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Chapter 1: Introduction and Background

On October 30, 2000, the Disaster Mitigation Act of 2000 (DMA2k) was signed into law. Among its other features, DMA2k established the requirement that in order to be eligible for federal mitigation grant funding, local governments must develop and adopt local hazard mitigation plans. On February 26, 2002, the Federal Emergency Management Agency (FEMA) published an Interim Final Rule (IFR) that set forth the guidance and regulations under which such plans were to be developed, reviewed, and approved. The IFR provided detailed descriptions of both the planning process and the required contents of the plan. The IFR requirements were later codified at 44 CFR, §201.6. This plan responds to those requirements.

1.1 Plan Purpose Regulations

The requirement to have a local mitigation plan is detailed in 44 CFR, §201.6. The local mitigation plan is the representation of the jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards. Local plans also serve as the basis for the State to provide technical assistance and to prioritize project funding.¹

A local government must have a mitigation plan approved in order to receive Hazard Mitigation Grant Program (HMGP) project grants. A local government must have a mitigation plan approved in order to apply for and receive mitigation project grants under all other mitigation grant programs.²

1.2 Background and Scope

Section describes the history of the plan for the municipality, including years of creation, update, and approval. May be copied and updated from previous plan.

1.3 Organization of the Plan

Federal regulations require specific content of local mitigation plans, including:

- Documentation of the planning process;
- A risk assessment that provides the factual basis for activities proposed to reduce losses from identified natural hazards;
- A mitigation strategy that provides the jurisdiction's blueprint for reducing potential losses identified in the risk assessment;
- A plan maintenance process; and
- Documentation that the plan has been formally adopted by the governing body of the jurisdiction.³

In support of these requirements, this plan is organized in the following manner:

- Chapter 1 – Introduction and Background
- Chapter 2 – Planning Process

¹ 44 CFR, §201.6

² 44 CFR, §201.6(a)(1)

³ 44 CFR, §201.6(c)

- Chapter 3 – Municipality Profile
- Chapter 4 – Hazard Identification and Risk Assessment
- Chapter 5 – Capability Assessment
- Chapter 6 – Mitigation Strategy
- Chapter 7 – Plan Monitoring and Maintenance
- Chapter 8 – Plan Adoption and Approval
- Appendix A – Plan Adoption and Approval Documents
- Appendix B – Meeting Documentation
- Appendix C – Public Outreach Documentation

For this update, the State Hazard Mitigation Officer (SHMO) has determined that each local plan shall be required to include both a capability assessment (Chapter 5) and a section describing all open space areas within the municipality (Chapter 4). Both of these sections are new additions to the plan and are State requirements.

1.4 Summary of Changes from Previous Plan

This plan update is a complete update from the previous version of this plan. This plan now follows the same template as all other local mitigation plans, making it easier to assess and to correlate data.

The following table provides details of the changes in information in the plan, by chapter.

Table 1: Summary of Changes to the Plan

| Chapter | Section | Change or Update |
|---------|---------|---|
| All | All | Introduction of template format, capability assessment, and open space land identification. |
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Chapter 2: Planning Process

2.1 Planning Process Regulations

44 CFR, 201.6(b) provides the requirements related to the planning process for local mitigation plans.

An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process must include:

- An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and non-profit interests to be involved in the planning process; and
- Review and incorporate, if appropriate, of existing plans, studies, reports, and technical information.⁴

Additionally, the plan must include documentation of the planning process used to develop the plan, including how it was developed, who was involved in the process, and how the public was involved.⁵

2.2 Overview of Hazard Mitigation Planning

2.3 History of Hazard Mitigation Planning in XXX

2.4 Preparing the 2019 Plan

2.5 Planning Team

The following table provides the membership of the local mitigation planning team.

⁴ 44 CFR, §201.6(b)

⁵ 44 CFR, §201.6(c)(1)

Table 2: Planning Team Members

| Member Name | Member Title | Member Agency | Member Email Address |
|-------------|--------------|---------------|----------------------|
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2.6 Planning Team Meetings

The following table provides an overview of the meetings of the planning team. Documentation of these meetings – including agendas, sign in sheets, and meeting notes – can be found in Appendix B.

Table 3: Planning Team Meeting Overview

| Meeting Date | Meeting Location | Public Meeting? (Yes or No) | Meeting Description |
|--------------|------------------|--------------------------------|---------------------|
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2.7 Public Involvement in the Planning Process

The following table provides an overview of the involvement of the public in the planning process. Documentation of these opportunities can be found in Appendix C.

Table 4: Public Involvement Overview

| Date | Location | Description | Plan Stage (Draft or Final) |
|------|----------|-------------|-----------------------------|
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2.8 Plans, Reviews, Studies, and Data Used in Planning Process

The following table provides the listing of documents and data used to develop this plan.

Table 5: Data and Documents Used for Plan Development

| Authoring Agency | Source Title | How Utilized in Plan | Section of Plan |
|---|---|----------------------|---------------------------|
| Puerto Rico Emergency Management Agency | Puerto Rico Hazard Mitigation Plan (2016) | General reference | HIRA, Mitigation Strategy |
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Chapter 3: Municipality Profile

3.1 General Overview of the Municipality

May be copied and updated from previous plan.

3.2 Population and Demographics

May be copied and updated from previous plan – must use and cite most recent US Census Estimate.

3.2.1 Population Trends

Comparison of current population to previous plan's population.

Table 6: Population by Barrio

| 2013-2017 ACS Estimates | | | | | |
|-------------------------|---------------|---------------|----------------|-------------------|-------|
| Municipality XX | Under 5 years | 5 to 18 years | 18 to 64 years | 65 years and over | Total |
| Barrio 1 | | | | | |
| Barrio 2 | | | | | |
| Total | | | | | |

Table 7: Population Changes

| Population Changes | | | |
|--------------------|------|------|----------|
| Municipality XX | 2010 | 2017 | % Change |
| Under 5 years | | | |
| 5 to 18 years | | | |
| 18 to 64 years | | | |
| 65 years and over | | | |
| Total | | | |

3.3 Housing and Land Use Trends

May be copied and updated from previous plan – must include comparison of land use described in previous plan, current trends, and future/projected use.

Table 8: Building Counts

| Jurisdiction | Total Housing Units (2010) | Units Built 2010 or later | % Building Stock Built Post-2010 |
|--------------|----------------------------|---------------------------|----------------------------------|
| | | | |

3.4 Employment and Industry

3.5 Municipal Asset Inventory

The following table provides details of all assets owned by the municipality.

Table 8: Municipal Asset Inventory

| Asset Name | Latitude/Longitude and/or Street Address | Asset Use or Function | Estimated Value of Asset | Critical Asset? (Yes or No) |
|---|--|-----------------------|--------------------------|-----------------------------|
| Example: Municipality Government Center | 12.34567, -89,0123 | Government Operations | \$1,000,000 | Yes |
| | | | | |
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3.6 Municipal Public Education/Outreach Capabilities

The following table provides an overview of the municipality's capabilities to deliver public education and outreach related to natural hazards and mitigation.

Table 9: Municipal Public Education/Outreach Capabilities

| Program | Program Description | Delivery Method | Date of Last Offering |
|---|---|-------------------------|--|
| Example: local group that focuses on environmental protection, emergency preparedness, etc. | Example: Local Red Cross offers community workshops and information on emergency preparedness | Workshops, publications | June 2018 (workshop); ongoing (publications) |
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Chapter 4: Hazard Identification and Risk Assessment

4.1 Hazard Identification and Risk Assessment Requirements

44 CFR, 201.6(c)(2) provides the requirements related to the hazard identification and risk assessment for local mitigation plans.

The plan must include the following:

- A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. The risk assessment shall include:
 - A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.
 - A description of the jurisdiction's vulnerability to the hazards that can affect the jurisdiction. This description shall include an overall summary of each hazard and its impact on the community. The plan should describe vulnerability in terms of:
 - The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;
 - An estimate of the potential dollar losses to identified vulnerable structures and a description of the methodology used to prepare the estimate; and
 - A general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.
 - A description of all structures insured by the National Flood Insurance Program (NFIP) that have been repetitively damaged by floods. Include explicit statement as to whether the community participates in the NFIP and complies with the NFIP regulations. Include a table of repetitive loss property information along with a table for the NFIP claims/losses.
 - Multi-jurisdictional plans must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.⁶

4.2 Natural Hazards that Can Affect the Municipality

Insert narrative describing the process by which natural hazards were determined and selected, making sure to note the reason that any hazard was not considered. If a natural hazard was eliminated during this process, please note it in the following table.

The following table provides the details of natural hazards that can or have affected the municipality.

⁶ 44 CFR, §201.6(c)(2)

Table 10: Natural Hazards Affecting the Municipality

| Natural Hazard | Description | Included in 2016 State Mitigation Plan? | Included in Previous Plan? | Included in This Plan? | Notes |
|---------------------------------|-------------|---|----------------------------|------------------------|-------|
| Climate Change / Sea Level Rise | | Yes | | | |
| Drought | | Yes | | | |
| Earthquakes | | Yes | | | |
| Earthquake – Liquefaction | | Yes | | | |
| Earthquake – Landslide | | Yes | | | |
| Flooding | | Yes | | | |
| Landslides | | Yes | | | |
| Strong Winds (Topical Cyclones) | | Yes | | | |
| Tsunamis | | Yes | | | |
| | | | | | |
| | | | | | |

4.3 Previous Disaster Declarations

The following table provides details of all known emergency or disaster declarations of hazard events in the municipality.

Table 11: Previous Hazard Occurrences

| Date of Occurrence | Hazard Type | Description of the Event | DR/EM # (if applicable) |
|--------------------|-------------|---|-------------------------|
| September 20, 2017 | Hurricane | Hurricane Maria impacted the municipality with... | FEMA-4339-DR-PR |
| | | | |
| | | | |
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4.4 Probability of Future Events Determination Methodology

As required by the applicable regulations, the following methodology was used to determine the probability of a future occurrence of the natural hazards that can affect the municipality:

- Hazards that occur less than once every five years – Low Probability

- Hazards that occur at least once every five years – Moderate Probability
- Hazards that occur at least annually – High Probability

Table 13: Documentation of the Hazard Evaluation Process

| Natural Hazards Considered | Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No) | How was this determination made? | Why was this determination made? |
|----------------------------|---|----------------------------------|----------------------------------|
|----------------------------|---|----------------------------------|----------------------------------|

Table 12: Summary Results of the Hazard Identification and Evaluation Process

| | |
|--|--|
| NATURAL HAZARDS | <input checked="" type="checkbox"/> Severe Winter Storm |
| <input type="checkbox"/> Avalanche | <input checked="" type="checkbox"/> Solar Flare/EMP |
| <input checked="" type="checkbox"/> Drought | <input type="checkbox"/> Storm Surge |
| <input checked="" type="checkbox"/> Earthquake | <input checked="" type="checkbox"/> Tornado |
| <input type="checkbox"/> Erosion | <input type="checkbox"/> Tsunami |
| <input type="checkbox"/> Expansive Soils | <input type="checkbox"/> Volcano |
| <input type="checkbox"/> Extreme Cold | <input checked="" type="checkbox"/> Wildfire |
| <input checked="" type="checkbox"/> Extreme Heat | <input checked="" type="checkbox"/> Windstorm/Thunderstorm |
| <input checked="" type="checkbox"/> Flooding | |
| <input checked="" type="checkbox"/> Hail | |
| <input checked="" type="checkbox"/> Hurricane/Tropical Storm | |
| <input checked="" type="checkbox"/> Infectious Disease | |
| <input type="checkbox"/> Landslide | |
| <input type="checkbox"/> Land Subsidence/Sinkhole | |
| <input checked="" type="checkbox"/> Lightning | |

☒ = Hazard considered significant enough for further evaluation in the XXX risk and vulnerability assessment.

4.5 Hazard Profiles

The following sub-sections provide the required information related to natural hazards, the area they can impact, the severity or magnitude of the hazard, previous occurrences of the hazards, and the probability of future occurrences of the hazards. The following five natural hazards have the highest potential of occurrence in the municipality and will have an in-depth analysis in the sub-sections below.

4.5.1 Hazard Description

This section should provide a narrative description of the hazard. This section should be repeated individually (and renumbered) for each natural hazard included in the plan.

4.5.1.1 Geographic Area Affected

May include maps or figures, if applicable. This section should be repeated individually (and renumbered) for each natural hazard included in the plan.

4.5.1.2 Severity or Magnitude of the Hazard

May include figures or graphics, if applicable. This section should be repeated individually (and renumbered) for each natural hazard included in the plan.

4.5.1.3 Impacts to Life, Property, or Operations

Include a narrative of the potential or historical impacts of the hazard. This section should be repeated individually (and renumbered) for each natural hazard included in the plan.

4.5.1.4 Previous Occurrences of the Hazard

Include a descriptive narrative or listing of the previous occurrences of the hazard within the municipality. This section should be repeated individually (and renumbered) for each natural hazard included in the plan.

4.5.1.5 Probability of a Future Occurrence

Provide the probability of a future occurrence of the hazard, referencing the use of the probability scale provided at Section 4.4. This section should be repeated individually (and renumbered) for each natural hazard included in the plan.

4.6 Risk and Vulnerability Assessment

4.6.1 Risk Assessment Methodology Description

Provide a detailed narrative description of the methodology used to perform the risk assessment.

4.6.2 Risk Assessment Ranking

The following table provides a snapshot of the risk ranking for each hazard.

Table 13: Risk Assessment Ranking

| Hazard | Impact to People | Impact to Facilities | Impact to Function | Score | Overall Ranking |
|--------------------|------------------|----------------------|--------------------|-------|-----------------|
| Example: Hurricane | High | High | High | | High |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

High=3, Moderate=2, Low=1

4.6.3 Estimate of Potential Losses

For each hazard profiled, estimate potential losses to facilities from each hazard. The methodology used for each hazard must be described. This section should be repeated individually (and renumbered) for each natural hazard included in the plan.

4.6.4 Facilities and Critical Assets Vulnerabilities

Include a map of the assets identified as critical by the jurisdiction. Include a narrative of the structural vulnerabilities of both buildings and infrastructure. This section should be repeated individually (and renumbered) for each natural hazard included in the plan.

4.6.5 Social Vulnerabilities

Include a detailed narrative of each hazard's potential to affect the population and community of the municipality; be sure to include a discussion of special needs populations. This section should be repeated individually (and renumbered) for each natural hazard included in the plan.

4.6.6 Natural Resources Vulnerabilities

Include a detailed narrative of each hazard's potential to affect the natural resources of the municipality. This section should be repeated individually (and renumbered) for each natural hazard included in the plan.

4.6.7 Future Conditions

Include a detailed narrative of the anticipated future conditions of the municipality, including any changes in hazards or vulnerabilities. This section should be repeated individually (and renumbered) for each natural hazard included in the plan.

4.6.8 Open Space Areas

This section only applies to those municipalities that have open space areas that were purchased with FEMA mitigation funding. Include a detailed description – and a map or figure, if possible – of the current use of each location.

4.6.9 Summary of Hazards and Impacts

Chapter 5: Capability Assessment

This section is a new addition to local mitigation plans in Puerto Rico; it will establish a baseline capability for each municipality, to allow for determination of technical assistance and training needs.

5.1 Plan and Regulation Capabilities

It is important that the planning team have members from the community. The community should bring recent, current, and future projects to the planning table. This will provide both background for planning purposes as well as points of insertion for hazard mitigation strategies. Examples of plans include general plans, capital improvement plans, and emergency preparedness and response plans. Regulatory capabilities include building codes and zoning ordinances. It is important to note these plans and regulations specifically include information for hazard mitigation. Also, this is an opportunity to identify where plans and regulations do not identify mitigation for hazards and could pose a risk to the community.

5.2 Administrative and Technical Capabilities

Mitigation actions need to be implemented through administrative and technical capabilities; specifically, staff and their skills to achieve them. **The municipality has** identified not only government administrative capabilities but contractor and private partner capabilities.

5.3 Financial Capabilities

The Municipality as well as Island and Federal agency programs may provide resources to fund mitigation actions. Each mitigation action must be analyzed for costs and whether funding is available for its implementation. The analysis supports prioritizing of mitigation actions. An aggregated assessment of financial capabilities will assist the Municipality in selecting mitigation actions.

5.4 Education and Outreach Capabilities (if applicable)

Table 14: Municipal Capability Assessment

| Planning and Regulatory Capability: Please indicate whether the following regulatory tools are currently in place or are under development for the jurisdiction. If applicable, please identify the department, agency, or organization responsible for its implementation, and the estimated effect on risk/loss reduction. Provide any comments, as necessary. | | | | | | |
|--|----------|----------------|------------------------|-------------------------------|-----------------------------------|----------|
| Planning/Regulatory Tool | In Place | In Development | Responsible Department | Effect on Risk/Loss Reduction | Opportunities for HMP Integration | Comments |
| Hazard mitigation plan | | | | | | |

| Planning and Regulatory Capability: Please indicate whether the following regulatory tools are currently in place or are under development for the jurisdiction. If applicable, please identify the department, agency, or organization responsible for its implementation, and the estimated effect on risk/loss reduction. Provide any comments, as necessary. | | | | | |
|--|----------|----------------|------------------------|-------------------------------|---|
| Planning/Regulatory Tool | In Place | In Development | Responsible Department | Effect on Risk/Loss Reduction | Opportunities for HMP Integration Comments |
| Land use, General, Master, or Growth Management Plan | | | | | |
| Floodplain management plan | | | | | |
| Open space management plan | | | | | |
| Storm water management plan or ordinance | | | | | |
| Natural resources protection plan | | | | | |
| Flood response or recovery plan | | | | | |
| Emergency operations plan | | | | | |
| Continuity of operations plan | | | | | |
| Evacuation plan | | | | | |
| Capital improvement plan | | | | | |
| Disaster recovery plan | | | | | |
| Economic development plan | | | | | |
| Historic preservation plan | | | | | |
| Floodplain or Flood Damage Prevention ordinance | | | | | |
| Zoning ordinance | | | | | |
| Post-disaster redevelopment or reconstruction ordinance | | | | | |

| Planning and Regulatory Capability: Please indicate whether the following regulatory tools are currently in place or are under development for the jurisdiction. If applicable, please identify the department, agency, or organization responsible for its implementation, and the estimated effect on risk/loss reduction. Provide any comments, as necessary. | | | | | | |
|--|----------|----------------|------------------------|-------------------------------|-----------------------------------|----------|
| Planning/Regulatory Tool | In Place | In Development | Responsible Department | Effect on Risk/Loss Reduction | Opportunities for HMP Integration | Comments |
| Puerto Rico Codes 2018 | | | | | | |
| NFIP Member | | | | | | |
| NFIP CRS Program member | | | | | | |
| Other (please describe in comments) | | | | | | |

Table 14: Municipal Capability Assessment (Continued)

| Administrative and Technical Capability: Please indicate if the municipality/community has access to, maintains, or has plans to hire the following staff members or positions. If yes, please identify the department or agency where the person or position is in house. Provide any comments, as necessary. | | | | | | |
|--|-----|----|-----------------|----------------------|-----------------------------------|----------|
| Staff/Personnel Resources | Yes | No | Future position | Department or Agency | Opportunities for HMP Integration | Comments |
| Planners with knowledge of land development and land management practices | | | | | | |
| Engineers or professionals trained in construction practices related to buildings and/or infrastructure | | | | | | |
| Planning or engineers with an understanding of natural hazards | | | | | | |
| Emergency manager | | | | | | |

| Administrative and Technical Capability: Please indicate if the municipality/community has access to, maintains, or has plans to hire the following staff members or positions. If yes, please identify the department or agency where the person or position is in house. Provide any comments, as necessary. | | | | | |
|--|-----|----|-----------------|----------------------|---|
| Staff/Personnel Resources | Yes | No | Future position | Department or Agency | Opportunities for HMP Integration Comments |
| Independent floodplain manager | | | | | |
| Floodplain manager through Puerto Rico Planning Board | | | | | |
| Land surveyors | | | | | |
| Scientist familiar with local natural hazards | | | | | |
| Staff with expertise or education in the community's vulnerability to natural hazards | | | | | |
| Resource development staff or grant writer | | | | | |
| Project manager | | | | | |
| Other (please describe in comments) | | | | | |

Table 14: Municipal Capability Assessment (Continued)

| Financial Capability: Please indicate whether the municipality/community has access to or is eligible to use the following financial resources for hazard mitigation purposes (including as a match for federal mitigation grant funds). If yes, please identify the department, agency, or organization responsible for its administration or allocation. Provide any comments, as necessary. | | | | | |
|--|-----|----|---------|----------------------|---|
| Financial Resource | Yes | No | Unknown | Department or Agency | Opportunities for HMP Integration Comments |
| Capital improvement funds | | | | | |

| Financial Capability: Please indicate whether the municipality/community has access to or is eligible to use the following financial resources for hazard mitigation purposes (including as a match for federal mitigation grant funds). If yes, please identify the department, agency, or organization responsible for its administration or allocation. Provide any comments, as necessary. | | | | | |
|--|-----|----|---------|----------------------|---|
| Financial Resource | Yes | No | Unknown | Department or Agency | Opportunities for HMP Integration Comments |
| Community Development Block Grants (CDBG) | | | | | |
| Special purpose taxes or taxing districts | | | | | |
| Utility fees | | | | | |
| Storm water fees | | | | | |
| Development impact fees | | | | | |
| General obligation, revenue, and/or special tax bonds | | | | | |
| Partnering arrangements or intergovernmental agreements | | | | | |
| Other (please describe in comments) | | | | | |

Chapter 6: Mitigation Strategy

6.1 Mitigation Strategy Requirements

44 CFR, 201.6(c)(3) provides the requirements related to the mitigation strategy for local mitigation plans.

The plan must include the following:

- A mitigation strategy that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs, and resources, and its ability to expand on and improve these existing tools.
- The section must include:
 - A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards;
 - 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 and existing buildings and infrastructure;
 - A description of the jurisdiction’s participation in the NFIP, and continues compliance with NFIP requirements, as appropriate; and
 - An action plan describing how the action identified will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.
- For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.⁷

6.2 Mitigation Goals

May be copied and updated from previous plan, if still applicable.

6.3 Identification and Analysis of Mitigation Techniques

Describe mitigation actions that are possible to address the identified hazards, risks, and vulnerabilities.

6.3.1 Prevention

Preventative activities are intended to keep hazard problems from getting worse and are typically administered through government programs or regulatory actions that influence the way land is developed and buildings are built. They are particularly effective in reducing a community’s future vulnerability, especially in areas where development has not occurred, or capital improvements have not been substantial. Examples of preventative activities include:

- ❖ Planning and zoning
- ❖ Building codes
- ❖ Open space preservation
- ❖ Floodplain regulations

- ❖ Stormwater management regulations
- ❖ Drainage system maintenance
- ❖ Capital improvements programming
- ❖ Riverine/fault zone setbacks

6.3.2 Property Protection

Property protection measures involve the modification of existing buildings and structures to help them better withstand the forces of a hazard, or removal of the structures from hazardous locations.

Examples include:

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

6.3.3 Natural Resource Protection

Natural resource protection activities reduce the impact of natural hazards by preserving or restoring natural areas and their protective functions. Such areas include floodplains, wetlands, steep slopes, and sand dunes. Parks, recreation, or conservation agencies and organizations often implement these protective measures. Examples include:

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

6.3.4 Structural Projects

Structural mitigation projects are intended to lessen the impact of a hazard by modifying the environmental natural progression of the hazard event through construction. They are usually designed by engineers and managed or maintained by public works staff. Examples include:

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

6.3.5 Emergency Services

Although not typically considered a “mitigation” technique, emergency service measures do minimize the impact of a hazard event on people and property. These commonly are actions taken immediately prior to, during, or in response to a hazard event. Examples include:

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

6.3.6 Public Education and Awareness

Public education and awareness activities are used to advise residents, elected officials, business owners, potential property buyers, and visitors about hazards, hazardous areas, and mitigation techniques they can use to protect themselves and their property. Examples of measures to educate and inform the public include:

- ❖ Outreach projects
- ❖ Speaker series/demonstration events
- ❖ Hazard map information
- ❖ Real estate disclosure
- ❖ Library materials
- ❖ School children educational programs
- ❖ Hazard expositions

6.4 Selection of Mitigation Techniques for XXXX

6.5 Mitigation Strategy

The following table provides the mitigation strategy for the municipality.

Table 15: Mitigation Action Plan

| Action # | Description | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department | Potential Funding Sources | Implementation Schedule | Implementation Status (2019) |
|--------------------------------|-------------|------------------------|----------------------|----------------------------|---------------------------------|----------------------------|---------------------------------|
| Prevention | | | | | | | |
| P-1 | | | | | | | |
| Property Protection | | | | | | | |
| PP-1 | | | | | | | |
| Structural Projects | | | | | | | |
| SP-1 | | | | | | | |
| Emergency Services | | | | | | | |
| ES-1 | | | | | | | |
| Public Education and Awareness | | | | | | | |
| PEA-1 | | | | | | | |

Chapter 7: Plan Maintenance and Monitoring

7.1 Plan Maintenance Requirements

44 CFR, 201.6(c)(4) provides the requirements related to the plan maintenance process for local mitigation plans.

The plan must include the following:

- A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle;
- A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate; and
- Discussion on how the community will continue public participation in the plan maintenance process.⁸

7.2 Plan Maintenance Point of Contact

The person responsible for monitoring, maintaining, and updating the plan is:

Title

Agency

Phone Number

Main Email Address

7.3 Monitoring the Plan

The municipality's maintenance strategy for implementation, monitoring, and evaluation provides a structure that encourages collaboration, information sharing, and innovation. Through a multi-tiered implementation method, the municipality will work with partners and residents to implement a localized approach to loss reduction while serving community needs through coordination. Through this strategy, the municipality will work to disrupt the disaster cycle and achieve greater disaster resiliency.

The plan will be monitored for several related purposes:

- To maintain the accuracy of hazard and risk information;
- To ensure that the mitigation strategies reflect the priorities of participating communities and stakeholders;
- To comply with Government of Puerto Rico and federal requirements for plan maintenance;
- To maintain eligibility for mitigation grant funding; and
- To ensure this plan is in harmony with other planning efforts.

⁸ 44 CFR, §201.6(c)(4)

To ensure efficient and effective implementation, the municipality will make use of existing capabilities and planning infrastructure. The municipality intends to implement the mitigation strategies described in this plan over the next five years, as funding and available resources allow.

7.4 Evaluating the Plan

Plan evaluation will be ongoing. In addition to the FEMA-required five-year cycle, the municipality will perform a review of the plan annually, or more often as circumstances require. At least annually, a progress report will be prepared and incorporated into the plan, noting any updates to information in the plan and any progress made towards achieving the mitigation strategy.

In addition to these annual updates, a review may be conducted after significant hazard occurrences to review and document the impacts of the event. Based on those impacts, adjustments to the mitigation strategy may be made and submitted to the State Hazard Mitigation Officer.

7.5 Updating the Plan

This plan will be updated within five years of approval and will be submitted to the State Hazard Mitigation Officer for review and approval.

This update will include a comprehensive review and revision of the complete plan. Approximately 18 months prior to the expiration of the plan, the Puerto Rico Planning Board and the municipality will initiate this review process, with particular attention paid to guidance and requirements.

7.6 Incorporation into Existing Planning Mechanisms

A variety of existing plans and documents were reviewed and considered during the development of this plan, including:

- Insert examples of plans/documents that were reviewed and incorporated into this update

Going forward, this plan will be considered in the development and update of new and existing plans and planning efforts, specifically those related to land use, zoning, disaster-related risk reduction, and floodplain management. In addition, a copy of this plan will be provided to the Planning Board, for their reference in developing rules and regulations.

7.7 Continued Public Involvement

The municipality is dedicated to continued public involvement and education. This dedication is reflected in many of the mitigation strategies described in this plan. The public is welcome to comment and provide input into this plan, at any time, and may request to view a copy of this plan.

The public will be periodically surveyed/provided a questionnaire regarding hazards, risks, and mitigation strategies specific to the community, to allow for and document direct involvement in the plan. Additionally, each time a progress report is completed for this plan, a copy of that report will be made available to the public for review; the progress will also be periodically discussed at regularly scheduled public meetings and may be disseminated through various social media outlets.

The municipality will also provide periodic presentations to community groups regarding the plan content and progress. These groups may include elected officials, schools, and other neighborhood groups.

At the individual resident level, public education and outreach programs provide the municipality with localized mechanisms for plan implementation. This approach to mitigation can adapt to the varying vulnerabilities and needs of communities. Public education programs are also a means for involving the public in mitigation policy development. Departments and agencies conducting mitigation-related programs will provide information regarding proposed mitigation measures to individuals, to aid individuals in choosing methods that are more effective for their communities.

The public education programs will also include NFIP-recommended components that will help to document the community's compliance with NFIP requirements.

Chapter 8: Plan Adoption and Approval

8.1 Plan Adoption Requirements

44 CFR, §201.6(c)(5) provides the requirements related to the adoption documentation for local mitigation plans.

The plan must include the following:

- Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan.
- For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.⁹

8.2 Plan Adoption

This plan was adopted by the municipality on xx xx, xxxx. A copy of the adoption resolution is included in Appendix A.

8.3 Plan Approval

This plan was approved by FEMA and the Office of the GAR, State Hazard Mitigation Officer on xx xx, xxxx. A copy of the approval letter is included in Appendix A.

⁹ 44 CFR, §201.6(c)(5)

Appendix A: Plan Adoption and Approval Documents

A.1 Plan Adoption Documentation

A.2 Plan Approval Documentation

A.3 Final Plan Review Tool

Appendix B: Meeting Documentation

B.1 Meeting Agendas

B.2 Meeting Sign-in Sheets

B.3 Meeting Minutes

B.4 Other Meeting Documentation

Appendix C: Public Outreach Documentation

C.1 Public Outreach Process Description

C.2 Public Outreach Documentation