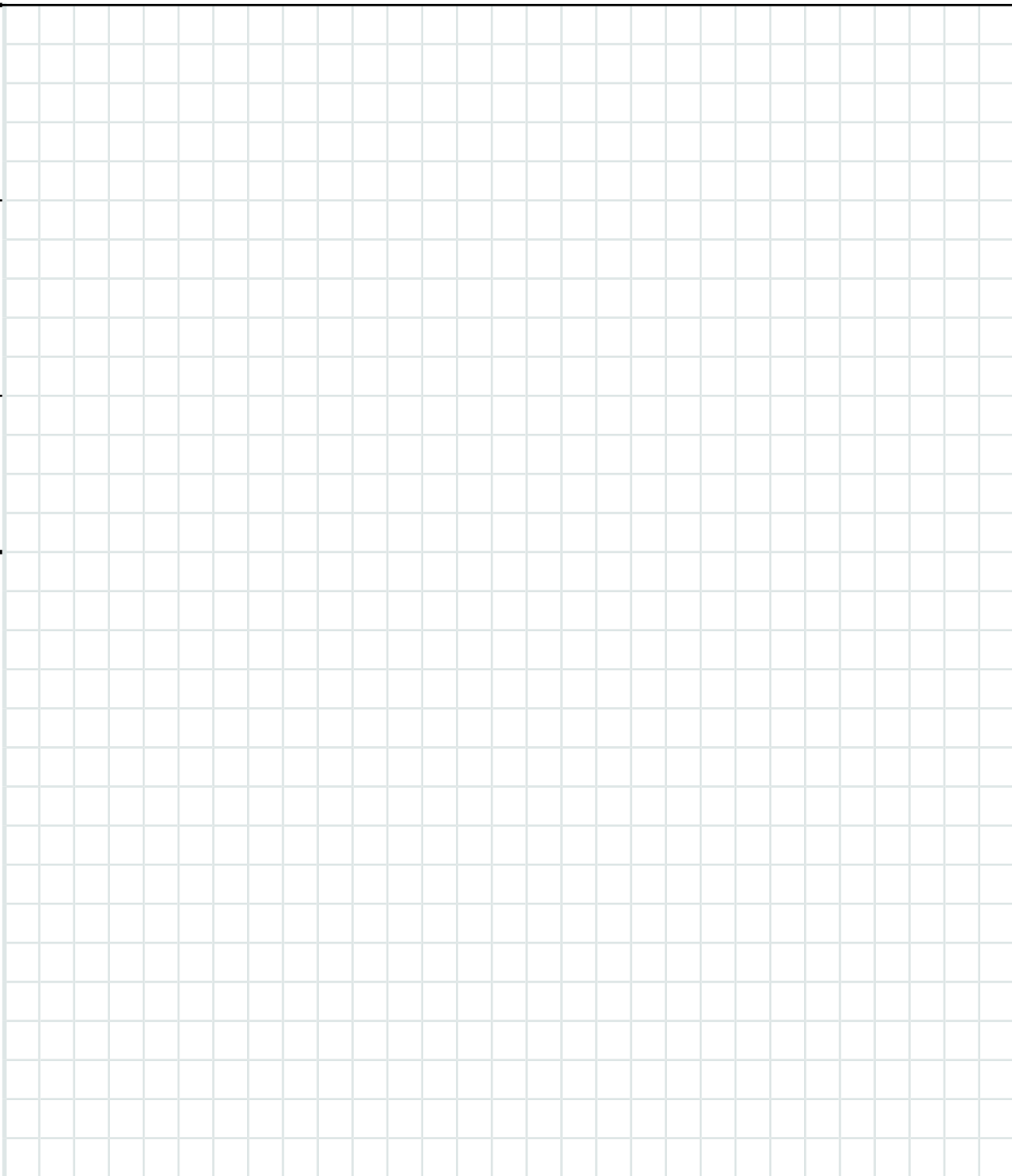
SCORING EVALUATION

<p>Flood Vulnerability Evaluation: <i>Point where flood waters would reach the lowest vulnerable point at the facility</i></p> <p>(5) Vulnerable to the 10% Annual Chance (10-Year) Flood Elevation OR Multiple Historical Losses Recorded with Significant Consequences</p> <p>(4) Vulnerable to the 2% Annual Chance (50-Year) Flood Elevation OR At Least One Record of Loss with Moderate to Significant Consequences</p> <p>(3) Vulnerable to the 1% Annual Chance (100-Year) Flood Elevation with Moderate to Significant Consequences</p> <p>(2) Vulnerable to the 0.2% (500-Year) Flood Elevation</p> <p>(1) Vulnerable above the 0.2% (500-Year) Flood Elevation</p> <p>Score: _____</p>	<p>Consequence (Service Loss) Evaluation <i>Estimated number of days/hours the given entity would remain out of service</i></p> <p>(5) Use of the facility or service is lost and inoperable for 7+ days / Damage costs would exceed 50% replacement value</p> <p>Estimate: _____</p> <p>(4) Use of the facility or service is lost and inoperable for 1 – 7 days / Damage costs would exceed 25% replacement value</p> <p>(3) Use of the facility or service is lost and restored within 24 hours / Damage costs total less than 10% replacement value</p> <p>(2) Use of the facility or service is maintained; however ingress or egress is lost / Costs limited to emergency protective measures only</p> <p>(1) Service is maintained without interruption / Minimal costs</p> <p>Score: _____</p>	<p>Criticality Evaluation: <i>Determine the highest Risk Category of the Site based on the Categories established in ASCE 24: Flood Resistant Design and Construction and referenced in the Florida Building Code (FBC)</i></p> <p>(4) Risk Category IV</p> <p>(3) Risk Category III</p> <p>(2) Risk Category II</p> <p>(1) Risk Category I</p> <p>Score: _____</p>
--	---	--

TOTAL SCORE (Flood Vulnerability x Consequence x Criticality): _____



Provide a basic sketch of the grounds and indicate the location of the structures on site. Indicate vulnerable areas, roadways, and potential mitigation points.

SKETCH Description _____ _____	ATTACHMENTS		
	<input type="checkbox"/> Photos	<input type="checkbox"/> Documents	<input type="checkbox"/> Other
			



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Structure Mitigation Assessment Form

Facility Name: _____
Structure Descriptor: _____ POC Name: _____
Title: _____ POC Phone: _____
POC Email Address: _____
Location (Address): _____
Inspector Name: _____
Date(s) of Field Inspection: _____ Area of Inspection: _____
 Exterior ONLY Exterior and Interior Interior ONLY
Related Inspection Form(s): Structure Form, ID# _____, _____, _____, _____, _____
Latitude: _____ Longitude: _____

DESKTOP EVALUATION

A. Structure Description

Structure Location: _____ Site Description: _____
Primary Building Occupancy/Purpose: _____ No. Employees Total: _____
Avg # Day: _____ Avg # Night: _____ Seasonal? _____
Building Risk Category (based on ASCE 24: *Flood Resistant Design and Construction* and FBC): _____
EMERGENCY OPERATIONS PLAN Provided Not provided. Describe: _____

B. Flood Risk Evaluation (include only if different from Grounds Form ID# _____)

Proximity to Water: _____ Water Body: _____ Type: _____
Floodplain Manager: _____ Contact Info: _____
Flood Data Resource: FIS FIRM RAMPP-RI GIS NOAA USACE Other _____
Flood Map Panel Number and Date: _____ Notes: _____
Applicable Flood Zone(s): A AE, (A1-30) _____ AH AO V VE, (V1-30) _____
 B, Shaded X X
Stillwater Recurrence Interval Elevation: 10-year: _____ 50-year _____ 100-year _____ 500-year _____
BFE: _____ Proposed Mitigation Design Elevation: _____ Datum: NAVD88 NGVD29 Other _____
Anticipated Sea Level Rise: 50 Year _____ 100-year _____
Source: _____

C. Structure Flood Vulnerability

Highest Adjacent Grade: _____ Lowest: _____ First Floor Elevation: _____ Basement Elevation: _____
Elevation of Key Water Entry Point: _____ Datum: NAVD88 NGVD29 Other _____
Stories above Grade: _____ Below: _____ Year Built: _____ Footprint (sq. ft): _____
Elevator(s)? Yes No, Number _____, Location of Elevator banks: _____

Foundation Type: Basement Crawlspace Slab on Grade Piles/ Columns Other _____

Frame: Wood Steel Masonry Reinforced Concrete Pre-Engineered Pole Other _____

Depth above first floor at BFE: _____ Depth above first floor at Proposed Mitigation Design

Elevation: _____

Critical Systems / Assets Associated with Structure:

FORM ID	Description	FORM ID	DESCRIPTION

_____ **FIELD EVALUATION** _____

POWER SUPPLY TO STRUCTURE: _____ BACKUP POWER SUPPLY: _____

WALLS: Average wall height: _____

Observed General Condition: _____ (1) New Construction (2) Excellent (3) Good (4) Fair (5) Poor

Exterior Wall Finish: Brick Wood EIFS Metal Stucco Concrete Concrete block
 Other _____

Interior Wall Finish: Drywall Plaster Wood / Wood Panel Metal Synthetic Panel Concrete
 Other _____

Describe use(s) of above-grade areas: _____

Describe use(s) of below-grade areas: _____

EXTERIOR PENETRATIONS/VULNERABILITIES (Quantity/ Locations)

ID	FFE	Grade EL	Description



INTER-BUILDING PENETRATIONS/VULNERABILITIES

Pipe space/Joined Basements: Height Above Grade (at bottom) _____ Description: _____

Ductwork: Height Above Grade (at bottom) _____ Description: _____

Conduit: Height Above Grade (at bottom) _____ Description: _____

Piping (i.e. Steam) Height Above Grade (at bottom) _____ Description: _____

Other: Height Above Grade (at bottom) _____ Description: _____

Foundation-wall connectors. Observed General Condition: _____

(1) New Construction (2) Excellent (3) Good (4) Fair (5) Poor, Describe: _____

Wall to roof connectors/gable ends. Observed General Condition: _____

(1) New Construction (2) Excellent (3) Good (4) Fair (5) Poor, Describe: _____

Evidence of Settlement (eg, structure leaning side to side, cracks in wall/floor/foundation): _____

Drainage (roof drains, gutters, foundation backfill, etc.): _____

Evidence of Foundation Moisture, interior (location and severity of mold and mildew; is mold at baseboard level only or vertically continuous along wall): _____

Evidence of foundation moisture, exterior: _____

Current Flood Mitigation Measures: _____

Current measures appear to be functioning properly: Yes No Describe: _____

Does the facility meet all current Codes and Standards or would an upgrade / improvements require Code Compliance? _____

Is there potential for debris risk to building?: Y / N Source: _____

(Optional) COMPLETE THIS SECTION IF EVALUATION COMPLETED AFTER THE SYSTEM IMPACTED BY FLOOD EVENT

Temporary or Emergency Repair Measures: _____

Work Required to Fully Restore Asset: _____

Codes and Standards Upgrades required? _____

Potential Hazard Mitigation Action: _____



Condition Evaluation Please indicate score / cause

For use with condition evaluation below

- (5) Destroyed or Damaged / Failing > 50%. Likely Requires replacement.
- (4) Damaged or Failing. Major repair / upgrades necessary.
- (3) Damaged. Can be repaired.
- (2) Further evaluation necessary to determine condition.
- (1) Undamaged and fully operational

If Structure has been damaged by a hazard event:

Date of Event: _____
 Type of Event: _____
 Flood Depth above Grade (if applicable): _____

Notes: _____

Exterior

Foundation ___ / ___ Structural ___ / ___
 Exterior Wall ___ / ___ Mold / Mildew Evident ___ / ___
 Missing Features ___ / ___ Walls ___ / ___
 Entryway ___ / ___ Ceiling ___ / ___
 Siding ___ / ___ Flooring ___ / ___
 Opening ___ / ___ Leakage/Seepage ___ / ___
 Roof ___ / ___ Foundation-Wall Connectors ___ / ___
 Other ___ / ___ Roof-Wall Connectors ___ / ___

SCORING EVALUATION

Flood Vulnerability Evaluation:

Point where flood waters would reach the lowest vulnerable point at the facility

- (5) Vulnerable to the 10% Annual Chance (10-Year) Flood Elevation OR Multiple Historical Losses Recorded with Significant Consequences
- (4) Vulnerable to the 2% Annual Chance (50-Year) Flood Elevation OR At Least One Record of Loss with Moderate to Significant Consequences
- (3) Vulnerable to the 1% Annual Chance (100-Year) Flood Elevation with Moderate to Significant Consequences
- (2) Vulnerable to the 0.2% (500-Year) Flood Elevation
- (1) Vulnerable above the 0.2% (500-Year) Flood Elevation

Score: _____

Consequence (Service Loss) Evaluation

Estimated number of days/hours the given entity would remain out of service

- (5) Use of the facility or service is lost and inoperable for 7+ days / Damage costs would exceed 50% replacement value
 Estimate: _____
- (4) Use of the facility or service is lost and inoperable for 1 – 7 days / Damage costs would exceed 25% replacement value
- (3) Use of the facility or service is lost and restored within 24 hours / Damage costs total less than 10% replacement value
- (2) Use of the facility or service is maintained; however ingress or egress is lost / Costs limited to emergency protective measures only
- (1) Service is maintained without interruption / Minimal costs

Score: _____

Criticality Evaluation:

Determine the Risk Category of the Structure based on the Categories established in ASCE 24: Flood Resistant Design and Construction and referenced in the Florida Building Code (FBC)

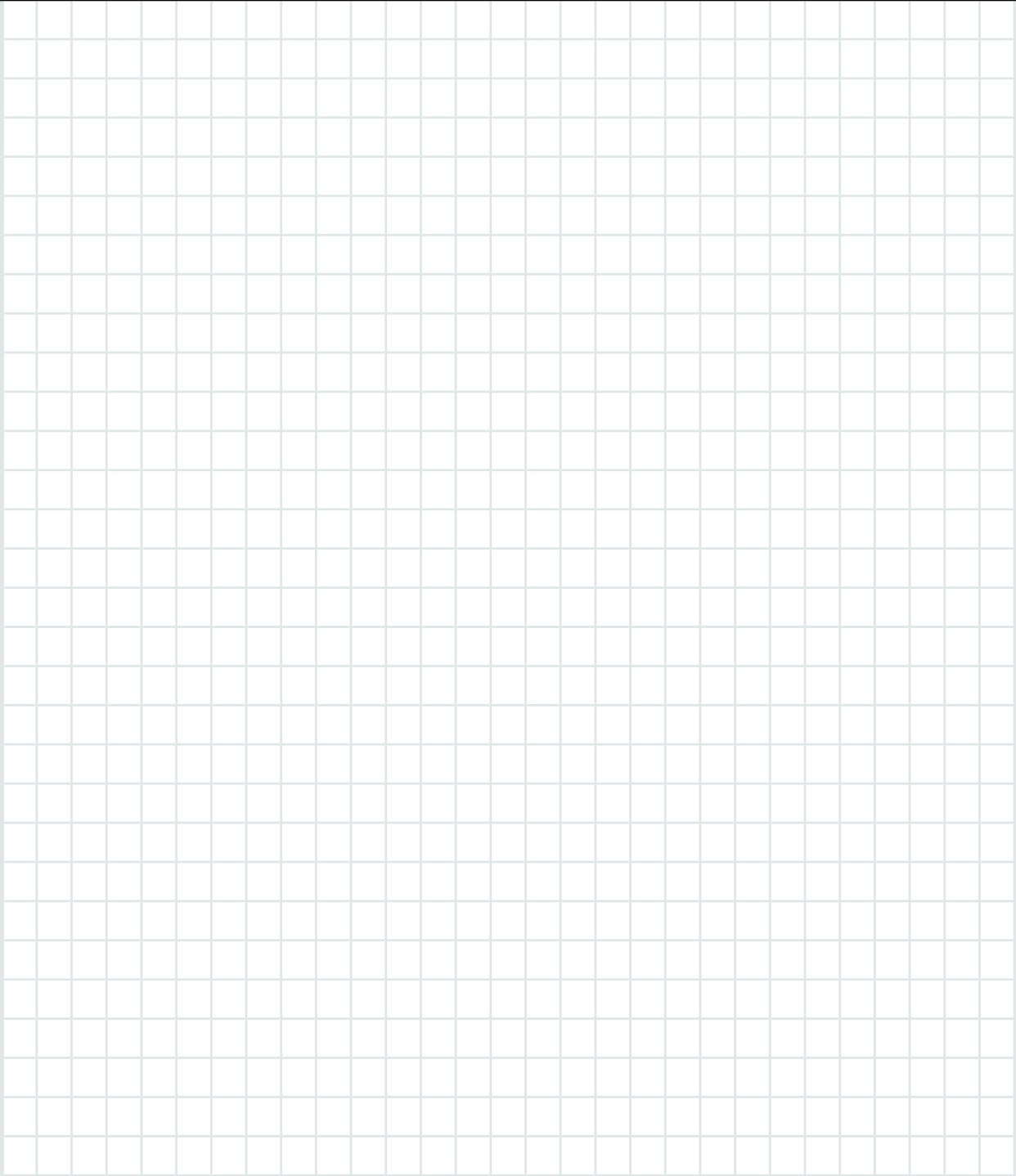
- (4) Risk Category IV
- (3) Risk Category III
- (2) Risk Category II
- (1) Risk Category I

Score: _____

TOTAL SCORE (Flood Vulnerability x Consequence x Criticality): _____



Provide a basic sketch of the grounds and indicate the location of the structures on site. Indicate vulnerable areas, roadways, and potential mitigation points.

SKETCH Description _____ _____	ATTACHMENTS		
	<input type="checkbox"/> Photos	<input type="checkbox"/> Documents	<input type="checkbox"/> Other
			



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System Mitigation Assessment Form

Facility Name: _____
System Name: _____ POC Name: _____
Title: _____ POC Phone: _____
POC Email Address: _____
Location (Address): _____
Inspector Name: _____

City _____ State _____ Zip _____

Date(s) of Field Inspection: _____ Check all that apply regarding system location:

Outdoors Indoors Below Grade Above Grade

Related Inspection Form(s): Structure Form, ID# _____, Grounds Forms, ID# _____

Latitude: _____ Longitude: _____

_____ **DESKTOP EVALUATION** _____

A. System Description

System Location: _____ System Description: _____

System Tier: _____ Notes: _____

System Classification: Life/Fire Safety Power/Electrical Service Heating/Cooling Sanitary / Sewer

Potable Water Transportation Essential Service (i.e., Security System) Other _____

B. Flood Risk Evaluation (complete only if system-specific information is unique. Otherwise see Form ID# _____)

BFE: _____ Proposed Mitigation Design Elevation: _____ Datum: NAVD88 NGVD29 Other _____

Anticipated Sea Level Rise: 50 Year _____ 100-year _____ Source: _____

C. System Vulnerability

Lowest Elevation of Critical System Assets: _____ Datum: NAVD88 NGVD29 Other _____

Notes: _____

What are the consequences of a complete system outage? _____

Can the system still operate in limited capacity should portions of the system be flooded? _____

Will other systems be at risk if this system is out of service? If so, provide details Yes No _____

Is there a backup system available should this system be out of operation? If so, At what elevation would that system be at risk? _____

_____ Datum: NAVD88 NGVD29 Other _____

Critical Assets Associated with System:

FORM ID	Description	FORM ID	DESCRIPTION

_____ **FIELD EVALUATION** _____

HEALTH AND SAFETY HAZARDS PRESENT? Yes No Describe: _____

A. SYSTEM NAME/PLATE INFORMATION

Manufacturer(s): _____

Model Number(s): _____

Serial Number(s): _____

Capacity(s): _____

Date of Installation(s): _____

Most Recent Improvement(s): _____

Does System meet all current Codes and Standards? Will System replacement/mitigation require code compliance? If so, Provide details: Yes No _____

B. SYSTEM FIELD ASSESSMENT

Summarize System Vulnerabilities: _____

Current Related Emergency Procedure (should system be impacted) _____

Current Flood Mitigation Measures: _____

Current measures appear to be functioning properly: Yes No Describe: _____



Does the system require external penetrations (i.e. Louvers) to operate? If so provide details: Yes No

Does the System present any inter-building vulnerabilities (i.e. ductwork, pipe, conduit)? If so provide details: Yes No _____

Is the system at risk of debris? Y / N Source: _____

Other Notes: _____

(Optional) COMPLETE THIS SECTION IF EVALUATION COMPLETED AFTER THE SYSTEM IMPACTED BY FLOOD EVENT

Temporary or Emergency Repair Measures: _____

Work Required to Fully Restore Asset: _____

Codes and Standards Upgrades required? _____

Potential Hazard Mitigation Action: _____

<p>Condition Evaluation Please indicate score / cause <i>For use with condition evaluation below</i></p> <p>(5) Destroyed or Damaged / Failing > 50%. Likely Requires replacement.</p> <p>(4) Damaged or Failing. Major repair / upgrades necessary.</p> <p>(3) Damaged. Can be repaired.</p> <p>(2) Further evaluation necessary to determine condition.</p> <p>(1) Undamaged and fully operational</p> <p>Condition Evaluation _____ / _____</p> <p>Cause of Damage (e.g., wind, flood) _____ / _____</p> <p>Source of Damage (e.g., flooding through conduit, surge) _____</p> <p>Notes: _____</p>	<p>If Structure has been damaged by a hazard event:</p> <p>Date of Event: _____</p> <p>Type of Event: _____</p> <p>Flood Depth above Grade (if applicable): _____</p> <p>Notes: _____</p>
---	---



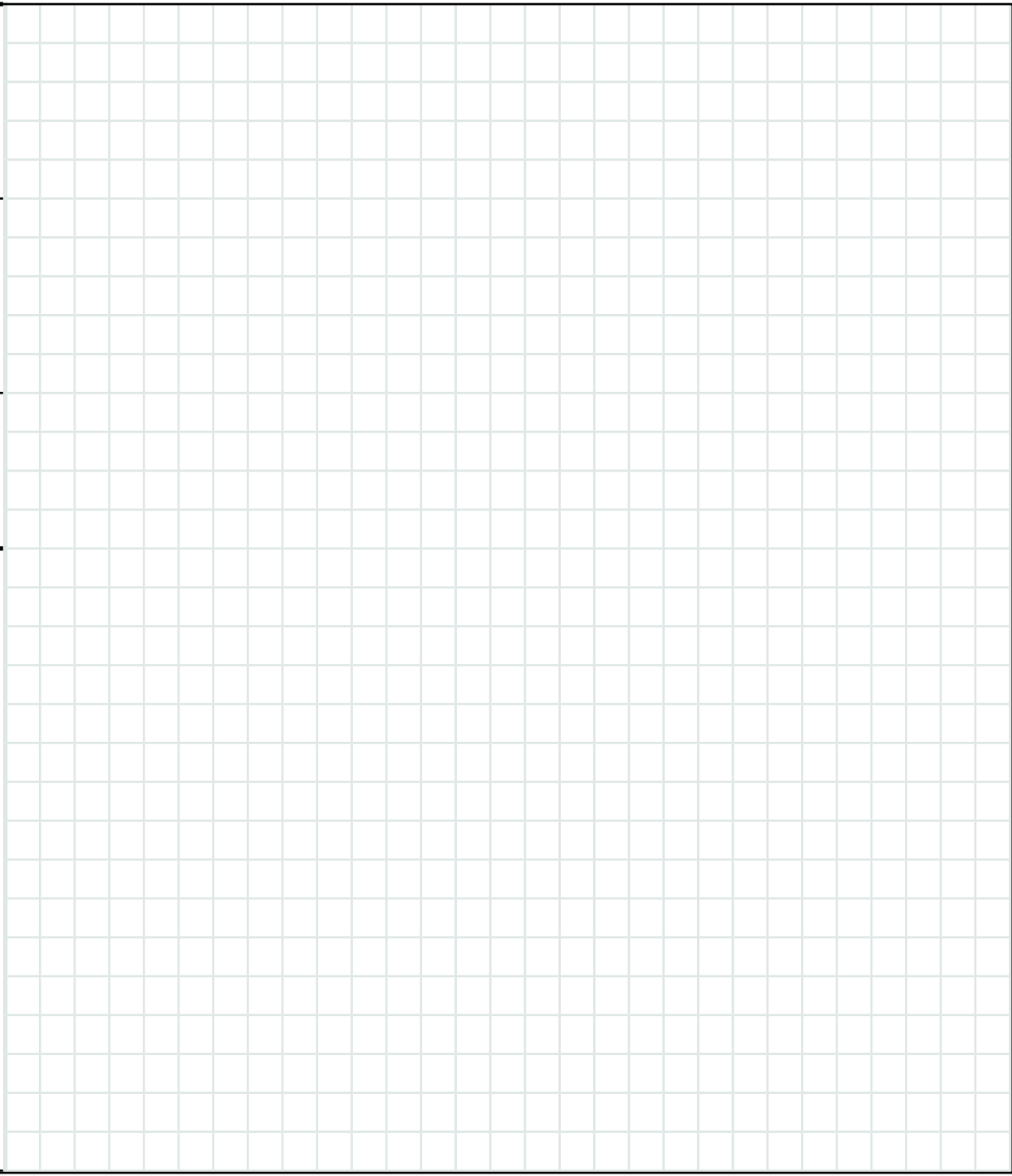
SCORING EVALUATION

<p>Flood Vulnerability Evaluation: <i>Point where flood waters would reach the lowest vulnerable point at the facility</i></p> <p>(5) Vulnerable to the 10% Annual Chance (10-Year) Flood Elevation OR Multiple Historical Losses Recorded with Significant Consequences</p> <p>(4) Vulnerable to the 2% Annual Chance (50-Year) Flood Elevation OR At Least One Record of Loss with Moderate to Significant Consequences</p> <p>(3) Vulnerable to the 1% Annual Chance (100-Year) Flood Elevation with Moderate to Significant Consequences</p> <p>(2) Vulnerable to the 0.2% (500-Year) Flood Elevation</p> <p>(1) Vulnerable above the 0.2% (500-Year) Flood Elevation</p> <p>Score: _____</p>	<p>Consequence (Service Loss) Evaluation <i>Estimated number of days/hours the given entity would remain out of service</i></p> <p>(5) Use of the facility or service is lost and inoperable for 7+ days / Damage costs would exceed 50% replacement value</p> <p>Estimate: _____</p> <p>(4) Use of the facility or service is lost and inoperable for 1 – 7 days / Damage costs would exceed 25% replacement value</p> <p>(3) Use of the facility or service is lost and restored within 24 hours / Damage costs total less than 10% replacement value</p> <p>(2) Use of the facility or service is maintained; however ingress or egress is lost / Costs limited to emergency protective measures only</p> <p>(1) Service is maintained without interruption / Minimal costs</p> <p>Score: _____</p>	<p>Criticality Evaluation: <i>Determine the Risk Category of the System based on the Categories established in the Public Facilities Flood Hazard Mitigation Assessment Manual (refer to Page _____)</i></p> <p>(4) Life Safety / Critical Equipment / Hazardous Materials Systems / Historic and Cultural Resources</p> <p>(3) Important Equipment and Systems</p> <p>(2) Minor Importance Equipment and Systems</p> <p>(1) Non-Essential Equipment</p> <p>Score: _____</p>
--	---	---

TOTAL SCORE (Flood Vulnerability x Consequence x Criticality): _____



Provide a basic sketch of the grounds and indicate the location of the structures on site. Indicate vulnerable areas, roadways, and potential mitigation points.

SKETCH		ATTACHMENTS		
Description _____ _____	<input type="checkbox"/> Photos	<input type="checkbox"/> Documents	<input type="checkbox"/> Other	
				



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Asset Mitigation Assessment Form

This form most helpful when used for critical assets that require their own assessment

Facility Name: _____ Asset Form #: _____ of _____
 System Name: _____ POC Name: _____
 Title: _____ POC Phone: _____
 POC Email Address: _____
 Location (Address): _____ City _____ state _____ zip _____
 Inspector Name: _____
 Date(s) of Field Inspection: _____ Asset Location: _____

Check all that apply regarding asset location:

- Outdoors Indoors Below Grade Above Grade

_____ **DESKTOP EVALUATION** _____

A. Asset Description

Asset Location: _____
 Asset Tier: _____ Notes: _____
 Asset Classification: Life/Fire Safety Electrical Service Heating/Cooling Potable Water
 Transportation Essential Service (i.e., Security System) Other: _____

B. Flood Risk Evaluation (only complete if asset-specific information is unique. Otherwise see Form ID# _____)

BFE: _____ Proposed Mitigation Design Elevation (PMDE): _____
 Datum: NAVD88 NGVD29 Other _____
 Anticipated Sea Level Rise: 50-year: _____ 100-year: _____ Source: _____

C. Asset Vulnerability

Height above floor: _____ Asset Lowest Elevation: _____
 Datum: NAVD88 NGVD29 Other _____
 Flood depth at which asset is no longer operational : _____ Explain: _____
 Flood elevation at which the asset is at risk (e.g., structure floods and asset impacted): _____
 Datum: NAVD88 NGVD29 Other _____

What are the consequences of the asset being out of service? Will other assets or systems be at risk if this system falls out of service? If so, provide details Yes No _____

Location and Elevation of the Asset's Power Supply: _____

Datum : NAVD88 NGVD29 Other _____

Is there a backup system available should this asset be out of service? If so, At what elevation would the backup be at risk? _____

Datum : NAVD88 NGVD29 Other _____
What are the Current Emergency Procedures: _____

_____ **FIELD EVALUATION** _____

HEALTH AND SAFETY HAZARDS PRESENT? Yes No Describe: _____

A. ASSET NAMEPLATE INFORMATION

Manufacturer(s): _____ Model Number(s): _____
Serial Number(s): _____ Capacity(s): _____
Date of Installation(s): _____ Most Recent Improvement(s): _____

Does Asset meet all current Codes and Standards? Will Asset replacement/mitigation prompt a Code Compliance? If so, Provide details: Yes No _____

Does the Asset meet the required capacity? _____

B. ASSET FIELD ASSESSMENT

Summarize the Asset's Vulnerabilities: _____

Is there potential for debris risk?: Y /N Source: _____

Current Related Emergency Procedure (should system be impacted) _____

Current Flood Mitigation Measures: _____

Current measures appear to be functioning properly: Yes No Describe: _____

Does the Asset require external penetrations (i.e. Louvers) to operate? If so provide details:
 Yes No _____

Does the Asset present any inter-building vulnerabilities (i.e. Ductwork, pipes, conduit)? If so provide details: Yes No _____



Other Notes: _____

(Optional) COMPLETE THIS SECTION IF THE EVALUATION IS CONDUCTED AFTER A FLOOD EVENT

Temporary or Emergency Repair Measures: _____

Work Required to Fully Restore Asset: _____

Codes and Standards Upgrades required? _____

Potential Hazard Mitigation Action: _____

Additional Notes : _____

<p>CONDITION EVALUATION (Please indicate score / cause) For use with condition evaluation below</p> <p>(5) Destroyed or Damaged / Failing > 50%. Likely Requires replacement.</p> <p>(4) Damaged or Failing. Major repair / upgrades necessary.</p> <p>(3) Damaged. Can be repaired.</p> <p>(2) Further evaluation necessary to determine condition.</p> <p>(1) Undamaged and fully operational</p>	<p>If Asset Has been Damaged by an Event:</p> <p>Date of Event: _____</p> <p>Type of Event: _____</p> <p>Flood Depth Above Grade (if applicable): _____</p> <p>Notes: _____</p> <p>_____</p> <p>_____</p>
<p>CONDITION EVALUATION ____ / ____</p> <p>CAUSE OF DAMAGE (e.g., wind, flood) ____ / ____</p> <p>SOURCE OF DAMAGE (e.g., flooding through conduit, surge) _____</p> <p>Notes: _____</p> <p>_____</p> <p>_____</p>	



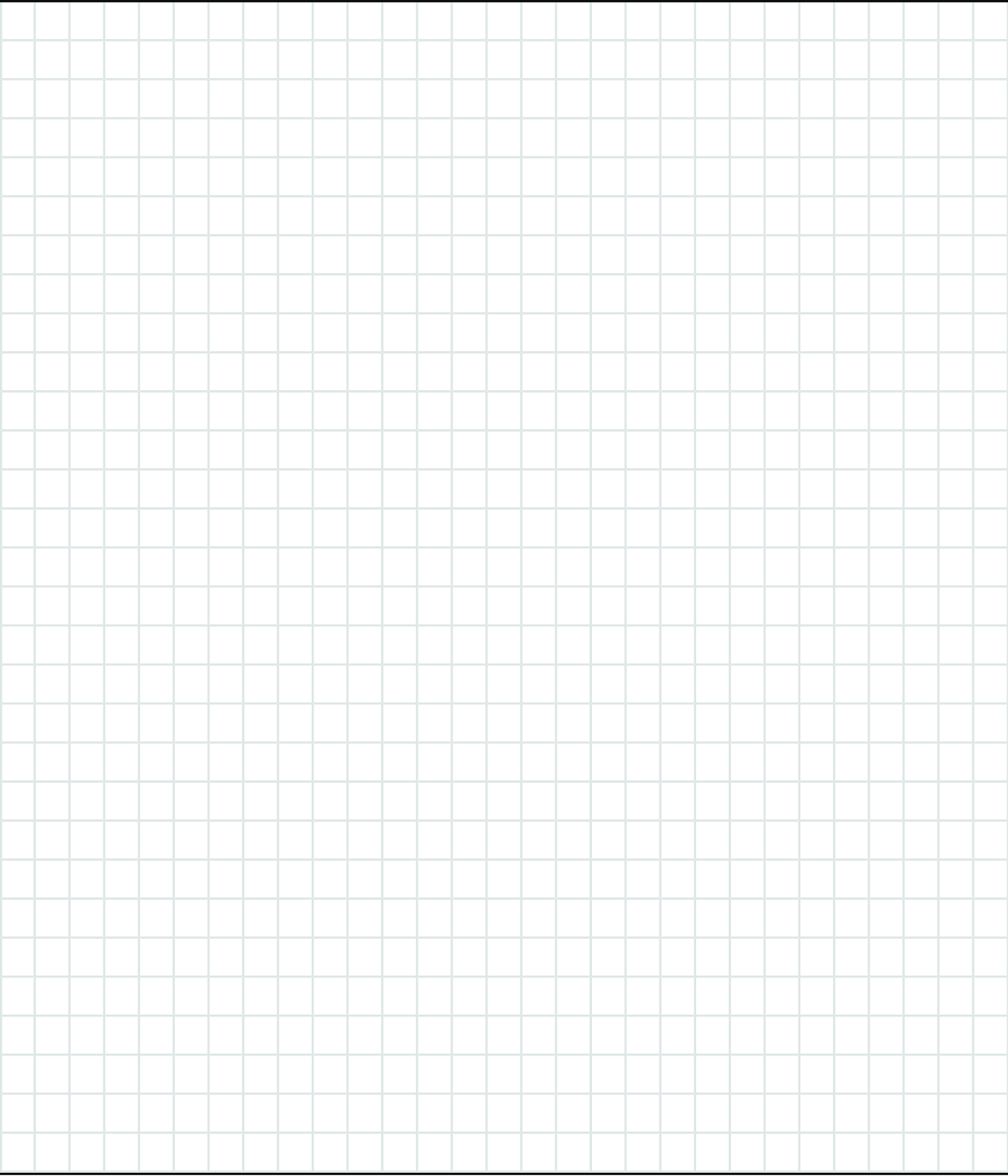
SCORING EVALUATION

<p>Flood Vulnerability Evaluation: <i>Point where flood waters would reach the lowest vulnerable point at the facility</i></p> <p>(5) Vulnerable to the 10% Annual Chance (10-Year) Flood Elevation OR Multiple Historical Losses Recorded with Significant Consequences</p> <p>(4) Vulnerable to the 2% Annual Chance (50-Year) Flood Elevation OR At Least One Record of Loss with Moderate to Significant Consequences</p> <p>(3) Vulnerable to the 1% Annual Chance (100-Year) Flood Elevation with Moderate to Significant Consequences</p> <p>(2) Vulnerable to the 0.2% (500-Year) Flood Elevation</p> <p>(1) Vulnerable above the 0.2% (500-Year) Flood Elevation</p> <p>Score: _____</p>	<p>Consequence (Service Loss) Evaluation <i>Estimated number of days/hours the given entity would remain out of service</i></p> <p>(5) Use of the facility or service is lost and inoperable for 7+ days / Damage costs would exceed 50% replacement value Estimate: _____</p> <p>(4) Use of the facility or service is lost and inoperable for 1 – 7 days / Damage costs would exceed 25% replacement value</p> <p>(3) Use of the facility or service is lost and restored within 24 hours / Damage costs total less than 10% replacement value</p> <p>(2) Use of the facility or service is maintained; however ingress or egress is lost / Costs limited to emergency protective measures only</p> <p>(1) Service is maintained without interruption / Minimal costs</p> <p>Score: _____</p>	<p>Criticality Evaluation: <i>Determine the Risk Category of the Asset based on the Categories established in the Public Facilities Flood Hazard Mitigation Assessment Manual (refer to Page _____)</i></p> <p>(4) Life Safety / Critical Equipment / Hazardous Materials Systems / Historic and Cultural Resources</p> <p>(3) Important Equipment and Systems</p> <p>(2) Minor Importance Equipment and Systems</p> <p>(1) Non-Essential Equipment</p> <p>Score: _____</p>
--	--	--

TOTAL SCORE (Flood Vulnerability x Consequence x Criticality): _____



Provide a basic sketch of the grounds and indicate the location of the structures on site. Indicate vulnerable areas, roadways, and potential mitigation points.

SKETCH		ATTACHMENTS		
Description _____ _____	<input type="checkbox"/> Photos	<input type="checkbox"/> Documents	<input type="checkbox"/> Other	
				



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Appendix B Mitigation Assessment Report Template

B.1 Mitigation Assessment Report Template offers a template that can be used by the facility assessment team to develop a comprehensive understanding of the mitigation needs and options.



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Facility Owner

Flood Mitigation Assessment

Address Line 1

Address Line 2

Address Line 3

Field Evaluation Date: _____

Report Date: _____

Signature 1 Name
Title

Signature 2 Name
Title

Signature 3 Name
Title

Flood Mitigation Assessment

Facility Name

Prepared for:

Prepared by:

Tel

Fax

Our Ref.:

Date:

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 - Attachment 6A: Structure Assessment Forms
 - Attachment 6B: System Assessment Forms
 - Attachment 6C: Asset Assessment Forms
 - Attachment 6D: Grounds Assessment Forms

Flood Mitigation Assessment

DATE

Facility

1. Executive Summary and Methodology

In year, the Office/Department/Company performed an inspection following the flood risk and mitigation assessment methodology presented within the *Public Facilities Flood Hazard Assessment Manual*. The evaluation was performed by engineers/floodplain specialists/planners.

Description of site including date built, number of facilities, facility sizes, and facility conditions. Description of overall site elevations, any previously existing mitigation measures, and any other notable site characteristics.

The site is located within a Federal Emergency Management Agency (FEMA) classified Flood Zone, which means that it is vulnerable to the -year flood (-percent annual chance).

This particular evaluation included observations of the overall grounds, structures, systems, and/or assets present on the site. Based on the results of the evaluation, mitigation options have been identified and evaluated on a preliminary basis. The results of the inspection and recommendations are discussed herein.

The pilot inspection and flood risk analysis was conducted on date, by names and titles of analysts ("the Team"). The Team evaluated the condition of on-site structures (see Attachment 6). Attachment 6 contains the inspection forms completed by the Team.

The primary purpose of the evaluation was to determine: List inspection goals

Discuss any constraints and modifications to methodology made during the inspection.

As a result of the flood risk analysis, the Team recommends the following mitigation measures for further consideration: List proposed measures

2. Existing Conditions

2.1 Description of Structures

Facility name, address, FEMA flood zone, and adjacent bodies of water.

DATE

Facility

Table 1 provides the year built for each structure found on site:

Table 1: Building Name and Year Built

Building Name	Year Built

2.2 Purpose of Structures

Describe functions of facilities onsite and criticality of the structures. Why is it important that the facility be mitigated?

Select elevation information for the structure(s) onsite is provided in Table 2. All elevations are referenced to the North American Vertical Datum of 1988 (NAVD88).

DATE

Flood Mitigation Assessment

Facility

Table 2: Building Name and Select Information

Building Name	Proximity to Water (ft)	Primary Use	Highest Adjacent Grade (ft)	Lowest Adjacent Grade (ft)	First Floor Elevation (ft)	Basement Elevation (ft)	Elevation of Water Entry (ft)	Stories	First Floor Area (sf)

Note: Elevations referenced to North American Vertical Datum of 1988 (NAVD88)

Facility

DATE

3. Flood Risk and Vulnerability

Location of site relative to nearby water bodies. Discuss vulnerability of the site to the 100-year floodplain and any other applicable floodplains based on the FEMA BFE and additional flood elevations.

The following flood elevations were developed from the ___ city/state/county ___ Flood Insurance Study performed in ___ date ___ upon analysis of the ___ coastal transect or stream/creek/river profile ___ (NAVD88):

- 10-Year Flood (10-Percent Annual Chance) – ___ feet NAVD88
- 50-Year Flood (2-Percent Annual Chance) – ___ feet NAVD88
- 100-Year Flood (1-Percent Annual Chance) – ___ feet NAVD88
- 500-Year Flood (0.2-Percent Annual Chance) – ___ feet NAVD88

3.1 Historical Losses

Discuss previous flooding or storm events onsite. Where did water enter the facility? How much physical damage was caused to the facility? Did the facility lose service and for how long?

3.2 Description of Existing Flood Mitigation Measures

Describe existing measures if applicable. Include photographs if applicable.

3.3 Building Vulnerabilities

Discuss structural vulnerabilities to both the BFE and the PMDE. See Attachment 5 for photographs of potential vulnerabilities.

3.4 Critical System and Asset Vulnerabilities

Discuss system and asset vulnerabilities to the BFE and the PMDE. See Attachment 5 for photographs of systems and assets.

3.5 Consequence Analysis

Discuss consequences of service loss to facilities onsite. Discuss historical building context.

DATE

Flood Mitigation Assessment

Facility

3.6 Scoring Evaluation

Each of the assets, systems, structures, and the grounds were analyzed and scored according to their vulnerability, consequence of loss, and their criticality. Vulnerability is ranked based on the system or asset's elevation and whether or not it will be affected by a 10-, 50-, 100-, or 500-year flood event. Consequence of loss is ranked based on the value of the item, including the cost of repair or replacement of the item, and how long it would take to repair or replace the item, during which time the facility may lose service. Lastly, criticality ranking is based on the system or asset's building code identified risk category, and engineering judgment of the importance of the piece of equipment. The scoring evaluation is detailed in Tables 3 through 5 below. In addition, Attachment 6 includes the inspection forms which detail the system, asset, grounds and structure scoring.

Table 3: Evaluation and Scoring of Assets

Asset	Flood Vulnerability Score	Service Loss Score	Criticality Score	Total
-------	---------------------------	--------------------	-------------------	-------

--

Table 4: Evaluation and Scoring of Structures and the Grounds

Grounds / Structure	Flood Vulnerability Score	Service Loss Score	Criticality Score	Total
---------------------	---------------------------	--------------------	-------------------	-------

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Table 5: Evaluation and Scoring of Systems

System	Flood Vulnerability Score	Service Loss Score	Criticality Score	Total
--------	---------------------------	--------------------	-------------------	-------

--

The maximum score is 100, which corresponds to a vulnerability score of 5, a service loss score of 5, and a criticality score of 4.

4. Mitigation Alternatives

Discuss structure ASCE risk categories. Explain the reasoning behind the PMDE, and to what level the PMDE protects to.

Briefly outline the mitigation alternatives identified and to what level they protect to.

4.1 Mitigation Option 1

Describe the mitigation alternative in detail and describe its overall effectiveness.

In addition to the above evaluation for overall effectiveness, there were several additional criteria that were considered. A commonly accepted method of evaluation for potential actions is the Social, Technical, Administrative, Political/Legal, Economic and Environmental (STAPLEE) action evaluation method developed by FEMA.

The following is the STAPLEE method evaluation of the mitigation option:

- Social:
- Technical:
- Administrative:
- Political/Legal:
- Economic:
- Environmental:

4.2 Mitigation Option 2

Describe the mitigation alternative in detail and describe its overall effectiveness.

In addition to the above evaluation for overall effectiveness, there were several additional criteria that were considered. A commonly accepted method of evaluation for potential actions is the Social, Technical, Administrative, Political/Legal, Economic and Environmental (STAPLEE) action evaluation method developed by FEMA.

The following is the STAPLEE method evaluation of the mitigation option:

- Social:

DATE

Facility

- Technical:
- Administrative:
- Political/Legal:
- Economic:
- Environmental:

4.3 Mitigation Option 3

Describe the mitigation alternative in detail and describe its overall effectiveness.

In addition to the above evaluation for overall effectiveness, there were several additional criteria that were considered. A commonly accepted method of evaluation for potential actions is the Social, Technical, Administrative, Political/Legal, Economic and Environmental (STAPLEE) action evaluation method developed by FEMA.

The following is the STAPLEE method evaluation of the mitigation option:

- Social:
- Technical:
- Administrative:
- Political/Legal:
- Economic:
- Environmental:

5. Recommendations

Discuss which of the mitigation options is recommended and why.

DATE

Facility

Attachment 1: Location Map

Attachment 2: FIRM

Attachment 3: Facility Layout

Attachment 4: Evaluation Photographs

Attachment 5: Flood Risk Assessment Forms

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September 2014

**GET A
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FLORIDA DIVISION OF
EMERGENCY MANAGEMENT



**PUBLIC FACILITIES FLOOD
MITIGATION WORKSHOP**

Workshop Materials

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PILOT

PUBLIC FACILITIES FLOOD MITIGATION WORKSHOP

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INTENDED AUDIENCE

- Facility operators
- Facility managers
- Facility planners
- Engineers
- Floodplain managers
- Hazard mitigation specialists

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VALUE TO EMERGENCY MANAGERS

This process can:

- Be scaled from the single facility to whole jurisdictions
- Be used to screen facilities for potential flood risk or for full blown assessments (read: scale to your resources)
 - Prioritize facilities for assessment
 - Screen facilities for further evaluation
 - Screen structures / assets for further evaluation
- Identify preliminary options
- Prioritize your risk and potential mitigation measures
- And chip away at risk long term...


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INTRODUCTIONS



- Name
- Where are you from (agency or jurisdiction)?
- Job title and role

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COURSE OBJECTIVES

Learn To:

- Identify and assess flood risk at your facility
- Understand the process of developing preliminary options for mitigation measures
- Understand the implications of the building code
- Develop preliminary prioritization criteria for your facilities for mitigation
- Understand potential funding sources and methods of implementing selected projects

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COURSE OBJECTIVES

Share:

- Your experiences
- Your feedback on the workshop
- Your feedback on the activities
- Your feedback on the manual


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COURSE AGENDA

Unit 1	Course Introduction
Unit 2	Understanding Flood Risk and Consequences
	Facility Evaluation
Unit 3	Mitigation Options
	Mitigation Assessment Report
Unit 4	Funding Sources
	<i>Course and Manual Evaluation</i>

THE FLORIDA DIVISION OF EMERGENCY MANAGEMENT






PUBLIC FACILITIES FLOOD MITIGATION WORKSHOP

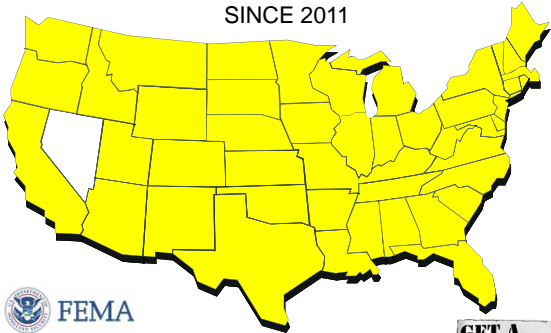
UNIT 1

THE FLORIDA DIVISION OF EMERGENCY MANAGEMENT




DECLARED DISASTERS

SINCE 2011



FEMA

THE FLORIDA DIVISION OF EMERGENCY MANAGEMENT




PUBLIC FACILITIES FLOOD MITIGATION INITIATIVE

Components

- Planning coordination for future public facilities
- Manual for evaluating existing facilities
- Workshops
- Pilot mitigation assessments
- Interactive state facility flood map
- Update to the State Hazard Mitigation Plan


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PUBLIC FACILITIES FLOOD MITIGATION INITIATIVE

WHY THIS INITIATIVE?

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MITIGATION 101

Reduces the loss of life and property by lessening the impact of disasters



Recovery
Putting a community back together after a disaster

Preparedness
Getting people, facilities (buildings and infrastructure), and equipment ready to quickly and effectively respond to a disaster before it happens

Response
Saving life and property during and immediately after a disaster

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INVEST \$1 NOW TO SAVE \$4 OVER TIME

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THE EMERGENCY MANAGEMENT CYCLE

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MITIGATION PLANNING CYCLE

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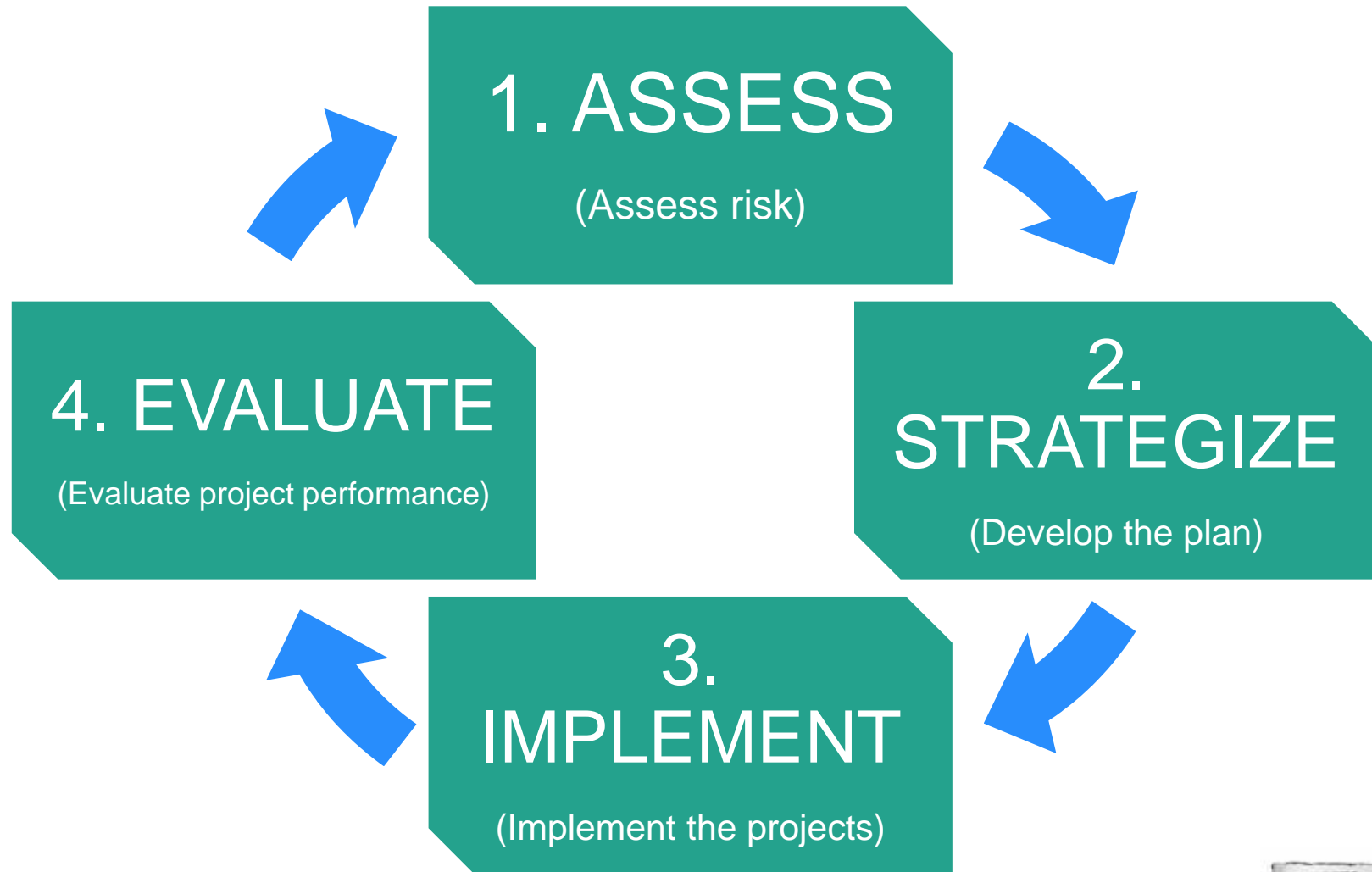
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MITIGATION PLANNING CYCLE



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TYPES OF PUBLIC FACILITIES

- Public facilities are constructed to provide services to the community.
- Significant disruption of civil and public life can occur when these facilities are damaged.
- The loss of these facilities impacts current occupants, but also the surrounding service population.

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THE CASE FOR PROTECTING PUBLIC FACILITIES

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MANUAL OVERVIEW

Take 5 minutes to review the contents of the Manual

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THE CASE FOR PROTECTING PUBLIC FACILITIES



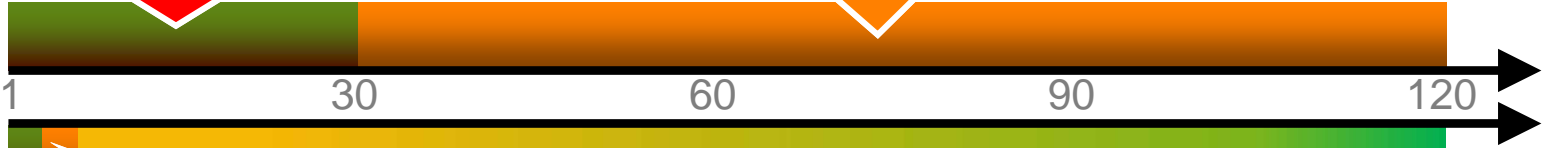
Offline



Limited Capacity

WTP 1

Day 1



WTP 2



Sandbags



Intake Breach



Mostly met demand

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TOOLS

- Tools in the Manual
 - Record of Historical Flood Loss
 - Grounds Inspection Worksheet
 - Structure Inspection Worksheet
 - System Inspection Worksheet
 - Asset Inspection Worksheet
 - Report Template
- Website (in progress)
 - Scoring Workbook

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MITIGATION ASSESSMENT REPORT

1. Executive Summary and Methodology
2. Facility Characterization
3. Flood Risk and Vulnerability
4. Consequence Analysis
5. Mitigation Options and Evaluation
6. Recommendations
7. Back-up Documentation (e.g. maps, photos)

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HISTORICAL LOSS DOCUMENTATION

- Provides a reference for understanding flood risk at a facility
- Reveals key vulnerabilities that may have been missed during a vulnerability assessment
- Provides insight into potential consequences of inaction
- Can be integrated into other planning mechanisms
- Helps justify public expenditure (e.g., Benefit Cost Analysis)


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HISTORICAL LOSSES

Documentation is Key!

- Good records of past events provide context for mitigation and justification for funding!
- Always keep as much documentation as possible following a flood!





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HISTORICAL LOSSES

Record of Historical Flood Loss Sheet


- Questionnaire to collect information regarding historical flood impacts to the facility
- One per historical loss event



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HISTORICAL LOSSES

- **Key information needed includes:**
 - Event date and name/type
 - Flood source (e.g., river, rain, sea)
 - Flood depth inside and outside the facility
 - Evidence of water moving rapidly? Evidence of waves?
 - Floodwater composition (Blackwater? Debris? Hazardous waste?)
 - Duration of flooding
 - Damages and service loss

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HISTORICAL LOSSES – INFO NEEDS CONT...

- Any warning before flooding?
- Site access interrupted? How long?
- Service interrupted? How long?
- Injuries or casualties
- Emergency protective measures deployed?
- Damages to ground, structures, critical systems/assets, contents, inventory? Other damages?
- Estimated revenue loss

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RECOMMENDED DOCUMENTATION

- FEMA Project Worksheets/Damage Survey Reports
- Insurance claims, damage repair records, or data from the state/local agency, local government
- Newspaper accounts citing credible sources (other than homeowner accounts)
- High water marks tied to depth-damage function damages
- Pictures
- Other documentation?

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ACTIVITY


Record of Historical Losses


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SPEND 5 MINUTES REVIEWING THE FORM AND THEN ANSWER THE FOLLOWING QUESTIONS TO THE CLASS.

- Does anyone know what a project worksheet is?
- What information will be more / less difficult to gather?
- Why is it important to try to gather this information first, at the beginning of an evaluation?
- What are some key sources for this information?
- Why might you want to know about warning times?
- What are some examples of historical flood loss from your own facilities and what did you learn?


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PUBLIC FACILITIES FLOOD MITIGATION WORKSHOP
UNIT 2


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UNIT 2 OBJECTIVES

- Understand flood risk concepts
- Understand factors that contribute to flood vulnerability
- Determine a method to prioritize your facilities
- Understand and communicate consequences of flood impacts
- Perform a desktop and field evaluation

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FLORIDA BUILDING CODE (FBC)

- Addresses flood-resistant construction or flood prevention
- Incorporates construction-related regulations for public and private buildings in the State of Florida
- Best way to determine the appropriate flood provisions for a community and facility


The flood provisions of the 2010 FBC achieve two broad objectives:

- Fulfill the purpose of safeguarding public health, safety, and general welfare
 - Structures built to NFIP criteria experience 80% less damage over time.
- Fulfill several requirements necessary for communities that participate in the NFIP

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FLORIDA BUILDING CODE

- **Building** – Flood provisions are primarily in Section 1612 Flood Loads, which refers to the standard Flood Resistant Design and Construction (ASCE 24). Table 1612.1 shows cross references to all of the flood provisions in all of the Florida codes.
- **Existing Building** – Flood provisions are found in sections on repairs, alterations, additions, and historic structures, as well as in sections on prescriptive and performance compliance methods.
- **Plumbing, Mechanical, and Fuel Gas** – Flood provisions are in a number of sections within these codes to ensure proper installation of systems and equipment.

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CONSENSUS STANDARDS

- **ASCE 7: Minimum Design Loads for Buildings and Other Structures** –provides information on designing for flood loads and hydrostatic pressure.

- **ASCE 24: Flood Resistant Design and Construction** – Provides minimum requirements and expected performance for design and construction of buildings/structures in flood hazard areas.

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ASCE 24-05: FLOOD RESISTANT DESIGN AND CONSTRUCTION

- Minimum requirements and expected performance for the design and construction of buildings and structures in flood hazard areas. Highlights include:
 - Building Performance
 - Flood-damage-resistant materials
 - Freeboard
 - Utilities and service equipment
 - Flood loads
 - Siting considerations
 - Foundation performance
 - Soil characteristics
 - Stable fill
 - Slabs-on-grade specifications
 - Two alternatives for flood openings
 - Stairs and ramps

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RISK CATEGORIES

Criticality Score	Risk Category	Nature of Occupancy
4	Category IV	<ul style="list-style-type: none"> ▪ Buildings and other structures designated as essential facilities ▪ Buildings and other structures, the failure of which could pose a substantial hazard to the community ▪ Buildings and other structures (including but not limited to, facilities that manufacture, process, handle, store, use, or dispose of such substances as hazardous fuels, hazardous chemicals, or hazardous waste) containing sufficient quantities of highly toxic substances where the quantity exceeds a threshold quantity established by the authority having jurisdiction to be dangerous to the public if released and is sufficient to pose a threat to the public if released ▪ Buildings and other structures required to maintain function of other Risk Category IV structures
3	Category III	<ul style="list-style-type: none"> ▪ Buildings and other structures, the failure of which could pose a substantial risk to human health ▪ Buildings and other structures, not included in Risk Category IV, with potential to cause a substantial economic impact and/or mass disruption of day-to-day civilian life in the event of a failure ▪ Buildings and other structures not included in Risk Category IV (including, but not limited to, facilities that manufacture, process, handle, store, use, or dispose of such substances as hazardous fuels, hazardous chemicals, or hazardous waste) containing toxic or explosive substances where their quantity exceeds a threshold quantity established by the authority having jurisdiction and is sufficient to pose a threat to the public if released
2	Category II	<ul style="list-style-type: none"> ▪ All buildings and other structures except those listed in Risk Categories I, III, and IV
1	Category I	<ul style="list-style-type: none"> ▪ Buildings and other structures that represent a low risk to human health in the event of failure

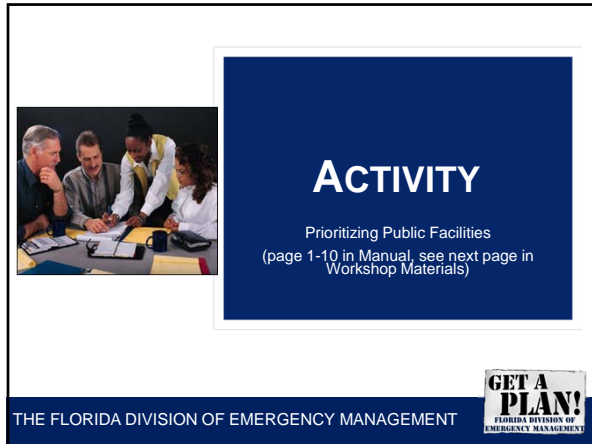
Source: ASCE 24: Flood Resistant Design and Construction

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RISK CATEGORIES

Criticality Score	Risk Category	Nature of Occupancy
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3	Category III	<ul style="list-style-type: none"> Buildings and other structures, the failure of which could pose a substantial risk to human health Buildings and other structures, not included in Risk Category IV, with potential to cause a substantial economic impact and/or mass disruption of day-to-day civilian life in the event of a failure Buildings and other structures not included in Risk Category IV (including, but not limited to, facilities that manufacture, process, handle, store, use, or dispose of such substances as hazardous fuels, hazardous chemicals, or hazardous waste) containing toxic or explosive substances where their quantity exceeds a threshold quantity established by the authority having jurisdiction and is sufficient to pose a threat to the public if released
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Source: ASCE 24: Flood Resistant Design and Construction

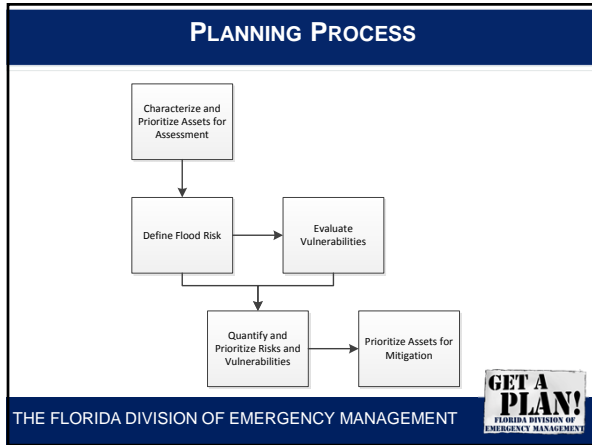


ACTIVITY

Prioritizing Public Facilities
(page 1-10 in Manual, see next page in Workshop Materials)

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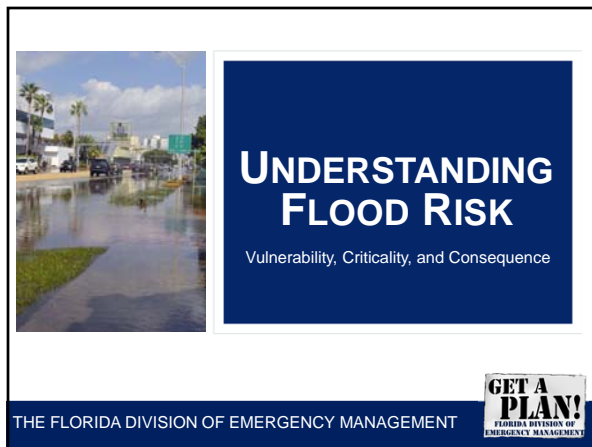


PLANNING PROCESS

```
graph TD; A[Characterize and Prioritize Assets for Assessment] --> B[Define Flood Risk]; A --> C[Evaluate Vulnerabilities]; B --> D[Quantify and Prioritize Risks and Vulnerabilities]; C --> D; D --> E[Prioritize Assets for Mitigation];
```

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UNDERSTANDING FLOOD RISK

Vulnerability, Criticality, and Consequence

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UNIT 2 ACTIVITY – PRIORITIZING PUBLIC FACILITIES

Review the following descriptions of public facilities and identify the Florida Building Code Risk Category. We will discuss (as a group) the potential implication should this building be taken out of service (independent of other factors).

1. State Emergency Operations Center – includes emergency response personnel, police dispatch, fire and rescue personnel, a public safety training center and a state liaison for homeland security.

Risk Category Assigned: _____

2. Voting and Ballot Storage Facility – Stores voter registration and ballot data in both paper and electronic format. Houses minimal full-time staff, except surrounding election time.

Risk Category Assigned: _____

3. Department of Health Building – Houses departments that deal with disability (handicap licenses and assistance for disabled citizens). Maintains records and disperses state assistance for WIC. Includes a testing laboratory for diseases that is managed by the Centers for Disease Control.

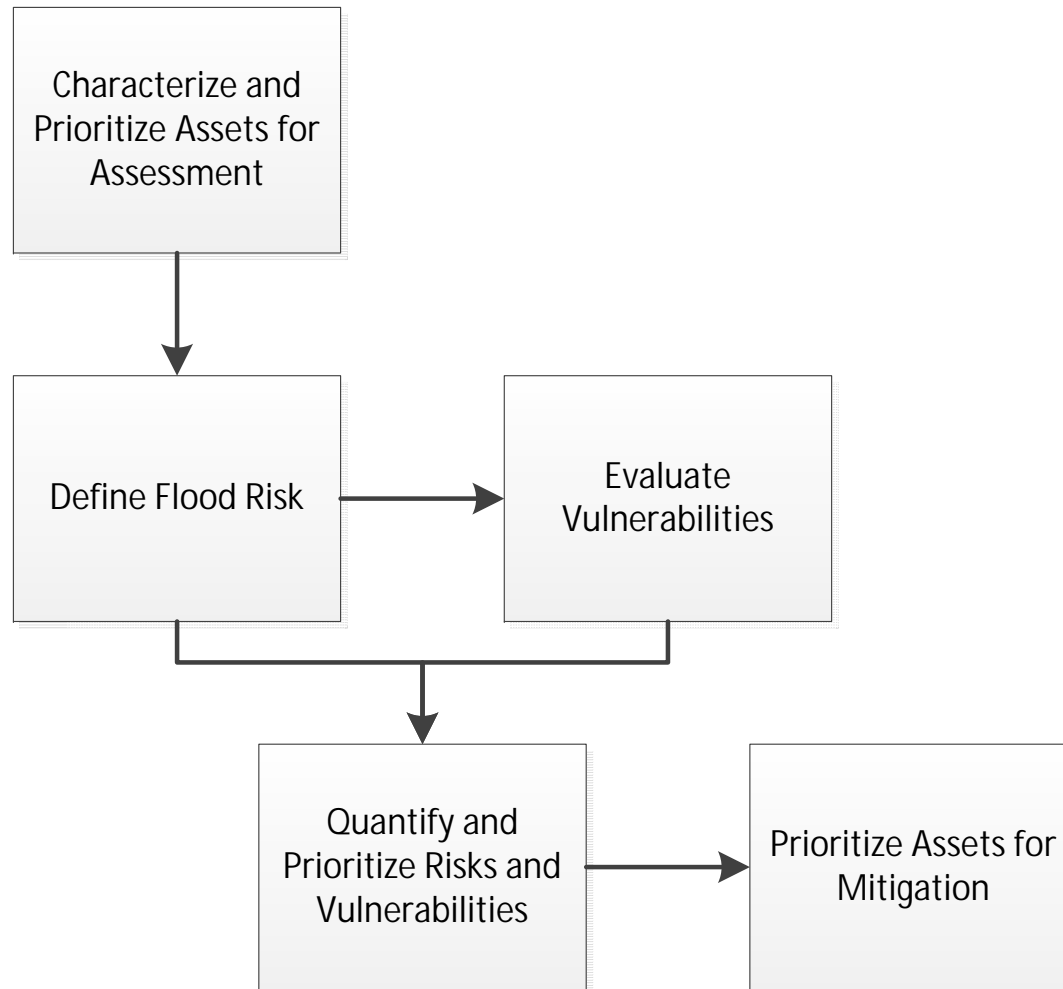
Risk Category Assigned: _____

4. Department of Alcoholic Beverages and Tobacco –Licenses the alcoholic beverage and tobacco industries within the state, collects and audits taxes and fees paid by the licensees, and enforces the laws and regulation of the alcoholic beverage and tobacco industries

Risk Category Assigned: _____

There is a section at the back of your workbook to rate your own facilities.

PLANNING PROCESS




FACILITY RISK

Risk = Probability x Consequence

Flood Hazard	Vulnerability
Criticality	Consequence (Damage and Lost Service)

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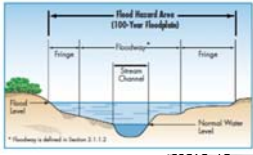
FLOOD HAZARD

An Introduction

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RIVERINE FLOODING


- Occurs when the volume of flow exceeds the capacity of waterway channels and spreads out over the adjacent land
- Caused by rainfall and/or snowmelt
- The dynamics of riverine flooding vary with terrain

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COASTAL FLOODING

- Occurs when normally dry, low-lying land is flooded by sea water
- Caused by hurricanes, tropical storms, nor'easters, typhoons, tsunamis, and wind-driven wave action




Zone V: Water height: 1.5 to 3 feet
Zone A: Water height: 2.5 to 3 feet
Zone B: Water height: 3 to 4 feet
Zone X: Water height: 1.5 to 3 feet

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PONDING

- Flooding as a result of depressions in the landscape collecting runoff
- Areas subject to ponding may not be depicted on the local or FEMA flood maps




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SHEET FLOW

- Flooding from runoff resulting from a combination of inadequate drainage and impervious surface
- Overland flow of water that takes the form of a thin, continuous film and is not concentrated into channels larger than rills

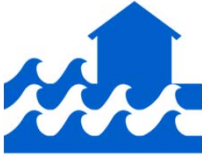


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UNDERSTANDING VULNERABILITY

- **Facility Characteristics**
 - Age of building
 - Construction type
 - Elevation and penetrations
 - Location (e.g., in floodplain or high wind zone)
- **Data Inputs**
 - Determine the elevations of different flood probabilities (FIRMs and FIS)
 - FEMA Map Service Center – <http://www.msc.fema.gov>
 - Compare these elevations with the lowest elevations of the facility
 - Advanced: structural integrity review, cascading impacts




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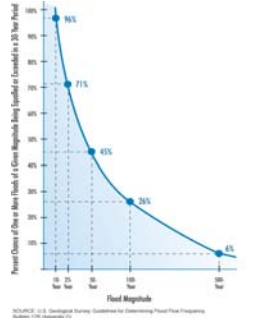
FLOOD PROBABILITY

- Based on a combination of historical records, modeling, and statistical analysis
- Best estimate of the likelihood that a flood of a certain elevation, depth, and magnitude will occur within any given year at a specific location
- The “base flood” is the flood elevation that has a 1-percent chance of being met or exceeded in any given year
- Often also communicated as “recurrence intervals” (e.g., 100-year flood)

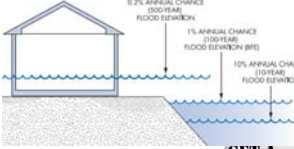
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FLOOD PROBABILITY



- **Variables**
 - Climate of the region
 - Amount of rainfall
 - Width of the floodplain
 - Size of the channel
 - Urbanization of floodplain







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FACTORS THAT MAY EXACERBATE FLOOD RISK

- **Temperature**
 - Increases in temperature alter global climate patterns leading to shifts in precipitation and storm events.
- **Precipitation**
 - Intense rainfall events typically produce more surface runoff due to limited infiltration and evaporation capacity.
- **Sea Level Rise**
 - Sea level rise may occur due to a combination of factors:
 - Thermal expansion of the waters
 - Melting of land-based ice
 - Regional subsidence (sinking)






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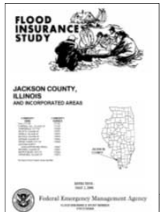
FLOOD RISK RESOURCES


Local Floodplain Administrator – The local administrator is a valuable asset in providing necessary flood assessment data. Available to all National Flood Insurance Program (NFIP) participating communities.

Flood Insurance Rate Map (FIRM)




Flood Insurance Study (FIS)



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FLOOD RISK RESOURCES

- **Technologies**
 - **ArcGIS** – Most flood modeling has been converted to a digital format viewable with ArcGIS
 - **Google Earth** – Google Earth has an add-on feature that provides flood mapping information
 - **HAZUS** – FEMA has developed a program add-on to ArcGIS to model flood scenarios and consequences
 - **Hydrologic Engineering Center** – The U.S. Army Corps of Engineers (USACE) has developed several tools to support modeling and consequences of flood risk
 - **Atlas 14 for Rainfall** – Precipitation Frequency Data Server (PFDS) provides recurrence intervals based on latitude/longitude (<http://dipper.nws.noaa.gov/hdsc/pfds/>)


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FIRM

- An official map generated by FEMA, of an NFIP community that delineates flood boundaries and qualifies the associated risk by zone
- Provides important flood vulnerability information:
 - If the property is in a Special Flood Hazard Area (SFHA)
 - Flood Zone
 - Base Flood Elevation
 - Limit of Moderate Wave Action (LiMWA)
 - Community number, map and panel ID, and effective date
- Data can also be used for Benefit-Cost Analysis

Who Uses FIRMs?


- Engineers, surveyors, and architects
- Floodplain managers
- Planners
- Property owners
- Insurance professionals and lenders




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FLOOD INSURANCE STUDY

- Presentation of flood risk for watercourses, lakes, and coastal flood hazard within a community
- Provides important flood source information:
 - Flood elevation data from flood profiles
 - Streambed elevation
 - Flood discharges
 - Transects descriptions/maps

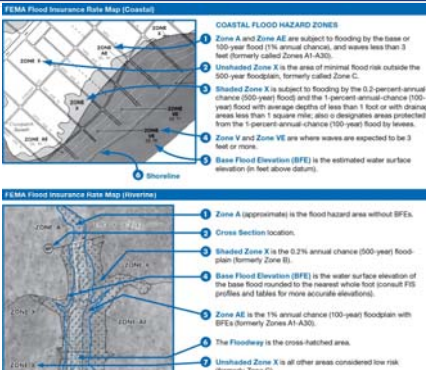




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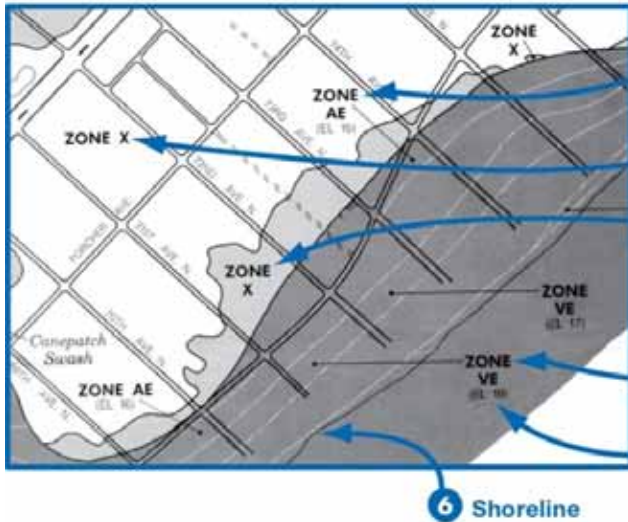
FEMA DESIGNATED FLOOD ZONES

FIRMs now also include the LiMWA (not shown) on coastal flood maps – the area seaward of the A Zone that is subject to 1.5 to 3 feet of wave action.



FEMA DESIGNATED FLOOD ZONES

FEMA Flood Insurance Rate Map (Coastal)

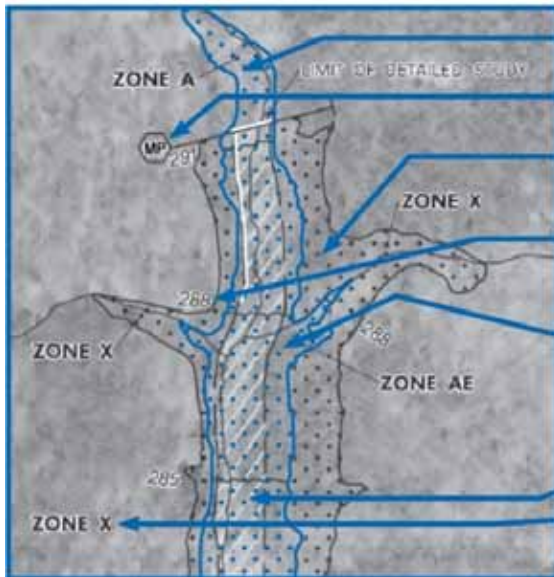


COASTAL FLOOD HAZARD ZONES

- 1** Zone A and Zone AE are subject to flooding by the base or 100-year flood (1% annual chance), and waves less than 3 feet (formerly called Zones A1-A30).
- 2** Unshaded Zone X is the area of minimal flood risk outside the 500-year floodplain, formerly called Zone C.
- 3** Shaded Zone X is subject to flooding by the 0.2-percent-annual-chance (500-year) flood and the 1-percent-annual-chance (100-year) flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; also o designates areas protected from the 1-percent-annual-chance (100-year) flood by levees.
- 4** Zone V and Zone VE are where waves are expected to be 3 feet or more.
- 5** Base Flood Elevation (BFE) is the estimated water surface elevation (in feet above datum).

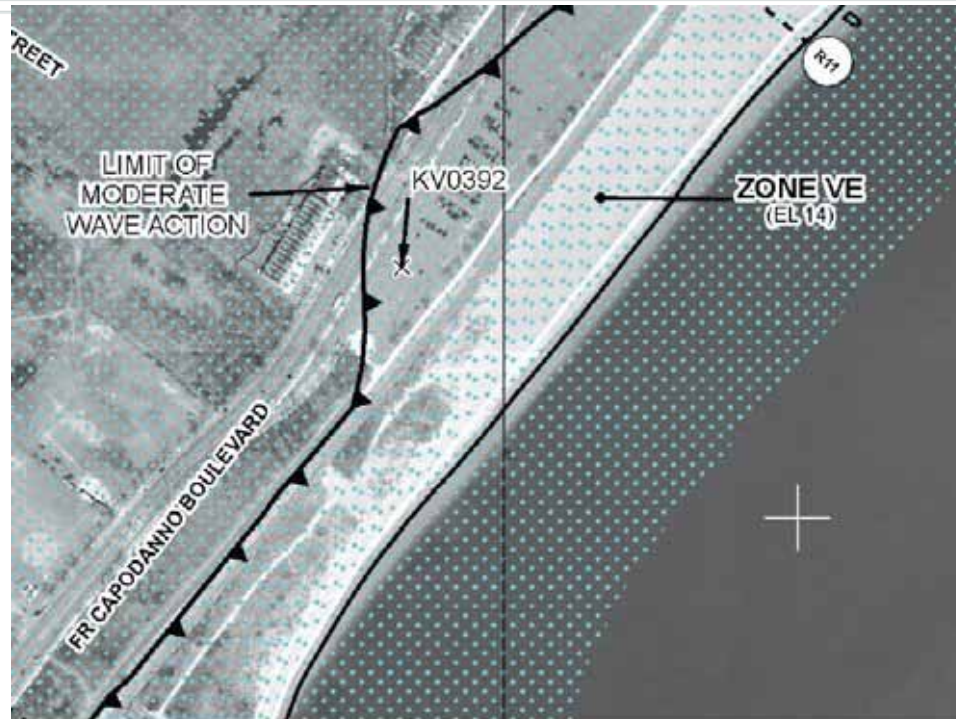
6 Shoreline

FEMA Flood Insurance Rate Map (Riverine)



- 1** Zone A (approximate) is the flood hazard area without BFEs.
- 2** Cross Section location.
- 3** Shaded Zone X is the 0.2% annual chance (500-year) floodplain (formerly Zone B).
- 4** Base Flood Elevation (BFE) is the water surface elevation of the base flood rounded to the nearest whole foot (consult FIS profiles and tables for more accurate elevations).
- 5** Zone AE is the 1% annual chance (100-year) floodplain with BFEs (formerly Zones A1-A30).
- 6** The Floodway is the cross-hatched area.
- 7** Unshaded Zone X is all other areas considered low risk (formerly Zone C).

LIMWA



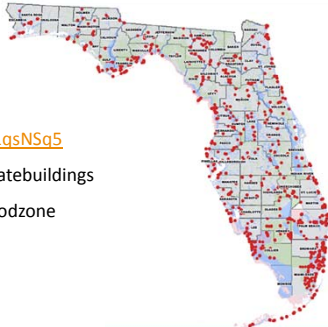
Legend

 Limit of Moderate Wave Action

Notes to Users

The AE Zone category has been divided by a Limit of Moderate Wave Action (LiMWA). The LiMWA represents the approximate landward limit of the 1.5 – foot breaking wave. The effects of wave hazards between the VE Zone and the LiMWA (or between the shoreline and the LiMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

STATE FACILITY FLOOD RISK IN FLORIDA



<http://bit.ly/1qsNSq5>
Username: statebuildings
Password: floodzone

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LIMITATIONS OF THE FIRM AND FIS

- Over time, significant changes can occur to the floodplain that may not be captured in older FIRMs and FIS.
- Like all maps, the FIRMs are a graphical method for simplifying and visualizing data.
- FIRMs often employ coarse approximations and rules of thumb.
- Climate changes and sea level rise introduce new uncertainties.

FEMA's Risk MAP Program
FEMA started "Risk MAP" in 2010 - Risk Mapping, Assessment, & Planning. Coastal flood maps nationally are being updated with specific attention to five goals:

- Evaluating and updating flood hazard data
- Increasing public awareness of flood risk
- Mitigation planning that addresses flood vulnerability
- An enhanced digital mapping platform to improve data sharing
- Aligned decision-making capabilities and management of risk communication

Risk MAP is designed to identify future flood risk to provide better planning tools.

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FLOOD RISK AND THE BUILDING CODE

The Building Code requires freeboard (a safety factor) based on flood zone and facility criticality

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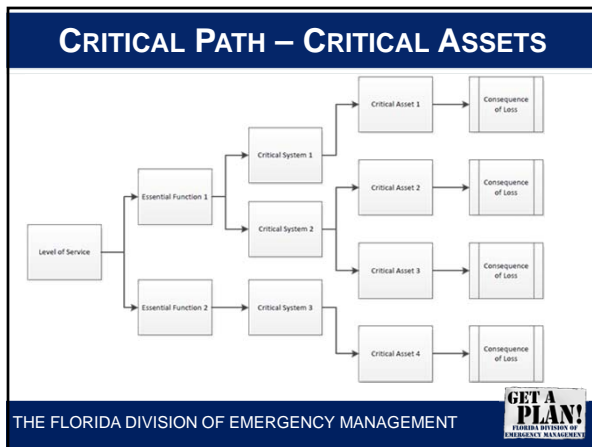
		Category I	Category II	Category III	Category IV
Elevation Lowest Floor	All A Zones not identified as Coastal A Zones: elevation of lowest floor	BFE	BFE + 1 ft. or DFE, whichever is higher	BFE + 1 ft. or DFE, whichever is higher	BFE + 2 ft., DFE, or the 500-year flood elevation, whichever is higher
Elevation of Bottom of Lowest Horizontal Structural Member	All V Zones and Coastal A Zones: where the lowest horizontal structural member is parallel to direction of wave approach	BFE	BFE	BFE + 1 ft. or DFE, whichever is higher	BFE + 1 ft., DFE, or the 500-year flood elevation, whichever is higher
	All V Zones and Coastal A Zones: where the lowest horizontal structural member is perpendicular to direction of wave approach	BFE	BFE + 1 ft. or DFE, whichever is higher	BFE + 2 ft. or DFE, whichever is higher	BFE + 2 ft., DFE, or the 500-year flood elevation, whichever is higher
Elevation Below Which Flood Damaged-Resistant Materials Shall be Used	All A Zones not identified as Coastal A Zones	BFE	BFE + 1 ft. or DFE, whichever is higher	BFE + 1 ft. or DFE, whichever is higher	BFE + 2 ft., DFE, or the 500-year flood elevation, whichever is higher
	All V Zones and Coastal A Zones: where the lowest horizontal structural member is parallel to direction of wave approach	BFE	BFE + 1 ft. or DFE, whichever is higher	BFE + 2 ft. or DFE, whichever is higher	BFE + 2 ft., DFE, or the 500-year flood elevation, whichever is higher
	All V Zones and Coastal A Zones: where the lowest horizontal structural member is perpendicular to direction of wave approach	BFE	BFE + 2 ft. or DFE, whichever is higher	BFE + 3 ft. or DFE, whichever is higher	BFE + 3 ft., DFE, or the 500-year flood elevation, whichever is higher
Minimum Elevation of Utilities and Equipment	All A Zones not identified as Coastal A Zones	BFE	BFE + 1 ft. or DFE, whichever is higher	BFE + 1 ft. or DFE, whichever is higher	BFE + 2 ft., DFE, or the 500-year flood elevation, whichever is higher
	All V Zones and Coastal A Zones: where the lowest horizontal structural member is parallel to direction of wave approach	BFE	BFE + 1 ft. or DFE, whichever is higher	BFE + 2 ft. or DFE, whichever is higher	BFE + 2 ft., DFE, or the 500-year flood elevation, whichever is higher
	All V Zones and Coastal A Zones: where the lowest horizontal structural member is perpendicular to direction of wave approach	BFE	BFE + 2 ft. or DFE, whichever is higher	BFE + 3 ft. or DFE, whichever is higher	BFE + 3 ft., DFE, or the 500-year flood elevation, whichever is higher
Dry Floodproofing of Non-Residential Structures and Non-Residential Portions of Mixed-Use Buildings	All A Zones not identified as Coastal A Zones: elevation to which dry floodproofing extends	BFE + 1 ft. or DFE, whichever is higher	BFE + 1 ft. or DFE, whichever is higher	BFE + 1 ft. or DFE, whichever is higher	BFE + 2 ft., DFE, or the 500-year flood elevation, whichever is higher
	All V Zones and Coastal A Zones; dry floodproofing not allowed	Not Permitted	Not Permitted	Not Permitted	Not Permitted

CATEGORIZING AND PRIORITIZING SYSTEMS AND ASSETS

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PRIORITIZING SYSTEMS / ASSETS			
Criticality Score	Category Heading	Systems	Assets
4	Critical Equipment / Hazardous Materials Systems	• Heating and Cooling Equipment	• Air Handling Units, Chillers, Boilers, Heat Exchangers
		• Ventilation Equipment	• Odor Control, Fans
	• Backup Systems / Water Removal	• Fuel Oil System, Portable Generators, Sump Pumps	
	• IT Equipment	• IT Equipment / Servers	
Life Safety Systems	• Fire Protection / Life Safety Systems	• Fire Pumps / Fire Protection Equipment / Life Safety	• Fire Pumps / Fire Protection Equipment / Life Safety
	• Potable Water	• Hose Pumps, Booster Pumps, Controls Equipment	• Hose Pumps, Booster Pumps, Controls Equipment
Historic and Cultural	• Electrical Systems (Normal and Emergency)	• Switchgear, Emergency Generators, ATS, MCC, Distribution Panels, Emergency Lighting	• Switchgear, Emergency Generators, ATS, MCC, Distribution Panels, Emergency Lighting
	• Critical / Dangerous Gas Systems	• Oxygen Tanks and Associated Equipment, Gas Detection for Noxious Gases	• Oxygen Tanks and Associated Equipment, Gas Detection for Noxious Gases
3	Important Equipment / Systems	• Wastewater	• Pesticides / Historic Artifacts, Archaeological Resources, Ethnographic Resources, Architectural Resources, Artwork, Archives, Writings
		• Transportation	• MSDs, Conveyance Equipment, Backflow Preventers
		• Security Systems	• Elevators / Escalators
		• Site Lighting / Telephone	• Cameras, Door Access Protection, Alarm Systems
2	Minor Importance Equipment / Systems	• Vital Storage (Medicine)	• Site Lighting / Telephone
		• Exterior Architecture	• Vital Storage (Medicine)
		• Office Equipment	• Exterior Architecture
		• Molding Risks	• Desk Computers, Kitchen Equipment
1	Non-Essential Equipment / Systems	• Non-Essential Equipment	• Chairs, Desks, Food
		• Non-Essential Equipment, Non-Vital Storage	

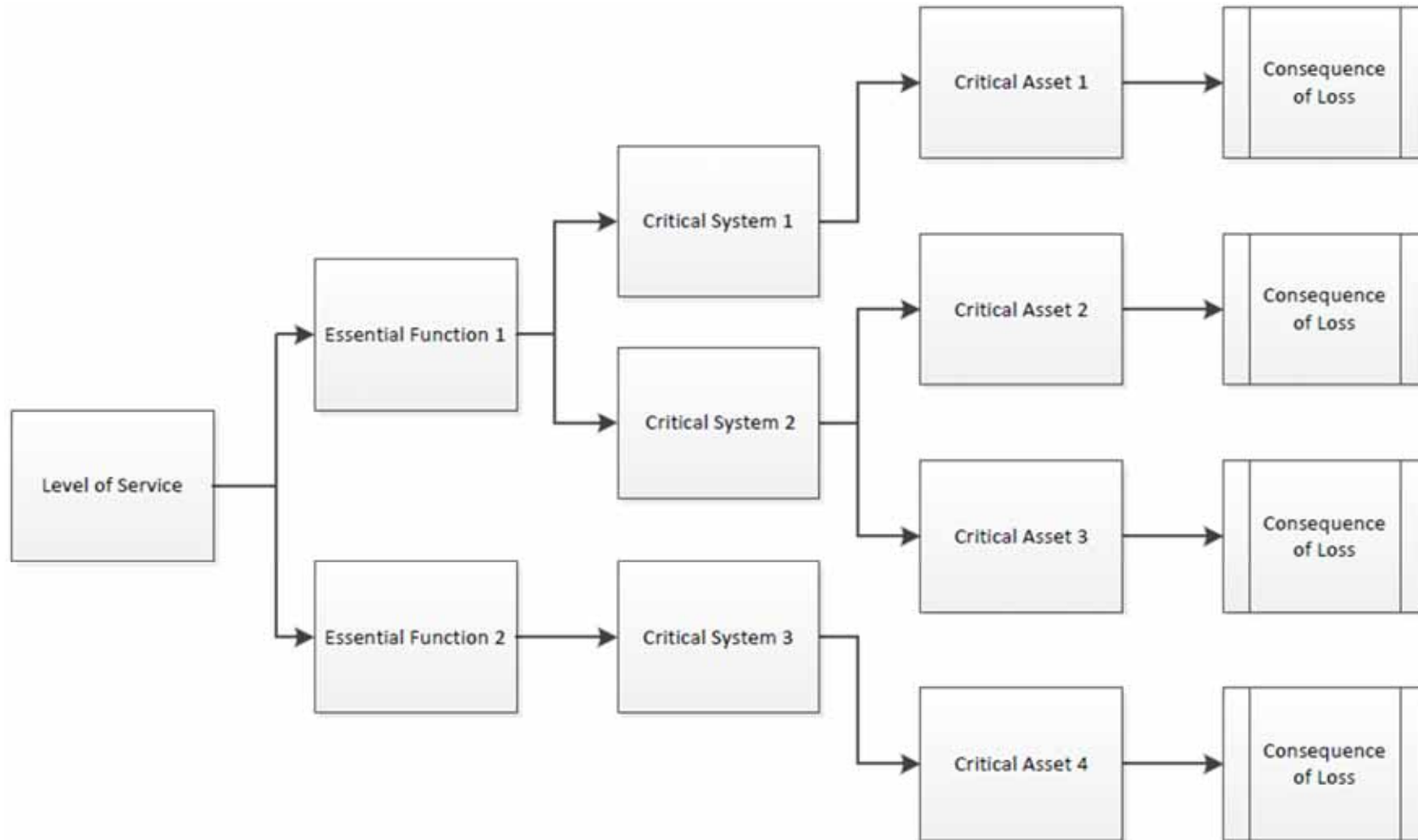
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PRIORITIZING SYSTEMS / ASSETS

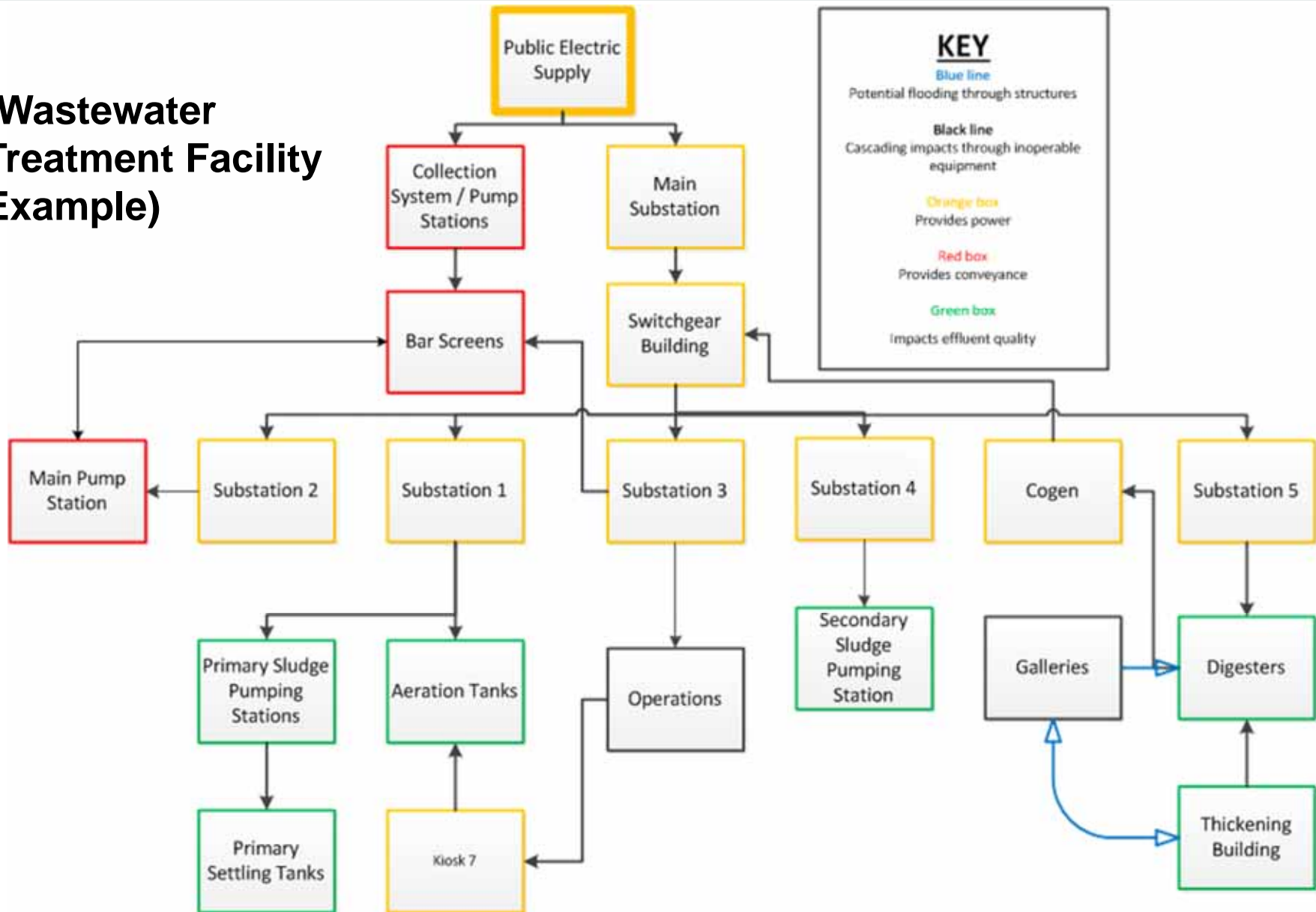
Criticality Score	Category Heading	Systems	Assets
4	Critical Equipment / Hazardous Materials Systems	• Heating and Cooling Equipment	• Air Handling Units, Chillers, Boilers, Heat Exchangers
		• Ventilation Equipment	• Odor Control, Fans
		• Backup Systems / Water Removal	• Fuel Oil System, Portable Generators, Sump Pumps
		• I.T. Equipment	• I.T. Equipment / Servers
	Life Safety Systems	• Fire Protection / Life Safety Systems	• Fire Pumps / Fire Protection Equipment / Life Safety
		• Potable Water	• House Pumps, Booster Pumps, Controls Equipment
		• Electrical Systems (Normal and Emergency)	• Switchgear, Emergency Generators, ATS, MCC, Distribution Panels, Emergency Lighting
		• Critical / Dangerous Gas Systems	• Oxygen Tanks and Associated Equipment, Gas Detection for Noxious Gases
	Historic and Cultural	• Historic and Cultural Resources	• Prehistoric / Historic Artifacts, Archaeological Resources, Ethnographic Resources, Architectural Resources, Artwork, Archives, Writings
	3	Important Equipment / Systems	• Wastewater
• Transportation			• Elevators / Escalators
• Security Systems			• Cameras, Door Access Protection, Alarm Systems
• Site Lighting / Telephone			• Site Lighting / Telephone
• Vital Storage (Medicine)			• Vital Storage (Medicine)
2	Minor Importance Equipment / Systems	• Exterior Architecture	• Exterior Architecture
		• Office Equipment	• Desk Computers, Kitchen Equipment
		• Molding Risks	• Chairs, Desks, Food
1	Non-Essential Equipment / Systems	• Non-Essential Equipment	• Non-Essential Equipment, Non-Vital Storage

CRITICAL PATH – CRITICAL ASSETS



CASCADING IMPACTS

(Wastewater Treatment Facility Example)





UNIT 2 ACTIVITY – PRIORITIZING ASSETS

Review the following assets and systems and answer the questions based on the lessons in Unit 2. Sample asset and system risk categories are provided on the following page (your facility may choose to identify alternate categories). We will discuss (as a group) the potential implication should this asset/system be taken out of service (independent of other factors).

1. Routine office furniture (chairs, desks, cabinets)

Asset or system? _____

Implications of losing service: _____

Critical? _____

Risk Category Assigned: _____

2. Security system at a correctional facility

Asset or system? _____

Implications of losing service: _____

Critical? _____

Risk Category Assigned: _____

3. Tracks for light rail transportation

Asset or system? _____

Implications of losing service: _____

Critical? _____

Risk Tier Assigned: _____

4. Onsite lift station pump for sanitary sewage disposal

Asset or system? _____

Implications of losing service: _____

Critical? _____

Risk Tier Assigned: _____

5. Artwork for a community center created out of community outreach programs

Asset or system? _____

Implications of losing service: _____

Critical? _____

Risk Tier Assigned: _____

TYPES OF EVALUATIONS

- **Desktop Evaluation**
 - Tools and Resources
 - Steps Recommended
- **Field Evaluation**
 - Tools and Resources
 - Steps Recommended

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INSPECTION WORKSHEETS

- Grounds Inspection Worksheet
- Structure Inspection Worksheet
- System Inspection Worksheet
- Asset Inspection Worksheet

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GROUNDS INSPECTION WORKSHEET


<p>Desktop Evaluation</p> <ul style="list-style-type: none"> ◦ Number of employees on site during day/night ◦ Highest site grade? Lowest? Access elevations? ◦ Potential flooding sources ◦ Site topography ◦ Anticipated sea level rise (50-year and 100-year) 	<p>Field Evaluation</p> <ul style="list-style-type: none"> ◦ Existing flood-mitigation measures ◦ Existing stormwater/drainage measures ◦ Evidence of runoff or drainage problems? Visible standing water? ◦ Features that may facilitate/inhibit grounds mitigation ◦ Describe grounds adjacent to the site
---	--

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STRUCTURE INSPECTION WORKSHEET

<p>Desktop Evaluation</p> <ul style="list-style-type: none"> ▪ Highest adjacent grade? Lowest? ▪ FFE ▪ Basement elevation ▪ Water entry point elevation ▪ Stories above grade? Below? ▪ Foundation and structure type? ▪ Anticipated flood depths ▪ Facility use/contents ▪ Anticipated sea level rise (50-year and 100-year) 	<p>Field Evaluation</p> <ul style="list-style-type: none"> ▪ Power/backup power supply to structure ▪ Wall type, height, and condition ▪ Exterior penetrations/vulnerabilities ▪ Elevator vulnerabilities? ▪ Inter-building penetrations / vulnerabilities
---	--

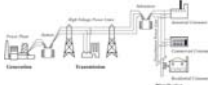





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SYSTEM INSPECTION WORKSHEET

<p>Desktop Evaluation</p> <ul style="list-style-type: none"> ▪ System description ▪ Flood Risk Evaluation ▪ System review <ul style="list-style-type: none"> ▪ Elevation where system becomes vulnerable ▪ Consequences of outage ▪ Cascading Impacts ▪ Available backup systems ▪ System asset analysis 	<p>Field Evaluation</p> <ul style="list-style-type: none"> ▪ Nameplate information ▪ System Field Assessment <ul style="list-style-type: none"> ▪ System vulnerabilities ▪ Existing flood mitigation measures ▪ External penetrations (e.g., wiring) ▪ Inter-building connections
--	---







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ASSET INSPECTION WORKSHEET

<p>Desktop Evaluation</p> <ul style="list-style-type: none"> ▪ Asset description ▪ Flood Risk Evaluation ▪ Asset review <ul style="list-style-type: none"> ▪ Asset elevations ▪ Flood depth at which asset is no longer operational ▪ Flood elevation at which the asset is at risk ▪ Consequences of outage 	<p>Field Evaluation</p> <ul style="list-style-type: none"> ▪ Nameplate information ▪ Asset Field Assessment <ul style="list-style-type: none"> ▪ Asset vulnerabilities ▪ Emergency procedures ▪ Existing flood-mitigation measures ▪ External penetrations ▪ Inter-building vulnerabilities
---	--






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QUESTIONS FOR THE CLASS

- When might you want to use a system form?
- When might an asset form be appropriate for use?
- Does it make sense to develop asset and system forms for every system and asset at the site?
- Do you need a structure form for every structure on the site?
- Why would a grounds form be appropriate to support facility assessment?
- What could you learn from having all four forms that you might not learn from only assessing the structure?


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ACTIVITY
DESKTOP AND FIELD
EVALUATION

Part 1 – Flood Risk Screening (see Workshop Materials on following page)


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DESKTOP
EVALUATION –
PLANS REVIEW

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UNIT 2 – DESKTOP AND FIELD EVALUATION

We will be walking you through a sample desktop and field evaluation for a student laboratory and office building. The site has 20 employees and no hazardous materials on site. This is a multi-building facility. To facilitate instruction and limit the length of this activity, this exercise is limited to a portion of the site including two buildings and two accessory structures. The exercise has been broken into three parts to aid learning.

UNIT 2 – DESKTOP AND FIELD EVALUATION

PART 1 – FLOOD RISK SCREENING

In order to appropriately allocate resources to mitigate flood risk, it is important to screen facilities to understand whether further evaluation is appropriate. A site may be identified through several mechanisms including (but not limited to) historical losses, identification of a site within a floodplain using GIS software, or notification that a facility or site may need an evaluation.

After a site has been identified, screening can be accomplished using online resources. Review the provided material and answer the questions.

1. Based on the description of the facility provided above, what Risk Category would you assign this facility? _____

2. Use the provided FEMA FIRM Map to determine the flood zone for the major structures identified in the aerial photograph (*the outline of the facility has been drawn on the FIRM*). _____

3. You have been provided with three excerpt pages from the Flood Insurance Study (FIS). The first page is a map showing transects. Locate the property and determine the closest transect. _____

4. The two pages following the transect map provide information about each transect. Use these pages to answer the following questions:
 - a. What are the Stillwater Elevations for the 10% _____ 2% _____
1% _____ and 0.2% _____?

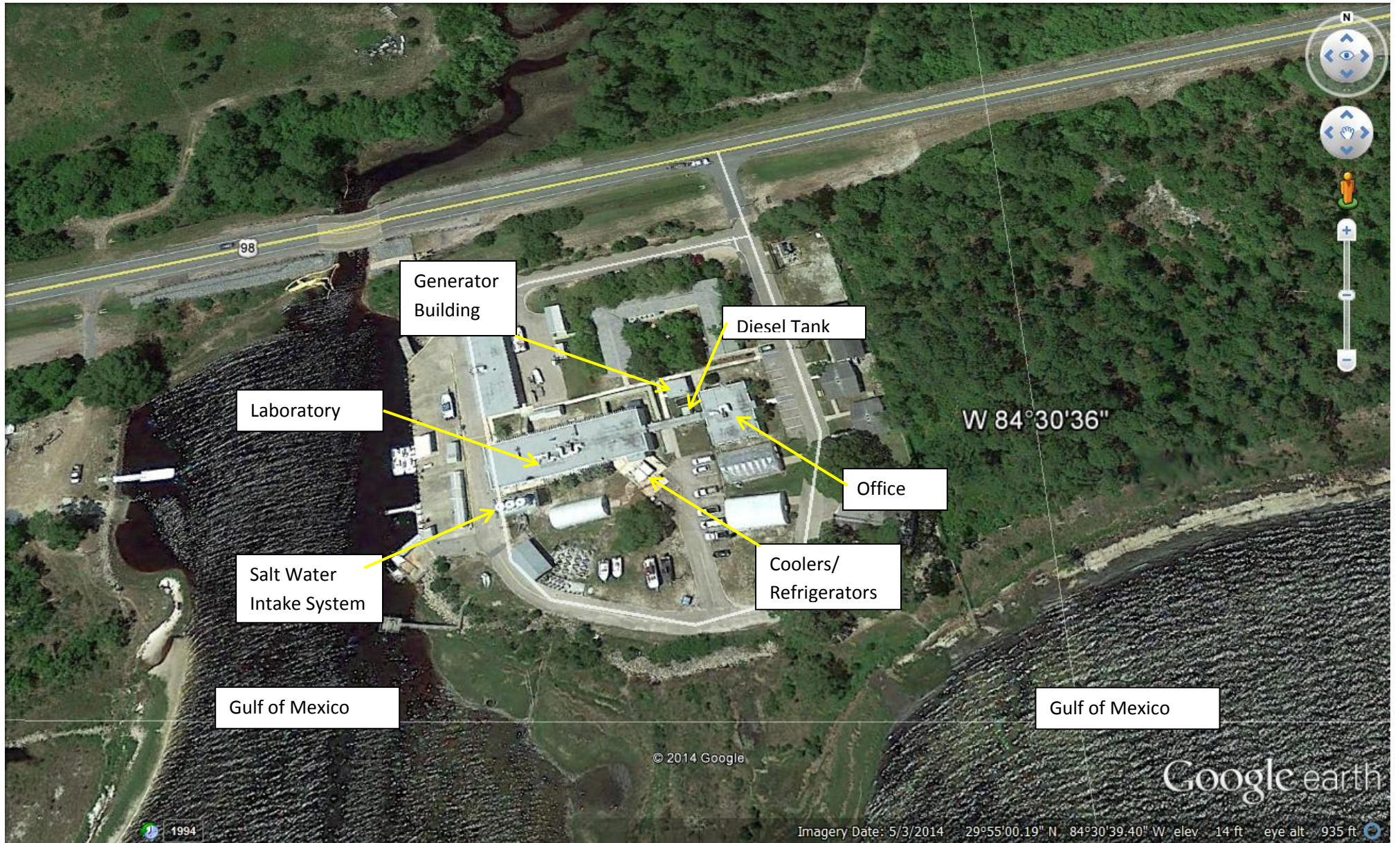
 - b. What are the BFEs? AE Zone: _____ VE Zone: _____



PUBLIC FACILITIES FLOOD MITIGATION WORKSHOP

-
- c. Subtract the 1% annual chance flood elevation from the BFE to determine wave action at the BFE: AE Zone: _____ VE Zone: _____
5. Based on base flood elevations and the risk category, what is a potential goal level of protection for this facility? *(Use this space to calculate potential goal level of protections. An example is provided on page 4-5 of the manual)*
6. Using the provided topographic map, identify the grade (ground) elevations at the facility.

Site Layout and Location

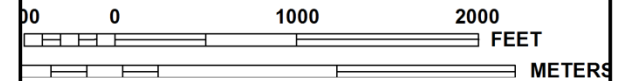




National Flood Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 1000'



NFIP

PANEL 0270F

FIRM
FLOOD INSURANCE RATE MAP

FRANKLIN COUNTY,
FLORIDA
AND INCORPORATED AREAS

PANEL 270 OF 650

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FRANKLIN COUNTY	120088	0270	F

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER
12037C0270F

MAP REVISED
FEBRUARY 5, 2014

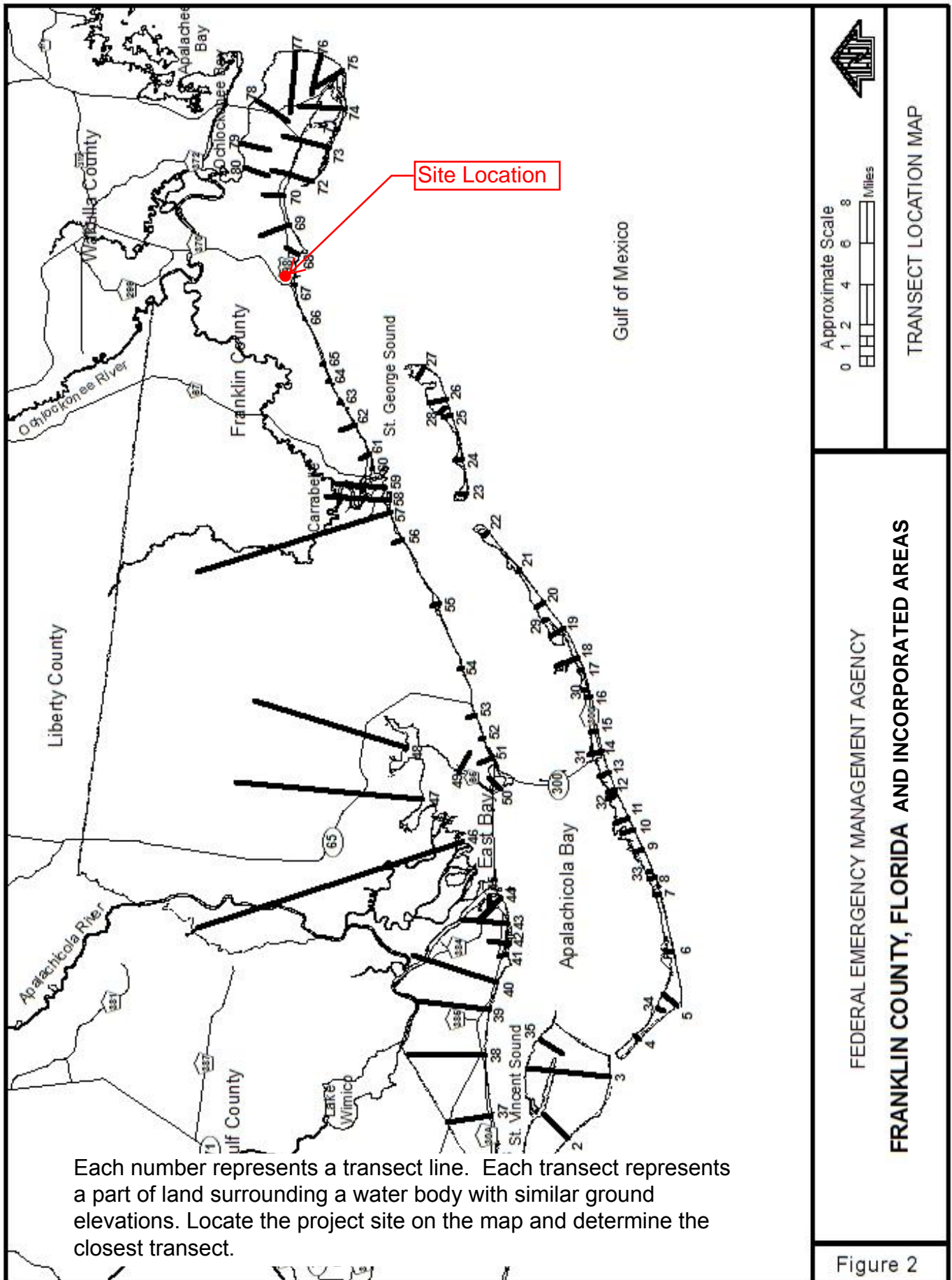
Federal Emergency Management Agency

US PANEL 0290

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Topographic Map (1-ft Contours)





Each number represents a transect line. Each transect represents a part of land surrounding a water body with similar ground elevations. Locate the project site on the map and determine the closest transect.

Figure 2

EXCERPT FROM FIS

After determining the transect number, find the correlating transect in the table below and identify and record the associated 1% annual chance stillwater elevation and the maximum 1% annual chance wave crest elevation.

TABLE 3 - TRANSECT DESCRIPTIONS – continued

<u>TRANSECT</u>	<u>LOCATION</u>	<u>ELEVATION (ft NAVD 88*)</u>	
		<u>1-PERCENT ANNUAL CHANCE STILLWATER</u>	<u>MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST</u>
60	Franklin County, approximately within the Carrabelle City Limits at Gulf Avenue along Highway 98/State Route 30 in St. George Sound at N 29.844379°, W 84.656029°	14.6 ¹	20.5
61	Franklin County, approximately 1.0 miles east of the eastern Carrabelle City Limits at the intersection of Gulf Avenue and Highway 98/State Route 30 in St. George Sound at N 29.847523°, W 84.645104°	14.6 ¹	20.4
62	Franklin County, approximately 0.7 miles west of the intersection of Lake Morality Road and Highway 98/State Route 30 in St. George Sound at N 29.860477°, W 84.623103°	14.7 ¹	20.6
65	Franklin County, approximately 0.5 miles west of Anneewakee Road along Highway 98/State Route 30 and approximately 4 miles west of the intersection with US 319/State Route 377 and Highway 98/State Route 30 in St. George Sound at N 29.886510°, W 84.579240°	15.0 ¹	20.9
66	Franklin County, approximately 1.7 miles west of the intersection with US 319/SR 377 and US Hwy 98/SR 30 in St. George Sound at N 29.903950°, W 84.544725°	15.0 ¹	21.0
67	Franklin County, approximately 1.4 miles west of Turkey Point and at the intersection with US 319/SR 377 and Highway 98/State Route 30 in St. George Sound at N 29.912668°, W 84.519416°	14.9 ¹	20.7
68	Franklin County, approximately 0.2 miles west of Turkey Point and approximately 1.5 miles east of the intersection with US 319/SR 377 and Highway 98/State Route 30 in St. George Sound at N 29.916345°, W 84.494260°	14.6 ¹	20.3
69	St. Teresa on the Gulf of Mexico coastline, approximately 1.51 miles northeast of Turkey Point (St. George Sound), at N 29.922999°, W 84.472955°	14.6 ¹	21.8
70	St. Teresa on the Gulf of Mexico coastline, approximately 2.83 miles east-northeast of Turkey Point (St. George Sound), at N 29.928797°, W 84.450676°	14.5 ¹	21.6

*North American Vertical Datum of 1988

¹Includes wave setup

EXCERPT FROM FIS

Locate the transect number in the table below. Identify and record the associated stillwater elevations and base flood elevations.

TABLE 4 - TRANSECT DATA - continued


FLOODING SOURCE	TRANSECT	STILLWATER ELEVATION (feet ¹ NAVD88*)				ZONE	BASE FLOOD ELEVATION (feet NAVD88*)
		10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT		
Saint George Sound	62	7.0	12.8	14.7	18.5	VE	17-21
						AE	14-17
Gulf of Mexico	63	7.0	13.0	14.9	18.6	VE	17-21
						AE	15-17
Gulf of Mexico	64	7.1	13.0	14.9	18.7	VE	17-21
						AE	15-17
Gulf of Mexico	65	7.1	13.1	15.0	18.7	VE	17-21
						AE	15-17
Gulf of Mexico	66	7.1	13.1	15.0	18.7	VE	17-21
						AE	15-17
Gulf of Mexico	67	7.0	13.0	14.9	18.6	VE	17-21
						AE	15-17
Gulf of Mexico	68	6.9	12.8	14.6	18.2	VE	17-20
						AE	15-17
Gulf of Mexico	69	6.9	12.5	14.6 ¹	20.5	VE	17-22
		6.9	12.2	14.6 ¹	19.7	AE	15-17
Gulf of Mexico	70	6.8	12.2	14.5 ¹	18.0	VE	17-22
		6.8	10.8	14.6 ¹	18.3	AE	15-17
Gulf of Mexico	71	6.4	11.6	13.3 ¹	16.5	VE	15-18
		6.4	11.7	13.3 ¹	16.6	AE	13-15
Gulf of Mexico	72	6.6	12.2	13.9 ¹	17.3	VE	17-21
		6.8	11.9	14.8 ¹	18.4	AE	15-16
Gulf of Mexico	73	6.8	11.8	13.5 ¹	16.8	VE	17-19
		6.6	12.1	14.0 ¹	17.4	VE	16-19
		6.6	12.2	14.0 ¹	17.4	AE	14-16


*North American Vertical Datum of 1988

¹Includes wave setup

IMPORTANT ACTIONS

- Facility Characterization
- Prioritizing Systems and Assets
- Review Worksheets
- Analyze Historical Losses
- Flood Hazard Information
- **Flood Vulnerability – Plans Review**
- **Record Questions for Field**






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DESKTOP EVALUATION

- Drawings and Process Diagrams
- Site plans
- Architectural and elevation plans
- Structural drawings
- Mechanical, Electrical, and Plumbing (MEP) drawings
- Process diagrams





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DESKTOP EVALUATION

Questions to Ask:

- What is the Primary Function of the facility? Is it critical?
- What drawings are available?
- What site vulnerabilities can be seen from the drawings?
- What is the goal level of protection?
- What key structures/systems/assets are below the Design Elevation?
- Are there basements or below grade areas on site?
- What are the expected flood depths?






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ACTIVITY

DESKTOP AND FIELD EVALUATION

Part 2 – Plans Review (see Workshop
Materials on following page)



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FIELD EVALUATION



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STEPS

- Review Worksheets
- **Field Confirm Desktop Evaluation Findings**
- **Address Desktop Evaluation Questions**
- **Look for Openings, Penetrations, Weaknesses, Below-grade Assets**
- **Take lots of pictures!**



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CONTINUOUS	
1. Project Name: _____	Date of Report: _____
2. Project Location: _____	Inspector: _____
3. Project Description: _____	Inspector Title: _____
4. Project Owner: _____	Inspector License No.: _____
5. Project Address: _____	Inspector State: _____
6. Project Phone: _____	Inspector City: _____
7. Project Email: _____	Inspector State: _____
8. Project Website: _____	Inspector City: _____
9. Project Other: _____	Inspector State: _____
10. Project Other: _____	Inspector City: _____
11. Project Other: _____	Inspector State: _____
12. Project Other: _____	Inspector City: _____
13. Project Other: _____	Inspector State: _____
14. Project Other: _____	Inspector City: _____
15. Project Other: _____	Inspector State: _____



UNIT 2 – DESKTOP AND FIELD EVALUATION

PART 2 – PLANS EVALUATION

This part of the activity will use the same case study. Review drawings to develop a more thorough understanding of flood risk at the site.

Potential Vulnerabilities

1. Based on the review of the plan view drawing, what assets are critical to the site?

2. Compare the Flood Risk elevations with the elevations provided in the provided plans. Record First Floor Elevations for structures or ground elevation for exterior assets.

Laboratory_____

Office _____

Generator Buildings_____

Diesel Fuel Tank (ground elevation)_____

Salt Water Intake System (ground elevation)_____

Sea Life Holding Tanks (ground elevation)_____

Refrigerators (ground elevation)_____

3. Now compare these elevations to the base flood elevations. How many feet are the structures likely to flood at the 1% annual chance flood event?

Laboratory_____

Office_____

Generator Buildings_____

Diesel Fuel Tank _____

Salt Water Intake System _____

Sea Life Holding Tanks _____

Refrigerators_____

4. Based on the drawings, where are the likely interior and exterior pathways for water to enter the structures?

5. At what recurrence interval(s) (10%, 2%, 1% or 0.2%) is the facility vulnerable?

Flood Zone VE
Base Flood Elevations (17-21)

Flood Zone AE
Base Flood Elevations (15-17)

Generator Building

Diesel Fuel Tank

FL. EL.
15.0'

Laboratory

B-1
LABORATORY BLDG.
FIN. FLOOR ELEV. 18.25'
BASEMENT FL. 8.25'

B-2
OFFICE
CLASSRM.
BLDG. FL.
EL. 16.0'

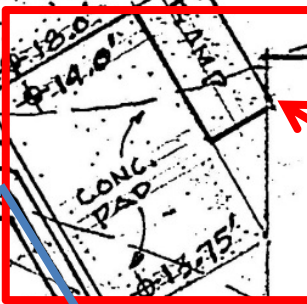
Office

ALTERNATE
NO. 2



SALT WATER TANKS

Salt Water Intake System

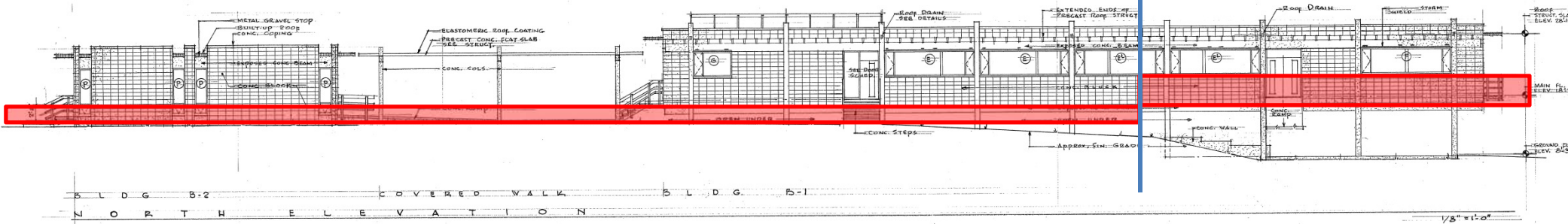


Exterior Coolers/Refrigerators

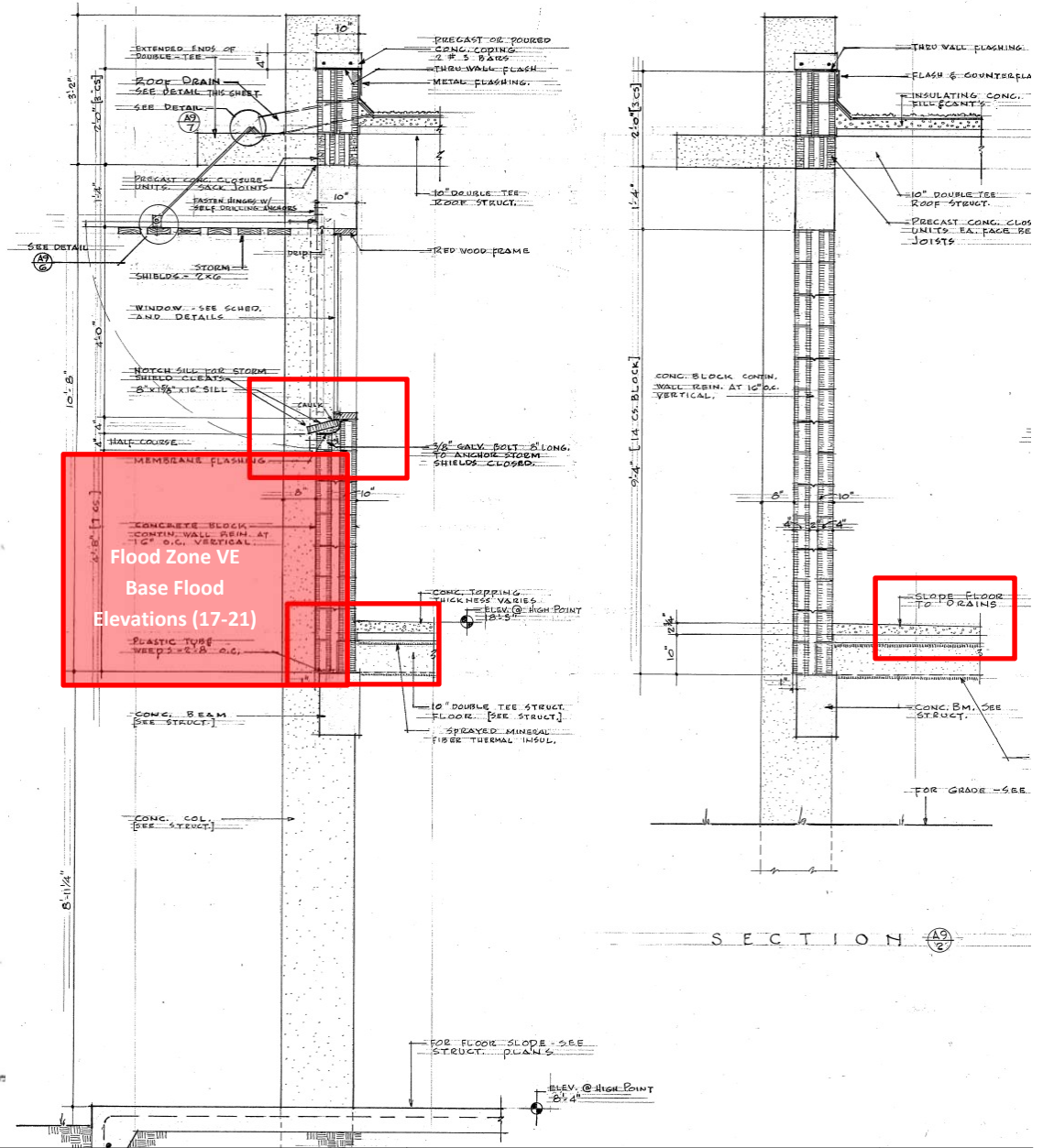
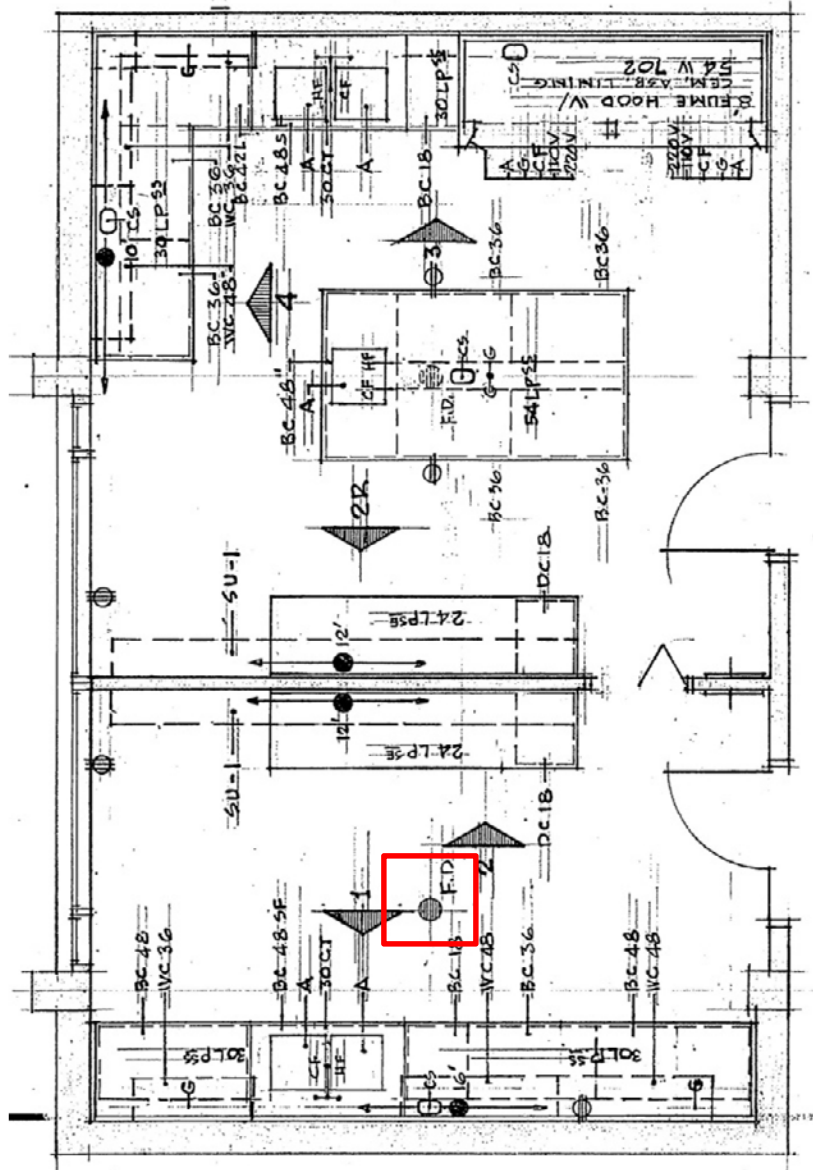
The above plan view drawing shows the ground elevations and the building floor elevations. Locate and record the floor elevations for the buildings and the ground elevation for the assets .

Flood Zone AE
Base Flood Elevations (15-17)

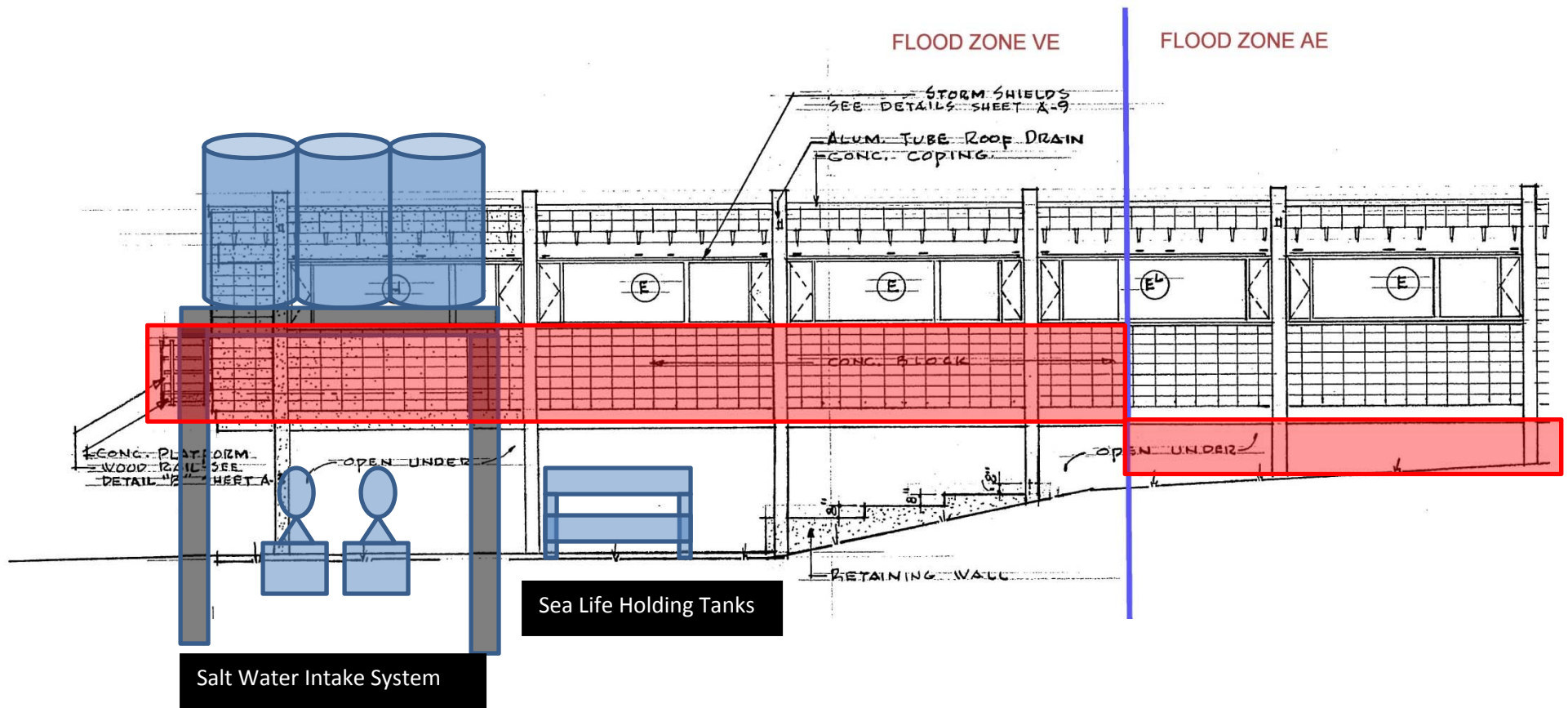
Flood Zone VE
Base Flood Elevations (17-21)



The above section view drawing shows the building elevations. Base flood elevations have been added to the drawing. Use this drawing to identifying vulnerable areas for the structures.



The above section view drawings shows details of portions of the buildings. The drawing on the left shows an example of a laboratory and the drawing of the right shows the window section. Use these details to determine additional building penetrations (floor drains) or potential sources of flood intrusion (floor joints, window sills).





The above section view drawing shows a portion of the building with the salt water intake system. Base flood elevations have been added to the drawing. Use this drawing to identify vulnerable areas for the salt water intake system and surrounding assets.

FIELD EVALUATION

Tools and Resources


<ul style="list-style-type: none">▪ PPE <ul style="list-style-type: none">▪ Hard hat▪ Safety vest▪ Boots▪ Glasses▪ Gloves	<ul style="list-style-type: none">▪ Equipment <ul style="list-style-type: none">▪ Camera▪ Measuring tape▪ Maps▪ Small Dry Erase Board	<ul style="list-style-type: none">▪ Interviews <ul style="list-style-type: none">▪ Facility owner▪ Facility staff▪ Equipment operators
--	---	---




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QUESTIONS TO ASK

- What are the consequences of flooding?
- What vulnerabilities exist below the BFE and the Goal Level of Protection?
- What vulnerabilities do not appear on the drawings?
- What is the condition of critical equipment?
- Is any equipment submersible?
- Is there potential for cascading impacts?
- What are existing mitigation measures?




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ACTIVITY

DESKTOP AND FIELD EVALUATION

Part 3 – Field Evaluation (see Workshop Materials on following page)

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UNIT 2 – DESKTOP AND FIELD EVALUATION

PART 3 – FIELD EVALUATION

Review the provided photo log to simulate a field visit to the buildings. Review both building vulnerabilities and the vulnerable assets and systems. Answer the following questions and we will discuss as a group.

Structure Questions:

1. Did you observe any additional penetration points from review of the photographs?

2. Are there any additional components of the building that would be vulnerable to flooding (i.e. walkways, assets not shown in the plans)?

3. Did you observe any additional assets or structures from review of the photographs that may be vulnerable during a flood event? What are they?

Sometimes, it is helpful to develop a visual representation of vulnerability. On the following pages, we provide one possible way to represent asset and structure vulnerabilities to the 1% annual chance and .2% annual chance flood events. We have calculated wave action at the .2% annual chance event using the methodology provided in the manual.



PHOTOGRAPH LOG

Project Name: Flood Mitigation Workshop

Site Location: Laboratory/Office Complex

Photo No: 01

Date: August 18-19, 2014

Description: Southwest corner Laboratory Building

Base Flood Elevations Shown in Red (Zone VE)



PHOTOGRAPH LOG

Project Name: Flood Mitigation Workshop

Site Location: Laboratory/Office Complex

Photo No: 02

Date: August 18-19, 2014

Description: Exterior of Laboratory Building

Base Flood Elevations Shown in Red (Zone AE)





PHOTOGRAPH LOG

Project Name: Flood Mitigation Workshop

Site Location: Laboratory/Office Complex

Photo No: 03

Date: August 18-19, 2014

Description: Exterior of Office Building

Base Flood Elevations Shown in Red (Zone AE)



PHOTOGRAPH LOG

Project Name: Flood Mitigation Workshop

Site Location: Laboratory/Office Complex

Photo No: 04

Date: August 18-19, 2014

Description: Exterior of Office Building

Base Flood Elevations Shown in Red (Zone AE)





PHOTOGRAPH LOG

Project Name: Flood Mitigation Workshop

Site Location: Laboratory/Office Complex

Photo No: 05 **Date:** August 18-19, 2014

Description: Breezeway connection between Office Building and Laboratory Building

Base Flood Elevations Shown in Red (Zone AE)



PHOTOGRAPH LOG

Project Name: Flood Mitigation Workshop

Site Location: Laboratory/Office Complex

Photo No: 06 **Date:** August 18-19, 2014

Description: South side of Office Building and Laboratory Building showing Saltwater Intake System with pumps and tanks.

Base Flood Elevations Shown in Red (Zone VE)



Project Name: Flood Mitigation Workshop

Site Location: Laboratory/Office Complex

Photo No: 07

Date: August 18-19, 2014

Description: South side of Laboratory Building showing Saltwater Intake System with pumps and tanks.



Project Name: Flood Mitigation Workshop

Site Location: Laboratory/Office Complex

Photo No: 08

Date: August 18-19, 2014

Description: Saltwater Intake System with pumps and tanks.





PHOTOGRAPH LOG

Project Name: Flood Mitigation Workshop

Site Location: Laboratory/Office Complex

Photo No: 09 **Date:** August 18-19, 2014

Description: Saltwater Intake System with pumps.



PHOTOGRAPH LOG

Project Name: Flood Mitigation Workshop

Site Location: Laboratory/Office Complex

Photo No: 10 **Date:** August 18-19, 2014

Description: Saltwater Intake System with pumps.





PHOTOGRAPH LOG

Project Name: Flood Mitigation Workshop

Site Location:
Laboratory/Office Complex

Photo No: 11

Date:
August 18-19,
2014

Description: Exterior of Office Building



PHOTOGRAPH LOG

Project Name: Flood Mitigation Workshop

Site Location:
Laboratory/Office Complex

Photo No: 12

Date:
August 18-19,
2014

Description: Generator Building– Finished Floor 15.0
Generator Pad Elevation 15.5

Base Flood Elevations Shown in Red (Zone AE)





PHOTOGRAPH LOG

Project Name: Flood Mitigation Workshop

Site Location: Laboratory/Office Complex

Photo No: 13

Date: August 18-19, 2014

Description: Diesel Tank – Slab Elevation 14.0

Base Flood Elevations Shown in Red (Zone AE)



PHOTOGRAPH LOG

Project Name: Flood Mitigation Workshop

Site Location: Laboratory/Office Complex

Photo No: 14

Date: August 18-19, 2014

Description: Exterior of Laboratory Building showing miscellaneous equipment with electrical service.



Project Name: Flood Mitigation Workshop

Site Location: Laboratory/Office Complex

Photo No: 15

Date: August 18-19, 2014

Description: Exterior of Laboratory Building showing sea-life holding areas (fed by salt water system)



Project Name: Flood Mitigation Workshop

Site Location: Laboratory/Office Complex

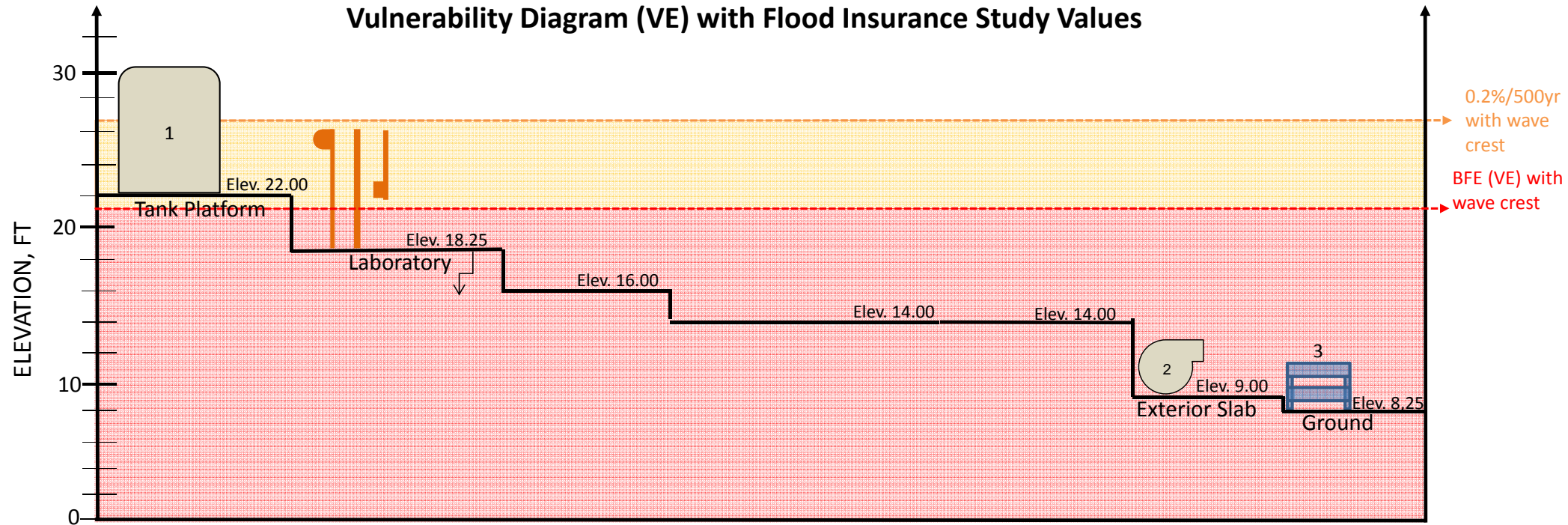
Photo No: 16

Date: August 18-19, 2014

Description: Exterior of Laboratory Building showing coolers/refrigerators.



Vulnerability Diagram (VE) with Flood Insurance Study Values

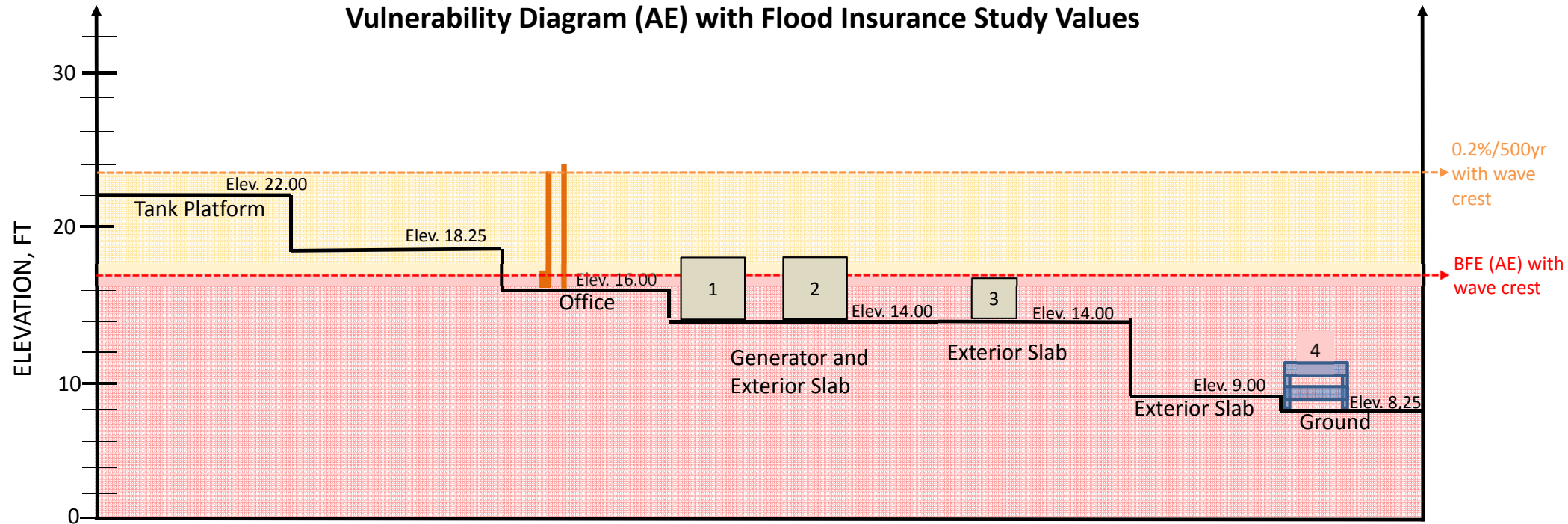


Legend:

1. Salt Water Intake Tanks [3]	4. Roll-up Doors	7. Floor Drain
2. Salt Water Intake Pumps	5. Regular Door	
3. Sea Life Holding Tanks	6. Windows	

Building	Vulnerable to the following Design Flood Elevation		Comments
	BFE (VE) with Wave Crest	500-year with Wave Crest	
Laboratory	Y	Y	
Salt Water Intake Tanks	N	Y	
Salt Water Intake Pumps	Y	Y	
Sea Life Tanks	Y	Y	

Vulnerability Diagram (AE) with Flood Insurance Study Values



Legend:

- 1. Generator [1]
- 2. Coolers/Refrigerators [2]
- 3. Diesel Fuel Tank [1]
- 4. Sea Life Holding Tanks
- 5. Windows
- 6. Regular Door

Building	Vulnerable to following Return Period Design Flood Elevation		Comments
	BFE (AE) with Wave Crest	500-year with Wave Crest	
Office	Y	Y	
Generator	Y	Y	
Diesel Tank	Y	Y	
Refrigerators	Y	Y	
Sea Life Tanks	Y	Y	


FACILITY RISK SCORING

When is scoring appropriate?

1. When evaluating multiple facilities
2. When funding is limited
3. When mitigation projects need to be prioritized

Purpose of scoring:

1. To rank facilities/systems/assets based on their mitigation need
2. To prioritize which facilities should receive funding
3. To easily communicate a need for mitigation to higher authorities




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FACILITY RISK SCORING

FACILITY FLOOD RISK =

VULNERABILITY X CONSEQUENCE X CRITICALITY




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CRITICALITY - GROUNDS / STRUCTURES

Criticality Score	Risk Category	Nature of Occupancy
4	Category IV	<ul style="list-style-type: none"> • Buildings and other structures designated as essential facilities • Buildings and other structures, the failure of which could pose a substantial hazard to the community • Buildings and other structures (including but not limited to, facilities that manufacture, process, handle, store, use, or dispose of such substances as hazardous fuels, hazardous chemicals, or hazardous waste) containing sufficient quantities of highly toxic substances where the quantity exceeds a threshold quantity established by the authority having jurisdiction to be dangerous to the public if released and is sufficient to pose a threat to the public if released • Buildings and other structures required to maintain function of other Risk Category IV structures
3	Category III	<ul style="list-style-type: none"> • Buildings and other structures, the failure of which could pose a substantial risk to human health • Buildings and other structures, not included in Risk Category IV, with potential to cause a substantial economic impact and/or mass disruption of day-to-day civilian life in the event of a failure • Buildings and other structures not included in Risk Category IV (including, but not limited to, facilities that manufacture, process, handle, store, use, or dispose of such substances as hazardous fuels, hazardous chemicals, or hazardous waste) containing toxic or explosive substances where their quantity exceeds a threshold quantity established by the authority having jurisdiction and is sufficient to pose a threat to the public if released
2	Category II	<ul style="list-style-type: none"> • All buildings and other structures except those listed in Risk Categories I, III, and IV
1	Category I	<ul style="list-style-type: none"> • Buildings and other structures that represent a low risk to human health in the event of failure

Source: ASCE 24: Flood Resistant Design and Construction



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CRITICALITY - GROUNDS / STRUCTURES

Criticality Score	Risk Category	Nature of Occupancy
4	Category IV	<ul style="list-style-type: none"> Buildings and other structures designated as essential facilities Buildings and other structures, the failure of which could pose a substantial hazard to the community Buildings and other structures (including but not limited to, facilities that manufacture, process, handle, store, use, or dispose of such substances as hazardous fuels, hazardous chemicals, or hazardous waste) containing sufficient quantities of highly toxic substances where the quantity exceeds a threshold quantity established by the authority having jurisdiction to be dangerous to the public if released and is sufficient to pose a threat to the public if released Buildings and other structures required to maintain function of other Risk Category IV structures
3	Category III	<ul style="list-style-type: none"> Buildings and other structures, the failure of which could pose a substantial risk to human health Buildings and other structures, not included in Risk Category IV, with potential to cause a substantial economic impact and/or mass disruption of day-to-day civilian life in the event of a failure Buildings and other structures not included in Risk Category IV (including, but not limited to, facilities that manufacture, process, handle, store, use, or dispose of such substances as hazardous fuels, hazardous chemicals, or hazardous waste) containing toxic or explosive substances where their quantity exceeds a threshold quantity established by the authority having jurisdiction and is sufficient to pose a threat to the public if released
2	Category II	<ul style="list-style-type: none"> All buildings and other structures except those listed in Risk Categories I, III, and IV
1	Category I	<ul style="list-style-type: none"> Buildings and other structures that represent a low risk to human health in the event of failure

Source: ASCE 24: Flood Resistant Design and Construction

CRITICALITY - SYSTEMS / ASSETS

Criticality Score	Category Heading	Systems	Assets
4	Critical Equipment / Hazardous Materials Systems	• Heating and Cooling Equipment	• Air Handling Units, Chillers, Boilers, Heat Exchangers
		• Ventilation Equipment	• Odor Control, Fans
		• Backup Systems / Water Removal	• Fuel Oil System, Portable Generators, Sump Pumps
		• I.T. Equipment	• I.T. Equipment / Servers
	Life Safety Systems	• Fire Protection / Life Safety Systems	• Fire Pumps / Fire Protection Equipment / Life Safety
		• Potable Water	• House Pumps, Booster Pumps, Controls Equipment
		• Electrical Systems (Normal and Emergency)	• Switchgear, Emergency Generators, ATS, MCC, Distribution Panels, Emergency Lighting
		• Critical / Dangerous Gas Systems	• Oxygen Tanks and Associated Equipment, Gas Detection for Noxious Gases
	Historic and Cultural	• Historic and Cultural Resources	• Prehistoric / Historic Artifacts, Archaeological Resources, Ethnographic Resources, Architectural Resources, Artwork, Archives, Writings
	3	Important Equipment / Systems	• Wastewater
• Transportation			• Elevators / Escalators
• Security Systems			• Cameras, Door Access Protection, Alarm Systems
• Site Lighting / Telephone			• Site Lighting / Telephone
• Vital Storage (Medicine)			• Vital Storage (Medicine)
2	Minor Importance Equipment / Systems	• Exterior Architecture	• Exterior Architecture
		• Office Equipment	• Desk Computers, Kitchen Equipment
		• Molding Risks	• Chairs, Desks, Food
1	Non-Essential Equipment / Systems	• Non-Essential Equipment	• Non-Essential Equipment, Non-Vital Storage

VULNERABILITY AND CONSEQUENCE

Vulnerability Score	Vulnerability Range
5	Vulnerable to the 10% annual chance (10-Year) flood elevation OR multiple historical losses recorded with significant consequences
4	Vulnerable to 2% annual chance (50-Year) flood elevation OR at least one record of loss with moderate to significant consequences
3	Vulnerable to the 1% annual chance (100-Year) flood elevation OR at least one record of loss with minor to moderate consequences
2	Vulnerable to the 0.2% annual chance (500-Year) flood elevation
1	Vulnerable above the 0.2% annual chance (500-Year) flood elevation

Consequence Score	Consequence Description
5	Use of the facility or service is lost and inoperable for 7+ days / Damage costs exceed 50% replacement value
4	Use of facility or service is lost and inoperable for 1-7 days / Damage costs would exceed 25% replacement value
3	Use of facility or service is lost and restored within 24 hours / Damage costs total less than 10%
2	Use of facility or service is maintained, however ingress and egress is lost / Costs limited to emergency protective measures only
1	Service is maintained without interruption / Minimal costs

FACILITY RISK SCORING

Risk Category IV - Most Critical (Criticality Score = 4)

Vulnerability	5	20	40	60	80	100
	4	16	32	48	64	80
	3	12	24	36	48	60
	2	8	16	24	32	40
	1	4	8	12	16	20
		1	2	3	4	5
Consequence						

Risk Category II - Minor Importance (Criticality Score = 2)

Vulnerability	5	10	20	30	40	50
	4	8	16	24	32	40
	3	6	12	18	24	30
	2	4	8	12	16	20
	1	2	4	6	8	10
		1	2	3	4	5
Consequence						

Risk Category III - Critical (Criticality Score = 3)

Vulnerability	5	15	30	45	60	75
	4	12	24	36	48	60
	3	9	18	27	36	45
	2	6	12	18	24	30
	1	3	6	9	12	15
		1	2	3	4	5
Consequence						

Risk Category I - Non-Essential (Criticality Score = 1)

Vulnerability	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
Consequence						

	Flood Risk Score Range	
Severe Risk	50-100	RED
High Risk	25-49	ORANGE
Moderate Risk	10-24	YELLOW
Residual Risk	1-9	GREEN

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FACILITY RISK SCORING

Severe (Risk Score 50 - 100)

Flood risk scores between 50 and 100 only occur if the criticality of the entity is of minor importance or higher. Additionally, both the vulnerability and consequence must be ranked 4 or higher. This could identify that the entity is likely in a potentially dangerous situation. Both the consequence and vulnerability should be reduced, where possible. Consider relocation as a priority option for these entities.

High (Risk Score 25 - 49)

Flood risk scores between 25 and 49 indicate conditions that could lead to significant negative outcomes from a flood event. A high level of vulnerability or high consequence score indicates the asset in question would likely lose service for an extended period of time. For many sites/systems/structures/assets, extended loss of service is unacceptable and action is required. Actions should be taken to reduce vulnerability, such as elevating or dry/wet floodproofing the asset, to help avoid a long-term loss of function. Actions to restore attributes may also be appropriate.

Moderate (Risk Score 10 - 24)

Flood risk scores between 10 and 24 indicate moderate to serious consequences; however, mitigation action may be a lower priority due to the criticality of the asset remaining low. Analyses may indicate the asset is ranked in the moderate category, but Cascading Impacts should be considered. The assessor should consider how this moderate to serious consequence will affect surrounding critical features of the facility. A combination of measures may be prescribed to reduce consequence and/or vulnerability.

Residual (Risk Score 1 - 9)

Flood risk scores between 1 and 9 occur when both consequence and vulnerability are relatively low. This situation suggests floods would pose minor or infrequent consequences. Nevertheless, a vulnerability score of 3 may not be acceptable for some critical facilities or high-value assets, because the owner cannot afford to be without these services, even on an infrequent basis. Note that risk is never completely eliminated. Some residual risk remains even after mitigation measures have been implemented. Monitor conditions and adapt as necessary.

FACILITY RISK SCORING

Severe (Risk Score 50 - 100)

Flood risk scores between 50 and 100 only occur if the criticality of the entity is of minor importance or higher. Additionally, both the vulnerability and consequence must be ranked 4 or higher. This could identify that the entity is likely in a potentially dangerous situation. Both the consequence and vulnerability should be reduced, where possible. Consider relocation as a priority option for these entities.

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Flood risk scores between 25 and 49 indicate conditions that could lead to significant negative outcomes from a flood event. A high level of vulnerability or high consequence score indicates the asset in question would likely lose service for an extended period of time. For many sites/systems/infrastructure/assets, extended loss of service is unacceptable and action is required. Actions should be taken to reduce vulnerability, such as elevating or drywall floodproofing the asset, to help avoid a long-term loss of function. Actions to restore attributes may also be appropriate.

Moderate (Risk Score 10 - 24)

Flood risk scores between 10 and 24 indicate moderate to serious consequences, however, mitigation action may be a lower priority due to the criticality of the asset remaining low. Analysts may indicate the asset is ranked in the moderate category, but cascading impacts should be considered. The assessor should consider how this moderate to serious consequence will affect surrounding critical features of the facility. A combination of measures may be prescribed to reduce consequence and/or vulnerability.

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SCORE THE FACILITY TOGETHER

1. Criticality Score: _____


2. Vulnerability Score: _____

3. Consequence Score: _____

1 X 2 X 3 = _____




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PUBLIC FACILITIES FLOOD MITIGATION WORKSHOP

UNIT 3





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UNIT 3 OBJECTIVES

- Understand potential mitigation options
- Develop a mitigation strategy
- Learn how to evaluate mitigation alternatives
- Apply findings to a Mitigation Assessment Report

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IDENTIFYING MITIGATION OPTIONS

Grounds, Structures, and
System/Assets

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MITIGATION OPTION SCOPE

- **Grounds Options**
- **Structure Options**
- **System/Asset Options**

Benefit-Cost Analysis

When several different flood-mitigation options may be viable to address flood risks, a benefit-cost analysis can be performed to rule out measures that are not cost effective.

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MITIGATION OPTION IDENTIFICATION

- Consider the advantages and disadvantages of each option
- Consider whether a multiple lines of defense strategy is appropriate
- Consider whether mitigation might trigger substantial improvements
- Consider site access or ADA Requirements
- Consider both engineering feasibility and cost effectiveness

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MULTIPLE LINES OF DEFENSE STRATEGY



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GROUNDS MITIGATION



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PERMANENT FLOODWALLS

New Orleans Floodwalls

- New Orleans uses a series of floodwalls, levees, flood gates and barrier islands
- The entire system runs over 100 miles long around the perimeter of the city
- Successfully protected the city from Hurricane Gustav

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PERMANENT FLOODWALLS (CONT.)

Pros

- Effective at addressing flooding of structures within surrounding flood barrier
- Largely passive with lower maintenance, requiring less dedicated staff
- Offer more potential for architectural or aesthetic

Cons

- Flooding possible through conduit and piping from areas of the facility not within the floodwall, or an extreme rain event
- Creates a physical barrier between the facility and its community
- Depends upon proper function of entrance closures, internal stormwater-pumping systems, and backup power



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TEMPORARY FLOODWALL



St. Paul Airport

- Annually at risk
- Mississippi River floods from snow melt
- Deployed four times since its construction in 2009, no recorded




Grein, Austria

- Danube River floods from heavy rain events
- Narrowly escaped major flooding during a 2013 event

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TEMPORARY FLOODWALLS (CONT.)

Pros	Cons
<ul style="list-style-type: none">Address flooding of structures within floodwall boundaryMaintains aesthetics and may be more acceptable to the community than a permanent floodwall	<ul style="list-style-type: none">Flooding may still occur from extreme rain eventRequires maintenance and deploymentRequires advance warningMust pump out rainwater that accumulates within the floodwall boundaryMust be stored and kept operable

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FILL SOLUTIONS

 <p>Netherlands Coast</p> <ul style="list-style-type: none">Experiences flooding annually with grade elevations below sea levelRoadways can be built on top of berms to maximize function to the community	 <p>Watson, Missouri</p> <ul style="list-style-type: none">Geotechnical designs must be capable of preventing breaching
---	---

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FILL SOLUTIONS (CONT.)

Pros	Cons
<ul style="list-style-type: none">Effective at preventing/impeding groundwater flowLargely passive, requiring no dedicated staffLower maintenance, though regular inspection is required	<ul style="list-style-type: none">Requires ample space to install or fill areasDoes not prevent flooding from other sources, only from groundwaterRequired in conjunction with additional mitigation measures


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DRAINAGE SOLUTIONS



Eugene, Oregon


- Ponding floods the area during severe rain events



Long Island, New York

- Before and After photo
- Riverine flooding caused by severe precipitation of 13" over a three hour span

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DRAINAGE SOLUTIONS (CONT.)


▪ **Pros**

- System will remove flood waters from built environment
- Provide flood protection to several structures, as opposed to just one structure
- Lower maintenance, though regular inspection is required

▪ **Cons**

- Flooding still possible if draining capacity is exceeded
- Typically applies to precipitation and not floodwaters
- Can require significant additional permitting
- Can require significant land resources if construction of retention areas are required.

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STRUCTURE MITIGATION

Dry floodproofing, wet floodproofing, elevation, relocation, mitigation reconstruction




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DRY FLOODPROOFING

<ul style="list-style-type: none">▪ Pros▪ Effective at addressing damage to structures/assets at lower levels▪ Assets can be operated during event	<ul style="list-style-type: none">▪ Cons▪ May create unbalanced hydrostatic/hydrodynamic forces that could result in structural damage to buildings▪ Does not protect against infiltration into the basement through walls and piping
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WET FLOODPROOFING

<ul style="list-style-type: none">▪ Pros▪ Effective at addressing damage to structures/assets at lower levels▪ Equalized hydrostatic/hydrodynamic forces; no structural concerns▪ Potentially the least costly mitigation measure▪ Construction of perimeter wall not required	<ul style="list-style-type: none">▪ Cons▪ Cleanup costs associated with contaminated water (i.e., blackwater) entering buildings▪ Loss of potential space for operations and revenue in area effected▪ Must ensure all critical assets are raised above the DFE or install submersible assets
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ELEVATION OF STRUCTURES

	<p>Jefferson Parish Pumping Station</p> <ul style="list-style-type: none">▪ Elevated the units to prepare for a 100 year storm event.▪ Provides a safe location for pumping station operations staff.▪ Rates for winds up to 250 MPH
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ELEVATION OF STRUCTURES (CONT.)

<ul style="list-style-type: none">▪ Pros<ul style="list-style-type: none">▪ Effective at addressing damage to buildings and assets▪ If elevated above design elevation, flood risk to buildings and assets greatly reduced	<ul style="list-style-type: none">▪ Cons<ul style="list-style-type: none">▪ Some physical damage to buildings could still be present if not elevated high enough▪ May present significant cost▪ Depending on the size of facility structures and systems (e.g., wastewater treatment plant pumps cannot be raised), elevation is not always practical
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RELOCATION




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RELOCATION (CONT.)

<ul style="list-style-type: none">▪ Pros<ul style="list-style-type: none">▪ Most effective measure for reducing flood risk to all buildings and assets▪ Potential for 100% protection of the facility	<ul style="list-style-type: none">▪ Cons<ul style="list-style-type: none">▪ Appropriate space may not be available or affordable▪ May present significant cost▪ Relocation may remove a critical service from the community
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MITIGATION RECONSTRUCTION (DEMOLISH AND REBUILD)

- Pros**
 - Significantly reduces flood risk to all buildings and assets
 - Multiple ways the ground floor can be used (infill to DFE and build on top, wet or dry floodproof the ground floor, or use ground floor as additional parking)
- Cons**
 - Phasing considerations—if the facility must be kept in service at all times, the construction period must be phased appropriately, which may present logistical or cost problems
 - If infill option is chosen for ground floor, cost can be significant and a much larger footprint would be required for construction
 - May present significant risks


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SYSTEM AND ASSET MITIGATION


Elevation of asset, hardening in place, submersible systems/assets, compartmentalization

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ELEVATION OF SYSTEM/ASSETS

- Pros**
 - Flood risk to system/asset is greatly reduced
 - Assets can be operated during event
- Cons**
 - Doesn't reduce risk from Building/Structures
 - May require construction of a platform or displace assets/functions in other areas of the facility.
 - Conduit, ductwork, piping, etc. will likely require extension or complete replacement




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HARDENING IN PLACE

<p>▪ Pros</p> <ul style="list-style-type: none">▪ System/asset can be operated during an event▪ Prevents damage to the assets	<p>▪ Cons</p> <ul style="list-style-type: none">▪ Asset can still be damaged if protective measure fails or all access points are not sealed properly▪ Generally requires frequent maintenance to ensure proper functioning
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SUBMERSIBLE SYSTEM/ASSETS

<p>▪ Pros</p> <ul style="list-style-type: none">▪ Even when system/asset is submerged, there is no damage▪ Asset can be operated during the event 	<p>▪ Cons</p> <ul style="list-style-type: none">▪ To be effective, the full system must be mitigated with similar submersible functions▪ Doesn't reduce risk from Building/Structures▪ Submersible equipment will need to be checked for compatibility with the existing systems.
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COMPARTMENTALIZATION

<p>▪ Pros</p> <ul style="list-style-type: none">▪ Even when structure is submerged, there is no damage▪ Can be paired with additional mitigation options, such as drainage to contain flood waters and remove them from the site▪ System/asset can be operated during the event	<p>▪ Cons</p> <ul style="list-style-type: none">▪ Related assets may still be damaged/affected by floodwaters outside compartmentalization▪ Only protects assets inside compartment▪ Typically required to be installed in conjunction with other mitigation measures▪ Implementation may be logistically complicated
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SUBSTANTIAL IMPROVEMENT

- Mitigation measures that substantially alter a facility's structure or footprint may trigger additional code requirements
- If a facility is being "substantially improved," the entire facility must be brought up to current flood provisions of the FBC
 - Often only applicable to smaller facilities
 - The costs of the improvements must equal or exceed 50% of the market value of the structure to qualify as "substantial improvement"
- Bringing a facility up to code may substantially increase project costs

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EVALUATING MITIGATION OPTIONS

Scope, Schedule, and Implementation

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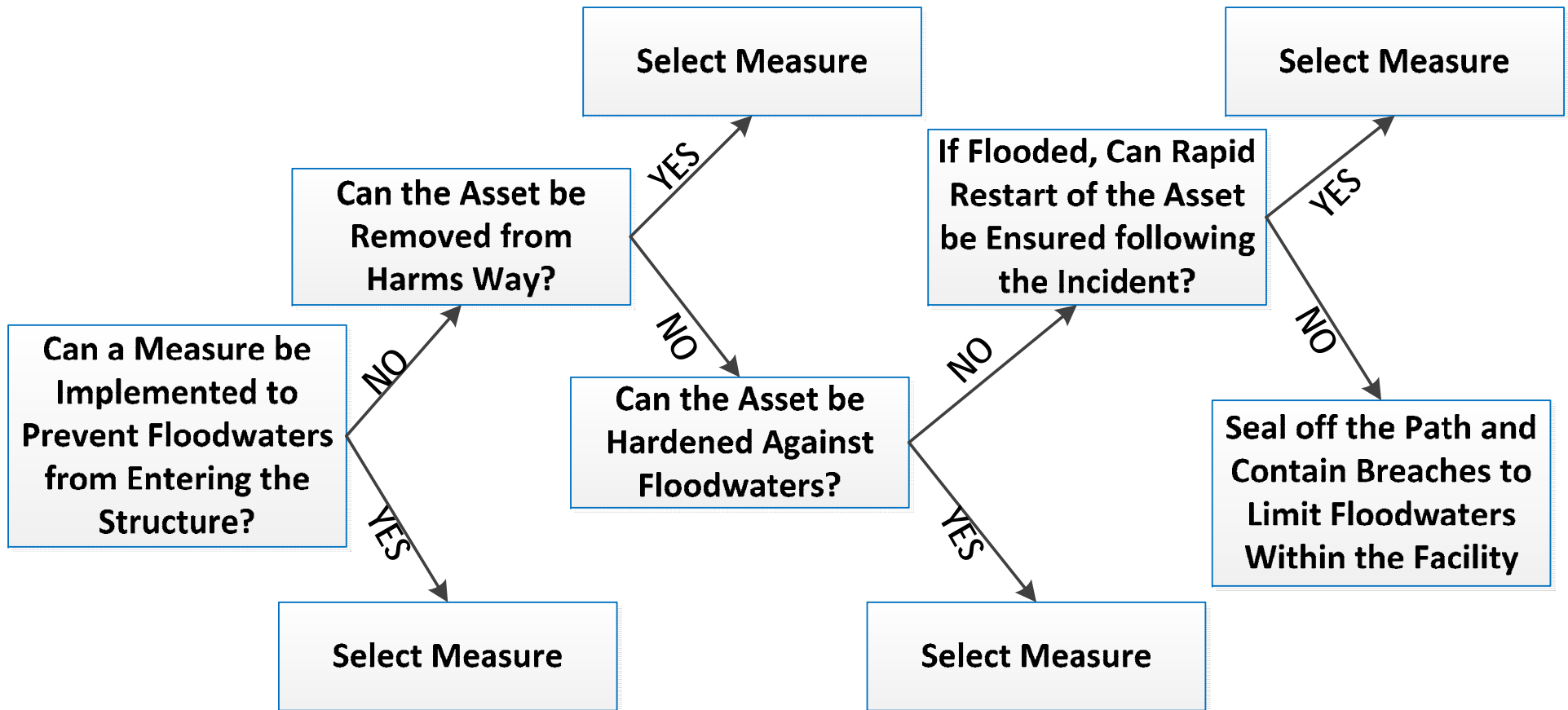
OPTION IDENTIFICATION PROCESS

```

            graph TD
                Q1[Can a Measure be Implemented to Prevent Floodwaters from Entering the Structure?] -- YES --> S1[Select Measure]
                Q1 -- NO --> Q2[Can the Asset be Removed from Harms Way?]
                Q2 -- YES --> S2[Select Measure]
                Q2 -- NO --> Q3[Can the Asset be Hardened Against Floodwaters?]
                Q3 -- YES --> S3[Select Measure]
                Q3 -- NO --> Q4[If Flooded, Can Rapid Restart of the Asset be Ensured following the Incident?]
                Q4 -- YES --> S4[Select Measure]
                Q4 -- NO --> S5[Seal off the Path and Contain Breaches to Limit Floodwaters Within the Facility]
                S5 --> S6[Select Measure]
            
```

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OPTION IDENTIFICATION PROCESS



MITIGATION ACTION EVALUATION

- STAPLEE
- Maintenance and operations implications
- Best Practices (History of Success)
- Stakeholder-specific priorities
- Benefit-Cost Analysis (BCA)


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STAPLEE CONSIDERATIONS

<ul style="list-style-type: none">▪ Social<ul style="list-style-type: none">▪ Community acceptance▪ Effect on segment on the population▪ Technical<ul style="list-style-type: none">▪ Technical feasibility▪ Long-term solution▪ Secondary impacts▪ Administrative<ul style="list-style-type: none">▪ Adequate staffing▪ Funding allocations▪ Maintenance/operations▪ Political<ul style="list-style-type: none">▪ Local champion▪ Political/public support	<ul style="list-style-type: none">▪ Legal<ul style="list-style-type: none">▪ State authority▪ Existing local authority▪ Potential legal challenge▪ Economic<ul style="list-style-type: none">▪ Benefit / cost of action▪ Contributes to economic goals▪ Outside funding required▪ Environmental<ul style="list-style-type: none">▪ Effect on land/water▪ Effect on species▪ Consistent with community goals▪ Consistent with federal laws
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MOPO CONSIDERATIONS

- The continuation of service provided by the facility is the ultimate goal of mitigation.
- Challenges from any measure that may complicate provision of services for existing staff must be considered.
- Alternatives to any measures that might significantly impact current operations wherever possible must be explored.
- OSHA Standards – The facility will be held accountable for any violations


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ENGINEERING PRINCIPLES

- General Design Considerations
 - Anticipated flood loads
 - "Resist" or "Avoid" hazards
 - Goal level of protection VS Design level of protection
 - Mitigation for additional hazards (e.g., wind)
 - Best Practices / Past Effectiveness
- How Does Building Use Affect Options
 - Facility layout
 - Facility function
- Applicable Guidance and Regulations
 - FBC, local floodplain management regulations, ASCE 7 & 24, FEMA P-55, FEMA 543, FEMA 551, USACE EM-1110-2-1100
- Evaluate Construction Materials
 - Limitations of existing construction
 - Durability
 - Appearance
 - Maintenance
 - Constructability


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OTHER FACTORS TO CONSIDER


- Timeline
- Level of protection (preferably above the 500-year flood level)
- Useful life
- Cost Effectiveness
 - What are the benefits of facility mitigation?
 - More expensive options with more comprehensive measures can be used for highly critical facilities

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WHAT SHOULD WE DO ABOUT OUR CASE STUDY FACILITY?

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WHAT ABOUT NEW FACILITIES OR PROJECTS?

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SITING NEW FACILITIES

- Although this Manual and workshop focuses on mitigation options for existing facilities, this methodology can be equally applied to the siting of new facilities.
 - Understanding floodplains and flood risk
 - Evaluating parcels (grounds) for site location considerations
 - Developing a design criteria above the BFE
 - Determining the critical structures/systems/assets and locating accordingly


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SITING NEW FACILITIES – EO11988

- **Step 1** – Determine if the proposed action (project) is in a floodplain
- **Step 2** – Conduct an early stakeholder review
- **Step 3** – Identify and evaluate practicable alternatives to locating in the floodplain
- **Step 4** – Identify impacts from the proposed project to the floodplain and potential impacts to the facility resulting from flooding
- **Step 5** – Minimize threats to life, property, and to natural and beneficial floodplain values
- **Step 6** – Reevaluate alternatives
- **Step 7** – Present and evaluate the findings
- **Step 8** – Implement the action (project)

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- Executive Summary
- Existing Conditions
- Flood Risk and Vulnerability
- Mitigation Alternatives
- Recommendations

MITIGATION ASSESSMENT REPORT


Review

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MITIGATION ASSESSMENT REPORT

- **Describe**
 - Methodology
 - Purpose and Use of Facility
 - Historical Losses
 - Consequence Analysis
 - Options
- **Document**
 - Cite all sources
 - Photos
 - Drawings
 - Field notes
 - Data sources
- **Discuss**
 - Decisions Made
 - Difficulties
 - Opportunities



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ACTIVITY

Mitigation Assessment Report –
What would it look like for our Case Study Facility

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IMPLEMENTATION

- Once an option or series of options is chosen:
 - Detailed Project Description – Tasks required, supplementary information (e.g., drawings), who will do the work, and where it will occur.
 - Detailed Cost Estimate – Itemized project budget showing costs of labor, engineering, materials, and supplies; equipment; transportation; and communications. All costs must be justified and pertinent to completing the project.
 - Timeline/Schedule – Primary milestone indicator ensuring that specific deadlines are met. Milestones are major accomplishments, not smaller tasks.
 - Project Useful Life – Details regarding the useful life and maintenance needs.

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OTHER RESOURCES

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**PUBLIC FACILITIES FLOOD MITIGATION WORKSHOP
UNIT 4**

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UNIT 4 OBJECTIVES

- Recognize potential funding sources
- Understand basic funding requirements

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COMMON SOURCES OF MITIGATION FUNDING

Post-Disaster Funding Programs:

- 406 HMP: Hazard Mitigation Program (FEMA)
- 404 HMGP: Hazard Mitigation Grant Program (FEMA)
- 428 PAAP: Public Assistance Alternative Procedures (FEMA)
- CDBG-DR Programs (HUD)

Additional FEMA Programs:

- PDM: Pre-Disaster Mitigation
- FMA: Flood Mitigation Assistance



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MITIGATION FUNDING: 406 HMP


- Section 406 of the Stafford Act
- Funding to prevent future damage and service loss to a facility
- Only applies if the facility has been damaged due to a disaster
- Only funds projects that protect damaged structures or equipment
- Measures must be cost effective
- Funding based on reimbursements

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MITIGATION FUNDING: 428 PAAP

- Section 428 of the Stafford Act
- Funding to prevent future damage and service loss to a facility
- Is currently a Pilot Program, for which the goal is to improve mitigation funding efficiency
- Funding is given in a "capped grant"
 - FEMA will only provide the capped amount and if the project exceeds this amount; the applicant incurs costs
 - If project costs incurred are less than the capped amount, the applicant may apply the money to other community projects
- Measures must be cost effective

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MITIGATION FUNDING: 404 HMGP

- Goal is Section 404 of the Stafford Act
- Funding to prevent future damage and service loss to a facility
- Can be applied to facilities that have NOT been previously damaged due to a disaster
 - Protect "at risk" facilities
- Measures must be cost effective
- Cost reimbursable program

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CDBG-DR

- Post-Disaster
- Disaster Specific Action Plan determines funding allocations
- Eligible activities include recovery and mitigation

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ANNUAL FEMA MITIGATION FUNDING OPTIONS

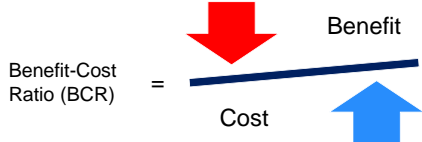
- Pre-Disaster Mitigation (PDM) Program – Competitive grants for hazard mitigation planning/projects pre-disaster. Projects must reduce risk to property/people; relies on funding after a presidentially declared disaster.
- Flood Mitigation Assistance (FMA) Program – Grants for flood-mitigation projects for facilities currently NFIP insured. Funded through the NFIP.



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BENEFIT-COST ANALYSIS

- A BCA is required for projects that are to be federally funded.
- Mitigation measures that fulfill the mitigation objective and eligibility criteria are subject to a BCA.
- A BCA is used to demonstrate that benefits of reducing future damage and maintaining the level of service during a storm event exceed the cost of the mitigation measures.




Benefit-Cost Ratio (BCR) = $\frac{\text{Benefit}}{\text{Cost}}$

THE FLORIDA DIVISION OF EMERGENCY MANAGEMENT **GET A PLAN!**

EVALUATION

Complete Workshop Evaluation Handout



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INDEPENDENT ACTIVITY – FACILITY RISK CATEGORY

In the spaces below, please rate your own facilities. Space is provided for up to 8 facilities.

1. _____

Risk Category Assigned: _____

2. _____

Risk Category Assigned: _____

3. _____

Risk Category Assigned: _____

4. _____

Risk Category Assigned: _____

5. _____

Risk Category Assigned: _____

6. _____

Risk Category Assigned: _____

7. _____

Risk Category Assigned: _____

8. _____

Risk Category Assigned: _____



PUBLIC FACILITIES FLOOD MITIGATION WORKSHOP

INDEPENDENT ACTIVITY - WORD MATCHING

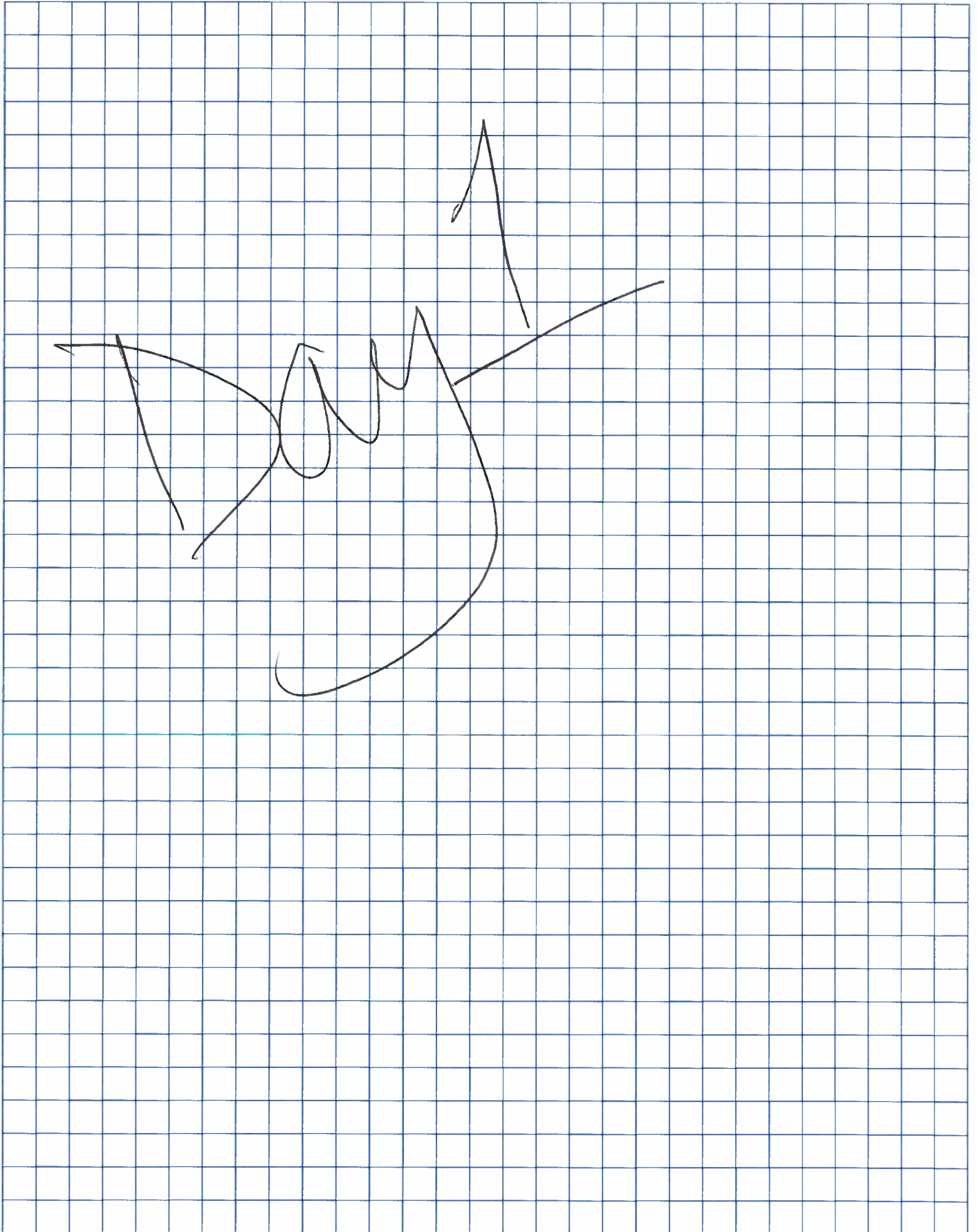
Match the terms with their definitions (provided on the next page).

- | | |
|--|--|
| A. Base Flood Elevation (BFE) | G. Flood depth |
| B. Special Flood Hazard Area (SFHA) | H. Desktop Evaluation |
| C. National Flood Insurance Program (NFIP) | I. Field Evaluation |
| D. Sources of Flooding | J. Historical losses |
| E. Flood Insurance Study (FIS) | K. Datum |
| F. Flood Insurance Rate Map (FIRM) | L. Cascading Impacts |
| | M. Personal Protection Equipment (PPE) |



PUBLIC FACILITIES FLOOD MITIGATION WORKSHOP

Terms	Definitions
	The reference point for an elevation; FEMA uses the North American Vertical Datum of 1988 (NAVD88)
	The Flood Elevation having a 1-percent-annual-chance of being exceeded in any given year and the basis of the insurance and floodplain management requirements of the NFIP.
	The 1-percent-annual chance (100-year) and 0.2-percent-annual-chance (500-year) floodplains are delineated here.
	The “domino effect” that can start when failure of critical assets impacts other systems
	A risk evaluation using documentation such as historic losses and flood map data
	Enables property owners in participating communities to purchase insurance protection from the government against flood losses.
	A flood hazard zone with at least a 1-percent-annual-chance of flooding and a prefix of “A” or “V”.
	The elevation of a particular flood frequency
	A risk evaluation completed using measurements, photographs, and site walkthroughs
	Riverine or Coastal.
	Provides estimated flood discharges for various frequencies and the flood profiles for each of the flood frequencies.



State Facilities Workshop
September 3, 2014

Name	Agency	Email	Initials
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State Facilities Workshop
September 3, 2014

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Deryl Wagner	USF Tampa	dwagner@admin.usf.edu	DW
Donna King	Osceola County	Donna.King@osceola.org	DK

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 09/03/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 09/03/14

could be used for project technical analysts, BCA and drainage reviews.

5. What do you feel could have been more extensively covered? Less?

If more time were available to complete the report.

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

no confusion.

7. Did you encounter any particularly helpful or interesting portions of the Manual?

Facilities risk categories, evaluations

8. What did you learn from reviewing the Manual?

Risk assessment of the facilities to complete reports.

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 09/03/14 Location: SLRC

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: Very informative workshop.

2. Given the topic, was this workshop: Too short Right length Too long

Comments: Could use more time to complete full report.

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 09/03/14 Location: SLRC

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Risk factors and assessments of the facilities

6. Did the workshop allow you to accomplish these goals? Why or why not?

Mostly yes.

7. What did you learn that you didn't know before the workshop?

cascade effect of damages caused by failure of one or another component of the system.

8. What do you feel could have been more extensively covered? Less?

Actual report to be completed by participants

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree		Strongly Agree		
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

NA - Manual use was limited.

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

10. Comments?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3/14 Location: Orlando

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
Instructor was prepared	1	2	3	(4)	5
Instructor knew the subject matter	1	2	3	(4)	5
Instructor encouraged participation	1	2	3	(4)	5
Instructor used visual aids properly	1	2	(3)	4	5
Instructor stimulated discussion	1	2	3	(4)	5
Instructor addressed participants needs and questions	1	2	3	(4)	5
Instructor covered the objectives of the workshop	1	2	3	(4)	5
The presentation contributed to the learning environment	1	2	3	(4)	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	(4)	5
The course contributed to my knowledge of flood mitigation	1	2	3	(4)	5
I would recommend this course to others in the future	1	2	3	(4)	5
This course is relevant and applicable to my work	1	2	3	(4)	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: Some of the topics could not be reviewed
due to time. Manual was not used.

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: This could easily be extended to a
2 day program

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

learn about funding sources and increase
knowledge on flood mitigation

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes - gave a good overview of both

7. What did you learn that you didn't know before the workshop?

learned new strategies of documentation
before an event to help minimize loss/damage
impact.

8. What do you feel could have been more extensively covered? Less?

The manual - barely opened it during
the workshop.

9. What did you most appreciate/enjoy/think was best about the course?

Instructors were knowledgeable and
encouraged participation

10. What did you most appreciate/enjoy/think was best about the course?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

Some of the workshop was rushed due to the time constraints. Even extending it the 2 hours from 8-5 would improve the time needed to present the information in a meaningful way.

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 09.03.14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree		Strongly Agree		
The Manual is easy to understand	1	2	③	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	③	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	③	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	③	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	④	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	④	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	④	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	④	5
I would recommend this Manual to others in the future	1	2	3	④	5
The Manual is relevant and applicable to my work	1	2	③	4	5
The Manual is a valuable educational mitigation resource	1	2	③	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	③	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

Provides insight into areas of concern.

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 09.02.14

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

10. Comments?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 09.02.14 Location: ORLANDO

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
Instructor was prepared	1	2	3	(4)	5
Instructor knew the subject matter	1	2	3	(4)	5
Instructor encouraged participation	1	2	3	4	(5)
Instructor used visual aids properly	1	2	3	4	(5)
Instructor stimulated discussion	1	2	3	4	(5)
Instructor addressed participants needs and questions	1	2	3	4	(5)
Instructor covered the objectives of the workshop	1	2	3	4	(5)
The presentation contributed to the learning environment	1	2	3	4	(5)
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	(5)
The course contributed to my knowledge of flood mitigation	1	2	3	4	(5)
I would recommend this course to others in the future	1	2	3	4	(5)
This course is relevant and applicable to my work	1	2	3	4	(5)

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 09.02.14 Location: ORLANDO

4. Did the workshop meet your expectations?

- Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

LESSONS LEARNED

6. Did the workshop allow you to accomplish these goals? Why or why not?

YES

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

PERSONAL EXPERIENCES

10. What did you most appreciate/enjoy/think was best about the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9-3-14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor						Strongly Disagree						Strongly Agree			
The Manual is easy to understand	1	2	3	4	5										
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5										
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5										
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5										
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5										
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5										
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5										
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5										
I would recommend this Manual to others in the future	1	2	3	4	5										
The Manual is relevant and applicable to my work	1	2	3	4	5										
The Manual is a valuable educational mitigation resource	1	2	3	4	5										
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5										

Comments: WE DID NOT USE THE MANUAL ENOUGH TO RESPOND

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

10. Comments?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-3-14 Location: ORLANDO

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	(5)
Instructor knew the subject matter	1	2	3	4	(5)
Instructor encouraged participation	1	2	3	4	(5)
Instructor used visual aids properly	1	2	3	4	(5)
Instructor stimulated discussion	1	2	3	4	(5)
Instructor addressed participants needs and questions	1	2	3	4	(5)
Instructor covered the objectives of the workshop	1	2	3	4	(5)
The presentation contributed to the learning environment	1	2	3	4	(5)
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	(5)
The course contributed to my knowledge of flood mitigation	1	2	3	4	(5)
I would recommend this course to others in the future	1	2	3	4	(5)
This course is relevant and applicable to my work	1	2	3	4	(5)

Comments: AN EXCELLENT START TO LEARN ABOUT FLOOD MITIGATION

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-3-14 Location: ORLANDO

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

TO LEARN MORE ABOUT THE SUBJECT
I DIDN'T KNOW MUCH ABOUT IT BEFORE

6. Did the workshop allow you to accomplish these goals? Why or why not?

~~NO~~ YES

7. What did you learn that you didn't know before the workshop?

MOST EVERYTHING

8. What do you feel could have been more extensively covered? Less?

NOT IN THIS AMOUNT OF TIME

9. What did you most appreciate/enjoy/think was best about the course?

THE EXPERIENCE OF THE PRESENTATION

10. What did you most appreciate/enjoy/think was best about the course?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/3/14

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree		Strongly Agree		
The Manual is easy to understand	1	2	(3)	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	(3)	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	(4)	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	(4)	5
The visuals are appropriate and helpful in understanding the material	1	2	3	(4)	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	(4)	5
Manual topics are presented in a logical sequence to aid learning	1	2	(3)	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	(3)	4	5
I would recommend this Manual to others in the future	1	2	(3)	4	5
The Manual is relevant and applicable to my work	1	2	(3)	4	5
The Manual is a valuable educational mitigation resource	1	2	(3)	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	(3)	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

The info was applicable to a wide range of needs

5. What do you feel could have been more extensively covered? Less?

A little bit more, we spent more on the PFR handouts

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

include more examples of the types of facilities in tables on pages 3-6 + 3-7

7. Did you encounter any particularly helpful or interesting portions of the Manual?

nice graphics

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

10. Comments?

Sorry, but the most useful info I received
was meeting people in the field. The introductions
were the best

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/3/14

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	(4)	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	(4)	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	(4)	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	(5)
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	(5)
Manual topics are presented in a logical sequence to aid learning	1	2	3	(4)	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	(4)	5
I would recommend this Manual to others in the future	1	2	3	(4)	5
The Manual is relevant and applicable to my work	1	2	3	(4)	5
The Manual is a valuable educational mitigation resource	1	2	3	(4)	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	(4)	5

Comments: Light bulb good 😊

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3/14 Location: Orlando

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/3/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	(4)	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	(4)	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	(4)	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	(4)	5
The visuals are appropriate and helpful in understanding the material	1	2	3	(4)	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	(4)	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	(4)	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	(4)	5
I would recommend this Manual to others in the future	1	2	3	(4)	5
The Manual is relevant and applicable to my work	1	2	3	(4)	5
The Manual is a valuable educational mitigation resource	1	2	3	(4)	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	(4)	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work? Blog, Design + Const.

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/3/14

5. What do you feel could have been more extensively covered? Less?

More tablet Eval of Facilitator - Similar to FEMA.
Evacuation Course.

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

Lack of Map Interaction etc - Paper not
as useful as Computer for looking for info

7. Did you encounter any particularly helpful or interesting portions of the Manual?

Ideas for Facilitator options

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3/14 Location: Orlando

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
Instructor was prepared	1	2	3	(4)	5
Instructor knew the subject matter	1	2	3	(4)	5
Instructor encouraged participation	1	2	3	(4)	5
Instructor used visual aids properly	1	2	3	(4)	5
Instructor stimulated discussion	1	2	3	(4)	5
Instructor addressed participants needs and questions	1	2	3	(4)	5
Instructor covered the objectives of the workshop	1	2	3	(4)	5
The presentation contributed to the learning environment	1	2	3	(4)	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	(4)	5
The course contributed to my knowledge of flood mitigation	1	2	3	(4)	5
I would recommend this course to others in the future	1	2	3	(4)	5
This course is relevant and applicable to my work	1	2	3	(4)	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3/14 Location: Orlando

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Unknown

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

Much more about Flood Prevention.

8. What do you feel could have been more extensively covered? Less?

More Table Top Exercises

Decision Makers need this.

9. What did you most appreciate/enjoy/think was best about the course?

Good Information -

10. What did you most appreciate/enjoy/think was best about the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 09/03/2014

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, no Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

I will use it.

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 09/03/14

5. What do you feel could have been more extensively covered? Less?

DETERMINING ELEVATIONS
BETTER MAPS

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

BETTER MAPS FOR EXERCISES

8. What did you learn from reviewing the Manual?

FLOOD HAZARD MITIGATION

9. Additional thoughts?

GOOD COURSE.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 09/03/14 Location: ORLANDO

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5 <input checked="" type="radio"/>
Instructor knew the subject matter	1	2	3	4	5 <input checked="" type="radio"/>
Instructor encouraged participation	1	2	3	4	5 <input checked="" type="radio"/>
Instructor used visual aids properly	1	2	3	4 <input checked="" type="radio"/>	5
Instructor stimulated discussion	1	2	3	4 <input checked="" type="radio"/>	5
Instructor addressed participants needs and questions	1	2	3	4 <input checked="" type="radio"/>	5
Instructor covered the objectives of the workshop	1	2	3	4	5 <input checked="" type="radio"/>
The presentation contributed to the learning environment	1	2	3	4 <input checked="" type="radio"/>	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4 <input checked="" type="radio"/>	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5 <input checked="" type="radio"/>
I would recommend this course to others in the future	1	2	3	4	5 <input checked="" type="radio"/>
This course is relevant and applicable to my work	1	2	3	4	5 <input checked="" type="radio"/>

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: 09/03/14 Location: ORLANDO

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

TO LEARN TO MITIGATE HAZARDS

6. Did the workshop allow you to accomplish these goals? Why or why not?

YES

7. What did you learn that you didn't know before the workshop?

LOTS

8. What do you feel could have been more extensively covered? Less?

ELEVATIONS of FLOOD ZONES.

9. What did you most appreciate/enjoy/think was best about the course?

I ENJOYED THE COURSE.

10. What did you most appreciate/enjoy/think was best about the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree		Strongly Agree		
The Manual is easy to understand	1	2	(3)	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	(3)	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	(4)	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	(3)	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	(4)	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	(4)	5
Manual topics are presented in a logical sequence to aid learning	1	2	(3)	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	(4)	5
I would recommend this Manual to others in the future	1	2	3	(4)	5
The Manual is relevant and applicable to my work	1	2	3	(4)	5
The Manual is a valuable educational mitigation resource	1	2	3	(4)	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	(3)	4	5

Comments: Need to organize back to be more in order of presentation to make it easier to follow and find topics.

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

For Civil Engr. site & Bldg Risker

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

more info on the forms prep.

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

yes

8. What did you learn from reviewing the Manual?

*Complex issues not heard fast Determinations
or consensus.*

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

- Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

The numerous considerations needed.

6. Did the workshop allow you to accomplish these goals? Why or why not?

much so.

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

No comment

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

broad issues covered.

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

DIDN'T REVIEW THE MANUAL ENOUGH IN CLASS (DRAFT VERSION)
I LOOK FORWARD TO THE FINAL VERSION

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

BECOME MORE FAMILIAR + LEARN TO THINK OF THESE
ISSUES AS I MOVE FORWARD

6. Did the workshop allow you to accomplish these goals? Why or why not?

YES THEY DID.

7. What did you learn that you didn't know before the workshop?

THE RATINGS + ASSESSMENT PROCEDURES

8. What do you feel could have been more extensively covered? Less?

SEE #7

9. What did you most appreciate/enjoy/think was best about the course?

SEE #7

10. What did you most appreciate/enjoy/think was best about the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9-3-14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree		Strongly Agree		
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: SOME DIAGRAMS WERE TOO SMALL

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

FACILITIES PLANNING

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

LESS INTRODUCTION TIME, MORE ON UNITS 4/5

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

SOME DIAGRAMS TOO SMALL TO READ

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: LESS TIME ON INTRODUCTION, SKIP TO UNITS 3-5

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

LEARN BASICS OF FLOOD MITIGATION

6. Did the workshop allow you to accomplish these goals? Why or why not?

YES, LEARNED ABOUT BFE, FIELD EVALUATIONS,
ASSETS VS. SYSTEMS

7. What did you learn that you didn't know before the workshop?

MITIGATION BASICS

8. What do you feel could have been more extensively covered? Less?

MORE ON FUNDING

9. What did you most appreciate/enjoy/think was best about the course?

FIELD / DESKTOP EXERCISES

10. What did you most appreciate/enjoy/think was best about the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 09-03-14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree
The Manual is easy to understand	1	②	3	4 5
Part I of the Manual is helpful for mitigation decision makers	1	②	3	4 5
Part II of the Manual is helpful for technical mitigation personnel	1	②	3	4 5
The information in the Manual is complete, helpful, and written at the appropriate level	1	②	3	4 5
The visuals are appropriate and helpful in understanding the material	1	③	3	4 5
The pilot sections are applicable and helpful in understanding the material	1	②	3	4 5
Manual topics are presented in a logical sequence to aid learning	1	②	3	4 5
The Manual contributed to my knowledge of flood mitigation	1	②	3	4 5
I would recommend this Manual to others in the future	①	2	3	4 5
The Manual is relevant and applicable to my work	①	2	3	4 5
The Manual is a valuable educational mitigation resource	①	2	3	4 5
I feel confident in performing flood mitigation assessments for public facilities	①	2	3	4 5

PLEASE TAKE MY RATINGS AS CONSTRUCTIVE! GOING BACK +
Comments: FOOT IS VERY CONFUSING, PPP DONT MAKE SENSE W/
MANUAL. MANUAL IS TOO TECHNICAL FOR MY POSITION IM NOT AN
ENGINEER, CFM, MITIGATION PERSON, ETC. I WOULD HOPE ALL TAKE
A LONG LOOK AT IT AND THINK ABOUT TARGET AUDIENCE. (SEE BELOW)

2. Given the topic, the Manual is: Too short Right length Too long

Comments: SEE ALL COMMENTS - AGAIN TOO MUCH FOR MY
POSITION

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

IN ITS CURRENT FORM NONE!

IF YOU PLAN ON DELIVERING TO BASIC EM PERSONNEL YOU
NEED TO START OVER AND BRING IT DOWN. IF IT IS EM
DIRECTORS - START OVER AND APPROACH EM DIRECTORS FOR THEIR INPUTS
IF ITS CFM'S, ENGINEERS, FULL TIME MIT PERSONNEL YOU ARE CLOSE!

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

SEE PREVIOUS PAGE

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

SEE PREVIOUS

7. Did you encounter any particularly helpful or interesting portions of the Manual?

NOT REALLY

8. What did you learn from reviewing the Manual?

NOT AT ALL / WISH IT WOULD HAVE BEEN MORE INSTANTANEOUS
LEAD.

9. Additional thoughts?

~~SEE ALL~~ UNITS 1 + 2 DO NOT EFFECTIVELY
HIT "PRECISION MARKS"

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/3/2014

10. Comments?

- P1 ON P.55 "ACTIVITY" READS AS IF THIS IS A GROW ACTIVITY "...AS WE REVIEW ATTACHED MANUAL TOOLS."
IT IS VERY IMPORTANT TO MAKE SURE ALL FIELDS ARE FILLED OUT COMPLETELY...
 - WE DID NOT GO OVER IMPORTANT "ISSUES" IN COMPLETE FORM(S).
 - WHAT ARE THE PITFALLS?
 - DO I NEED TO DO ALL THE FORMS?
 - IF SO MANY OF THE FORMS HAVE REDUNDANT INFO - HAVE YOU CONSIDERED 1 FORM W/ ALL TOOLS AND "N/A" SECTIONS THAT DON'T APPLY?
- QUESTION WAS ASKED WHAT IS THE DIFFERENCE BETWEEN A SYSTEM + AN ASSET? - COULD HAVE BEEN ADDRESSED IF WE REVIEWED THE FORMS AS A CLASS.

SEE LACMA HITS MANUAL

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3/14 Location: ORLANDO SURC

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
Instructor was prepared	1	2	3	4	5 (5)
Instructor knew the subject matter	1	2	3	4 (4)	5
Instructor encouraged participation	1	2	3	4 (4)	5
Instructor used visual aids properly <i>DIANT MATCH BOOK</i>	1	2	3 (3)	4	5
Instructor stimulated discussion	1	2	3	4 (4)	5
Instructor addressed participants needs and questions	1	2	3	4	5 (5)
Instructor covered the objectives of the workshop <i>N/A I BELIEVE</i>	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3 (3)	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3 (3)	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4 (4)	5
* I would recommend this course to others in the future - <i>But NOT EM DIRECTORS</i>	1	2	3	4 (4)	5
This course is relevant and applicable to my work	1	2	3	4 (4)	5

Comments: ** I THINK THIS COURSE IS TOO ADVANCED FOR MOST IF NOT ALL EM DIRECTORS; DESIRED MORE FOR FULL TIME CFMS, CAS, MITIGATION PLANNERS*

2. Given the topic, was this workshop: Too short Right length Too long

Comments: *HOWEVER TWO BREAKS + 55 MIN LUNCH VIOLATES ALL ADULT BASIC EDUCATION RULES - 50 MIN ON / 10 MIN OFF*

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: *VALED BETWEEN TOO MUCH TOO FAST & RIGHT PACE*

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-3-2011 Location: SLRC

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

LEARN MORE ABOUT MITIGATION OF PUBLIC BUILDINGS

6. Did the workshop allow you to accomplish these goals? Why or why not?

I THINK WE GOT OFF OF THE FOCUS OF GOVT/~~AND~~ PUBLIC BUILDINGS

7. What did you learn that you didn't know before the workshop?

CDBG/DR MONEY

8. What do you feel could have been more extensively covered? Less?

FOR ME THIS COURSE IS VERY ADVANCED SO I DON'T FEEL LIKE I CAN ADVISE FOR PURPOSES OF OBJECTIVE

9. What did you most appreciate/enjoy/think was best about the course?

SHARING OF INFO

10. What did you most appreciate/enjoy/think was best about the course?

SAME QUESTION

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: 09-3-14 Location: SLRC

11. Comments?

THIS COURSE SHOULD HAVE BEEN MARKETED
FOR A SPECIFIC AUDIENCE. AS AN EM DIRECTOR
I SHOULD NOT HAVE BEEN HERE

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/3/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

Existing and new facilities checklist.

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

Some pages provided too much information on a single page. Maybe format material or spread the information over more sheets.

7. Did you encounter any particularly helpful or interesting portions of the Manual?

Yes

8. What did you learn from reviewing the Manual?

Background resources and organization of approach.

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3/14 Location: Orlando

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
Instructor was prepared	1	2	3	4	5 <input checked="" type="radio"/>
Instructor knew the subject matter	1	2	3	4	5 <input checked="" type="radio"/>
Instructor encouraged participation	1	2	3	4 <input checked="" type="radio"/>	5
Instructor used visual aids properly	1	2	3	4 <input checked="" type="radio"/>	5
Instructor stimulated discussion	1	2	3	4 <input checked="" type="radio"/>	5
Instructor addressed participants needs and questions	1	2	3	4 <input checked="" type="radio"/>	5
Instructor covered the objectives of the workshop	1	2	3	4 <input checked="" type="radio"/>	5
The presentation contributed to the learning environment	1	2	3	4 <input checked="" type="radio"/>	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4 <input checked="" type="radio"/>	5
The course contributed to my knowledge of flood mitigation	1	2	3	4 <input checked="" type="radio"/>	5
I would recommend this course to others in the future	1	2	3	4 <input checked="" type="radio"/>	5
This course is relevant and applicable to my work	1	2	3	4 <input checked="" type="radio"/>	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Gain resource knowledge, stepping stones

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

Diversity of speakers and their project/subject matter experience.

10. What did you most appreciate/enjoy/think was best about the course?

Correlation to actual projects.

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/3/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	(4)	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	(4)	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	(4)	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	(5)
The visuals are appropriate and helpful in understanding the material	1	2	3	(4)	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	(4)	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	(4)	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	(4)	5
I would recommend this Manual to others in the future	1	2	3	4	(5)
The Manual is relevant and applicable to my work	1	2	3	(4)	5
The Manual is a valuable educational mitigation resource	1	2	3	4	(5)
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

Not enough time to evaluate during
a classroom setting

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

unable to evaluate, not enough time
during classroom setting.

7. Did you encounter any particularly helpful or interesting portions of the Manual?

well defined pro-con for mitigation
strategy development

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

would have liked more time to review manual -
edp since we could not take them.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

- Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

I am not an engineer, so the engineers in the class probably can take more away. But could see how this level of technical discussion would be appropriate. Helpful for developing formal mitigation planning process on agency level.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: Sept 3 2014 Location: Orlando

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
Instructor was prepared	1	2	3	4	(5)
Instructor knew the subject matter	1	2	3	4	(5)
Instructor encouraged participation	1	2	3	4	(5)
Instructor used visual aids properly	1	2	3	(4)	5
Instructor stimulated discussion	1	2	3	4	(5)
Instructor addressed participants needs and questions	1	2	3	4	(5)
Instructor covered the objectives of the workshop	1	2	3	4	(5)
The presentation contributed to the learning environment	1	2	3	4	(5)
Course topics were delivered in a logical sequence to aid learning	1	2	(3)	(4)	5
The course contributed to my knowledge of flood mitigation	1	2	3	(4)	5
I would recommend this course to others in the future	1	2	3	(4)	5
This course is relevant and applicable to my work	1	2	3	(4)	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: however, the initials under
were too long

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

- Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Yes

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

Cost-benefit

9. What did you most appreciate/enjoy/think was best about the course?

friendly - helpful staff/instructors

10. What did you most appreciate/enjoy/think was best about the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/3/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: I may have scored the manual differently if I had more time to review it

2. Given the topic, the Manual is: Too short Right length Too long *independently*

Comments: it's the right length for reading but not for use in a daylong training

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work? would help to establish a mitigation strategy & prioritization.

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

*w'd be happy with just the manual,
not the training*

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: Too much of a varied group of participants. I could get what I need with just the manual.

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

understanding flood mitigation

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

Can help me apply the Flood Considerations better with a different mindset.

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 09/03/14

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

Identifying flood zones and determining wave height etc...

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3/14 Location: Orlando

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	(5)
Instructor knew the subject matter	1	2	3	4	(5)
Instructor encouraged participation	1	2	3	4	(5)
Instructor used visual aids properly	1	2	3	4	(5)
Instructor stimulated discussion	1	2	3	4	(5)
Instructor addressed participants needs and questions	1	2	3	4	(5)
Instructor covered the objectives of the workshop	1	2	3	4	(5)
The presentation contributed to the learning environment	1	2	3	4	(5)
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	(5)
The course contributed to my knowledge of flood mitigation	1	2	3	4	(5)
I would recommend this course to others in the future	1	2	3	(4)	5
This course is relevant and applicable to my work	1	2	3	(4)	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3/14 Location: Orlando

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Learn anything I can to add to
my understanding of Flood Management.

6. Did the workshop allow you to accomplish these goals? Why or why not?

yes, thorough instruction.

7. What did you learn that you didn't know before the workshop?

Determining Elevation of concern to
a particular site

8. What do you feel could have been more extensively covered? Less?

I wouldn't know at this time,
still learning.

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9.3.2014

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree	1	2	3	4	5	Strongly Agree
The Manual is easy to understand		1	2	3	4	5	
Part I of the Manual is helpful for mitigation decision makers		1	2	3	4	5	
Part II of the Manual is helpful for technical mitigation personnel		1	2	3	4	5	
The information in the Manual is complete, helpful, and written at the appropriate level		1	2	3	4	5	
The visuals are appropriate and helpful in understanding the material		1	2	3	4	5	
The pilot sections are applicable and helpful in understanding the material		1	2	3	4	5	
Manual topics are presented in a logical sequence to aid learning		1	2	3	4	5	
The Manual contributed to my knowledge of flood mitigation		1	2	3	4	5	
I would recommend this Manual to others in the future		1	2	3	4	5	
The Manual is relevant and applicable to my work		1	2	3	4	5	
The Manual is a valuable educational mitigation resource		1	2	3	4	5	
I feel confident in performing flood mitigation assessments for public facilities		1	2	3	4	5	

Comments: It's hard to evaluate thoroughly because there wasn't time to study it in depth, but what I saw I liked a lot.

2. Given the topic, the Manual is: Too short Right length Too long

Comments: Probably enough, but not sure. Again - may be too early to say w/o more time to look through all of it.

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

The App. A form will be very useful.

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9.30.2014

5. What do you feel could have been more extensively covered? Less?

More examples of wet + dry Flood proofing. More photos of actual work.

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9.3.2014 Location: Orlando SOC

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: Like many Floodplain seminars/courses I've attended, a lot of time is spent on concepts. But many of the concepts...

2. Given the topic, was this workshop: Too short Right length Too long

Comments: ... seem like common sense. I'd like to see more examples of actual mitigation techniques. And while I understand the

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: motivation of instructors to engage participants, it can sometimes waste valuable time. Do I really want to listen to participants' guests at an answer? No. I want to hear you, the experts at Axxedis, tell me all you know, and relate your vast experience, give more real life situations. If you were able to actually measure flood...

maybe it will apply to my own facilities.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

- Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

I really did enjoy the day. The speakers were good, & I thank you!

10. What did you most appreciate/enjoy/think was best about the course?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/3/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree		Strongly Agree		
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: Very hard to follow since the slides weren't in order. I also did not feel like the manual was easy to correlate to the lecture.

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

The manual falls in line with my work

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

10. Comments?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3/14 Location: Orlando

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3/14 Location: Orlando

4. Did the workshop meet your expectations?

- Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Prepare for flood mitigation in my community

6. Did the workshop allow you to accomplish these goals? Why or why not?

yes

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

The instructors seemed fairly knowledgeable

10. What did you most appreciate/enjoy/think was best about the course?

same question

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/3/14

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

Assess my Building

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

2-DAY SIMILAR

7. Did you encounter any particularly helpful or interesting portions of the Manual?

yes - calculate BFE and compare to your Building

8. What did you learn from reviewing the Manual?

All new to me - so everything thing was new

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree		Strongly Agree		
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
The Manual is easy to understand	1	2	3	4	(5)
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	(5)
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	(5)
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	(5)
The visuals are appropriate and helpful in understanding the material	1	2	3	4	(5)
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	(5)
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	(5)
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	(5)
I would recommend this Manual to others in the future	1	2	3	4	(5)
The Manual is relevant and applicable to my work	1	2	3	4	(5)
The Manual is a valuable educational mitigation resource	1	2	3	4	(5)
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	(5)

Comments: Great job putting the manual together and
presenting it today

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Mostly, Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

Helps for Risk assessment.

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9-3-2014

5. What do you feel could have been more extensively covered? Less? *nothing*

more online tools showing
more Acronym definitions

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

No

7. Did you encounter any particularly helpful or interesting portions of the Manual?

The Risk category assessment section

8. What did you learn from reviewing the Manual?

*how to evaluate & assess risk for
flood mitigation*

9. Additional thoughts?

great class, very helpful

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

10. Comments?

*all instructors were very good
presenters*

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-3-2014 Location: Auto Log. Resp. Center

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

- Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Learn of Flood mitigation

6. Did the workshop allow you to accomplish these goals? Why or why not?

yes

7. What did you learn that you didn't know before the workshop?

how to assess flood risk

8. What do you feel could have been more extensively covered? Less?

—

9. What did you most appreciate/enjoy/think was best about the course?

great instruction

10. What did you most appreciate/enjoy/think was best about the course?

*very good Powerpoints
and internet demos*

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-3-2014 Location: State Log. Program Center

11. Comments?

Fantastic, thank you

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/3/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	(3)	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	(3)	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	(4)	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	(3)	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	(4)	5
The pilot sections are applicable and helpful in understanding the material	1	2	(3)	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	(4)	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	(4)	5
I would recommend this Manual to others in the future	1	2	3	(4)	5
The Manual is relevant and applicable to my work	1	2	3	(4)	5
The Manual is a valuable educational mitigation resource	1	2	3	(4)	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	(4)	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/3/14

IT ADDED TO MY KNOWLEDGE OF
FLOOD MITIGATION

5. What do you feel could have been more extensively covered? Less?

TOPICS PRESENTED WERE ADEQUATELY
COVERED

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

IT WAS DIFFICULT TO RELATE WORKBOOK /
PRESENTATION SLIDES TO MANUAL.

7. Did you encounter any particularly helpful or interesting portions of the Manual?

CONCEPT OF MITIGATION WHOLLY NEW
TO ME

8. What did you learn from reviewing the Manual?

MITIGATION MEASURES AND
ASSESSMENT

9. Additional thoughts?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

10. Comments?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3/14 Location: ORLANDO

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	(5)
Instructor knew the subject matter	1	2	3	4	(5)
Instructor encouraged participation	1	2	3	4	(5)
Instructor used visual aids properly	1	2	3	4	(5)
Instructor stimulated discussion	1	2	3	4	(5)
Instructor addressed participants needs and questions	1	2	3	4	(5)
Instructor covered the objectives of the workshop	1	2	3	4	(5)
The presentation contributed to the learning environment	1	2	3	4	(5)
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	(5)
The course contributed to my knowledge of flood mitigation	1	2	3	4	(5)
I would recommend this course to others in the future	1	2	3	4	(5)
This course is relevant and applicable to my work	1	2	3	4	(5)

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3/14 Location: ORLANDO

4. Did the workshop meet your expectations?

- Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

LEARN MORE ABOUT FLOOD MITIGATION

6. Did the workshop allow you to accomplish these goals? Why or why not?

TOPIC NEW TO ME - LEARNED MORE
ABOUT MITIGATION

7. What did you learn that you didn't know before the workshop?

SEE ABOVE

8. What do you feel could have been more extensively covered? Less?

COVERAGE OF TOPICS ADEQUATE

9. What did you most appreciate/enjoy/think was best about the course?

MITIGATION MEASURES

10. What did you most appreciate/enjoy/think was best about the course?

MULTIPLE PRESENTATIONS

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

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Assessment Factor	Strongly Disagree		Strongly Agree		
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree		Strongly Agree		
The Manual is easy to understand	1	2	(3)	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	(4)	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	(4)	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	(4)	5
The visuals are appropriate and helpful in understanding the material	1	2	(3)	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	(4)	5
Manual topics are presented in a logical sequence to aid learning	1	2	(3)	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	(5)	4	5
I would recommend this Manual to others in the future	1	2	(3)	4	5
The Manual is relevant and applicable to my work	1	2	3	(4)	5
The Manual is a valuable educational mitigation resource	1	2	3	(4)	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	(4)	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: Need more time to teach all topics.

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

10. Comments?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: *People with low information about flood conditions will be lost because of the amount of info.*

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

WORKSHOP EVALUATION FORM

**Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop**

Date of Workshop: _____ Location: _____

11. Comments?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/3/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/3

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORK SHOP

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/3/14

10. Comments?

GREAT INFO BUT TOO MUCH FOR A 8 HR CLASS.
SKIP THE INDVI. INTROS TO SAVE 30-40 MIN.
SKIP THE GROUP BREAK OUTS - I FEEL YOU LOST THE
ROOM DURING THOSE

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3 Location: OKLAHOMA

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: 2ND HALF 1ST HALF

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3/19 Location: ORLANDO

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 8/3/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	(3)	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	(3)	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	(3)	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	(3)	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	(4)	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	(4)	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	(4)	5
The Manual contributed to my knowledge of flood mitigation	1	2	(3)	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	(5)
The Manual is a valuable educational mitigation resource	1	2	3	(4)	5
I feel confident in performing flood mitigation assessments for public facilities	1	(2)	3	4	5

Comments: Really need to have more time to look through the manual,

we really didn't spend much time looking at it, but not sure what you would
 2. Given the topic, the Manual is: ? Too short Right length Too long ^{give up to dedicate} more time to
the manual

Comments: Not sure. Need more time to look through it.

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no Don't Know!

4. How does the information in the Manual apply to your work?

Closely! Need to finalize so we can use + become very familiar
with it

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

Looking at facilities & working through ~~the~~ worksheets could be a whole 2nd day activity.

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

Not sure - no time to really look @ it

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3/14 Location: Orlando

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
Instructor was prepared	1	2	3	(4)	5
Instructor knew the subject matter	1	2	3	(4)	(5)
Instructor encouraged participation	1	2	3	4	(5)
Instructor used visual aids properly	1	2	3	(4)	5
Instructor stimulated discussion	1	2	3	4	(5)
Instructor addressed participants needs and questions	1	2	3	4	(5)
Instructor covered the objectives of the workshop	1	2	3	(4)	5
The presentation contributed to the learning environment	1	2	3	(4)	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	(5)
The course contributed to my knowledge of flood mitigation	1	2	3	4	(5)
I would recommend this course to others in the future	1	2	3	4	(5)
This course is relevant and applicable to my work	1	2	3	4	(5)

Comments: course could easily be two days. It ~~was~~^{is} very practical
data

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: portions were a little fast. Could/should spend more time on activities (explaining them) especially the last one. Looking at the building plans + understanding the red boxes ~~explainer~~ was a first for me. Was helpful when the engineer came over to explain more

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/3/14 Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Learn how to assess buildings for flood potential

6. Did the workshop allow you to accomplish these goals? Why or why not?

yes, but wish I could have practiced more in doing so. This will be part of my job + I want to make sure I do a good job. This seems like a one of a kind course.

7. What did you learn that you didn't know before the workshop?

how to use plans ^{+ FIS} to assess for risk

8. What do you feel could have been more extensively covered? Less?

Looking at more examples, FIS examination + building plans
Maybe just create a 1 page info sheet on funding resources ~~and~~
+ let people read for themselves later. Also could skip STAPLER explanation...?

9. What did you most appreciate/enjoy/think was best about the course?

it was useful + applicable. way better than any FEMA course.

10. What did you most appreciate/enjoy/think was ^{least} ~~best~~ about the course?

it was a little rough being the 1st PILOT course but has tons of potential + would like to attend a refined course later + see it provided more often

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

DAY

2

State Facilities Workshop
September 4, 2014

Name	Agency	Email	Initials
Larry LaHue	Volusia County EM	LLaHue@volusia.org	
Leigh Anne Wachter	Osceola County EM	Leigh.Wachter@Osceola.org	<i>LAW</i>
Levan Zhizhilashvili	FDEM	Levan.Zhizhilashvili@em.myflorida.com	<i>LZ</i>
Lt. Chris Evan	Citrus County EM	cevan@sheriffcitrus.org	<i>CE</i>
Luz Bossanyi	FDEM	Luz.Bossanyi@em.myflorida.com	
Nathan Shaw	Lake County EM	Nshaw@lakecountyfl.gov	<i>NS</i>
Pamela Harris	Hernando County EM	PSHarris@hernandosheriff.org	<i>PH</i>
Pat White	Volusia County EM	pwhite@volusia.org	<i>Pat White</i>
Richard Halquist	Osceola County EM	Richard.halquist@osceola.org	<i>CH</i>
Scott Canaday	Highlands County EM	scanaday@hceoc.org	
Spencer Kostus	Lake County EM	skostus@lakecountyfl.gov	<i>S-K</i>
Steven Lerner	Seminole County EM	slerner@seminolecountyfl.gov	
Tosha Reiss	Glades County EM	treiss@myglades.com	
Tyna Hilton	City of Edgewater Environmental Services	thilton@cityofedgewater.org	<i>Tyna Hilton</i>

Kelvin Bledsoe

Emmie Myr Paulsen Sch city

KP ledsee@flac.gov.org

RP

Name	Agency	Email	Initials
Adele Balmer	FDEM	Adele.Balmer@em.myflorida.com	<i>AB</i>
Barbara Spaulding	Pasco County EM	bspaulding@pascocountyfl.net	
Bennie Henley	Highlands County EM	bhenley@hceoc.org	
Blake Lowvorn	UCF	blake.lowvorn@ucf.edu	<i>BL</i>
Carl Jones Bob Wesch	Citrus County EM Bldg Dir	Carl.Jones@bocc.citrus.fl.us bwesch@sheriffcitrus.org	<i>CJ</i>
Bret Jordan	Citrus County EM	bjordan@sheriffcitrus.org	<i>BJ</i>
Capt. Mike Brennan	City of Palm Coast	mbrennan@palmcoastgov.com	<i>MB</i>
Charlie Gatto	Citrus County	charlie.gatto@bocc.citrus.fl.us	
Craig Radzak	City of Sanford Fire Department	Craig.Radzak@sanfordfl.gov	
Hayley Markman	UCF	hayley.markman@ucf.edu	<i>HM</i>
James Price	FDEM	James.Price@em.myflorida.com	<i>JP</i>
Jennifer Fleischman	UCF	jennifer.fleischman@ucf.edu	
Joe Thalheimer	UCF	joseph.thalheimer@ucf.edu	
Jose Vasquez	UCF	Jose.Vasquez@ucf.edu	

1 SHAWN COLLINS FDEM SHAWN COLLINS @ EM MYFLORIDA.COM
 OT → JASON TAYLOR Orange County OEM jason.taylor@ocfl.net
 WARRICK

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9-4-14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	(4)	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	(4)	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	(4)	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	(4)	5
The visuals are appropriate and helpful in understanding the material	1	2	3	(4)	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	(4)	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	(4)	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	(4)	5
I would recommend this Manual to others in the future	1	2	3	(4)	5
The Manual is relevant and applicable to my work	1	2	3	(4)	5
The Manual is a valuable educational mitigation resource	1	2	3	(4)	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	(3)	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9-4-14

I am on a team that is developing an LMS.

5. What do you feel could have been more extensively covered? Less?

Everything was just about right.

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

No.

7. Did you encounter any particularly helpful or interesting portions of the Manual?

Forms in the Appendix. Facilities evaluation

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-4-14 Location: Orlando, FL

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
Instructor was prepared	1	2	3	④	5
Instructor knew the subject matter	1	2	3	④	5
Instructor encouraged participation	1	2	3	④	5
Instructor used visual aids properly	1	2	3	④	5
Instructor stimulated discussion	1	2	3	④	5
Instructor addressed participants needs and questions	1	2	3	④	5
Instructor covered the objectives of the workshop	1	2	3	④	5
The presentation contributed to the learning environment	1	2	3	④	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	④	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	⑤
I would recommend this course to others in the future	1	2	3	④	5
This course is relevant and applicable to my work	1	2	3	④	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-4-14 Location: Orlando, FL

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

I had no expectations but wanted to learn
whatever was available; left very satisfied.

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-4-14 Location: Orlando, FL

11. Comments?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/4/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
The Manual is easy to understand	1	2	3	4	5	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5	1	2	3	4	5

Comments: It's a ^{very} good start - the workshops are a good idea to "put more eyes" on the document

2. Given the topic, the Manual is: Too short Right length Too long

Comments: Very good visuals, graphs, etc.

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

Relates to our CMS work, grant funding

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/4/14

5. What do you feel could have been more extensively covered? Less?

^{abit}
Might be me but I was confused until we did the afternoon workshop, got in small groups and the discussion on several different topics

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

~~Some bits were sparse at the~~ I like the flow and graphics but some areas seem "wordy"

7. Did you encounter any particularly helpful or interesting portions of the Manual?

Charts, graphics, check lists, etc

8. What did you learn from reviewing the Manual?

The importance of support systems to facilities and mitigating those systems even before the facility

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/4/14 Location: Orlando, FL

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5*
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: I think this easily could be a 2-day workshop

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: It was a good pace but at the end felt rushed because we were out of time but all discussion + topics were important

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/4/14 Location: Orlando

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Update and expand my mitigation knowledge

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes, covered many topics in one day

7. What did you learn that you didn't know before the workshop?

Mitigation to facility support systems

8. What do you feel could have been more extensively covered? Less?

Funding sources, residential, etc

9. What did you most appreciate/enjoy/think was best about the course?

I liked the array of instructors - it wasn't just
1 person presenting

10. What did you most appreciate/enjoy/think was best about the course?

WORKSHOP EVALUATION FORM

**Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop**

Date of Workshop: _____ Location: _____

11. Comments?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9-4-2014

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree
The Manual is easy to understand	1	(2)	3	(4) 5
Part I of the Manual is helpful for mitigation decision makers	1	(2)	3	(4) 5
Part II of the Manual is helpful for technical mitigation personnel	1	(2)	3	(4) 5
The information in the Manual is complete, helpful, and written at the appropriate level	1	(2)	3	(4) 5
The visuals are appropriate and helpful in understanding the material	1	(2)	3	(4) 5
The pilot sections are applicable and helpful in understanding the material	1	(2)	3	(4) 5
Manual topics are presented in a logical sequence to aid learning	1	(2)	3	(4) 5
The Manual contributed to my knowledge of flood mitigation	1	(2)	3	(4) 5
I would recommend this Manual to others in the future	(1)	2	3	4 (5)
The Manual is relevant and applicable to my work	(1)	2	3	4 (5)
The Manual is a valuable educational mitigation resource	1	(2)	3	(4) 5
I feel confident in performing flood mitigation assessments for public facilities	1	(2)	3	(4) 5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?
 Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-4-14 Location: Orlando

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-4-14 Location: Orlando

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/4/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

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Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

EM. WORK

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

Page numbering

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

*Put it on a thumb drive.
Cheaper + more effective. Save the
environment.*

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/4/14 Location: ORLANDO SURC

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

- Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

*Understanding maps, charts, FEMA
info.*

6. Did the workshop allow you to accomplish these goals? Why or why not?

YES

7. What did you learn that you didn't know before the workshop?

Mitigation strategies

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

Knowledge instructors, their enthusiasm.

10. What did you most appreciate/enjoy/think was best about the course?

Isn't this the same question as 9.?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/4

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

not sure what sections are "pilot"

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

provides overview for mitigation; specifically flood plain management

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

exercise after lunch

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

MANUAL EVALUATION FORM

**Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual**

Date: _____

10. Comments?

A series of 17 horizontal lines provided for entering handwritten comments.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/4 Location: State Logistics Resource Center

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/4/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	(4)	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	(4)	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	(4)	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	(4)	5
The visuals are appropriate and helpful in understanding the material	1	2	3	(4)	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	(4)	5
Manual topics are presented in a logical sequence to aid learning	1	2	(3)	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	(4)	5
I would recommend this Manual to others in the future	1	2	3	(4)	5
The Manual is relevant and applicable to my work	1	2	3	(4)	5
The Manual is a valuable educational mitigation resource	1	2	3	(4)	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	(3)	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/11/14

As the mitigation planner, I will use this to better understand my Role, the tools available to me, and how to educate others.

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

I would consider adding section tabs labeled for ease of use!

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual
Date: _____

10. Comments?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/4/14 Location: Orlando SLRC

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: we ran behind and reduced the material presentation - really rushed through the afternoon

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/9/14 Location: Orlando SLRC

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

to understand the process for mitigation efforts

6. Did the workshop allow you to accomplish these goals? Why or why not?

yes

7. What did you learn that you didn't know before the workshop?

how to document + evaluate

8. What do you feel could have been more extensively covered? Less?

like to spend more time on understanding the various types of mitigation efforts and when best to use them.

9. What did you most appreciate/enjoy/think was best about the course?

learning the tools available to us.

10. What did you most appreciate/enjoy/think was best about the course?

same question?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree		Strongly Agree		
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: CLASS needs to be two Days
with more group Exercises

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

I am a local mitigation coordinator.
Very Valuable

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/4/14

5. What do you feel could have been more extensively covered? Less?

Funding Sources and how they
Apply

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

yes. Math Assessment. As stated
more for technical professionals

7. Did you encounter any particularly helpful or interesting portions of the Manual?

Most of it. Especially Flooding

8. What did you learn from reviewing the Manual?

100 year
500 year flood concept

9. Additional thoughts?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/4/14

10. Comments?

Good Chassis Model in structures
Again recommend be targeted over
two days, or atleast a day
and a half.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/4/14 Location: Orlando

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	(5)
Instructor knew the subject matter	1	2	3	4	(5)
Instructor encouraged participation	1	2	3	(4)	5
Instructor used visual aids properly	1	2	3	(4)	5
Instructor stimulated discussion	1	2	3	(4)	5
Instructor addressed participants needs and questions	1	2	3	4	(5)
Instructor covered the objectives of the workshop	1	2	3	(4)	5
The presentation contributed to the learning environment	1	2	3	(4)	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	(4)	5
The course contributed to my knowledge of flood mitigation	1	2	3	(4)	5
I would recommend this course to others in the future	1	2	3	4	(5)
This course is relevant and applicable to my work	1	2	3	4	(5)

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/4/14 Location: Orlando

4. Did the workshop meet your expectations?

- Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

yes

6. Did the workshop allow you to accomplish these goals? Why or why not?

yes. know more about flooding

7. What did you learn that you didn't know before the workshop?

How to Determine 100/500 year
flooding

8. What do you feel could have been more extensively covered? Less?

funding

9. What did you most appreciate/enjoy/think was best about the course?

flooding concept

10. What did you most appreciate/enjoy/think was best about the course?

same question as #9

Σ

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/4/14 Location: Ocala

11. Comments?

Palm Beach would
be glad to host
this workshop

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/4/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
The Manual is easy to understand	1	2	3	4	5	5	4	3	2	1
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5	5	4	3	2	1
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5	5	4	3	2	1
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5	5	4	3	2	1
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5	5	4	3	2	1
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5	5	4	3	2	1
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5	5	4	3	2	1
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5	5	4	3	2	1
I would recommend this Manual to others in the future	1	2	3	4	5	5	4	3	2	1
The Manual is relevant and applicable to my work	1	2	3	4	5	5	4	3	2	1
The Manual is a valuable educational mitigation resource	1	2	3	4	5	5	4	3	2	1
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5	5	4	3	2	1

Comments: Manual is well done, the only thing is that the parts (I and II) need to be more clearly defined at the beginning (not in the manual, during the presentation)

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/4/14

as a Mitigator I can use it all the time as a reference to evaluate applications for the different wind retrofit projects. we evaluate daily that type of projects.

5. What do you feel could have been more extensively covered? Less?

This workshop is very technical, I really would like to have more time to review the manual, instructor gave us only 10 minutes.

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

I need more time to review the manual to be able to answer this question

7. Did you encounter any particularly helpful or interesting portions of the Manual?

At a glance, I would say the entire manual is very interesting, dynamic and illustrative.

8. What did you learn from reviewing the Manual?

Flood risk score, RISK categories, STAPLEE

9. Additional thoughts?

The manual has a lot of valuable information, good guidance but we needed more time to review it in detail.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/4/14 Location: SLRC

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: I think this workshop should be more than 1 day, maybe 1 1/2 or 2 days.

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: Sometimes was not enough time to analyze everything because the workshop is technical, for me was good, but not for all attendees.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Learn this methodology and apply it for future projects.

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes, but I still think it should be more than 1 day class.

7. What did you learn that you didn't know before the workshop?

A few things for the planning process, the scoring system, methodology for mitigation assessment report.

8. What do you feel could have been more extensively covered? Less?

They should give more time to review the manual and do it like activity group.

9. What did you most appreciate/enjoy/think was best about the course?

The excersices were very good.

10. What did you most appreciate/enjoy/think was best about the course?

the dinamic, working on real projects.

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 09/04/11

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree		Strongly Agree		
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: I do not have a technical background, so I am not the end user of this product

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 09/04/14

helps explain in depth the technical aspects under
FBC + ASCE for assessments

5. What do you feel could have been more extensively covered? Less?

Extend to an all-hazards approach

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

Yes; ordering of the categories backwards to me
logically (even though) it is that way
verbatim to ASCE)

7. Did you encounter any particularly helpful or interesting portions of the Manual?

Pilot project descriptions; mitigation options

8. What did you learn from reviewing the Manual?

I need to engage more technical partners for our
County LHA Working Group

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 09/09/14 Location: SLRC

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5					
Instructor knew the subject matter	1	2	3	4	5					
Instructor encouraged participation	1	2	3	4	5					
Instructor used visual aids properly	1	2	3	4	5					
Instructor stimulated discussion	1	2	3	4	5					
Instructor addressed participants needs and questions	1	2	3	4	5					
Instructor covered the objectives of the workshop	1	2	3	4	5					
The presentation contributed to the learning environment	1	2	3	4	5					
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5					
The course contributed to my knowledge of flood mitigation	1	2	3	4	5					
I would recommend this course to others in the future	1	2	3	4	5					
This course is relevant and applicable to my work	1	2	3	4	5					

Comments: More technical in nature than anticipated; should ask Public Works, Utilities, & Flood plain managers to attend

2. Given the topic, was this workshop: Too short Right length Too long

Comments: Much too short to cover all topics thoroughly and have an interactive portion

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: Several aspects for non-technical mitigation practitioners seemed glossed over due to pace

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 09/04/14 Location: SLRC

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Incorporation hazard mitigation ideas / practices to my
County LMS Working Group

6. Did the workshop allow you to accomplish these goals? Why or why not?

No. Much more technical in nature than anticipated/
advertised
Activities were not very helpful or useful

7. What did you learn that you didn't know before the workshop?

How to better understand FIRMs

8. What do you feel could have been more extensively covered? Less?

Vulnerability / Risk Assessment ; Team teaching was not
utilized well ; engineers on hand to help answer
questions, but are not good instructors or engaging

9. What did you most appreciate/enjoy/think was best about the course?

Good A/V, good interactions w/ lead instructor who
was knowledgeable + convey technical info

10. What did you most appreciate/enjoy/think was best about the course?

Same question as above??

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: 09/09/14 Location: SLRC

11. Comments?

Needs to be a longer course to better
cover topics

Advertise better for class to appropriate
audience to attend class; much more
technical in nature and should be geared
to Public Works, Utilities, Risk Management,
Facilities/Building, Code Enforcement,
and Flood plain Managers

Registration run through SERT TRAC?

We would be glad to host another class
(or series) if available in future

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
The Manual is easy to understand	1	2	3	4	5	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5					
Instructor knew the subject matter	1	2	3	4	5					
Instructor encouraged participation	1	2	3	4	5					
Instructor used visual aids properly	1	2	3	4	5					
Instructor stimulated discussion	1	2	3	4	5					
Instructor addressed participants needs and questions	1	2	3	4	5					
Instructor covered the objectives of the workshop	1	2	3	4	5					
The presentation contributed to the learning environment	1	2	3	4	5					
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5					
The course contributed to my knowledge of flood mitigation	1	2	3	4	5					
I would recommend this course to others in the future	1	2	3	4	5					
This course is relevant and applicable to my work	1	2	3	4	5					

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

The transition between the Desktop (Field) email was spot on! Explaining that the Desktop was all on line & easy to find & really showed the difference

Also saying "Since we know it is high risk we should look in depth" was awesome!

Watch the "ums" & "you know"s, it makes it seem like you are winging it

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/4/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	④	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	⑤
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	⑤
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	⑤
The visuals are appropriate and helpful in understanding the material	1	2	3	④	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	⑤
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	⑤
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	⑤
I would recommend this Manual to others in the future	1	2	3	4	⑤
The Manual is relevant and applicable to my work	1	2	3	4	⑤
The Manual is a valuable educational mitigation resource	1	2	3	4	⑤
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	④	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

10. Comments?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 4/4/14 Location: SLRC

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	(5)
Instructor knew the subject matter	1	2	3	4	(5)
Instructor encouraged participation	1	2	3	4	(5)
Instructor used visual aids properly	1	2	3	4	(5)
Instructor stimulated discussion	1	2	3	4	(5)
Instructor addressed participants needs and questions	1	2	3	4	(5)
Instructor covered the objectives of the workshop	1	2	3	4	(5)
The presentation contributed to the learning environment	1	2	3	4	(5)
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	(5)
The course contributed to my knowledge of flood mitigation	1	2	3	4	(5)
I would recommend this course to others in the future	1	2	3	4	(5)
This course is relevant and applicable to my work	1	2	3	4	(5)

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: Could possibly be turned into a 2 day workshop with the amount of information being presented.

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

- Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Learn more about mitigation for public facilities.

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes.

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

The resources that can be taken back and put to use

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

Would like copy of Public Facilities Flood Mitigation Manual
Would like this workshop to continue

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/4/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: NICE MANUAL, GOOD AESTHETIC, HELPFUL INFO

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

HELPS IN THE DECISION MAKING PROCESS

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/4/14

5. What do you feel could have been more extensively covered? Less?

THE BALANCE WAS GOOD, NO CHANGE NEEDED

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

Practical Applications for Case Study are interesting + helpful. It would be nice to see more

7. Did you encounter any particularly helpful or interesting portions of the Manual?

See above

8. What did you learn from reviewing the Manual?

Assessment tools + strategies

9. Additional thoughts?

None

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/4/14 Location: ORLANDO

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

MITIGATION FUNDING OPTIONS

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes, the material was covered

7. What did you learn that you didn't know before the workshop?

Where to find online resources

8. What do you feel could have been more extensively covered? Less?

MORE MITIGATION ASSESSMENT INFO

9. What did you most appreciate/enjoy/think was best about the course?

TAUGHT FROM THE PLANNER / ENGINEER PERSPECTIVE

10. What did you most appreciate/enjoy/think was best about the course?

SEE ABOVE

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

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Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5					
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5					
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5					
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5					
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5					
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5					
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5					
I would recommend this Manual to others in the future	1	2	3	4	5					
The Manual is relevant and applicable to my work	1	2	3	4	5					
The Manual is a valuable educational mitigation resource	1	2	3	4	5					
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5					

Comments: VERY WELL DONE SUGGEST ONLY, MAYBE SOME LABEL CHANGES, GREAT OVERALL!

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

PROVIDING DETAILED PROCESS TO CREATING AN UNDERSTANDING IN MITIGATION ACTIVITY

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/4/2014

5. What do you feel could have been more extensively covered? Less?

From a manual perspective, balanced approach

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

EXERCISE ACTIVITY NOT CLEAR OR REPETITIVE WITHIN THE SAME ACTIVITY - SAME QUESTION TWICE

7. Did you encounter any particularly helpful or interesting portions of the Manual?

TOO MUCH TO LIST BUT GREAT USE OF GRAPHICS, DIAGRAMS, CHARTS!

8. What did you learn from reviewing the Manual?

TOO MUCH TO LIST BUT EASY STEP APPROACH!

9. Additional thoughts?

VERY WELL DONE OVERALL! RETHINK QUESTIONS IN THE ACTIVITIES NOT COMPLEX, BUT WHAT IS THE QUESTION LOOKING FOR?

NICE!

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/4/2014 Location: ORLANDO - SLRC

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: GREAT SKILL + LEADERSHIP "CARLEY"!
EXERCISES - SUPER EASY TO UNDERSTAND + LISTEN TO...

2. Given the topic, was this workshop: Too short Right length Too long

Comments: EXTEND FOR EXERCISE/ACTIVITY - ALLOW
GROUP ACTIVITY WHEN THE CLASS GOES LIVE

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

NEED BETTER CLASS TO BEST DELIVER CLASS

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/4/2014 Location: Orlando SLRC

4. Did the workshop meet your expectations?

- Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

LOOKING AT STEP AND PROCESS ORIENTED ASSESSMENT

6. Did the workshop allow you to accomplish these goals? Why or why not?

YES - PROVIDED MANY ANSWERS

7. What did you learn that you didn't know before the workshop?

THE MICA TO LIST

8. What do you feel could have been more extensively covered? Less?

- NOTHING -

9. What did you most appreciate/enjoy/think was best about the course?

MANUAL, WORKSHOP + LECTURES - GREAT COMBO!

10. What did you most appreciate/enjoy/think was best about the course?

KNOWLEDGE BASED MATERIAL + HUMAN RESOURCES.

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/4/14

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	(4)	5
Part I of the Manual is helpful for mitigation decision makers	1	2	(3)	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	(4)	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	(4)	5
The visuals are appropriate and helpful in understanding the material	1	2	(3)	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	(4)	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	(5)
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	(5)
I would recommend this Manual to others in the future	1	2	3	(4)	5
The Manual is relevant and applicable to my work	1	2	(3)	4	5
The Manual is a valuable educational mitigation resource	1	2	3	(4)	5
I feel confident in performing flood mitigation assessments for public facilities	1	(2)	3	4	5

Comments: Some of the graphics are difficult to read, so updating graphics

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

The flood zone information is helpful as well as risk categories.

5. What do you feel could have been more extensively covered? Less?

Applying the mitigation plan, and flood hazard for a building needs to be more extensive.

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

I think the use of abbreviations is difficult w/out some one having a strong background in Mitigation and Engineering. Maybe explaining the more common abbreviations

7. Did you encounter any particularly helpful or interesting portions of the Manual?

The graphs were very helpful, but not all were easy to read.

8. What did you learn from reviewing the Manual?

Building codes items needed to evaluate flood risk for a building.

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 7/9/14 Location: Orlando, FL

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: Needs to be additional day as not enough time to properly cover all the topics in depth.

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: Moved very fast based on limited time.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Learning about flood risk for our buildings and mitigating losses

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes, but I wish there was more time for in depth examples.

7. What did you learn that you didn't know before the workshop?

I am new to flood mitigation, so all the material, building codes are new to me.

8. What do you feel could have been more extensively covered? Less?

Reviewing buildings for flood risks and mitigating those losses.

9. What did you most appreciate/enjoy/think was best about the course?

The graphics and examples

10. What did you most appreciate/enjoy/think was best about the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 07/04/14

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
The Manual is easy to understand	1	2	3	<u>4</u>	5					
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	<u>5</u>					
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	<u>5</u>					
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	<u>5</u>					
The visuals are appropriate and helpful in understanding the material	1	2	3	4	<u>5</u>					
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	<u>5</u>					
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	<u>5</u>					
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	<u>5</u>					
I would recommend this Manual to others in the future	1	2	3	4	<u>5</u>					
The Manual is relevant and applicable to my work	1	2	3	4	<u>5</u>					
The Manual is a valuable educational mitigation resource	1	2	3	4	<u>5</u>					
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	<u>5</u>					

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 09/04/14 Location: Orlando

4. Did the workshop meet your expectations?

- Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9-4-2014

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1. Please rate the following:

Assessment Factor	Strongly Disagree		Strongly Agree		
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: Great Class & Manual is very well written

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-4-2014 Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

To learn more about Mitigation Assessments of City Facilities

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes

7. What did you learn that you didn't know before the workshop?

Almost everything that was taught

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

That instructors did the activities with entire class

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9-4-14

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1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
The Manual is easy to understand	1	2	3	4	(5)
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	(5)
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	(5)
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	(5)
The visuals are appropriate and helpful in understanding the material	1	2	3	4	(5)
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	(5)
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	(5)
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	(5)
I would recommend this Manual to others in the future	1	2	3	4	(5)
The Manual is relevant and applicable to my work	1	2	3	4	(5)
The Manual is a valuable educational mitigation resource	1	2	3	4	(5)
I feel confident in performing flood mitigation assessments for public facilities	1	2	(3)	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-4-14 Location: SLRC Orlando

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
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Instructor covered the objectives of the workshop	1	2	3	4	5
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Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 4 SEP 2014

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	(4)	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	(4)	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	(4)	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	(4)	5
The visuals are appropriate and helpful in understanding the material	1	2	3	(4)	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	(4)	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	(4)	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	(4)	5
I would recommend this Manual to others in the future	1	2	3	(4)	5
The Manual is relevant and applicable to my work	1	2	3	(4)	5
The Manual is a valuable educational mitigation resource	1	2	3	(4)	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	(4)	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 4 SEP 14 Location: ORLANDO

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
Instructor was prepared	1	2	3	④	5
Instructor knew the subject matter	1	2	3	④	5
Instructor encouraged participation	1	2	3	④	5
Instructor used visual aids properly	1	2	3	④	5
Instructor stimulated discussion	1	2	3	④	5
Instructor addressed participants needs and questions	1	2	3	④	5
Instructor covered the objectives of the workshop	1	2	3	④	5
The presentation contributed to the learning environment	1	2	3	④	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	④	5
The course contributed to my knowledge of flood mitigation	1	2	3	④	5
I would recommend this course to others in the future	1	2	3	④	5
This course is relevant and applicable to my work	1	2	3	④	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What did you most appreciate/enjoy/think was best about the course?

Day 3

State Facilities Workshop
September 10, 2014

Name	Agency	Email	Initials
Andres Kraul	Florida Department of Corrections	kraul.andres@mail.dc.state.fl.us	AKK
Bailey Barefoot	Florida Department of Corrections	kraul.andres@mail.dc.state.fl.us	EBB
Brian Kenyon	Agency for Health Care Administration	brian.kenyon@ahca.myflorida.com	
Casey Ditter	Lafayette County Building & Zoning	lafcobldg@gmail.com	Casey Ditter
Conor Grace	Pensacola Public Works	conor.grace@navy.mil	Conor Grace
Danny Kilcollins	Florida Division of Emergency Management	danny.kilcollins@em.myflorida.com	Duff
Dayton Saltsman	City of South Pasadena	dsaltsman@mysouthpasadena.com	DS
Debbie Bass	Florida Division of Emergency Management	debbie.bass@em.myflorida.com	DB
Debbie Ray Martin	DOE	Debbie.martin@fldoe.org	Debbie Martin
Denise Imbler	ARPC	DImbler@theearpc.com	
Eve Rainey	FEPA	erainey@fepa.org	
G.W. Casey Jones	DCF Design and Construction	casey_jones@dcf.state.fl.us	
Gary Larson	City of St. Augustine Beach	glarson@cityofsab.org	
H.R. Hough	Department of Highway Safety and Motor Vehicles	HRHough@fhsmv.gov	HR.H
Jamey Creel	Florida Division of Emergency Management	jamey.creel@em.myflorida.com	JBC
Jarrick Saquibal	NWFWMD	Jarrick.Saquibal@nwfwater.com	Jarrick Saquibal
Jim Schock	St. Johns County	jschock@sjcfl.us	James R. Schock
Joelle O'Daniel-Lopez	Naval Facilities Engineering Command (NAVFAC) SE	joelle.odaniellopez@navy.mil	
Juan Matos	Florida Division of Emergency Management	juan.matos@em.myflorida.com	
Karla Castellon	Florida School for the Deaf and Blind	castellonk@fsdb.k12.fl.us	

Sabrina Ugo FEMA
 Jamey Creel FOEM
 gabriela.ugo@fema.dhs.gov
 jamey.creel@em.myflorida.com

Name	Agency	Email	Initials
Kenneth Cureton	Florida Department of State	Kenneth.Cureton@dos.myflorida.com	
Leroy Marshall II	Suwannee River Water Management District	LRM@srwmd.org	LRMS
Mark Fuller	City of Tallahassee	mark.fuller@talgov.com	MF
Marlee Robinson	FDEM	marlee.robinson@em.myflorida.com	
Martha Uribe	Florida Division of Emergency Management	martha.uribe@em.myflorida.com	MCU
Michael Lovejoy	Nature Coast EMS	michael.lovejoy@naturecoastems.org	
Migel Shepherd	DMS	Nigel.Shepherd@dms.MVFlorida.com	
Nick Mayernick	FDLE	nicholasmayernick@fdle.state.fl.us	
Nicole McDonald	UWF	nmcdonald@uwf.edu	
Paul Zarza	NWFWMD	Paul.Zarza@nwfwater.com	
Pennie Sparks	UWF	psparkes@uwf.edu	
Phil Whorley	Emergency Disaster Strategies	pwhorley.eds@gmail.com	
Randall Lester	Florida School for the Deaf and Blind	lesterr@fsdb.k12.fl.us	
Richard Hilburn	Florida Department of State	Richard.Hilburn@dos.myflorida.com	
Robert Johnson	Lafayette County Building & Zoning	lafcobids@gmail.com	
Steve Armstrong	Florida School for the Deaf and Blind	armstrongs@fsdb.k12.fl.us	
Sue Leitholf	DEP	susan.leitholf@dep.state.fl.us	
Wally Mitchell	Florida Division of Emergency Management	wally.mitchell@em.myflorida.com	

Wygodski AVI DCF
 avikam_wygodski@
 OCF.State.FL.us
 OCF

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/10/2014

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4 ¹	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4 ¹	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4 ¹	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4 ¹	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4 ¹	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4 ¹	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4 ¹	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4 ¹	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: World have liked more time to review the manual, so its hard to evaluate

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

Allow us to perform flood mitigation if/when we are allowed or needed.

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/10/2014

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/2014 Location: Tallahassee

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: More hands on types of exercises. More discussion on available resources (e. website for locating information)

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: Good pace, just would like more hands on exercises

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/2014 Location: Tallahassee

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

How to apply & help the University understand vulnerable areas
on campus Assess the risk for campus

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes → this is a great tool to apply campus
wide evaluation

7. What did you learn that you didn't know before the workshop?

Assessment/Evaluation process

8. What do you feel could have been more extensively covered? Less?

Main Evaluation Process - More

9. What did you most appreciate/enjoy/think was best about the course?

Instructors were very knowledgeable about topic
& had real world experience

10. What changes would you recommend to the course?

Make the course longer - at least 1 1/2 days

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/2019 Location: Tallahassee

11. Comments?

Really want electronic format of
manual + forms NOW / /

A physical field component would be helpful.

It would be nice to have more
training on finding sources. ~~Stop~~

Add ~~you~~ the presenters contact information to work book.

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9-10-14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	(4)	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	(4)	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	(4)	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	(4)	5
The visuals are appropriate and helpful in understanding the material	1	2	3	(4)	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	(4)	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	(4)	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	(4)	5
I would recommend this Manual to others in the future	1	2	3	(4)	5
The Manual is relevant and applicable to my work	1	(2)	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	(4)	5
I feel confident in performing flood mitigation assessments for public facilities	1	(2)	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

Emergency Management Section

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9-10-14

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

look at areas within training
that apply to school within
the flood zones.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-10-14 Location: DEM

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
Instructor was prepared	1	2	3	(4)	5
Instructor knew the subject matter	1	2	3	(4)	5
Instructor encouraged participation	1	2	3	(4)	5
Instructor used visual aids properly	1	2	3	(4)	5
Instructor stimulated discussion	1	2	3	(4)	5
Instructor addressed participants needs and questions	1	2	3	(4)	5
Instructor covered the objectives of the workshop	1	2	3	(4)	5
The presentation contributed to the learning environment	1	2	3	(4)	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	(4)	5
The course contributed to my knowledge of flood mitigation	1	(2)	3	4	5
I would recommend this course to others in the future	1	2	3	(4)	5
This course is relevant and applicable to my work	1	(2)	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-10-14 Location: DEM

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

Learner alot my area of
work does not specifically relate
to this, but very knowledgeable

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What changes would you recommend to the course?

Look at specific flood zones areas
that relate to school for powerpoint
or slides.

No time to

Review

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
The Manual is easy to understand	1	2	3	4	5	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Tallahassee

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

a lot! ~~as~~ I didn't know much about
flooding, ~~as~~

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

Examples of exercises

10. What changes would you recommend to the course?

The slides could use more common language and
explain acronyms (or have cheat sheet in back).

Carly for example did great job of explaining
and talking, however the slides in comparison
as a stand alone resource are not as self
explanatory.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

Great that other communities members
could benefit from this course.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/12 Location: Tallahassee

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/12 Location: Tallahassee

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

understand Flood Mitigation & how to
measure and what to look for

6. Did the workshop allow you to accomplish these goals? Why or why not?

yes

7. What did you learn that you didn't know before the workshop?

all about AE & VE & Flood mitigation

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

relaxed atmosphere & location

10. What changes would you recommend to the course?

N/A

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	(4)	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	(4)	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	(4)	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	(4)	5
The visuals are appropriate and helpful in understanding the material	1	2	3	(4)	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	(4)	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	(4)	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	(4)	5
I would recommend this Manual to others in the future	1	2	3	(4)	5
The Manual is relevant and applicable to my work	1	2	3	(4)	5
The Manual is a valuable educational mitigation resource	1	2	3	(4)	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	(4)	5

Comments: Invaluable

2. Given the topic, the Manual is: Too short Right length Too long

Comments: good info

3. Did the Manual meet your expectations?
 Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?
 We are about 6 ft Above Sea Level
 Impact Critical Site

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9-10-14

5. What do you feel could have been more extensively covered? Less?

all good

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

no

7. Did you encounter any particularly helpful or interesting portions of the Manual?

yes

8. What did you learn from reviewing the Manual?

yes

9. Additional thoughts?

o

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-0-14 Location: Tallahassee

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: None

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

manly

6. Did the workshop allow you to accomplish these goals? Why or why not?

yes

7. What did you learn that you didn't know before the workshop?

'flood exit' assessment

8. What do you feel could have been more extensively covered? Less?

NA

9. What did you most appreciate/enjoy/think was best about the course?

Forum + Relief

10. What changes would you recommend to the course?

MS

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree		Strongly Agree		
The Manual is easy to understand	1	2	(3)	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	(3)	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	(3)	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	(3)	4	5
The visuals are appropriate and helpful in understanding the material	1	(2)	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	(3)	4	5
Manual topics are presented in a logical sequence to aid learning	1	(2)	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	(3)	4	5
I would recommend this Manual to others in the future	1	2	(3)	4	5
The Manual is relevant and applicable to my work	1	2	(3)	4	5
The Manual is a valuable educational mitigation resource	1	2	(3)	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	(3)	4	5

Comments: DISCULT TO EVAL MANUAL, DID NOT SPEND
A LOT OF TIME WITH IT

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MEMBER OF LMS GROUP

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

USE OF FORMS

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree		Strongly Agree		
Instructor was prepared	1	(2)	3	4	5
Instructor knew the subject matter	1	(2)	3	4	5
Instructor encouraged participation	1	(2)	3	4	5
Instructor used visual aids properly	1	2	(3)	4	5
Instructor stimulated discussion	1	(2)	3	4	5
Instructor addressed participants needs and questions	1	(2)	3	4	5
Instructor covered the objectives of the workshop	1	2	(3)	4	5
The presentation contributed to the learning environment	1	2	(3)	4	5
Course topics were delivered in a logical sequence to aid learning	1	(2)	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	(3)	4	5
I would recommend this course to others in the future	1	2	(3)	4	5
This course is relevant and applicable to my work	1	2	(3)	4	5

Comments: NEED TO WORK ON EXERCISES

MATERIAL NOT CLEAR

2. Given the topic, was this workshop: Too short Right length Too long

Comments: SPEND MORE TIME ON MITIGATION EVAL & LESS

ON INTRODUCTION SECTION

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

YES

6. Did the workshop allow you to accomplish these goals? Why or why not?

YES WORKING EXAMPLES BUT HANDOUTS MUST BE BETTER

7. What did you learn that you didn't know before the workshop?

USE OF THE FORMS

8. What do you feel could have been more extensively covered? Less?

MORE TIME ON EVALUATIONS

9. What did you most appreciate/enjoy/think was best about the course?

10. What changes would you recommend to the course?

BETTER READABILITY OF EXAMPLE. I WOULD BREAK
DOWN THE EXAMPLES AND NOT DO IT ALL AT ONCE.

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	④	⑤
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	⑤
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	⑤
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	③	④	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	⑤
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	⑤
Manual topics are presented in a logical sequence to aid learning	1	2	③	④	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	⑤
I would recommend this Manual to others in the future	1	2	3	4	⑤
The Manual is relevant and applicable to my work	1	2	3	4	⑤
The Manual is a valuable educational mitigation resource	1	2	3	4	⑤
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	④	5

pg 38 draft

pg 38 is intro of pg 39

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

10. Comments?

missing

Primary Contact info of person(s) with institutional knowledge about facility
 include lat/lon
 include self Insured | Historical Loss Sheet

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/16 Location: Kelly Train Room

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What changes would you recommend to the course?

time / day - extend

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/10/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: More photos showing failures & accidents that take place after floods

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

Managing state facilities (FCO) this presentation helps to request additional funding for mitigating future projects to avoid future problems. (better)

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

Building codes

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

No.

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

Determining height deviations of different structures.

9. Additional thoughts?

*workshop materials page # 35 : Critical Score —
— Life Safety Systems should be higher than Critical Equip.*

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Southwood

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Southwood

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

To understand the flooding ^{criteria &} requirements & how it
could affect facilities & communities.

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes, discussing examples of what has happened
and what could happen with 100/yr+ flooding issues

7. What did you learn that you didn't know before the workshop?

Fema on line portal showing flood maps
Measuring minimum requirements for building ~~the~~ floor ft.

8. What do you feel could have been more extensively covered? Less?

Future building design concepts on using lower
elevations (under building), how to better build
ideas.

9. What did you most appreciate/enjoy/think was best about the course?

Work shops, exploring material, and applying
to real life examples.

10. What changes would you recommend to the course?

Showing more photos examples of "failures"
and good design solutions.

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/10/14

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
The Manual is easy to understand	1	2	3	4	5					
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5					
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5					
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5					
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5					
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5					
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5					
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5					
I would recommend this Manual to others in the future	1	2	3	4	5					
The Manual is relevant and applicable to my work	1	2	3	4	5					
The Manual is a valuable educational mitigation resource	1	2	3	4	5					
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5					

Comments: _____

↓
didn't review
for see
workshop
eval

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Tallahassee

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5

Comments: Wasnt sure about target audience when I signed up

2. Given the topic, was this workshop: Too short Right length Too long

Comments: Would have liked to go deeper

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Tallahassee

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Find out more about mitigation for flood
damage @ state facilities,

6. Did the workshop allow you to accomplish these goals? Why or why not?

Mostly Yes - know a bit more now

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

More planning + less site specific

9. What did you most appreciate/enjoy/think was best about the course?

Case studies

10. What changes would you recommend to the course?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Tallahassee

11. Comments?

Con for filling mitigation - Permits (wetland +
others) are ~~probab~~ required + not easy to
obtain

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
The Manual is easy to understand	1	2	3	4	5	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/16/14 Location: Tallahassee

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Tallahassee

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Get ideas from state officials/trainers to apply to Dept. of Navy facility mgmt.

6. Did the workshop allow you to accomplish these goals? Why or why not?

yes -

7. What did you learn that you didn't know before the workshop?

flood zone info

8. What do you feel could have been more extensively covered? Less?

~~passive~~ active mitigation could be covered more

9. What did you most appreciate/enjoy/think was best about the course?

case studies

10. What changes would you recommend to the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 09/09/2014

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree	2	3	4	Strongly Agree
The Manual is easy to understand	(1)	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	(1)	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	(1)	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	(1)	2	3	4	5
The visuals are appropriate and helpful in understanding the material	(1)	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	(1)	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	(1)	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	(1)	2	3	4	5
I would recommend this Manual to others in the future	(1)	2	3	4	5
The Manual is relevant and applicable to my work	(1)	2	3	4	5
The Manual is a valuable educational mitigation resource	(1)	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	(1)	2	3	4	5

Comments: Excellent content / ideas

2. Given the topic, the Manual is: Too short Right length Too long

Comments: You can use it "as-is". When can we get a "Final" version?

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 09/09/2014

100% applicable to my work

5. What do you feel could have been more extensively covered? Less?

Coverage appeared appropriate.

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

No

7. Did you encounter any particularly helpful or interesting portions of the Manual?

The photo log. I always take a lot of pix and then I don't remember where I took them!

8. What did you learn from reviewing the Manual?

Excellent quality and very comprehensive. A very valuable tool - if used.

9. Additional thoughts?

Even though some people think that it should be a more than one day event, travel budgets, schedules, etc. will make attendance to this type of workshops more difficult if a "multi-day" format is adopted.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 09/09/2014 Location: Tallahassee

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree	2	3	4	Strongly Agree
Instructor was prepared	(1)	2	3	4	5
Instructor knew the subject matter	(1)	2	3	4	5
Instructor encouraged participation	(1)	2	3	4	5
Instructor used visual aids properly	(1)	2	3	4	5
Instructor stimulated discussion	(1)	2	3	4	5
Instructor addressed participants needs and questions	(1)	2	3	4	5
Instructor covered the objectives of the workshop	(1)	2	3	4	5
The presentation contributed to the learning environment	(1)	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	(1)	2	3	4	5
The course contributed to my knowledge of flood mitigation	(1)	2	3	4	5
I would recommend this course to others in the future	(1)	2	3	4	5
This course is relevant and applicable to my work	(1)	2	3	4	5

→ move to 5

Comments: Excellent presentation

2. Given the topic, was this workshop: Too short Right length Too long

Comments: Fast-pace but it works! Oops? - jumped the gun

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 09/09/2014 Location: Tallahassee

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Meet people involved with other State Facilities
Having a copy of the Manual even if is in "draft" form

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes, presentation was excellent.

7. What did you learn that you didn't know before the workshop?

That the FEMA website has become more user-friendly

8. What do you feel could have been more extensively covered? Less?

Coverage was appropriate

9. What did you most appreciate/enjoy/think was best about the course?

The more realistic/real world examples

10. What changes would you recommend to the course?

Keep it about a 7 hours long even if "cramming" is needed!

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 09/09/2014 Location: Tallahassee

11. Comments?

- Keep the fast-pace
- Some topics may be "above" some attendees, don't wait until "everybody" gets it.
- In some instances (like the Flood calculation), it may be better if the presenter "just walks-through" the example to go easy on the audience (i)

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/10/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	(4)	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	(5)
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	(5)
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	(4)	5
The visuals are appropriate and helpful in understanding the material	1	2	3	(4)	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	(5)
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	(5)
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	(5)
I would recommend this Manual to others in the future	1	2	3	4	(5)
The Manual is relevant and applicable to my work	1	2	3	4	(5)
The Manual is a valuable educational mitigation resource	1	2	3	4	(5)
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	(4)	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/10/14

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: _____

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	(5)
Instructor knew the subject matter	1	2	3	4	(5)
Instructor encouraged participation	1	2	3	4	(5)
Instructor used visual aids properly	1	2	3	4	(5)
Instructor stimulated discussion	1	2	3	4	(5)
Instructor addressed participants needs and questions	1	2	3	4	(5)
Instructor covered the objectives of the workshop	1	2	3	4	(5)
The presentation contributed to the learning environment	1	2	3	4	(5)
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	(5)
The course contributed to my knowledge of flood mitigation	1	2	3	4	(5)
I would recommend this course to others in the future	1	2	3	4	(5)
This course is relevant and applicable to my work	1	2	3	4	(5)

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What changes would you recommend to the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: Sept. 16. 117

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
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The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

I don't think we spent a lot of time reviewing the manual. I ~~do~~ think we spent more time on the workshop booklet.

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: Sept. 16, '14 Location: Jallahama, FL.

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

various websites that show flood zones

8. What do you feel could have been more extensively covered? Less?

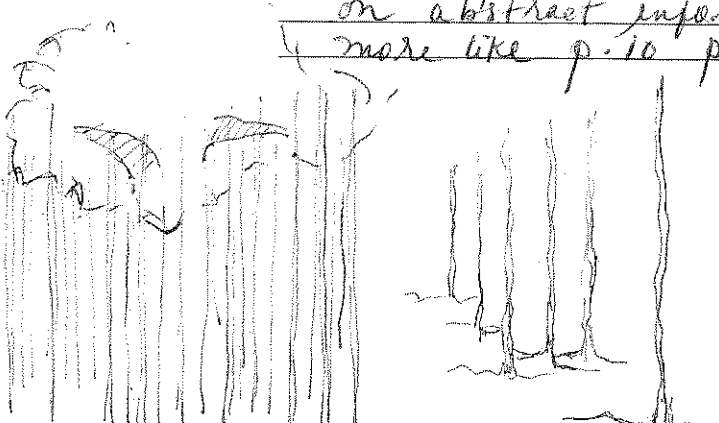
*Visual examples of flood issues and potential solutions.
better graphics of the different flood zones.*

9. What did you most appreciate/enjoy/think was best about the course?

The photos towards the end of the day.

10. What changes would you recommend to the course?

*more practical examples, ~~was~~ a bit too heavy
on abstract information and graphs i.e. p. 40 p. 33
(more like p. 10 p. 56 and the New Orleans floodwalls photos)*



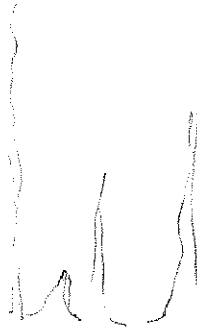
WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

- * the presenters had great stories and examples but they could've benefited from having images to illustrate some of the interesting stories they told. For example: when they spoke of submersible assets and compartmentalization.
- * Present case studies that demonstrate how to protect facilities.
- * Really wished you would've shortened the presentation and left time to see the video that was mentioned.



MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: _____

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1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

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This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What changes would you recommend to the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9-10-14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

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The visuals are appropriate and helpful in understanding the material	1	2	3	(4)	5
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I would recommend this Manual to others in the future	1	2	3	4	(5)
The Manual is relevant and applicable to my work	1	2	3	4	(5)
The Manual is a valuable educational mitigation resource	1	2	3	(4)	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	(3)	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/10/14

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Tallahassee FL

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
Instructor was prepared	1	2	3	(4)	5
Instructor knew the subject matter	1	2	3	4	(5)
Instructor encouraged participation	1	2	3	4	(5)
Instructor used visual aids properly	1	2	3	(4)	5
Instructor stimulated discussion	1	2	3	4	(5)
Instructor addressed participants needs and questions	1	2	3	4	(5)
Instructor covered the objectives of the workshop	1	2	3	(4)	5
The presentation contributed to the learning environment	1	2	3	4	(5)
Course topics were delivered in a logical sequence to aid learning	1	2	3	(4)	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	(5)
I would recommend this course to others in the future	1	2	3	4	(5)
This course is relevant and applicable to my work	1	2	3	(4)	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/29/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

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Assessment Factor	Strongly Disagree		Strongly Agree		
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
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The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
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Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
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I would recommend this Manual to others in the future	1	2	3	4	5
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The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 2/10/14

flood determination

5. What do you feel could have been more extensively covered? Less?

-eliminate sea rise and climate change

not based on good science

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

- page #'s and some class references
not clear

7. Did you encounter any particularly helpful or interesting portions of the Manual?

- like one page storm event summary

8. What did you learn from reviewing the Manual?

- some VE applications

9. Additional thoughts?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

10. Comments?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Tallahassee

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

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Assessment Factor	Strongly Disagree		Strongly Agree		
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I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Tallahassee

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Learn

6. Did the workshop allow you to accomplish these goals? Why or why not?

Y

7. What did you learn that you didn't know before the workshop?

VE

8. What do you feel could have been more extensively covered? Less?

eliminate sea rise and climate change

9. What did you most appreciate/enjoy/think was best about the course?

DONUTS

10. What changes would you recommend to the course?

let us keep draft manual

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Tallahassee

11. Comments?

temporary flood walks - good
-the Afternoon was better than the morning
-end of the day was excellent

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 3.12.14

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
The Manual is easy to understand	1	2	3	4	5					
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5					
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The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5					
The visuals are appropriate and helpful in understanding the material	1	2	3	(4)	5					
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5					
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5					
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5					
I would recommend this Manual to others in the future	1	2	3	4	5					
The Manual is relevant and applicable to my work	1	2	3	(4)	5					
The Manual is a valuable educational mitigation resource	1	2	3	4	(5)					
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5					

Comments: We did not reference the manual or have much opportunity to review it. Focus was on workshop materials & EXERCISES.

2. Given the topic, the Manual is: Too short Right length Too long

Comments: No way to tell really. seems an appropriate length

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

EXERCISES were good but it isn't obvious how the manual helps since we referenced the workshop materials more than the manual.

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9.10.14

5. What do you feel could have been more extensively covered? Less?

A section by section review of the manual highlighting the extensive details & case studies in it.

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

It would have helped to have time before the class to review the manual.

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

10. Comments?

The evaluation tools are valuable
in my view that is really all ~~the~~ ~~is~~
we focused on 3 parts ok but I
cannot evaluate the manual on the
basis of this workshop.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9.10.14 Location: Tallah

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Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: Appreciated good tools

2. Given the topic, was this workshop: Too short Right length Too long

Comments: If we had 1.5 days we could walk through the manual & then do walk through the tools w/

3. Was the pace of the workshop: Too Fast Right pace Too slow Practical exercises.

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

- To assess what new tools are available
- see how funds are utilized

6. Did the workshop allow you to accomplish these goals? Why or why not?

yes

7. What did you learn that you didn't know before the workshop?

Assessment tools

8. What do you feel could have been more extensively covered? Less?

The actual manual

9. What did you most appreciate/enjoy/think was best about the course?

Good instructors

10. What changes would you recommend to the course?

reference manual - use it in course

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 2/10/10

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree		Strongly Agree		
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: The page's used during class were good, some 'color coding' didn't match answers given (re: Risk Category)

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

*more individual and group exercises (take a longer class)
to better learn to use manual*

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

add page # to Table of Contents

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: DEM

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	(2)	3	4	5
Instructor knew the subject matter	1	(2)	3	4	5
Instructor encouraged participation	1	(2)	3	4	5
Instructor used visual aids properly	1	(2)	3	4	5
Instructor stimulated discussion	1	(2)	3	4	5
Instructor addressed participants needs and questions	1	(2)	3	4	5
Instructor covered the objectives of the workshop	1	(2)	3	4	5
The presentation contributed to the learning environment	1	(2)	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	(2)	3	4	5
The course contributed to my knowledge of flood mitigation	1	(2)	3	4	5
I would recommend this course to others in the future	1	(2)	3	4	5
This course is relevant and applicable to my work	1	(3)	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: would like to see more 'hands on' exercise

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

get a basic understanding of flood mitigation

6. Did the workshop allow you to accomplish these goals? Why or why not?

yes, was a good introduction to subject. I would like to see break-out sessions

7. What did you learn that you didn't know before the workshop?

different flood mitigation techniques

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What changes would you recommend to the course?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

11. Comments?

A) some organization of enlarged sheets seemed out of sequence

B) instead of "color" use line weights / types so black / white prints are readable

C) Make such courses able to meet CEU's for AIA / Engineering requirements for registered professionals

Overall the good course. I would like to see getting away from small images like FEMA uses. Too hard to read.

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 11/16/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	(3)	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	(3)	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	(3)	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	(3)	4	5
The visuals are appropriate and helpful in understanding the material	1	2	(3)	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	(3)	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	(3)	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	(3)	4	5
I would recommend this Manual to others in the future	1	2	(3)	4	5
The Manual is relevant and applicable to my work	1	2	(3)	4	5
The Manual is a valuable educational mitigation resource	1	2	(3)	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	(3)	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/10/14

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

Evaluation forms

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Tallahassee

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Tallahassee

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Know more about Flood Planning

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes

7. What did you learn that you didn't know before the workshop?

Issues that need to be considered when planning
to prevent flood damage.

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What changes would you recommend to the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 7-10-14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
The Manual is easy to understand	1	2	3	4	5	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5	1	2	3	4	5

Comments: Need questions that have right questions with right answers.

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9-10-14

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

work sheets should be put on screen & answers shown to class one at a time. (clarity)

7. Did you encounter any particularly helpful or interesting portions of the Manual?

Some

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

Need clarity on some areas

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree		Strongly Agree		
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What changes would you recommend to the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/10/14

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9/10/14

10. Comments?

World, have been helpful if draft manual could have been
emailed out for review before workshop.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: FDEM Office

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree					Strongly Agree				
Instructor was prepared	1	2	3	4	5	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: Possibly could stretch to 1 1/2 days

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: FDEM office

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

More information on flood mitigation

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes, included assessment tools for existing & future sites

7. What did you learn that you didn't know before the workshop?

Funding sources information

8. What do you feel could have been more extensively covered? Less?

Funding sources & best management practices on how to secure mitigation funding

9. What did you most appreciate/enjoy/think was best about the course?

Instructor examples from projects they've worked on.

10. What changes would you recommend to the course?

Include field visits.

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9-10-14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

- Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

10. What changes would you recommend to the course?

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/10/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
The Manual is easy to understand	(1)	2	3	4	(5)
Part I of the Manual is helpful for mitigation decision makers	1	(2)	3	(4)	5
Part II of the Manual is helpful for technical mitigation personnel	1	(2)	3	(4)	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	(2)	3	(4)	5
The visuals are appropriate and helpful in understanding the material	1	(2)	3	(4)	5
The pilot sections are applicable and helpful in understanding the material	1	(2)	3	(4)	5
Manual topics are presented in a logical sequence to aid learning	(1)	2	3	4	(5)
The Manual contributed to my knowledge of flood mitigation	(1)	2	3	4	(5)
I would recommend this Manual to others in the future	(1)	2	3	4	(5)
The Manual is relevant and applicable to my work	(1)	2	3	4	(5)
The Manual is a valuable educational mitigation resource	(1)	2	3	4	(5)
I feel confident in performing flood mitigation assessments for public facilities	1	(2)	3	(4)	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: _____

5. What do you feel could have been more extensively covered? Less?

Funding information

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

Elevation vs. BFE

7. Did you encounter any particularly helpful or interesting portions of the Manual?

8. What did you learn from reviewing the Manual?

9. Additional thoughts?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Kelly, Shunard Dr. Tallahassee

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree				Strongly Agree
Instructor was prepared	(1)	2	3	4	(5)
Instructor knew the subject matter	(1)	2	3	4	(5)
Instructor encouraged participation	(1)	2	3	4	(5)
Instructor used visual aids properly	(1)	2	3	4	(5)
Instructor stimulated discussion	(1)	2	3	4	(5)
Instructor addressed participants needs and questions	(1)	2	3	4	(5)
Instructor covered the objectives of the workshop	(1)	2	3	4	(5)
The presentation contributed to the learning environment	(1)	2	3	4	(5)
Course topics were delivered in a logical sequence to aid learning	(1)	2	3	4	(5)
The course contributed to my knowledge of flood mitigation	(1)	2	3	4	(5)
I would recommend this course to others in the future	(1)	2	3	4	(5)
This course is relevant and applicable to my work	(1)	2	3	4	(5)

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: _____ Location: _____

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

6. Did the workshop allow you to accomplish these goals? Why or why not?

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

Knowledgeable instructors

10. What changes would you recommend to the course?

More comfortable Chairs

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9/10/14

The *Public Facilities Flood Hazard Mitigation Assessment Manual* is a guidebook for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this guidebook. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
The Manual is easy to understand	1	2	3	4	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	4	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	4	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	4	5
The visuals are appropriate and helpful in understanding the material	1	2	3	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	4	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	4	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this Manual to others in the future	1	2	3	4	5
The Manual is relevant and applicable to my work	1	2	3	4	5
The Manual is a valuable educational mitigation resource	1	2	3	4	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	4	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Tallahassee

This workshop has been a pilot for the further improvement of public facilities mitigation in the State of Florida. Your feedback will be taken seriously and is critical to improving this educational program. We would appreciate if you could take a few minutes to share your opinions with us so we can better serve you in the future.

Please enter your responses in the form field or check box after the appropriate selection.

1. Please rate the following:

Assessment Factor	Strongly Disagree			Strongly Agree	
Instructor was prepared	1	2	3	4	5
Instructor knew the subject matter	1	2	3	4	5
Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: Depending on the technical needs of the audience the workshop is just right (low tech) or possibly too short (high tech)

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Tallahassee

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Understand the guidance provided by the Manual and
material to be covered in the workshop.

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes

7. What did you learn that you didn't know before the workshop?

8. What do you feel could have been more extensively covered? Less?

9. What did you most appreciate/enjoy/think was best about the course?

A good step-by-step process described through
a real facility.

10. What changes would you recommend to the course?

None

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

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Instructor was prepared	1	2	3	4	5
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Instructor encouraged participation	1	2	3	4	5
Instructor used visual aids properly	1	2	3	4	5
Instructor stimulated discussion	1	2	3	4	5
Instructor addressed participants needs and questions	1	2	3	4	5
Instructor covered the objectives of the workshop	1	2	3	4	5
The presentation contributed to the learning environment	1	2	3	4	5
Course topics were delivered in a logical sequence to aid learning	1	2	3	4	5
The course contributed to my knowledge of flood mitigation	1	2	3	4	5
I would recommend this course to others in the future	1	2	3	4	5
This course is relevant and applicable to my work	1	2	3	4	5

Comments: Went into too much detail for those of us looking for an overview

2. Given the topic, was this workshop: Too short Right length Too long

Comments: Too much time spent on exercises

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Tal

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

Understand flood mitigation concepts

6. Did the workshop allow you to accomplish these goals? Why or why not?

Yes

7. What did you learn that you didn't know before the workshop?

Resources for flood inf.

8. What do you feel could have been more extensively covered? Less?

Less

9. What did you most appreciate/enjoy/think was best about the course?

Young, bright instructors had detailed knowledge and were well prepared.

10. What changes would you recommend to the course?

Less time on exercises
Hand out manual for keeping

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Flood Mitigation Workshop

Date of Workshop: 9/10/14 Location: Tal

11. Comments?

Recommend more emphasis on concepts
for review and less time on
calculations

MANUAL EVALUATION FORM

Florida Division of Emergency Management Public Facilities Hazard Mitigation Assessment Manual

Date: 9-10-14

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The Manual is easy to understand	1	2	3	④	5
Part I of the Manual is helpful for mitigation decision makers	1	2	3	④	5
Part II of the Manual is helpful for technical mitigation personnel	1	2	3	④	5
The information in the Manual is complete, helpful, and written at the appropriate level	1	2	3	④	5
The visuals are appropriate and helpful in understanding the material	1	2	③	4	5
The pilot sections are applicable and helpful in understanding the material	1	2	3	④	5
Manual topics are presented in a logical sequence to aid learning	1	2	3	④	5
The Manual contributed to my knowledge of flood mitigation	1	2	3	④	5
I would recommend this Manual to others in the future	1	2	3	④	5
The Manual is relevant and applicable to my work	1	2	③	4	5
The Manual is a valuable educational mitigation resource	1	2	3	④	5
I feel confident in performing flood mitigation assessments for public facilities	1	2	3	④	5

Comments: _____

2. Given the topic, the Manual is: Too short Right length Too long

Comments: _____

3. Did the Manual meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

4. How does the information in the Manual apply to your work?

~~REMOVED~~ ITEMS IN NEW CONSTRUCTION/RENOVATIONS
WILL HAVE MORE CONSIDERATION FOR FLOODING
POTENTIAL

MANUAL EVALUATION FORM

Florida Division of Emergency Management
Public Facilities Hazard Mitigation Assessment Manual

Date: 9-10-14

5. What do you feel could have been more extensively covered? Less?

I THINK ALL TOPICS WERE COVERED WELL

6. Did you encounter any confusing or difficult to understand portions of the Manual? Any suggestions for improvement?

NO,

7. Did you encounter any particularly helpful or interesting portions of the Manual?

MOST OF THE INFORMATION WAS HELPFUL AND INTERESTING.
IT WILL PROVIDE MANY TALKING POINTS FOR OUR
CAMPUS STAKEHOLDERS.

8. What did you learn from reviewing the Manual?

TOO MUCH TO LIST, ALL NEW INFORMATION TO ME AND
VERY INFORMATIVE

9. Additional thoughts?

GREAT WORKSHOP.

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-10-14 Location: DMS TALLAHASSEE

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Comments: _____

2. Given the topic, was this workshop: Too short Right length Too long

Comments: _____

3. Was the pace of the workshop: Too Fast Right pace Too slow

Comments: _____

WORKSHOP EVALUATION FORM

Florida Division of Emergency Management Public Facilities Flood Mitigation Workshop

Date of Workshop: 9-10-14 Location: DWG TALLAHASSEE

4. Did the workshop meet your expectations?

Definitely, yes Mostly, yes Mostly, no Definitely, no

5. What were your personal learning goals for this workshop?

DID NOT HAVE ANY GOALS, CAME TO LEARN A NEW
SUBJECT

6. Did the workshop allow you to accomplish these goals? Why or why not?

YES,

7. What did you learn that you didn't know before the workshop?

JUST ABOUT EVERYTHING

8. What do you feel could have been more extensively covered? Less?

NOTHING

9. What did you most appreciate/enjoy/think was best about the course?

ALL GOOD

10. What changes would you recommend to the course?

NONE

We would like
to partner with
State agencies
to help
understand
and improve
the resiliency
of State-owned
facilities
against current
and future
flood risk.

State Facilities Flood Risk Assessment Project -- Key Activities

Wednesday, March 12th, 2014

Project Introduction

The Florida Division of Emergency Management (DEM) in conjunction with State agencies shall make studies of emergency-related matters (Section 252.44, F.S.). This study, is aimed at reducing or avoiding dangers caused by flooding to **existing and future State-owned facilities**. FEMA has provided funding to DEM to perform the following actions:

- 1) **Identify existing facilities at risk of flooding.** To date, DEM has identified over 4,000 facilities in floodplains derived with the SOLARIS database and flood hazard map layers. (see attached for more detail).
- 2) **Provide tools to develop appropriate mitigation options.**
 - Prepare a guidebook with methodologies to aid facility managers and engineers so they may evaluate facilities and assets for vulnerability to flooding, as well as potential mitigation options.
 - Conduct workshops with stakeholders to discuss and implement the information in the draft guidebook to test the methodology.
- 3) **Consider processes used by State agencies to evaluate flood risk in site selection/mitigation of state facilities.**
 - Engage key agencies' staff in two workshops on procedures to evaluate flood risk and consider preliminary options for mitigation measures. Findings will be incorporated into the guide book that, when completed, will be disseminated to State agencies.
- 4) **Incorporate the results of items 1, 2, and 3 into the State Hazard Mitigation Plan.**

These 4 scope items must be completed by September 2014.

You're Invited!



Training Workshop on Flood Mitigation for State Facilities

The Florida Division of Emergency Management will host a training workshop on mitigation assessments for state facilities.

Topics to be covered:

- ✓ Understanding Flood Risk
- ✓ Florida Building Code
- ✓ Siting New Facilities
- ✓ Mitigation of Existing Facilities
- ✓ Funding Sources

The new Public Facilities Flood Mitigation Assessment Manual will be used during the training. Attendees will be given opportunity to provide feedback.

Two Training Opportunities

September 4, 2014, 9am - 4pm

Florida State Logistic Response Center
2702 Director's Row
Orlando, Florida 32809

September 10, 2014, 9am - 4pm

Florida Division of Emergency Management
2555 Shumard Oak Blvd.
Tallahassee, FL 32399

Interested in attending? Email Jamie Price with the preferred date and the number of attendees.
Jamie Price, FDEM Bureau of Mitigation DEM-SHMPAT@em.myflorida.com





STATE OF FLORIDA
DIVISION OF EMERGENCY MANAGEMENT


RICK SCOTT
Governor

BRYAN W. KOON
Director

August 11, 2014

MEMORANDUM

TO: State Facilities Stakeholders

FROM: Marianne Arbulu, MPA, CFM
State Floodplain Manager 
Community Program Manager
Florida Division of Emergency Management

Re: Training Workshop for State Facilities in the Floodplain

This memo is to verify that the Florida Division of Emergency Management has added a second Orlando area workshop on Wednesday, September 3, 2014 from 9:00am – 4:00pm. This workshop will be the same workshop that is being held on September 4, 2014.

Should you have any questions regarding this matter please contact Jamie Leigh Price at 850-413-9925 or jamie.price@em.myflorida.com.

MA/jlp