PLANES DE MITIGACIÓN CONTRA PELIGROS NATURALES

Resiliencia Planificada

JUNTA DE PLANIFICACIÓN

# 2020
# Municipality of Peñuelas

## Natural Hazard Mitigation Plan

**Executive Summary**

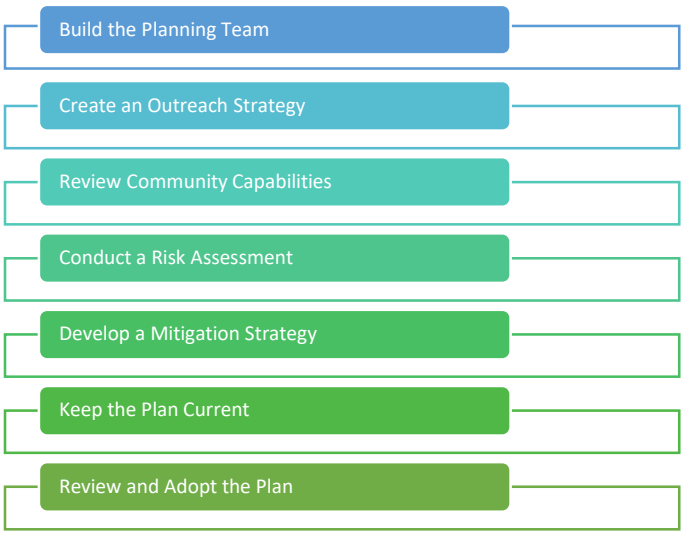
EN DIOS CONFIAMOS

# 1 Introduction

The municipality of Peñuelas has revised its Local Hazard Mitigation Plan (LHMP).1 This complies with the federal Disaster Mitigation Act of 2000 (DMA2K), which was signed into law to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988. One of the requirements that this legislation establishes is that in order for the municipality to receive federal mitigation funds, it must elaborate and adopt a Federal Emergency Management Administration (FEMA) approved LHMP.2 Also, the DMA2K promotes that the local government, together with the State, work on pre disaster planning and encourages the development of sustainable hazard mitigation activities.

These LHMPs must be revised and updated every five (5) years to remain in compliance with regulations and Federal mitigation grant conditions. This updating requirement offers the municipality an opportunity to reevaluate recommendations, monitor the implementation of mitigation strategies included in the previous Plan, monitor the impact of mitigation actions that have been implemented, and determine if any changes to the plan need to be incorporated. This plan complies with said regulations.

*Figure 1 Hazard Mitigation Planning Process*




***Hazard Mitigation Planning Process***

The strategies and projects enumerated in the LHMP have the goal of reducing the loss of life and property that can result from a natural disaster. Hence, the mitigation strategies, included in the LHMP, involve planning efforts, capital projects, and other activities that reduces the impacts of the natural hazards included in Peñuelas' LHMP of 2020.

The municipality has also revised the LHMP under the authority of Act 81-1991, known as the Autonomous Municipalities Act of 1991, as amended. Section 2.004 of said Act 81-1991, states that the municipality can carry out any activity that establish programs or adopt convenient and useful measures to prevent and fight fires, aid the community in cases of emergency or natural disasters, catastrophic accidents of fires and for the civil protection in general.[3]

[1] Please note that the 2020 Revised HMP was written in Spanish as per agreement between the Municipality of Peñuelas, the Planning Board, the Governor's Authorized Representative (GAR) and FEMA.
[2] 42 U.S.C 5165; 44 C.F.R. § 201.6.
[3] 21 L.P.R.A § 4054

This Executive Summary will provide an overview on:

- Peñuelas' population characteristics;
- The public participation and outreach efforts with the community during the LHMP planning process;
- Peñuelas' risk assessment;
- A review of the mitigation strategies, goals and LHMPs action plan; and
- Plan maintenance, and how to keep the Plan current.

# 2 Peñuelas' Profile: Main Population Characteristics


*Figure 2: Peñuelas and its wards*

The Municipality of Peñuelas is located on the south coast of the island and adjoins in the north with Adjuntas, by the east with Ponce, to the west with Guayanilla and to the south with the Caribbean Sea. Peñuelas has an area of 117 square kilometers (45.0 square miles). It is also known as "El Valle de los Flamboyanes" or "La Capital del Güiro".

The municipality has thirteen (13) *barrios* or wards: Pueblo, Barreal, Coto, Cuebas, Encarnación, Jaguas, Macaná, Quebrada Ceiba, Rucio, Santo Domingo, Tallaboa Alta, Tallaboa Poniente, and Tallaboa Saliente.

The municipality has the Tallaboa River, which originates in the Rucio ward 830 meters above sea level. It is 24.9 kilometers long. It has a catchment area of 32.3 square miles. The Guayanés River and the Quebradas Ceiba and Barreal are their tributaries. The Macaná River crosses from north to south by the border between the municipalities of Guayanilla and Peñuelas. This River, with a length of approximately 11.4 kilometers, from its birth to its mouth, originates in the Macaná neighborhood of Peñuelas, an elevation of 730 meters above sea level. It receives runoff from Quebrada de los Cedros and has a catchment area of 9.18 square miles.

*Table 1: Population by age group: 2010 and 2017*

| Population | 2010 Census | 2017 ACS estimate | % Rate of Change |
|---|---|---|---|
| Younger than 5 years age | 1,726 | 1,321 | -405 |
| 5 to 19 years of age | 5,811 | 4,565 | -1,246 |
| 20 to 64 years of age | 14,048 | 12,613 | -1,435 |
| 65 years of age and older | 2,697 | 3,162 | 465 |
| ***Total*** | **24,282** | **21,661** | **-2,621** |

*Source: US Census Bureau, Census 2010; American Community Survey 2013-2017 Estimates*

According to the 2010 Census, Peñuelas had a population of 24,282. The American Community Survey (ACS) of 2017 estimated that the population of Peñuelas had decreased to 21,661 inhabitants. This represents a reduction of 10.79%. Nonetheless this overall reduction, two of the thirteen wards were estimated to have an

increase in their population. According to the 2017 ACS, Santo Domingo has the largest population with 5,880, while Tallaboa Saliente has the smallest, with 149 residents.

# 3 Outreach and Public Participation

In order to guide the development of this Plan, Hon. Gregory Gonsález Souchet, Mayor of Peñuelas, appointed the following officials to constitute the Mitigation Planning Committee (henceforth, the Planning Committee). The Planning Committee is comprised by representatives from (5) departments with key roles and experience in community planning, public works, and emergency management to serve as key components in the planning process.

*Table 2 Hazard Mitigation Planning Committee*

| Name | Position | Agency | Email |
|---|---|---|---|
| Juan Pablo Rivera Ramos | Director | Office of Emergency Management | juanprivera@live.com |
| Carlos Maldonado Rivera | Sub-director | Office of Emergency Management | cmaldonado@municipiodepenuelas.com |
| Carlos A. Echevarría Ramos | Director | Office of Public Works | careche@yahoo.com |
| Ramón L. Segarra Rivera | Special Assistant | Office of the Mayor | Not provided |
| Yancy E. Caquías | Secretary | Office of Territorial Ordinance | Ordterritorialpenuelas@gmail.com |
| Wilmer Colón Echevarría | Special Assistant | Office of the Mayor/ Office of Faith-based Organizations | wcolon@municipiodepenuelas.com |

The Planning Committee activities included: (1) updating the list of the municipality assets and local critical facilities; (2) updating the status of the previous LHMP mitigation strategies; (3) determine possible new mitigation strategies for the 2020 LHMP; (4) development and implementation of public participation and outreach activities and stakeholders at large such as neighboring municipalities, governmental agencies; (5) announce the municipality's LHMP efforts to agencies, stakeholders and public feedback for Peñuelas LHMP 2020 draft version and incorporate such comments on the Plan.

On October 11, 2019, a notice was published on 2 local newspapers (Metro and Primera Hora). Said notice informed the public about the first Public Participation meeting to be held in Peñuelas on October 23. On February 19, 2020 a second notice was published regarding the publication of the 2020 LHMP draft version for review providing 25 days period for review, submittal of comments, and the opportunity to participate in a second community meeting, held on March 5th. A draft version of the 2020 LHMP was made available

on the Puerto Rico Planning Board's (PRPB) website (jp.pr.gov), while a hard copy was made available at the Municipal Public Works Office for public review from 7:00am to 3:30 pm on weekdays.

# 4 Peñuelas' Risk Assessment

After reviewing the natural hazards identified as priorities on the previous Peñuelas' 2014 LHMP, the Municipal Emergency Response Plan, the municipality's disaster history, and other literature related to potential future hazards, the Planning Committee identified the following hazards in the 2020 LHMP; (1) Sea Level Rise, (2) Drought, (3) Earthquakes, (4) Flooding, (5) Landslides, (6) Strong Winds (Tropical Cyclones), (7) Tsunami (8) Coastal Erosion, (9) Strom Surge, (10) Wild Fire. Discussion of these natural hazards are included in the 2020 LHMP's Chapter 4. In addition, the 2020 LHMP includes a quantitative vulnerability analysis based on the best available data for Peñuelas and Puerto Rico accounting for future development to assess mitigation strategies to prevent repetitive and severe property loss.

This assessment served as a key tool for the Planning Committee and the public to identify and prioritize potential mitigation strategies by focusing attention on areas that present the greatest risk of damages to people, critical facilities, and normal municipality operations. The analysis for earthquake, flood, landslides, and high winds was performed by assessing the potential impacts from each hazard using geographic information system data (GIS).

By ranking each section, the municipality was in position to determine an overall risk classification. It is important to mention that this classification exercise resulted from the municipality's 2020 LHMP technical risk assessment along with a capability gap analysis and the local community input, which is based on previous natural events experienced by the Planning Committee and the residents and business owners of Peñuelas.

The following table provides a summary of the risk classification for each identified hazard. Part of the process of completing the next appraisal required input from the community as well as from the Committee. Beyond the risk analysis, this table presents the municipality's prioritization analysis.

*Table 3 Natural Hazard Ranking*

| Natural Hazard | Risk to people | Risk to facilities | Risk to operations | Classification |
|---|---|---|---|---|
| Sea Level Rise | Low | High | Moderate | High |
| Drought | Low | Low | Moderate | Low |
| Earthquake/Liquefaction | High | High | High | High |
| Flooding | High | High | High | High |
| Landslide | Moderate | Moderate | Moderate | Moderate |
| Strong Winds/Tropical Cyclones | High | High | High | High |
| Tsunami | Low | Low | Low | Low |

| Natural Hazard | Risk to people | Risk to facilities | Risk to operations | Classification |
|---|---|---|---|---|
| Storm Surge | Low | High | High | Moderate |
| Coastal Erosion | Low | Low | Low | Low |
| Wildfire | Low | Low | Low | Low |

Source: *Planning Committee 2019-2020*

Currently, the potential risks with the highest classification or greater impact identified for the municipality are: (1) earthquake/liquefaction (2) flooding; (3) landslide and (4) strong winds.

A ranking methodology was adopted to develop the mitigation strategies based on these risks as discussed on Chapter 6 and are divided into the following categories: (1) Prevention, (2) Property Protection, (3) Natural Resources Protection, (4) Structural Projects, (5) Emergency Services, and (6) Education and Public Awareness. The strategy category with most mitigation actions is "Prevention" with a total of 15 mitigation projects. Landslide and flooding are the natural hazards that are most addressed within the mitigation actions.

# 5 Mitigation Strategies, Goals, and Action Plan

The municipal capabilities, along with the risk assessment, serve as a foundation for the design, development and implementation of mitigation strategies. Mitigation strategies, found in Chapter 6, consist of a broad amount of local goals and strategies. The local mitigation actions were gathered from the 2012 LHMP and were incorporated into the current LHMP. This chapter provides information about the assigned implementation mechanisms and target completion dates. The sections in this chapter are designed to make the Plan strategic by identifying long-term goals, and functional, by identifying short term and immediate actions that will guide the daily local decision-making process and project implementation.

Mitigation goals consist of general guidelines that explain what the Municipality of Peñuelas wants to achieve in terms of hazards and mitigation. Thus, the goals included in the 2020 LHMP, offer the Planning Committee and the communities a framework for identifying, prioritizing and implementing actions to reduce the risks associated to natural hazards at Peñuelas.

Mitigation strategies are activities, projects, measures, or processes that Peñuelas will adopt in order to reduce or eliminate risk to people and property from hazards. Consequently, Peñuelas reviewed and revised the criteria adopted in the 2014 LHMP to analyze and prioritize potential mitigation strategies for the municipality. In order to developed the actions, the Planning Committee used the following criteria: (1) the potential of the strategy to reduce expected future damages and/or losses; (2) the capacity of the municipality to implement the action within the 5-year cycle of the Plan; (3) support from the public, agencies, municipal departments, amongst others; and (4) the potential of the action to increase resiliency of Peñuelas and its residents. Accordingly, the Planning Committee adopted these criteria, the results from the risk assessment, and the feedback from local and neighboring communities to prioritize each mitigation strategy that was contained in this LHMP.

Most of the strategies and projects in the action plan target mitigation via the proper use of land-use regulations and public policies. The following summarizes some of the strategies intended to mitigate these hazards:

- Promoting public policy via planning of land-use, including development guides
- Landslide mitigation construction in the Jaguas, Barreal, and Mucaná communities.
- Acquisition of generators for critical infrastructure.
- Conducting a study of possible facilities to be built for protection against Tsunami and Storm Surge in the coastal wards.
- Implementing a flood prevention program for critical facilities such as the Government Center, Police Station, Town Hall, and Elderly Care Center.

# 6 Maintenance to Keep the Plan Current

Chapter 7 details the revision and monitoring process in great extent. The formal maintenance process, identified by the Planning Committee, aims to keep the document viable and current, as it is a living document that shall reflect the hazards and realities affecting its community, and how to plan and prepare ahead in the event of a natural disaster. The plan maintenance process provides the procedures for evaluation and review every third quarter of each fiscal year during its 5-year life cycle. Evaluation will include a review of the mitigation action plan implementation, continued public involvement through the Plan's life cycle, as required by federal legislation. As part of the review process, the members of the Planning Committee. In the event of a major natural disaster affecting the island and/or municipality, an emergency meeting must be scheduled, and the Plan should be updated or amended, as necessary, bypassing the 5-year term. The Secretary of Public Ordinance will coordinate with other municipal dependencies, as needed, to achieve the goals and objectives stated in this LHMP.

Finally, the municipality will promote continued public participation during the plan maintenance by;

- Regularly surveying the public on perceived hazards, dangers and mitigation actions in the municipality.
- Placing a copy for public review every time a progress report on the LHMP is prepared.
- Providing regular presentations to community groups regarding the content and progress of the LHMP.
- Having a robust education program regarding the NFIP program and NFIP recommendations.

# 7 Plan Approval and Adoption

The Federal Emergency Management Agency (FEMA) completed review of the Municipality of Peñuelas' Hazard Mitigation Plan, based on the standards pursuant to title 44 C.F.R. Section 201 as authorized by the Disaster Mitigation Act of 2000 (DMA2k). The Plan received a satisfactory rating for all required criteria and was approved as approvable pending adoption (APA) September 11, 2020. Accordingly, the Municipality of Peñuelas, adopted said Plan on September 14, 2020 via Executive Order No. 11, Series 2020-2021.

Upon receiving the record of adoption from the municipality, FEMA approved the Plan by September 21, 2020 and issued an official approval letter to municipality that dates from that same date stating the jurisdiction has adopted said Plan thus approved and is eligible for FEMA Hazard Mitigation Assistance

programs. The approval letter establishes the expiration date 5 years from the date of approval, or until September 20, 2025.