

PLANES DE MITIGACIÓN CONTRA PELIGROS NATURALES

Resiliencia Planificada



JUNTA DE PLANIFICACIÓN

2020

Municipality of Jayuya

Natural Hazard Mitigation Plan

Executive Summary

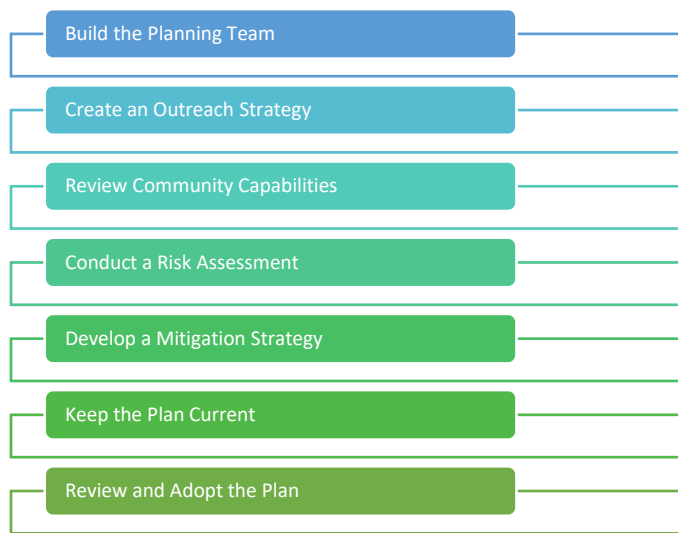


1 Introduction

The municipality of Jayuya 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.

Hazard Mitigation Planning Process



The strategies and projects enumerated in the LHMP have the ultimate 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 Jayuya’s 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

This Executive Summary will provide an overview on:

- Jayuya’s population characteristics;

¹ Please note that the 2020 Revised HMP was written in Spanish as per agreement between the Municipality, of Jayuya, 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

- The public participation and outreach effort with the community during the LHMP planning process;
- Jayuya’s risk assessment;
- A review of the mitigation strategies, goals and LHMPs action plan; and
- Plan maintenance, and how to keep the Plan current.

2 Jayuya’s Profile: Main Population Characteristics

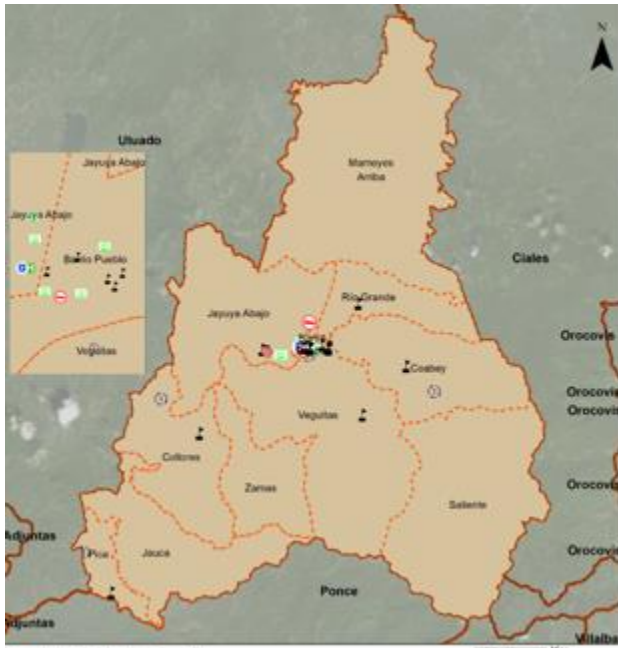


Figure 1: Jayuya and its wards

The Municipality of Jayuya is in the Central Area of Puerto Rico, in the highest elevations of the Central Mountain Range. Jayuya is bordered by Utuado and Ciales on the north, by Ponce, Juana Díaz and Orocovis on the south, by Ciales on the east and Utuado on the west. The geographic extension of the municipality is approximately 39 square miles. It consists of eleven (11) wards: Jayuya-Pueblo, Coabey, Collores, Jauca, Jayuya Abajo, Mameyes Arriba, Pica, Río Grande, Saliente, Veguitas and Zamas.

Cerro de Punta or *Cerro Punta* is the highest point on the island, rising to 4,390 ft. above sea level. It is part of the *Cordillera Central* and is located on the border between the municipalities of Jayuya and Ponce. Other important peaks are: Cerro Magoyo, Piedra Blanca, Cerro Maravillas, Cerro Saliente and the Tres Picachos. The largest segment of the Toro Negro Forest is also located in Jayuya and Ponce.

It is located at an elevation of between 440 meters (1,433 ft.) and 1,338 meters (4,390 ft). Rivers in the municipality include the Grande de Jayuya, as well as the Saliente, Jauca, Limón, Naranjito and Veguita.

According to the 2010 Census Jayuya had 16,642 inhabitants. The 2017 American Community Survey estimates the population of Jayuya decreased to 15,297 inhabitants, an 8.08 % decrease regarding 2010 Census. Of the eleven (11) barrios of Jayuya, eight (8) have shown a decrease in population, while three (3) showed a marginal increase (Pica, Río Grande, Veguitas). Further details, regarding the profile of the municipality, can be found in Chapter 3 of the updated 2020 LHMP.

Table 1: Population by age group: 2010 and 2017

| Population | 2010 Census | 2017 ACS estimate | % Rate of Change |
|---------------------------|---------------|-------------------|------------------|
| Younger than 5 years age | 1,144 | 873 | -23.69% |
| 5 to 19 years of age | 4,006 | 3,275 | -18.25% |
| 20 to 64 years of age | 9,611 | 8,905 | -7.35% |
| 65 years of age and older | 1,881 | 2,244 | 19.30% |
| Total | 16,642 | 15,297 | -8.08% |

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

This profile highlights the population that could be potentially vulnerable to natural hazards in the municipality, particularly persons with 65 years of age and older which had an increase of 19.30% in the municipality during this seven-year period (2010 to 2017). Hazard mitigation strategies and

actions consider these population characteristics and its vulnerability toward natural hazards analyzed in this update.

3 Outreach and Public Participation

To serve as the engine behind the review of the LHMP, the Mayor of Jayuya appointed the following officials to constitute the Mitigation Planning Committee (henceforth, the Planning Committee). The Planning Committee is comprised by representatives from five (5) departments with key roles and experience in community planning, public works, and emergency management. Hence, the Committee members included those with responsibility for, and expertise in, implementing mitigation projects in the Municipality of Jayuya.

Table 2 Hazard Mitigation Planning Committee

| Name | Position | Agency | email |
|----------------------------|---------------|----------------------------|--|
| Edilberto Santiago Negrón | Director | Emergency Managemet Agency | esantiago@jayuya.puertorico.pr |
| María M. Ortiz de Jesús | Director | Office of Federal Programs | mortiz@jayuya.puertorico.pr |
| Adrián A. Bennet Rodríguez | Administrator | Office of the Mayor | abennett@jayuya.puertorico.pr |
| María Medina Montes | Director | Finances | mmedina@jayuya.puertorico.pr |
| Sol M. Rosario González | Director | Planning Office | srosario@jayuya.puertorico.pr |
| Agustín Lugo Luciano | Director | Community Outreach | alugo@jayuya.puertorico.pr |

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 Jayuya LHMP 2020 draft version. Accordingly, from January 3, 2019 to January 30, 2020, the Planning Committee reviewed and provided comments on the 2020 LHMP preliminary and draft versions.

On April 15, 2019, a notice was published on a local newspaper (Primera Hora). The said notice informed the public about the first Public Participation meeting to be held in Jayuya. On June 7, 2019, a second notice was published regarding the publication of the 2020 LHMP draft version for review providing 20 days period for review, submit comments, and the opportunity to participate in a second community meeting. A draft version of the 2020 LHMP was made available on the Puerto Rico Planning Board (PRPB) website. Also, a hard copy of Jayuya’s 2020 LHMP was placed in the Planning Office of Jayuya for public review. The hard copy was available for public review from 8:00 am to 4:00 pm on weekdays.

4 Jayuya’s Risk Assessment

After reviewing the natural hazards identified as priorities on the previous Jayuya’s 2012 LHMP, the Municipal Emergency Response Plan, the Jayuya Land Use Plan of 2003, 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) Flooding; (2) Landslides; (3) Earthquakes; (4) High Winds (tropical storms); (5) Droughts; and (6) 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 Jayuya 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 Jayuya.

The following table outlines the result of the risk assessment.

Table 3 Natural Hazard Ranking

| Natural Hazard | Risk to people | Risk to facilities | Risk to Operations | Classification |
|------------------------------|----------------|--------------------|--------------------|----------------|
| High Winds/Tropical Cyclones | 3 | 3 | 3 | Moderate |
| Floods | 3 | 3 | 3 | High |
| Landslides | 2 | 3 | 2 | High |
| Earthquakes/Liquefaction | 2 | 1 | 2 | Moderate |
| Droughts | 2 | 2 | 3 | Moderate |
| Wildfire | 1 | 1 | 1 | Low |

Based on the Natural Hazard Ranking table, the following hazards are considered as significant at Jayuya: (1) flood; (2) landslide; (3) high winds; (4) earthquakes; and (5) drought. However, as stated by the Planning Committee, the landslide and flooding hazards pose the greatest risk of loss to Jayuya’s population, building stock, critical facilities and infrastructure. For example, on a 100-year flood, an estimated 555 people in Jayuya will experience a flood between 2 to 3 feet and 1,203 people may experience a flood between 3 to 4 feet. Furthermore, a large percentage of the population are vulnerable to landslides. Based on the tools used on the risk assessment, 89.7% of the population are in areas ranked from moderate to very high.

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 Natural Resources Protection with a total of 13 mitigation projects. Landslide and flooding are the natural hazards that are most addressed by the projects.

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 2011 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 Jayuya 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 Jayuya.

Mitigation strategies are activities, projects, measures, or processes that Jayuya will adopt in order to reduce or eliminate risk to people and property from hazards. Consequently, Jayuya reviewed and revised the criteria adopted in the 2012 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 Jayuya 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 the continuity of municipality services after a hazard event. The following summarizes some of the strategies intended to mitigate these hazards:

- Construction of a microgrid in the downtown area, where the government offices are located.
- Protection systems for critical infrastructure such as City Hall, Local Emergency Management Office.
- Improvement to flood control canals and stormwater system on individual communities.
- Improvements to wooden, concrete and other structures in accordance with current building codes so that they are earthquake and strong winds resistant.
- Develop an awareness and educational program; workshops and/or publications aimed for stakeholders and the general public to inform about the importance of water conservation and alternatives for storage and protection during any disaster or emergency event.

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 Office of Federal Programs 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;

- Advising local communities about their strengths and weaknesses to deal with natural hazards and how to mitigate the associated risks,
- Advising local communities about what resources are available before, during and after a natural disaster,
- Creating and maintaining a database of individuals that are interested in hazard mitigation in order to keep them up to date on any information that may increase their capabilities in the subject matter,
- The Local Hazard Mitigation Planning Committee shall represent the community, and
- Holding public meetings to discuss HMP monitoring and supervision at the beginning of the last quarter of each fiscal year and/or after the occurrence of any natural disaster in the municipality.

7 Plan Approval and Adoption

The Federal Emergency Management Agency (FEMA) completed review of the Municipality of Jayuya's 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) on February 20, 2020. Accordingly, the Municipality of Jayuya, adopted said Plan on May 8, 2020 via Resolution No. 70, Series 2019 – 2020.

Upon receiving the record of adoption from the municipality, FEMA issued an official approval letter that dates from May 19, 2020 stating the jurisdiction has adopted said Plan thus approved and eligible for FEMA Hazard Mitigation Assistance programs. This approval letter establishes the expiration date five (5) years from the date of approval, or until May 18, 2025.