

Meeting 3: June 7, 2023



**Orange County Floodplain Management Plan (FMP) and
Program for Public Information (PPI) Update**

Floodplain Management Planning Committee Meeting #3

Wednesday, June 7th, 2023, 11:00 a.m.

Microsoft Teams Meeting

David Stroud, Abby Moore, and Ranger Ruffins from WSP, the County's consultant for this plan update, facilitated the meeting according to the following agenda:

Floodplain Management Plan

- Where we are in the planning process
 - Step 6,7 and 8
 - Review Public Feedback
 - Hazard Identification & Risk Assessment (HIRA) Recap
 - Capability Assessment
 - Review/Set Goals & Objectives
 - Develop Mitigation Actions

Program for Public Information

- Target Areas & Audiences
- Topics & Messages

Next Steps

There were five people in attendance, members of the FMPC and County Staff:

- Eric Albert, Orlando Health, Inc
- Liliu Wu, Senior Engineer, Stormwater Management
- Darrell Moody, PIO Officer, Orange County Communications
- Janice Moran, Executive Director, American Red Cross Central Florida & U.S. Virgin Islands
- Olan Hill, Assistant Manager, Orange County Planning Division

Where We Are in the Planning Process

David updated the HMPC on where we are in the 10-Step Planning Process. The planning process is currently at Steps 6, 7, and 8 (Set Goals, Review Possible Activities, and Draft an Action Plan).

Review Public Feedback

Public Survey Results

Ranger reviewed the public survey results. There have been 61 responses to the survey so far. Ranger noted that 67% of respondents have experienced high water or flooding. The following were common issues mentioned in the survey responses:

- Flooding from Little Econ, Whipoorwill, Wekiva
- Impacts from Hurricane Ian and Nicole.



- Residential flooding
- Poor drainage from neighbors
- Blocked storm drains

Only 37% of respondents have taken actions to protect their homes. Several residents noted that they do not know how to protect their homes, particularly after dealing with the impact from Hurricane Ian. Ranger also noted that 27% of respondents do not know if they are in a floodplain, which may indicate a need for increased outreach. Additionally, 63% do not have flood insurance also indicating the potential for further outreach about the benefits of flood insurance. 66% of respondents say they do not know who to contact for more information about flooding. The best methods for receiving information include email, mail, the County website, and public workshops and meetings.

Hazard Identification & Risk Assessment Recap

Hazard Profile Summary

Ranger briefly reviewed the Priority Risk Index (PRI) scores for the evaluated hazards. She reminded the Committee that all the hazards were evaluated using PRI to rank their relative importance. She noted that Climate Change is the highest priority hazard. The majority of the hazards have moderate risk – dam and levee failure. She also provided a brief summary of the hazard risk and vulnerability assessment findings for each of the identified hazards.

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Climate Change	Highly Likely	Limited	Large	More than 24 hrs	More than 1 week	3.1
Channel Bank Erosion	Likely	Minor	Negligible	More than 24 hrs	Less than 1 week	1.9
Dam/Levee Failure	Unlikely	Critical	Moderate	6 to 12 hrs	Less than 1 week	2.4
Flood: Riverine and Flash	Likely	Critical	Moderate	12 to 24 hrs	Less than 1 week	2.9
Flood: Stormwater/Localized	Highly Likely	Limited	Small	12 to 24 hrs	Less than 24 hours	2.7
Hurricane and Tropical Storm	Likely	Critical	Moderate	More than 24 hrs	Less than 1 week	2.6

Capability Assessment Review

Capability Assessment Takeaways

Abby provided a brief update of the County capability assessment. She explained that the County has very strong regulatory, administrative, and fiscal capability. There are also several opportunities for plan integration. For example, the Local Mitigation Strategy and the County’s Resilience Action plan have complimentary projects and actions that support flood mitigation. The Orlo Vista Flood Mitigation Project is addressing key challenges discussed throughout this planning process. Orange County has also recently updated its floodplain ordinance based on State requirements and is in the process of updating its comprehensive plan, land development plan, and comprehensive plan.

Set Plan Goals and Objectives

Review Existing Goals and Objectives

Abby reviewed the goals from the current 2017 FMP. The five goals are as follows:

- Goal 1: Reduce vulnerability and exposure to flood hazards in order to protect the health, safety and welfare of both residents and visitors
- Goal 2: Encourage property owners through an expanded flood hazard communication and outreach program to protect their homes and businesses from flood damage
- Goal 3: Protect critical and essential facilities and infrastructure from the effects of flood hazards
- Goal 4: Encourage protection of natural resources by employing watershed-based approaches that balance environmental, economic, and engineering considerations
- Goal 5: Reduce damage to all development including repetitively flooded buildings through flood resilient strategies and measures

The FMPC was asked to respond to a poll to determine which goals they would like to update or further discuss. The poll asked “Which goal(s) would you like to update? Select which goals, if any, you would like to discuss changes to?”



There were five respondents. Four respondents indicated that none of the goals need to be updated. One respondent selected goal three to discuss.

Darrell noted that during excessive rain events, particularly events similar to Hurricane Ian, flood systems fail when they take on too much water. In relation to goal three, Darrell further explained that while critical facilities and infrastructure can be upgraded, he is unsure how they can be better protected from more intense floods. Liuliu mentioned that the County's new critical infrastructure is built to withstand a 500-yr flood event. Based on the discussion, the FMPC determined that goal three is a priority for the County. The FMPC will review the rest of the goals and objectives and decide if they would like to make any changes.

Janice asked if there are examples of types of infrastructure protection other high flood-prone communities around the county have in place. David explained that the types of protection vary based on the types of flood and sources of flood they experience. He also noted that when a large amount of rainfall occurs in a short time these systems will likely fail.

Eric suggested mapping critical facilities so they can be checked on during flood events. Abby responded that for this plan the critical facilities have been mapped in the SFHA, but not outside of the flood risk areas. It was determined that WSP will map drainage complaints that the County has received and nearby critical facilities to evaluate which facilities may need to be examined. The WSP team will see if they have the 311 complaints or get them from the County.

Develop Mitigation Action Plan

Generating New Mitigation Activities

Abby reviewed things to consider when brainstorming new mitigation actions and reviewed the six FEMA mitigation category and provided examples for each.

Evaluate Existing Mitigation Strategy

Abby noted that there are 23 existing flood mitigation actions and presented a table of the actions broken down by FEMA mitigation categories. The FMPC was asked to a poll, "How important is it to you to pursue mitigation projects in each of these categories? Rank the categories in order of importance". Prevention was ranked the highest followed by property protection, emergency services, structural projects, public outreach, and then natural resources protection.

The WSP team will follow up with the County to review the existing list of actions and determine which ones to carry forward, mark as complete, or delete.

New Mitigation Strategies – Public Input

David reviewed projects proposed by the public through the public survey and asked the FMPC to rank their top three suggestions for projects that should be incorporated into the mitigation action plan. The top three projects were:

1. Expand drainage capacity around localized flooding locations and update existing infrastructure
2. Review and inventory community flood reports from Hurricane Ian and develop a plan to address hot spots
3. Limit new development/impervious surface in known flooding areas

Possible Actions

David reviewed some potential new actions based on the six identified flood hazards. The FMPC can view these suggestions in the meeting PowerPoint. David also reviewed some prompts for stakeholder input. Stakeholders can review these questions to begin thinking about potential new mitigation strategies.

PPI Review

PPI Updates – Target Areas

At the last meeting the FMPC chose PPI target areas, target audiences, and topics and messages. Below is the list of PPI topics reviewed. David suggested removing the Shaded X Zone as a target area because it may be difficult to reach this group unless the County were to do a targeted mailing.

Target Areas:

- Special Flood Hazard Areas (SFHA)



- Repetitive Loss Areas
- Shaded X Zone
- Realtors, Lenders, and Insurance Agents

Target Audiences

- Homeowners Associations
- Spanish Speaking Populations
- Landscapers
- Realtors, Lenders, and Insurance Agents

Topics & Messages

- Hurricane Preparedness
- Be aware of other hazards
- Reduce Stormwater Runoff
- Work with your Neighbors

PPI Updates – Inventory of Existing Outreach Efforts

David reviewed existing PPI projects, including mailed brochures, the hurricane expo, and flood information posted on the County’s website. David noted that the committee will be asked to review the outreach projects from the previous PPI and provide comments or revisions to the projects. Locations for hard copy materials should also be reviewed and verified or updated if needed.

David also asked Janice if there are outreach projects that the Red Cross provides. Janice indicated that there was national involvement with Ian. Smaller hazard events might be limited to local/regional resources. The Red Cross does not have a marketing budget but relies on media for outreach. They also have brochures and other literature that could be distributed.

Liulu also noted that the County attends an annual ASCE ice breaker event and provides outreach at that event and will share further information with the WSP team.

Next Steps

FMPC members should review and send mitigation strategy comments and suggestions by (abigail.moore@wsp.com) by Friday, June 30th including:

- Comments/Revisions on draft goals and objectives
- Comments/Revisions to draft mitigation action plan
- Additional mitigation action ideas and implementation details

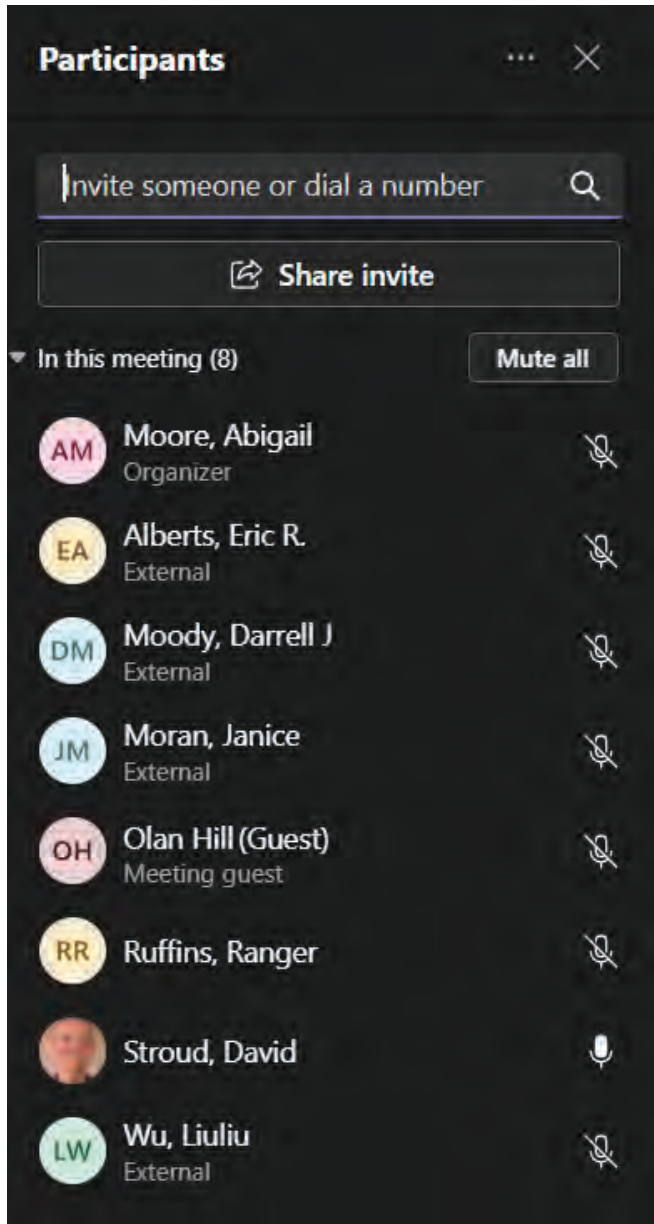
The WSP team will work with County staff to schedule the next FMPC meeting.

Follow up actions include:

- Daniel/County to send WSP:
 - Canal map with identified erosion locations
 - GIS data for dam inundation for high hazard dams
 - 311 flood complaints

The meeting ended at 12:09 PM





Meeting 4: September 13, 2023



**Orange County Floodplain Management Plan (FMP) and
Program for Public Information (PPI) Update**

Floodplain Management Planning Committee Meeting #4

Wednesday, September 13th, 2023, 10:00 a.m.

Microsoft Teams Meeting

David Stroud, Ranger Ruffins, and Abby Moore from WSP, the County's consultant for this plan update, facilitated the meeting according to the following agenda:

Agenda

- Floodplain Management Plan
 - Review the Draft FMP
 - Organization of the Plan
 - Key Plan Components
 - Discussion and Next Steps
 - Final Public Meeting
 - Plan Adoption
 - Implementation and Maintenance
- Program for Public Information
 - Target Areas & Audiences
 - Topics & Messages
 - Outreach Projects

Attendance

In addition to the consulting team, there were four attendees:

- Liulu Wu, Senior Engineer, Orange County Stormwater Management
- Darrell Moody, PIO Officer, Orange County Communications
- John Mulhall, Communications and Warning Coordinator, Orange County Emergency Management
- Eric Alberts, Orlando Health, Inc.

Floodplain Management Plan

Review of the Draft FMP - Organization of the Plan

Ranger began the meeting by reviewing the organization of the draft FMP, which includes eight main sections and three appendices. Ranger summarizes the contents of each section as follows:

1. **Introduction:** Provides context and justification for the plan and present the community profile.
2. **Planning Process:** Explains the 10-step process that was followed to prepare the plan and describes the FMPC membership, FMPC meetings, public meetings, and public/stakeholder outreach.
3. **Hazard Identification:** Provides an overview of past flood events, including disaster declarations and other flood event history used to identify the hazards that were profiled in the plan.
4. **Flood Risk & Vulnerability Assessment:** Presents detailed profiles of risk and vulnerability for each identified hazard, estimates exposure and loss estimates, prioritizes the hazards, and summarizes vulnerability conclusions.
5. **Capability Assessment:** Reviews the existing tools, resources, and staff that can support mitigation.



6. **Mitigation Strategy:** Summarizes continued compliance with the NFIP, reviews goal setting and the resulting goals, describes the action identification and prioritization process, and presents the mitigation action plan.
7. **Plan Adoption:** Documents the formal adoption of the plan by the County Commission, which will be completed after the draft is finalized.
8. **Plan Implementation and Maintenance:** Outlines the process for monitoring and evaluating the plan, including the FMPC responsibilities moving forward.

Appendix A. Planning Process Documentation: Discusses the planning process and provides documentation from all meetings, public outreach efforts, and stakeholder coordination.

Appendix B. Mitigation Strategy: Reviews the FEMA mitigation categories and actions within each category that were considered for inclusion in the mitigation action plan.

Appendix C. References: Documents data and resources referenced throughout the plan.

Review of the Draft FMP - Key Plan Components

Planning Process

Ranger provided an overview of the planning process, which included four FMPC meetings, starting in September 2022 and wrapping up with today’s fourth and final meeting.

The first public meeting for the plan was delayed due to Hurricane Ian. It was held in December 2022 after the hurricane, had 50 attendees, and involved a significant amount of public participation and input, including a question-and-answer session at the end of the meeting. The final public meeting has yet to be scheduled but will be held soon to present the draft plan and solicit public feedback.

Ranger reviewed the public survey results. There were 61 responses to the survey. About 67% of respondents have experienced high water or flooding and nearly half of respondents are very concerned about flooding. Over 25% of respondents don’t know if they’re in the mapped floodplain.

Most respondents said they do not have flood insurance; reasons included not being located in a floodplain or having other protection in place. Others indicated they are considering flood insurance now or recently got it after Hurricane Ian.

Only 37% of respondents have taken actions to protect their homes. Several residents noted that they do not know how to protect their homes.

Risk Assessment - PRI Results

Ranger briefly reviewed the Priority Risk Index (PRI) scores for the evaluated hazards. She noted that climate change is the highest priority hazard. Most of the hazards have moderate priority, and channel bank erosion is considered low priority.

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Climate Change	Highly Likely	Limited	Large	More than 24 hrs	More than 1 week	3.1
Channel Bank Erosion	Likely	Minor	Negligible	More than 24 hrs	Less than 1 week	1.9
Dam/Levee Failure	Unlikely	Critical	Moderate	6 to 12 hrs	Less than 1 week	2.4
Flood: Riverine and Flash	Likely	Critical	Moderate	12 to 24 hrs	Less than 1 week	3.5
Flood: Stormwater/Localized	Highly Likely	Limited	Small	12 to 24 hrs	Less than 24 hours	2.7
Hurricane and Tropical Storm	Likely	Critical	Moderate	More than 24 hrs	Less than 1 week	3.0

Mitigation Strategy - Plan Goals

Ranger reviewed the plan goals which were reviewed and reaffirmed at the third FMPC meeting. The goals are as follows:

- **Goal 1:** Reduce vulnerability and exposure to flood hazards in order to protect the health, safety and welfare of both residents and visitors.



- **Goal 2:** Encourage property owners through an expanded flood hazard communication and outreach program to protect their homes and businesses from flood damage.
- **Goal 3:** Protect critical and essential facilities and infrastructure from the effects of flood hazards.
- **Goal 4:** Encourage protection of natural resources by employing watershed-based approaches that balance environmental, economic, and engineering considerations.
- **Goal 5:** Reduce damage to all development including repetitively flooded buildings through flood resilient strategies and measures.

Mitigation Strategy - Action Plan

David reviewed the updated mitigation action plan, which includes 23 total actions. Many of these actions were carried forward from the previous plan, however eight actions were removed because they were either completed or deleted, three actions were revised, and seven newly identified actions were added to the plan. David noted that the FMPC and consulting team made an effort to identify actions across all six FEMA mitigation categories; the projects breakdown by mitigation category as follows:

- **Public Information & Outreach: 3 Actions**
- **Emergency Services: 4 Actions**
- **Structural Projects: 10 Actions**
- **Prevention: 4 Actions**
- **Property Protection: 2 Actions**
- **Natural Resource Protection: 2 Actions**

David reviewed each of the actions in the updated mitigation action plan, which are summarized below. Further detail is presented in the plan for each action following the summary mitigation action plan table.

Action Item	Project	Hazards Addressed	Goals Met	Priority	Responsible Department/ Agency	Mitigation Category	Funding Source	Time-frame
1	Encourage residents through outreach and education projects to consider the benefits of acquisition or elevation.	Climate Change, Dam/Levee Failure, Hurricane/Tropical Storm, Flood, Riverine/Flash, Flood, Stormwater/Localized	1, 2, 5	High	Stormwater Management Division	Public Information & Outreach	HMCP	Ongoing, Year 1
2	Protect critical facilities and infrastructure from potential flood damage.	All Hazards	1, 3	Medium	Stormwater Management Division, Office of Emergency Management	Emergency Services	Operating Budget	Ongoing, Year 1
3	Ensure back up power systems and generators are in place for all critical facilities and emergency shelters.	Climate Change, Dam/Levee Failure, Hurricane/Tropical Storm, Flood, Riverine/Flash, Flood, Stormwater/Localized	1, 3	Medium	Office of Emergency Management	Emergency Services	Operating budget	Ongoing, Year 1



APPENDIX A: PLANNING PROCESS DOCUMENTATION

Action Item	Project	Hazards Addressed	Goals Met	Priority	Responsible Department/ Agency	Mitigation Category	Funding Source	Time-frame
4	Install high water level outfalls in lieu of current drainwells or retrofit existing drainwells, including at Lake Price, Lake Pleasant, Mustang Way, and Lake Florence.	Climate Change, Dam/Levee Failure, Hurricane/Tropical Storm, Flood, Riverine/Flash, Flood, Stormwater/Localized	1, 3, 5	Medium	Stormwater Management Division	Structural Projects	Operating Budget	Between Year 2-4
5	Retrofit culverts along Apopka Boulevard.	Hurricane/Tropical Storm, Flood, Riverine/Flash, Flood, Stormwater/Localized	1	Medium	Stormwater Management Division	Structural Projects	Operating Budget	Between Year 2-4
6	Add flood gauges to improve calibration of current flood modeling system and enable better flood warning.	All Hazards	1	Medium	Stormwater Management Division	Emergency Services	TBD	Between Year 2-4
7	Evaluate options for higher regulatory standards to reduce the vulnerability of new development to flooding.	Climate Change, Flood, Stormwater/Localized, Flood, Riverine/Flash	1, 3, 5	Medium	Stormwater Management Division	Prevention	Operating Budget	Between Year 2-4
8	Consider options for public/private partnership with home improvement stores to encourage homeowners to take mitigation and preparedness actions.	Hurricane/Tropical Storm, Flood, Riverine/Flash, Flood, Stormwater/Localized	2	Low	Stormwater Management Division	Property Protection	Operating Budget	Year 1
9	Create a program for acquisition of repetitive loss properties and coordinate with comprehensive planning efforts.	Climate Change, Hurricane/Tropical Storm, Flood, Riverine/Flash, Flood, Stormwater/Localized	1, 2, 5	High	Planning & Development Department, Environmental Protection Division	Prevention, Property Protection	Operating Budget	Between Year 2-4
10	Coordinate open space opportunities with existing Green PLACE program, wetland preservation, and comprehensive plan policies.	Climate Change, Hurricane/Tropical Storm, Flood, Riverine/Flash, Flood, Stormwater/Localized	1, 2	High	Planning & Development Department, Environmental Protection Division	Natural Resource Protection	Green PLACE program	Between Year 2-4



APPENDIX A: PLANNING PROCESS DOCUMENTATION

Action Item	Project	Hazards Addressed	Goals Met	Priority	Responsible Department/ Agency	Mitigation Category	Funding Source	Time-frame
11	Acquire properties for a regional stormwater detention basin.	Hurricane/Tropical Storm, Flood, Riverine/Flash, Flood, Stormwater/Localized	1, 4	Medium	Stormwater Management Division	Structural Projects	TBD	Year 5
12	Improve stormwater quality to ensure compliance with NPDES permit and pollutant TMDLs.	Flood, Riverine/Flash, Flood, Stormwater/Localized	1, 4	High	Stormwater Management Division	Prevention, Natural Resource Protection	Operating Budget	Year 2
13	Prepare watershed master plans for all HUC-12 river basins in the County.	Flood, Riverine/Flash, Flood, Stormwater/Localized	1, 4, 5	Medium	Stormwater Management Division	Prevention	Operating Budget	Year 3, when data is available
14	Improve/Upgrade pump stations at Bonnie Brook, Verona Park, and Woodsmere.	Hurricane/Tropical Storm, Flood, Riverine/Flash, Flood, Stormwater/Localized	1, 3, 5	High	Stormwater Management Division	Structural Projects	Operating Budget	Ongoing, Between Year 1 - 3
15	Complete stormwater retrofits on Control Structure for Pond 6612 and Lake George Outfall.	Hurricane/Tropical Storm, Flood, Riverine/Flash, Flood, Stormwater/Localized	1, 3, 5	High	Stormwater Management Division	Structural Projects	Operating Budget	Ongoing, Between Year 1 - 3
16	Continue to implement stormwater management emergency hurricane preparedness procedures as needed and update regularly.	Climate Change, Hurricane/Tropical Storm, Flood, Stormwater/Localized	1	Low	Stormwater Management Division, Office of Emergency Management	Emergency Services	Operating Budget	Ongoing, Year 1
17	Hurricane Ian slope restoration - stormwater retrofit of E-6 Borrow Pit / E-5 S.R. 50.	Climate Change, Hurricane/Tropical Storm, Flood, Stormwater/Localized	1, 5	High	Stormwater Management Division	Structural	Operating Budget	Between Year 2 - 3
18	Buleva Pond 6115 improvements - increase pond size and drainage connection/outfall.	Flood, Stormwater/Localized	1, 5	Medium	Stormwater Management Division	Structural Projects	Operating Budget	Between Year 2 - 3



Action Item	Project	Hazards Addressed	Goals Met	Priority	Responsible Department/ Agency	Mitigation Category	Funding Source	Time-frame
19	Modification of pond and add sheet pile wall to MSBU Ponds 7534 and 7535 in Andover Lakes Village.	Flood: Riverine/Flash, Flood, Stormwater/Localized	1.5	Medium	Stormwater Management Division	Structural Projects	Operating Budget	Between Year 2 - 3
20	Construction of outfall for land locked pond - 43rd Street - Pond 6796.	Flood: Riverine/Flash, Flood, Stormwater/Localized	1.5	Medium	Stormwater Management Division	Structural Projects	Operating Budget	Between Year 2 - 5
21	Construction of outfall for land locked pond - Buena Vista & Observatory; Ponds 6175 & 0008.	Flood: Riverine/Flash, Flood, Stormwater/Localized	1.5	Medium	Stormwater Management Division	Structural Projects	Operating Budget	Between Year 2 - 3
22	Develop paid advertisements through public service announcements to educate the public about flood insurance and flood risk.	All Hazards	2.5	Low	Stormwater Management Division	Public Information & Outreach	Operating Budget	Ongoing, Year 1
23	Promote property protection measures for homeowners on the County website and social media pages.	All Hazards	2.5	High	Stormwater Management Division	Public Information & Outreach	Operating Budget	Year 1

Next Steps

Plan Adoption

David indicated that the plan will be adopted in tandem with the updated Program for Public Information and Repetitive Loss Area Analysis. These plans must be adopted by March 2024, but the target date for adoption is late this year or early in 2024.

Plan Implementation & Maintenance

David explained that the FMPC will be responsible for ongoing implementation and maintenance of the plan, including attending regular meetings (virtual or in person) to review the status of projects in the mitigation action plan and provide updates on progress toward implementation. David recommended quarterly meetings to best support implementation and maximize CRS credit for the plan.

Next Steps

The draft plan will be sent out for review by the end of the week or early next week. David requested that feedback on the draft FMP be provided via email to Ranger at ranger.ruffins@wsp.com by Friday, September 29th.



Program for Public Information

Target Areas & Audiences

David reviewed the target areas and target audiences that were discussed at the last FMPC meeting. Since the previous PPI, the committee replaced the area “localized stormwater flooding areas” with “realtors, lenders, and insurance agents” since this group is involved in the buying and selling of property and can advise buyers on flood risk. This also provides cost savings to the County because the County is already sending a mailing to this group for the CRS.

Target Areas:

- Special Flood Hazard Areas (SFHA)
- Repetitive Loss Areas
- Shaded X Zone
- Realtors, Lenders, and Insurance Agents

Target Audiences:

- Homeowners Associations
- Spanish Speaking Populations
- Landscapers
- Realtors, Lenders, and Insurance Agents

Topics & Messages

David reviewed the CRS Priority Topics, which must be included in the PPI, and the four additional topics that the County has chosen to provide outreach on. For this update, “general preparedness” and “buy flood insurance outside the SFHA” were replaced with two new topics: working with your neighbors to resolve drainage issues and reducing stormwater runoff. The resulting four additional topics are listed below:

- Hurricane preparedness
- Be aware of other hazards
- Reduce stormwater runoff
- Work with your neighbors

Outreach Projects

David reviewed each of the PPI projects, which are listed below by target area and audience.

Target Area #1 SFHA	OP #1 Updated Flood Protection Brochure will be mailed to all property owners in SFHA annually
	OP #2 Updated Flood Protection Brochure placed at 5 different locations in the County (Public Works, Administration Building, Barnett Park, Property Appraiser, Supervisor of Elections, South Econ Park Senior Renaissance Center)
	OP #3 Publicize the Floodsmart.gov website on the County’s website and on the Flood Protection Brochure that is distributed to SFHA & Repetitive Loss Areas
	OP #4 Map Inquiry Service: Provide information on areas that have local storm water flooding, repetitive loss, and flood depths, and publicize this service on website along with information on the FIRM including floodway info
	OP #5 Flood Protection Assistance: Publicize Service on County’s website, Flood Protection Brochure and in meetings with HOA’s (see OP #16)
	OP #6 Update County’s website to include flood outreach information (10 topics), elevation certificates, LOMAs and Hurricane Preparedness page, links to Floodsmart.gov, Orange County Emergency Management, State of Florida Emergency Management, and FEMA.
	OP #7 Brochure for Orange County to distribute to HVAC contractors on benefits of elevating HVAC Units and brochure on benefits of building responsibly in the SFHA (Placed at 5 locations in OP# 2)



	OP #8 Signage placed throughout the community and SFHA which says don't throw trash and debris down storm drainage inlets and signage along canals which says don't throw trash and debris into canals.
Target Area #2: Repetitive Loss Areas/Properties	OP #10 Updated Flood Protection Brochure mailed each year to all properties in Repetitive Loss Areas OP #11 See projects OP #3 through OP #6 above as they also apply in Repetitive Loss Areas
Target Area #3: Shaded X Zone	OP #12 Continue to hold the Hurricane Expo annually to provide preparedness, response, and recovery information to all County residents including information on the 10 topics in the updated Flood Protection Brochure OP #13 Promote Flood Insurance in X Zones by providing Insurance agents with flood insurance brochures from FEMA to be mailed with the 320 letters to insurance agents OP #14 The St. John's Water Management District Brochure "Neighborhood Guide to Stormwater Systems" (placed at 5 locations in OP# 2)
Target Audience #1: Homeowners Associations	OP #15 Speak to a Homeowner's Associations each year on topics of Flood Hazard, Flood Insurance, Property Protection, Family Protection, Building Responsibly, Protection of Natural Floodplain Functions, Sinkholes and Hurricane Preparedness (All topics on the updated Flood Protection Brochure)
Target Audience #2: Spanish Speaking Population	OP #16 FEMA NFIP Insurance Brochure in Spanish available at 5 locations in County and 311 reporting line has Spanish speaking operators to report any flooding issues
Target Audience#3: Landscapers	OP #17 Develop information brochure to inform landscapers not to blow grass clippings or leaves into storm drains
Target Area/Audience #4: Realtors, Lenders, and Insurance Agents (and Surveyors)	OP #18 Provide NFIP brochures on benefits of flood insurance and that insurance can be purchased anywhere in the County to lenders, and insurance companies to be mailed with 320 mailing.

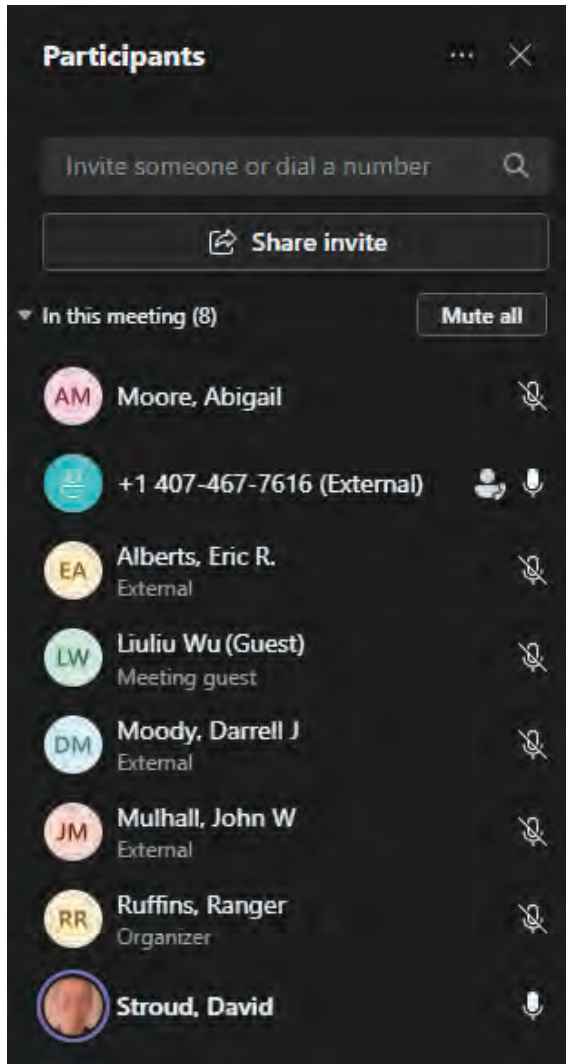
David asked the FMPC for any comments or suggestions on the outreach projects.

Linliu noted that by state requirements the County is required to provide the outreach brochure in multiple languages and will provide the brochures in English, Spanish, and Creole.

Eric noted that the outreach brochure for landscapers would also be relevant to homeowners associations because many homeowners do their own landscaping activities that can have negative impacts, such as dumping yard waste in or near canals or drainage inlets. David agreed and suggested that WSP can create another brochure for the County to bring when speaking to HOAs that explains the importance of keeping the stormwater system clear of debris.

There were no further questions or discussion. The meeting ended at 10:52 AM.






A.2 Planning Step 2: Involve the Public

Table A.2 – Public Meeting Dates

Meeting Type	Meeting Topic	Meeting Date	Meeting Locations
Public Meeting #1	<ol style="list-style-type: none"> 1) Introduction to DMA, CRS and the planning process 2) Introduction to hazard identification 	<p>12/6/2022 5:00 – 7:00 p.m.</p>	Microsoft Teams
Public Meeting #2	<ol style="list-style-type: none"> 1) Review complete “Draft” Floodplain Management Plan 2) Solicit comments and feedback from the public 	<p>11/2/2023 5:30 – 7:30 p.m.</p>	Microsoft Teams

Public Meeting Minutes, Attendance, & Publicity
Meeting 1: December 6, 2022

Minutes and Attendance



Orange County Floodplain Management Plan (FMP) Update
Public Meeting #1
Tuesday, December 6, 2022, 5:00 p.m.
Microsoft Teams Meeting

David Stroud, Abby Moore, and Ranger Ruffins from WSP, the County's consultant, and Daniel Negron and Liliu Wu, the County representatives, facilitated the meeting according to the following agenda:

- Trends in Disasters
 - Why Plan?
- Disaster Mitigation Act (DMA) Planning Requirements
- Community Rating System (CRS) Requirements
 - CRS Program Overview
 - CRS Program Benefits
 - Activity 510 Floodplain Management Planning 10-Step Process
- How to Stay Involved

Trends in Disasters
David discussed that there have been more disaster declarations in recent years as well as increased cost for disaster response and recovery, in part due to population growth and development in hazardous areas which has increased exposure. As of October 2022, there have been 15 disaster events with losses exceeding \$1 billion. In Florida, the top 10 costliest disasters have been hurricane/flood related. Most recently, Hurricane Ian impacted Orange County resulting in more than 10 inches of rain. National Flood Insurance Program (NFIP) loss estimates are between \$3.5-\$5.3 billion. Total damages are expected to exceed Hurricanes Andrew and Irma.

David explained that we must plan for mitigation because the costs of response and recovery are growing, many events are predictable or repetitive, loss reduction works, and there are funds available to help. The average benefit-cost ratio for a federally funded mitigation project is 6:1; however, for the flood hazard the return on investment is 7:1.

DMA Planning Requirements
David reviewed the intent of DMA planning and explained the basis of DMA planning requirements in the Code of Federal Regulations, which establish the four-phase planning process. This process dovetails with the CRS Program's 10-Step planning process. The completed plan will meet all the requirements of both programs.

CRS Requirements
CRS Program Overview and Benefits
The CRS Program, in which Orange County participates, is a voluntary, point-based program that provides a 5% premium discount to flood insurance policyholders for every 500 points that the County earns. Currently, the County is a Class 5, which provides a 25% discount to policyholders in the SFHA. The annual savings to all policyholders is \$545,468, with an average annual per policy discount of \$174 in the SFHA.

Activity 510 FMP 10-Step Process
Floodplain Management Planning is one activity that provides Orange County with credit in the CRS Program. The purpose of a floodplain management plan is to reduce potential losses from future disasters. Abby reviewed the 10-Step planning process noting that the planning requirements of the DMA outline four ordered phases: 1) organize resources, 2) risk assessment, 3) develop a mitigation plan, and 4) adoption and implementation. These phases outline a ten-step planning process reflected in both DMA and CRS planning requirements. Abby reviewed the 10-Step planning process, which is as follows:

1. Organize to Prepare the Plan
2. Involve the Public
3. Coordinate with Other Departments

1 Orange County, FL FMP Update | Public Meeting 1

4. Assess the Hazard
5. Assess the Problem
6. Set Goals
7. Review Possible Activities
8. Draft an Action Plan
9. Adopt the Plan
10. Implement, Evaluate, and Revise the Plan

Phase 1: Organize Resources

Step 1 – Organize to Prepare the Plan

In this step the County convened the FMPC which includes local staff, citizens, and stakeholders. Additionally, the County can organize existing resources and inventory what tools, data, and services are available to create the plan.

Step 2 – Plan for Public Involvement

Prepare and develop ways to engage the public in the planning process. This could include integrating the public on the planning team, posting information on websites, developing press releases, and implementing surveys and questionnaires.

The WSP planning team has developed a public survey that will help the Committee better understand the community's experiences and concerns with flooding. The survey can be accessed at the link [HERE](#).

Step 3 – Coordinate with Other Departments and Agencies

The FMPC will seek the support of other departments for assistance with plan development. These agencies can help connect with the public, provide critical information and data, and provide important insight that enriches the FMP.

Phase 2: Risk Assessment

Step 4 – Identify the Hazards

Hazard identification explores what types of events may occur within the County. Hazards are profiled based on their extent, past occurrences, seasonal patterns, magnitude, and other factors. The hazards identified for this plan are as follows:

- 1% annual chance flood
- 0.2% annual chance flood
- Repetitive flooding
- Dam & levee inundation
- Stormwater hot spots

Step 5 – Assess the Risks

The risk assessment considers what assets will be affected as well as the location a hazard can occur, previous occurrences, potential impacts, probability, and extent of the evaluated hazards. This step also considers the County's existing local capability to implement mitigation projects.

Abby briefly discussed the range of data and tools used to evaluate assets and assess risk including building footprint and parcel data, and FEMA's Hazus loss estimation tool.

Phase 3: Develop a Mitigation Plan

Step 6 – Set Planning Goals

The FMPC will develop a set of goals that will guide the creation and implementation of the Plan's mitigation strategy.

Step 7 – Review Mitigation Alternatives

The FMPC will review and choose mitigation activities that reflect the goals and capability of the County.

Step 8 – Draft Action Plan

At this step, the County will identify and prioritize action and determine which department is responsible for particular mitigation actions, when the actions will be completed, and how they will be financed.

Phase 4: Adoption and Implementation

Step 9 – Adopt the Plan

At this step, the plan will be adopted by County Commissioners. The public will have the opportunity to review and provide input that will be incorporated into the plan before adoption.

Step 10 – Review Mitigation Alternatives

Overtime, the FMPC should monitor changes in vulnerability, report on progress, publicize successes, and revise the plan as necessary. The DMA and CRS program require updates every 5 years. After the plan is adopted the FMPC can maximize CRS credit by meeting quarterly to review plan progress.

Questions and Discussion

Below is a list of questions posted in the meeting chat and the answers provided by the County and WSP consulting team.

Q: We lost electricity in our area and the lift stations stopped working and sewage water came out at an alarming amount (I have pictures) is there a plan in place to attach generators to these lift stations in the future?

Generators at lift stations is a potential action item that the FMPC can consider for the mitigation action plan. The resident was asked to share more information about the specific lift stations.

Q: I heard a few years ago there was a discussion about straightening out the Econ River in the area that is known as the Herrod property (McCulloch and Rocking Horse). With the possibility of FEMA money available, and now that the County owns that property, might it be looked at again. I spoke with an individual who was saying that because of the extreme curves in the river there, that added to the back up.

There are no plans to straighten the river. The County is updating the Stormwater Master Plan and will address similar issues.

Q: Developers are taking out 1, 000s of acres of wetlands around us and it is causing a drainage issue. What is going to be done to assess these areas to secure they have their own drainage systems verses affecting ours, before they build?

The resident followed up and shared that since the wetlands have been taken out 10%-15% of homes in their development have flooded. The resident was asked to follow up with the consultants and the County to share the exact location so the FMPC can look into the issues and add further details about wetlands management and other mitigation into the plan.

Q: Rocking Horse Rd. is being surveyed for what reason?

Surveying could be done for a variety of reasons. Orange County Stormwater can look into this further.

Q: What is Orange County's current CRS Class?

Orange County currently has a Class 5 CRS rating. See the meeting presentation (slides 16 and 17) for more details.

Q: How is Orange County planning for climate change? Was Ian an anomaly or is this what we can expect in the future? If this is our future, major changes need to be made for stormwater management.

Ian was not an anomaly. Florida has experienced similar storms in the past, several of which has happened in nearby communities, and neighboring states. Orange County and all of Florida can expect storms of similar magnitude in the future. Orange County does have an aggressive and proactive stormwater management department that is actively working to resolve existing issues and prepare for more frequent storms like Ian. More information about hurricanes and tropical storms and impacts of climate change will be covered in the plan.

Q: Since this planning session is for Orange County and the storm water flows out of Orange County into Seminole County. What is being done downstream in Seminole County to work in conjunction with Orange County to have a cohesive unified plan.

Both Orange County and Seminole County have their own stormwater management standards to control stormwater within the County and any runoff or challenges from neighboring jurisdiction that impact the County.

Q: My homeowner's insurance just went up \$5k. That does not include flood insurance.

Homeowners insurance can go up as a result of disasters, but the NFIP and CRS program have no control over homeowners' prices. The CRS program does provide discounts on flood insurance policies. Based on Orange County's CRS classification, residents receive a 25% discount on policies.

Q: What department controls watersheds in Orange County? And how many out of 12 were opened before or during Hurricane Ian?

We believe the resident meant to ask about floodgates. A few floodgates were opened before Hurricane Ian. It is standard practice to open gates before a major storm, however there are limitations for how much water the County can let through. Orange County Stormwater Management Division manages this.

How are deep wells managed in Orange County before hurricanes?

We believe the resident meant drains or drain wells. There are 85 drain wells. The County has a maintenance schedule for inspection every two weeks. Many of them have been replaced.

Q: You discussed elevation. If my house is an older home built in the 50's, and new construction around me has fill brought in to raise their elevation based on code, I believe an unintended consequence is my house has become the lowest elevation and now the surrounding homes drain onto my property flooding my home. Will this be looked into?

This is an issue of no adverse impact (NAI). Older homes built before NFIP standards were in place are referred to as Pre-FIRM homes – they were built before FEMA Flood Insurance Rate Maps (FIRM) were developed. Newer homes developed after these standards (PostFIRM) must be built at a higher elevation based on the FIRM to minimize flooding. Developers and engineers are required to follow these building standards and review the site before construction. The County also reviews development applications. Flooding of lower elevation homes is an unintended consequence and it's a widespread issue.

The resident was asked to send more information about where her home and the County can look at recent development in her community to better understand any challenges.

Q: With the flooding that occurred off Lake Underhill between Chickasaw Trail and Rouse Road (generally), what are the specific areas you will be concentrating on to prevent the recurrence? The drainage ditch on the south side of Lake Underhill is extremely compromised.

The County has noted this problem area and will share it with the consultants working with the Public Works Department on the updated Stormwater Master Plan.

Q: How does Orange County classify Hurricane Ian in terms of hazard identification? Was it a 0.2 annual chance flood?

The County has 14 flood gauges and is still reviewing the data from Hurricane Ian. However initial data from the airport estimates between 13 and 18 inches fell across the County, which is between a 200-year and 500-year event.

Q: How recent is the Florida Flood Map?

Flood maps are not completed at a state level, but Orange County' FEMA flood maps (FIRMs) were adopted in September 2021.

Q: The Drainage Pond south of the Oxford Park Housing Development appx. 5 days after Hurricane Ian overflowed and flooded the west side of Rocking Horse Rd. Total amount of rainfall was 5 inches. My property at Rocking Horse Rd. -2.5 acres was under 5 inches of water -small amount of water entered my home. What can be done to address this problem?

Most ponds are designed for the 25-year storm event. Those ponds would not be able to handle the amount of rainfall that occurred during Hurricane Ian or other storms of similar or greater magnitude.

Q: Some retention ponds have silt build up. More dredging to remove the silt.

Orange County owns 2,000 retention ponds and can provide maintenance on those, however, many ponds are privately owned and are the HOAs' responsibility. It is possible for an HOA to enter into an agreement with the County if they want the County to maintain the pond.

Q: My husband and I sent Daniel pictures and a description of the flooding on Lake Berge Road in Union Park, along with a possible solution for our street's flooding. What will you do with that information?

Daniel has received this information and passed it onto the consultants working on the Stormwater Management Master Plan who will look into the issue.

Q: Is there any plan to prevent the flooding of the Little Econ River?

Flooding of the river will be addressed in the updated Stormwater Master Plan.

Q: Signs need to be posted at storm drains in: English, Spanish and Creole keeping clear storm drains.

This is a great recommendation that will be incorporated into the FMP's mitigation action plan. In addition to posting signs, the County will consider providing material to communities who would like to develop their own signs to post in their communities and address their specific issues and problem areas.

Q: Besides FEMA are there other funding sources to assist homeowners with houses that incurred severe damage?

Most funding and assistance come from FEMA grants or the NFIP. The National Housing and Urban Development (HUD) department may provide some grant funding or loans for repairs. The state of Florida may have some funding available – residents could check with the Division of Emergency Management.

How is Orange County dealing with the floodplain elevations that are incorrect along the Little Econ?

This will be addressed in the updated Stormwater Master Plan.

Are they still going to repair the ecosystem In Orlo Vista community? How are you all going to prevent the flooding in the Orlo Vista area about 90% of the houses was under water?

Yes, Orlo Vista is a priority project and has already received HMGP funding. The project will start early 2023 and the goal is to have it completed by February 2024. The project is designed to protect the community from a 100-year 75-hour storm event.

Lake Venus has silt build up.

Lake Venus is a part of the Orlo Vista community and will be addressed in the upcoming project.

Has the County considered nature-based solution and sponge cities methods for mitigation plans?

Yes, the Committee will consider nature-based solutions (this tie to FEMA's "natural floodplain functions" category of mitigation which is encourage). The FMPC can recommend some specific sponge city methods for consideration as well. If residents have specific projects in mind, please let us know.

We have a weir in our lake system that we tried to get approval for fixing before storms, and are having lots of restrictions. Who can we talk to to get help with this?

Any type of weir would require a permit from the State Water Management District. The County has to comply with those state-level regulations. They don't want flooding to be moved from one area to another downstream area.

How often are the storm drains checked for blockage especially before a storm?

Drain wells are checked every four to six weeks and the County checks for any broken or damaged control structures. Hot spots/problem areas are checked prior to storms.

Is the Floodplain Management Ordinance cross referenced with the Water Conservation Ordinance?

Yes. The floodplain manage ordinance is Chapter 19 of the County ordinance and can be viewed online. A FIRM (flood map) and the floodplain management ordinance go hand in hand. When a new FIRM is adopted the County's floodplain management ordinance needs to be updated. The County updated its ordinance in 2021 and it was done in coordination with the State of Florida and aligns with the State's new building code.

How to Stay Involved

Please complete the public survey which can be accessed [HERE](#).

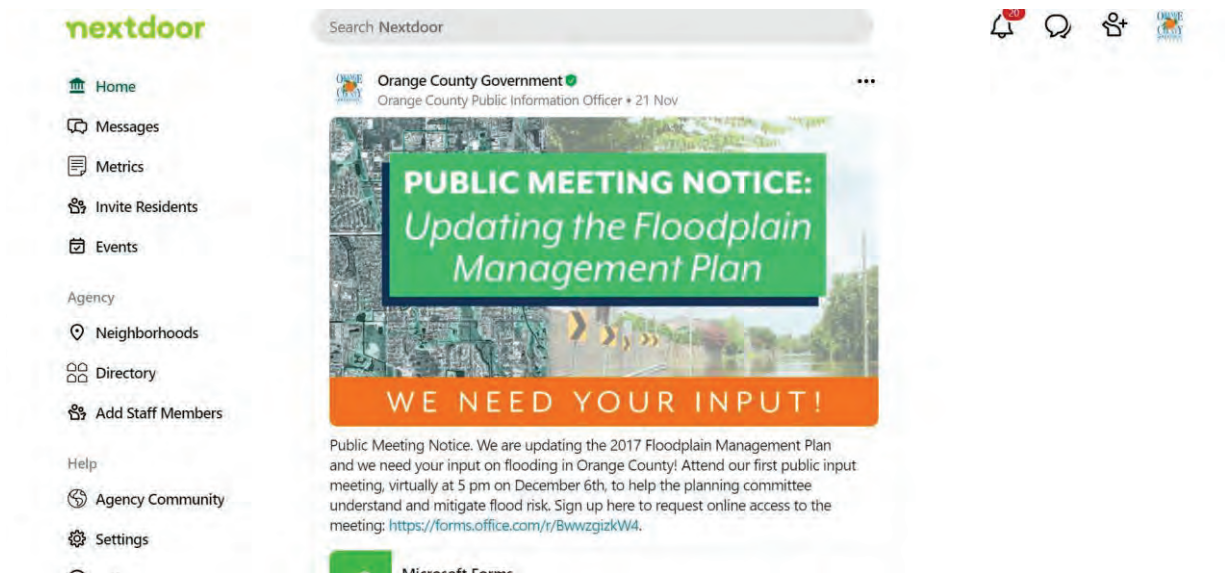
The survey allows you to provide information on past hazard events, provide input on the plan's goals and mitigation actions, and provide other data and input.

Future meeting materials and a draft of the plan will be made available for your review moving forward.

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Public Meeting Notice: Updating the Floodplain Management Plan

5:00 PM
Tuesday, 12/06/2022, 5:00 PM - 7:00 PM
Contact: Daniel Negron
 Stormwater Management Division
 (407) 836-7743
 Daniel.Negron@ocfl.net
Location: Virtual - Sign up here to request online access to the meeting:
<https://forms.office.com/r/Bwvzgizk/W4>
Category: Community Meeting
Districts: 1,2,3,4,5,6
Description:
 We are updating the 2017 Floodplain Management Plan and we need your input! A virtual public input meeting will be held on December 6th at 5pm to provide an overview of the plan's purpose and gather your feedback on changes and new information that should be incorporated into this update. Have you experienced flooding in the past? Are there areas in your neighborhood prone to stormwater flooding? Do you have suggestions for how to reduce flood risk? Come to the meeting to share your input! Citizens can send floodplain-related content via email ahead of the meeting. Daniel.Negron@ocfl.net

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Meeting 2: November 2, 2023

Minutes and Attendance



Orange County Floodplain Management Plan (FMP) and Program for Public Information (PPI) Update
Floodplain Management Plan Public Meeting #2
Thursday, November 2nd, 2023, 5:30 p.m.
Microsoft Teams Meeting

David Stroud, Ranger Ruffins, and Kimmy Hansen from WSP, the County's consultant for this plan update, facilitated the meeting according to the following agenda:

Agenda


- Floodplain Management Plan
 - Orange County Staff Introductions
 - Where we are in the Planning Process
 - Review the Draft FMP
 - Organization of the Plan
 - Key Plan Components
 - Next Steps
 - Plan Adoption
 - Implementation and Maintenance
 - Discussion and Feedback

Floodplain Management Plan
Review of the Draft FMP - Organization of the Plan

David began the meeting by reviewing the organization of the draft FMP, which includes eight main sections and three appendices. David summarized the contents of each section as follows:

1. **Introduction:** Provides context and justification for the plan and present the community profile.
2. **Planning Process:** Explains the 10-step process that was followed to prepare the plan and describes the Floodplain Management Plan Committee (FMPC) membership, FMPC meetings, public meetings, and public/stakeholder outreach.
3. **Hazard Identification:** Provides an overview of past flood events, including disaster declarations and other flood event history used to identify the hazards that were profiled in the plan.
4. **Flood Risk & Vulnerability Assessment:** Presents detailed profiles of risk and vulnerability for each identified hazard, estimates exposure and loss estimates, prioritizes the hazards, and summarizes vulnerability conclusions.
5. **Capability Assessment:** Reviews the existing tools, resources, and staff that can support mitigation.
6. **Mitigation Strategy:** Summarizes continued compliance with the NFIP, reviews goal setting and the resulting goals, describes the action identification and prioritization process, and presents the mitigation action plan.
7. **Plan Adoption:** Documents the formal adoption of the plan by the County Commission, which will be completed after the draft is finalized.
8. **Plan Implementation and Maintenance:** Outlines the process for monitoring and evaluating the plan, including the FMPC responsibilities moving forward.

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Appendix A. Planning Process Documentation: Discusses the planning process and provides documentation from all meetings, public outreach efforts, and stakeholder coordination.

Appendix B. Mitigation Strategy: Reviews the FEMA mitigation categories and actions within each category that were considered for inclusion in the mitigation action plan.

Appendix C. References: Documents data and resources referenced throughout the plan.

Review of the Draft FMP - Key Plan Components

Planning Process

David provided an overview of the planning process, which included four FMPC meetings, starting in September 2022.

The first public meeting for the plan was delayed due to Hurricane Ian. It was held in December 2022 after the hurricane, had 50 attendees, and involved a significant amount of public participation and input, including a question-and-answer session at the end of the meeting.

Ranger reviewed the public survey results. There were 61 responses to the survey. About 67% of respondents have experienced high water or flooding and nearly half of respondents are very concerned about flooding. Over 25% of respondents don't know if they're in the mapped floodplain.

Most respondents said they do not have flood insurance; reasons included not being located in a floodplain or having other protection in place. Others indicated they are considering flood insurance now or recently got it after Hurricane Ian.

Only 37% of respondents have taken actions to protect their homes. Several residents noted that they do not know how to protect their homes.

Risk Assessment

Key Issues by Hazard

Ranger provided a summary of the hazard risk and an overview of vulnerability assessment findings for each of the identified hazards. Please see presentation slides 21 and 22 for a review and chapter 4 of the draft FMP for more details on the findings.

PRI Results

All of the hazards were evaluated using the Priority Risk Index (PRI) to rank their relative importance. With the PRI, hazards are rated on their probability, impact, spatial extent, warning time, and duration to produce an overall score and associated priority level. Ranger briefly reviewed the PRI scores for the evaluated hazards. She noted that climate change is the highest priority hazard. Most of the hazards have moderate priority, and channel bank erosion is considered low priority.

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Climate Change	Highly Likely	Limited	Large	More than 24 hrs	More than 1 week	3.1
Channel Bank Erosion	Likely	Minor	Negligible	More than 24 hrs	Less than 1 week	1.9
Dam/Levee Failure	Unlikely	Critical	Moderate	6 to 12 hrs	Less than 1 week	2.4
Flood: Riverine and Flash	Likely	Critical	Moderate	12 to 24 hrs	Less than 1 week	2.9
Flood: Stormwater/Localized	Highly Likely	Limited	Small	12 to 24 hrs	Less than 24 hours	2.7
Hurricane and Tropical Storm	Likely	Critical	Moderate	More than 24 hrs	Less than 1 week	2.6

Mitigation Strategy - Plan Goals

Ranger reviewed the plan goals which were reviewed and reaffirmed at the third Floodplain Management Plan Committee meeting. The goals are as follows:

- **Goal 1:** Reduce vulnerability and exposure to flood hazards in order to protect the health, safety and welfare of both residents and visitors.
- **Goal 2:** Encourage property owners through an expanded flood hazard communication and outreach program to protect their homes and businesses from flood damage.
- **Goal 3:** Protect critical and essential facilities and infrastructure from the effects of flood hazards.



- **Goal 4:** Encourage protection of natural resources by employing watershed-based approaches that balance environmental, economic, and engineering considerations.
- **Goal 5:** Reduce damage to all development including repetitively flooded buildings through flood resilient strategies and measures.

Mitigation Strategy - Action Plan

Ranger reviewed the updated mitigation action plan, which includes 23 total actions. Many of these actions were carried forward from the previous plan, however eight actions were removed because they were either completed or deleted, three actions were revised, and seven newly identified actions were added to the plan. Ranger noted that the FMPC and consulting team made an effort to identify actions across all six FEMA mitigation categories; the projects breakdown by mitigation category as follows:

- Public Information & Outreach: 3 Actions
- Emergency Services: 4 Actions
- Structural Projects: 10 Actions
- Prevention: 4 Actions
- Property Protection: 2 Actions
- Natural Resource Protection: 2 Actions

Please review chapter six of the draft plan to see further details about the chosen mitigation actions.

Next Steps

Plan Adoption

The FMP must be adopted by the County Commission by March 2024, but the target date for adoption is late this year or early in 2024.

Plan Implementation & Maintenance

Ranger explained that the FMPC will be responsible for ongoing implementation and maintenance of the plan, including attending regular meetings (virtual or in person) to review the status of projects in the mitigation action plan and provide updates on progress toward implementation. Ranger recommended quarterly meetings to best support implementation and maximize CRS credit for the plan.

Next Steps

The draft plan will be sent out for review. Ranger requested that feedback on the draft FMP be provided via email to Ranger at ranger.ruffins@wsp.com by Thursday, November 30th.

Discussion and Feedback

Q: Have you taken the pending OC Wetland Code update into account in your County actions table? It is scheduled to be adopted in December 2023. One of the proposed changes requires a 100' upland buffer for all wetlands. Contact WetlandPermitting@ocfl.net for more information.

We have not, but we have taken natural floodplain functions into account and the need for protection.

Q: A new plaza popped up near a residents neighborhood that recently took out a recreation pond and wanted to know more about future development and where they will find more space for water during future storms and flooding.

This area has been identified. New development has to get a permit from the state. Resident can follow up with the engineering division about this development.

Q: Will the Orlo Vista mitigation project have wetland buffer?

Orlo Vista project will be excavating the three existing ponds deeper. The ponds will get new pumps and will essentially stay the same besides being deeper. This project is 30% complete. Expected to be done by the end of next summer 2024.














- *Q: Will this increase storm drainage?*

They will receive a 24 hour notice before a storm hits which will notify them to turn on the pumps to the ponds to help drain the ponds as water builds up.
















APPENDIX A: PLANNING PROCESS DOCUMENTATION

Participants

Name	
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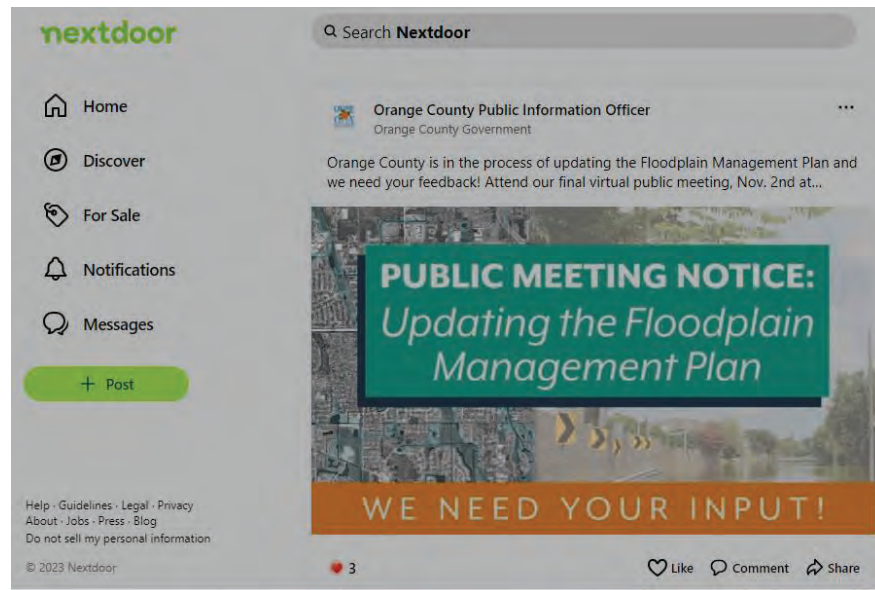
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Meeting Publicity Press Release

The screenshot shows the Orange County Government website. At the top left is the logo for Orange County Government Florida. The navigation menu includes: News Stories, Media Releases, Media Center, Media Gallery, Directory, OCFL.net, and social media icons for WhatsApp, Facebook, Twitter, Instagram, YouTube, and #myOCFL. Below the navigation are links for Public Health & Safety, Community & Services, Business, and Español, along with a search bar.

The main content area features a news article dated 29 September, 2023. The article title is "Orange County Updating Floodplain Management Plan". A sub-headline reads "Seeking Public Input, VIRTUAL Public Meeting Planned for November 2". The article text states: "Orange County, Fla. – Orange County is in the process of updating its Floodplain Management Plan. As part of the planning process, Public Works will host a VIRTUAL public meeting on November 2, 2023, at 5:30 p.m." It also includes a link to "Sign up HERE" to request online access to the meeting. To the right of the text is the Orange County Government logo. Below the text, it mentions that the Floodplain Management Plan (FMP) was last updated in 2017 and is used to address flood hazards and vulnerabilities.

On the right side of the page, there is a "Mayor Demings" section with a link to "The Demings Digest | October 2023". Below that are two more links: "Orange County Hispanic Heritage Month | A Celebration Showcasing a Vibrant Hispanic Community" and "Orange County's Budget Addresses Top Priorities for Resident Quality of Life".

At the bottom right, there is an "Explore Tags" section with a grid of buttons: Affordable Housing, Animal Services, Arts & Cultural Affairs, Building Safety, Convention Center, Corrections, County Commissioners, County News, and Domestic Violence Commission.

Public Survey

Orange County distributed a public survey that requested public input into the floodplain management planning process to help the FMPC understand the impacts of past floods and identify mitigation activities that could lessen the risk and impact of future flood events. The survey was provided on Orange County’s website. There were 61 responses received. The survey results are summarized below.

Q1. Where do you live?

Answer Choices	Percentage	Number Responding
Unincorporated Orange County	84%	48
Other	26%	9
Total	-	57

Q2: Have you ever experienced or been impacted by high water or flooding in Orange County?

Answer Choices	Percentage	Number Responding
Yes	67%	40
No	33%	20
Total	-	60

Q3: If you answered “yes to question 2, please explain:

Summary of Common Responses
Overflow from lakes and rivers (Little Econ, Whippoorwill, Wekiva)
Impacts and damage from Hurricane Ian and Nicole
Residential flooding (backyards and driveways)
Poor drainage from neighbors
Blocked storm drains

Q4: How concerned are you about the possibility of your community being impacted by flooding?

Answer Choices	Percentage	Number Responding
Not concerned	8%	5
Somewhat concerned	33%	20
Very concerned	47%	28
Other	12%	7
Total	-	60

Q5: Is your home located in a Federal Emergency Management Agency (FEMA) floodplain?

Answer Choices	Percentage	Number Responding
Yes	8%	5
No	65%	39
I don’t know	27%	16
Total	-	60

Q6: Do you have flood insurance for your home and/or personal property?

Answer Choices	Percentage	Number Responding
Yes	32%	19
No	63%	38
I don’t know	5%	3
Total	-	60

APPENDIX A: PLANNING PROCESS DOCUMENTATION

Q7: If you answered “No,” to questions 6, why not?

Answer Choices	Percentage	Number Responding
My home is not located in a floodplain	-	24
I rent	-	1
It’s too expensive	-	7
I never really considered it	-	4
I don’t need it because my home is elevated or otherwise protected	-	11
I don’t need it because it never floods	-	7
Other	-	7
Total	-	61

Reponses for “other” included”:

- My home has never flooded before
- I am considering buying flood insurance after most recent storm
- It’s too expensive

Q8: Have you taken any actions to protect your home from flood damage?

Answer Choices	Percentage	Number Responding
Yes	37%	22
No	63%	38
Total	-	60

Q9: If you answered “yes” to question 8, please explain:

Sample of Responses
New roof and making sure all portions of the house are fixed and updated.
I’ve done grade work around the property to move water away from the structure.
Pumps and sandbags
I don’t really know what we can do. It would be really hard to defend a home from that much water. That’s what we need help from Orange County to include this alternative in the mitigation plan.
French drain installed but does not drain quick enough for heavy storms.
Have a drainage ditch that runs alongside my house to the back easement.
I have had a backhoe come in and dig a ditch, I have installed pvc pipes and I have installed 3 sump pumps attempting to route the water away from my home while the drainage ditch next to my property over fills and spill into my property. I have 1 to 2 FEET of water on my property during heavy summer rains and my yard remains a marsh.
Sealed off garage and doors to restrict/divert flood waters.
I pay for flood insurance
House is elevated approximately 4 feet above the yard and 12-15 feet above normal water levels.

Q10: Do you know what government office to contact for more information about risks associated with flooding?

Answer Choices	Percentage	Number Responding
Yes	34%	20
No	66%	39
Total	-	59

APPENDIX A: PLANNING PROCESS DOCUMENTATION

Q11: What is the most effective way for you to receive information about how to make your home or neighborhood more resistant to flood damage?

Answer Choices	Percentage	Number Responding
Newspaper	-	4
Television advertising or programs	-	5
Radio advertising or programs	-	3
Public workshops/meetings	-	18
School meetings	-	1
Mail	-	27
Email	-	42
Orange County website	-	22
Social media	-	12
		4
Total	-	61

*Note: Respondents were able to choose more than one answer choice

Q12: What are some steps your local government could take to reduce the risk of flooding in your neighborhood?

Sample of Responses
Review and inventory community flood reports from Hurricane Ian. Develop plan to address hot spots.
Limit new development/impervious surface in known flooding areas
Increase flood information/communication in Spanish
Wetlands and open space protection and conservation
Early warning system to notify residents of high-water areas
Expand drainage capacity around localized flooding locations and update existing infrastructure

Other Outreach Efforts

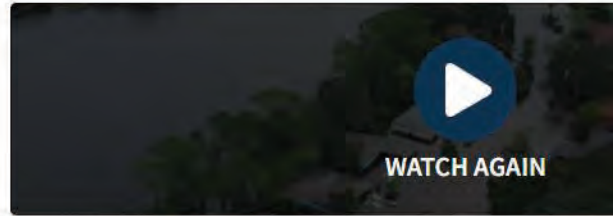
ORANGE COUNTY

Orange County leaders to go over flooding management plan



By [James Tutten, WFTV.com](#)

December 06, 2022 at 8:04 am EST



Video: Orange County leaders to go over flooding management plan Orange County leaders will meet Tuesday (James Tutten, WFTV.com/WFTV)

ORLANDO, Fla. — Orange County leaders will meet Tuesday to update the county's flood plan.

>>> STREAM CHANNEL 9 EYEWITNESS NEWS LIVE <<<

Officials are looking over Orange County's 2017 flood-plain management plan.

[Watch: Residents of Stone Island want answers as flooding problems continue](#)

A.3 Planning Step 3: Coordinate

This planning step credits the incorporation of other plans and other agencies' efforts into the development of the floodplain management plan. Other agencies and organizations must be contacted to determine if they have studies, plans and information pertinent to the floodplain management plan, to determine if their programs or initiatives may affect the community's program, and to see if they could support the community's efforts.

To incorporate stakeholder input into the plan, the County and the FMPC identified a variety of stakeholders and sent a letter inviting each stakeholder to provide data or information relevant to the planning process, review draft plan documents, and provide feedback and comments. A sample coordination letter is provided below. A copy of all coordination letters can be provided upon request by the Orange County Public Works Department. A list of the stakeholders who were contacted is provided in Table A.3.



Table A.3 – Stakeholder Coordination Contact List

Name		Title/Position, Organization/Agency
Educational Institutions		
1	Matthew Rall	University of Central Florida
2	Lou Alexis	Orange County Public Schools
3	Ken Olsen	Valencia College
4	Scott Rayburn	Rollins College
Surrounding Municipalities		
5	Allison McGillis	City of Winter Park Planning & Community Development
6	Virginia Corless	City of Ocoee Planning Division
7	Yolanda Quiceno	City of Belle Isle City Clerk
8	Manny Soto	City of Orlando Emergency Manager
9	Kelly Carson	City of Winter Garden Community Development Planning Director
10	Robert Smith	Town of Windermere Town Manager
11	Albert Carbon	Town of Oakland Public Works Director
12	Glenton Glizean, Jr.	Central Florida Tourism Oversight District Administrator
13	Dan Matthys	City of Maitland, Community Development Director
14	Sandy Riffle	City of Edgewood City Clerk
15	Bobby Howell	City of Apopka Planning Manager
16	Veronica King	Town of Eatonville
17	Dawn Mullins	Ranger Drainage District
Federal Government		
18	Jason Hunter	Floodplain Management and Insurance Branch Chief - FEMA Region IV
19	Roy McClure	CRS Coordinator - FEMA Region IV
20	Craig Carpenter	ISO/CRS Specialist
21	Mechelle Olivier	ISO/CRS Specialist
22	David Clukie	NFIP - FEMA Region IV Support Staff

APPENDIX A: PLANNING PROCESS DOCUMENTATION

	Name	Title/Position, Organization/Agency
State Government		
23	Austin Beeghly	Florida Division of Emergency Management
24	Greg Workman	Florida Fish and Wildlife Conservation Commission, Northeast Region
25	Rick Dolan	Florida Forest Service
Business Community & Non-Profits Organizations		
26	Helen Barger	Wedgefield Homeowners Association
27	Gabriel Mena	Vista Lakes Community Development District
28	Yovannie Rodriguez	Greater Orlando Aviation Authority
30	Taylor Laurent	MetroPlan Orlando
31	Scott McCurdy	Coastal Reconstruction
32	Andy Canion	St. Johns River Water Management District
33	William Graf	South Florida Water Management District

Appendix B. Mitigation Strategy

44 CFR Subsection D §201.6(c)(3)(ii): [The mitigation strategy section shall include] a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

As part of the process of developing the mitigation action plan found in Section 6.4, the FMPC reviewed and considered a comprehensive range of mitigation options before selecting the 23 actions identified for implementation. This section summarizes the full range of mitigation measures evaluated and considered by the FMPC, including a review of the categories of mitigation measures outlined in the 2017 Community Rating System Coordinator's Manual, a discussion of current local implementation and CRS credits earned for those measures, and a list of the specific mitigation projects considered and recommended for implementation.

The FMPC reviewed mitigation measures within each of the following mitigation categories defined within the Community Rating System 2017 Coordinators Manual.

- Prevention
- Property Protection
- Natural Resource Protection
- Emergency Services
- Structural Projects
- Public Information

B.1 Alternative Mitigation Measures

Note: the CRS Credit Sections are based on the 2017 CRS Coordinator's Manual.

B.1.1 Prevention & Regulatory Measures

Prevention measures are designed to keep a problem - such as flooding - from occurring or from getting worse. The objective of preventive measures is to ensure that future development is not exposed to damage and does not cause an increase in damages to other properties. Building, zoning, planning and code enforcement offices usually administer preventive measures. Some examples of types of preventive measures include:

- Comprehensive or land use plan
- Zoning ordinance
- Building codes
- Floodplain regulations
- Subdivision ordinance
- Stormwater management regulations
- Open space preservation

Comprehensive or Land Use Plan

Planning and zoning activities direct development away from these areas, particularly floodplains and wetlands. They do this by designating land uses that are compatible with the natural conditions of land that is prone to flooding, such as open space or recreation. Planning and zoning activities can also provide benefits by simply allowing developers more flexibility in arranging improvements on a parcel of land through the planned development approach.

Orange County's Comprehensive Plan was most recently amended in 2023, however, a new plan is underway, Vision 2050. In A Comprehensive Plan, in broad terms, is a policy statement to guide the future placement and development of community facilities. It is the basis for a community's zoning, subdivision and design regulations and a community's official maps and amendments to the zoning, subdivision and design ordinances. The future land use element of the plan represents the County's vision for its development and redevelopment for future planning periods. The future land use maps serve as the foundation for subsequent development of more detailed Land Development Regulations and special area plans.

Zoning Ordinance

The Orange County Code of Ordinances was last updated in April 2023. Planning and zoning activities direct development away from hazardous areas, particularly floodplains and wetlands. They do this by designating land uses that are compatible with the natural conditions of land that is prone to flooding, such as open space or recreation.

Orange County's zoning consists of both a zoning map and a written ordinance that defines the zoning districts, including various residential, commercial, and mixed-use districts. The zoning regulations describe what type of land use and specific activities are permitted in each district, and how buildings and other construction may be sized and placed on a lot. The zoning regulations also provide procedures for rezoning and other planning applications. The zoning map and zoning regulations provide properties in Orange County with certain rights to development.

Building Codes

Building codes provide one of the best methods of addressing natural hazards. When properly designed and constructed according to code, the average building can withstand many of the impacts of natural hazards. Hazard protection standards for all new and improved or repaired buildings can be incorporated into the local building code. Building codes can ensure that the first floors of new buildings are constructed to be higher than the elevation of the 100-year flood (the flood that is expected to have a one percent chance of occurring in any given year). This is shown in Figure B.1.

Just as important as having code standards is the enforcement of the code. Adequate inspections are needed during construction to ensure that the builder understands the requirements and is following them. Making sure a structure is properly elevated and anchored requires site inspections at each step.

Orange County has adopted and enforces the 2020 Florida Building Code.

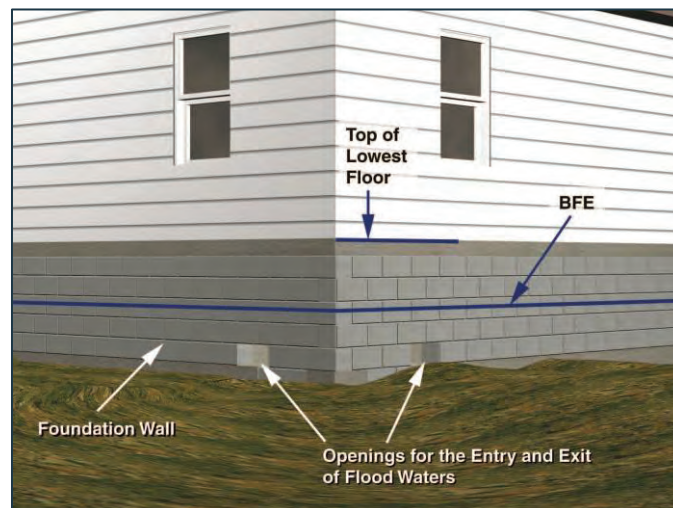


Figure 8.1

Source: FEMA Publication: *Above the Flood: Elevating Your Floodprone House, 2000*

Floodplain Regulations

The National Flood Insurance Program (NFIP) is administered by the Federal Emergency Management Agency (FEMA). As a condition of making flood insurance available for their residents, communities that participate in the NFIP agree to regulate new construction in the area subject to inundation by the 100-year (base) flood. The floodplain subject to these requirements is shown as an A or V Zone on the Flood Insurance Rate Map (FIRM).

There are five major floodplain regulatory requirements. Additional floodplain regulatory requirements may be set by state and local laws.

- 1) All development in the 100-year floodplain must have a permit from the community. The NFIP regulations define "development" as any manmade change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.
- 2) Development along a river or other channel cannot obstruct flows so as to cause an increase in flooding on other properties. An analysis must be conducted to demonstrate that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.
- 3) New buildings may be built in the floodplain, but they must be protected from damage from the base flood. In riverine floodplains, the lowest floor of residential buildings must be elevated to be at or above the base flood elevation (BFE). Nonresidential buildings must be either elevated or floodproofed.
- 4) Under the NFIP, a "substantially improved" building is treated as a new building. The NFIP regulations define "substantial improvement" as any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure before the start of construction of the improvement. This requirement also applies to buildings that are substantially damaged.
- 5) Communities are encouraged to adopt local ordinances that are more comprehensive or provide more protection than the federal criteria. The NFIP's Community Rating System provides insurance premium credits to recognize the additional flood protection benefit of higher regulatory standards.

Orange County updated its floodplain management ordinance after a new Flood Insurance Rate Map (FIRM) became effective in 2021. The effective map is based on updated hydrological, hydraulic, and topographical methods and data and identifies risk from riverine and lacustrine flooding sources.

Subdivision Ordinance

Subdivision ordinances are intended to encourage planned development that accounts for infrastructure needs of growth as well as the vision and goals of the comprehensive plan related to new development. Orange County has a subdivision ordinance in place that stipulates drainage and stormwater requirements for all development. Specifically, new subdivisions must provide for pollution abatement, groundwater recharge, and protection from flooding. All subdivisions must limit runoff to pre-construction conditions and must provide a drainage map and drainage plans.

Stormwater Management Regulations

Stormwater runoff is increased when natural ground cover is replaced by urban development. Development in the watershed that drains to a river can aggravate downstream flooding, overload the community's drainage system, cause erosion, and impair water quality. There are three ways to prevent flooding problems caused by stormwater runoff:

- 1) Regulating development in the floodplain to ensure that it will be protected from flooding and that it won't divert floodwaters onto other properties;

- 2) Regulating all development to ensure that the post-development peak runoff will not be greater than it was under pre-development conditions; and
- 3) Setting construction standards so buildings are protected from shallow water.

The Orange County Code of Ordinance stipulates stormwater standards under its site development regulations. The standards include requirements for pollution abatement, recharge, rate of discharge limitations, and protection from flooding depending on the category a property falls into. Properties are categorized based on size and amount of impervious surface. Orange County also incorporates a stormwater management element in its comprehensive plan, with objectives to reduce flooding, regulate development to better manage stormwater, fix existing drainage problems, and protect natural drainage features.

Open Space Preservation

Keeping the floodplain and other hazardous areas open and free from development is the best approach to preventing damage to new developments. Open space can be maintained in agricultural use or can serve as parks, greenway corridors and golf courses.

Comprehensive and capital improvement plans should identify areas to be preserved by acquisition and other means, such as purchasing an easement. With an easement, the owner is free to develop and use private property, but property taxes are reduced or a payment is made to the owner if the owner agrees to not build on the part set aside in the easement. The Orange County Comprehensive Plan contains an open space element with the goal of protecting and preserving open space resources in the County.

Although there are some federal programs that can help acquire or reserve open lands, open space lands and easements do not always have to be purchased. Developers can be encouraged to dedicate park land and required to dedicate easements for drainage and maintenance purposes.

Orange County has many open space and natural parcels which serve to reduce future flood losses by remaining open. These parks and natural preserved areas create opportunities for the public to benefit from education and recreation while eliminating potential for future flooding.

Local Implementation and CRS Credit

The CRS encourages strong building codes. It provides credit in two ways: points are awarded based on the community's Building Code Effectiveness Grading Schedule (BCEGS) classification and points are awarded for adopting the International Code series. Orange County's BCEGS rating is a Class 3 for residential and a Class 3 for commercial. Orange County has adopted the Florida Building Code which is based on national model building codes and national consensus standards which are amended where necessary for Florida's specific needs. The Florida Building Code is updated every three years.

CRS credits are available for regulations that encourage developers to preserve floodplains or other hazardous areas away from development. There is no credit for a plan, only for the enforceable regulations that are adopted pursuant to a plan. Orange County currently receives credit for Activity 430 – Higher Regulatory Standards. Additionally, Orange County currently receives credit for Activity 420 – Open Space Preservation. Preserving flood prone areas as open space is one of the highest priorities of the Community Rating System. The credits in the 2017 manual have doubled for OSP (Open Space Preservation). The County also currently receives credit for Activity 450 – Stormwater Management. The community enforces regulations for soil and erosion control and water quality, freeboard in non-SFHA zones, and regulates development size and design storm. To improve preventative mitigation, the FMPC recommended integrating flood mitigation into future updates of the County's Comprehensive Plan.

Conclusions

Future flood losses in Orange County will be reduced through the implementation of the Florida Building Code and the County’s floodplain management regulations. Zoning and comprehensive planning can work together to reduce future flood losses by directing development away from hazard prone areas. Continued hazard mitigation planning can further identify specific projects to reduce risk. Expanding administrative and technical capabilities, including mapping and GIS data, can improve the County’s ability to implement preventative mitigation measures.

Creating or maintaining open space is a major way to reduce future flood losses. The County’s parks and natural preserved areas create opportunities for the public to benefit from education and recreation while eliminating potential for future flooding.

Table B.1 – Prevention Mitigation Options and Recommended Projects

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
Prevention Measures Considered by FMPC			
-	Continue to maintain or work to improve the County’s BCEGS ratings.	Reduced vulnerability in new development. County’s BCEGS is adequate and pursues other actions for promoting protected development through higher regulatory standards,	n/a
-	Consider implementing LID principles and practices to new development, redevelopment and retrofits to existing development.	Stormwater management improvements will be pursued through higher regulatory standards and NPDES permit compliance.	n/a
Prevention Measures and Funding Recommended for Implementation			
7	Evaluate options for higher regulatory standards to reduce the vulnerability of new development to flooding.	Higher regulatory standards can ensure that future structures are built to minimize their impact on flooding and their vulnerability to floods.	Operating budget
12	Improve stormwater quality to ensure compliance with NPDES permit and pollutant TMDLs.	Managing runoff and reducing stormwater pollution protects surface waters and helps mitigate health risks associated with flooding.	Operating budget
13	Prepare watershed master plans for all HUC-12 river basins in the County.	Updated watershed master plans will provide more accurate flood risk data enabling a better understanding of needs and opportunities for mitigation.	Operating budget

B.1.2 Property Protection Measures

Property protection measures are used to modify buildings or property subject to damage. Property protection measures fall under three approaches:

- Modify the site to keep the hazard from reaching the building,
- Modify the building (retrofit) so it can withstand the impacts of the hazard, and
- Insure the property to provide financial relief after the damage occurs.

Property protection measures are normally implemented by the property owner, although in many cases technical and financial assistance can be provided by a government agency.

Keeping the Hazard Away

Generally, natural hazards do not damage vacant areas. The major impact of hazards is to people and improved property. In some cases, properties can be modified so the hazard does not reach the damage-prone improvements. For example, a berm can be built to prevent floodwaters from reaching a house. There are five common methods to keep a flood from reaching and damaging a building:

- Erect a barrier between the building and the source of the flooding.
- Move the building out of the flood prone area.
- Elevate the building above the flood level.
- Demolish the building.
- Replace the building with a new one that is elevated above the flood level.

Barriers

A flood protection barrier can be built of dirt or soil (a "berm") or concrete or steel (a "floodwall"). Careful design is needed so as not to create flooding or drainage problems on neighboring properties. Depending on how porous the ground is, if floodwaters will stay up for more than an hour or two, the design needs to account for leaks, seepage of water underneath, and rainwater that will fall inside the perimeter. This is usually done with a sump or drain to collect the internal groundwater and surface water and a pump and pipe to pump the internal drainage over the barrier.

Barriers can only be built so high. They can be overtopped by a flood higher than expected. Barriers made of earth are susceptible to erosion from rain and floodwaters if not properly sloped, covered with grass, and properly maintained. A berm can also settle over time, lowering its protection level. A floodwall can crack, weaken, and lose its watertight seal. Therefore, barriers need careful design and maintenance (and insurance on the building, in case of failure).

Relocation

Moving a building to higher ground is the surest and safest way to protect it from flooding. In areas subject to flash flooding, deep waters, or other high hazard, relocation is often the only safe approach. Relocation is also preferred for large lots that include buildable areas outside the floodplain or where the owner has a new flood-free lot (or portion of the existing lot) available.

Building Elevation

Raising a building above the flood level can be almost as effective as moving it out of the floodplain. Water flows under or around the building, causing little or no damage to the structure or its contents. Raising a building above the flood level is cheaper than moving it and can be less disruptive to a neighborhood. Elevation has proven to be an acceptable and reasonable means of complying with floodplain regulations that require new, substantially improved, and substantially damaged buildings to be elevated above the base flood elevation.

