

PLANES DE MITIGACIÓN CONTRA PELIGROS NATURALES
Resiliencia Planificada



JUNTA DE PLANIFICACIÓN

2020

Municipality of Aguas Buenas

Natural Hazard Mitigation Plan

Executive Summary

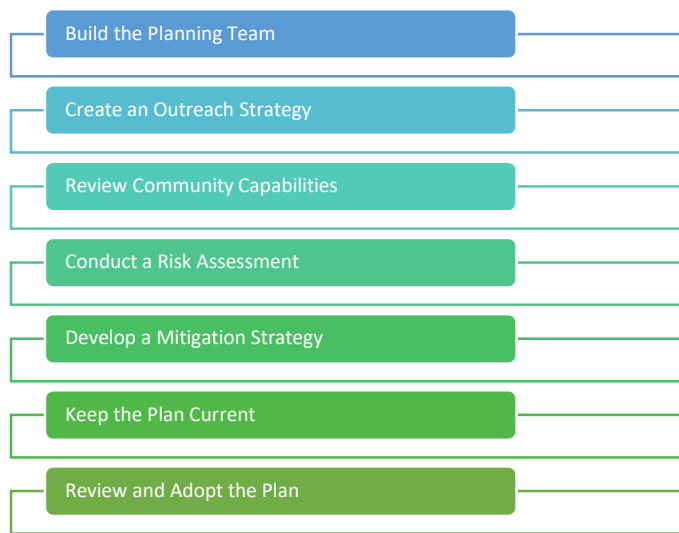


1 Introduction

The municipality of Aguas Buenas 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 goal of reducing the loss of life, personal injuries, and property damages 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 Aguas Buenas’ 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 discuss

- Aguas Buenas’ social characteristics,

¹ Please note that the 2020 Revised HMP was written in Spanish as per agreement between the Municipality, of Aguas Buenas, 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 to the community during the LHMP planning process,
- Aguas Buenas’ risk assessment,
- A review of the mitigation strategies, goals and action plan of the LHMP,
- Plan maintenance, and how to keep the Plan current

2 Aguas Buenas: Main Characteristics and Profile

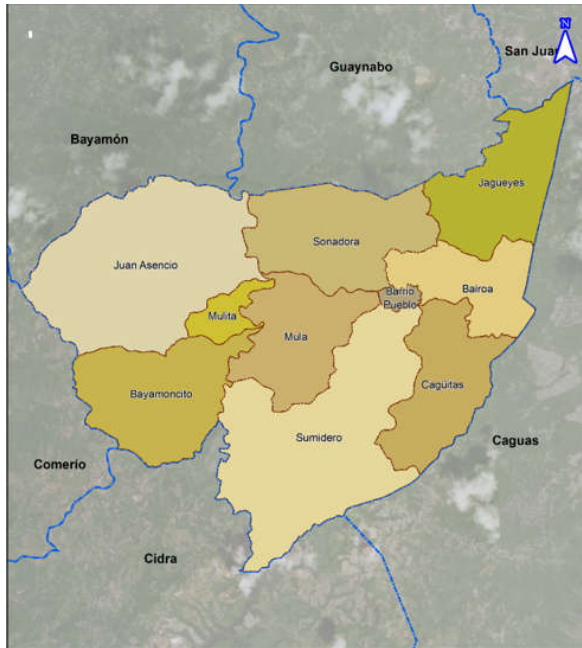


Figure 1 Aguas Buenas and its wards

The Municipality of Aguas Buenas is in the Central Northeastern region of Puerto Rico, It borders the municipalities of Caguas to the east, Bayamón, Guaynabo and San Juan to the north and Comerío to the west. To the south, it borders with Cidra. The geographic extension of the municipality is approximately 30.06 square miles. Administratively, Aguas Buenas is divided in ten (10) wards or *barrios*. These *barrios* are: Bairoa, Bayamoncito, Cagüitas, Jagüeyes, Juan Asencio, Mula, Mulita, Sonadora, Sumidero, and Pueblo.

According to the 2010 Census, Aguas Buenas had 28,659 inhabitants. The 2017 American Community Survey estimates the population of Aguas Buenas decreased to 26,855 inhabitants, a 6.29 % decrease regarding 2010 Census. Of the ten (10) barrios of Aguas Buenas, six (6) have shown a decrease in population, while four (4) showed a marginal increase (Bayamoncito, Mula, Mulita, and Sonadora). The Barrio

of Sumidero experienced a percentage change of -16.87% between 2010 and 2017. Further details, regarding the profile of the municipality, can be found in Chapter 3 of the updated 2020 LHMP.

Table 1 Aguas Buenas Population Change

Population	2010 Census	2017 ACS estimate	% Rate of Change
Younger than 5 years age	1,795	1,254	-30.14%
5 to 19 years of age	6,236	5,290	-15.17%
20 to 64 years of age	16,841	15,693	-6.82%
65 years of age and older	3,787	4,618	21.94%
Total	28,659	26,855	-6.29%

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 21.94% 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 Aguas Buenas appointed the following officials to constitute the Mitigation Planning Committee. The Committee is comprised by representatives from five (5) departments and the Mayor himself, all with key roles 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 Aguas Buenas.

Table 2 Hazard Mitigation Planning Committee

Name	Position	email
Javier García Pérez	Mayor	jgarcia@aguasbuenaspr.net
Rafael Ortiz Fontanez	Administrative Secretary to the Mayor	rortiz@aguasbuenaspr.net
Ingrid V. Gutiérrez Ortiz	Director-Office of Planning	igutierrez@aguasbuenaspr.net
Agripino Aponte Rivera	Director of Municipal Public Works	aaponte@aguasbuenaspr.net
Juan Ortiz Rivera	Director of Financies	jortiz@aguasbuenaspr.net
Ángel Flores Malavé	Director of Municipal Emergency Management	aflores@aguasbuenaspr.net

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 on Aguas Buenas LHMP 2020 draft version. Accordingly, from June 24,2019 to November 24, 2019, the Planning Committee reviewed and provided comments on the 2020 LHMP preliminary and draft versions.

On August 26, 2019, a notice was published on local newspaper. The said notice informed the public about the first Public Participation meeting in Aguas Buenas, held on September 4. On October 30, 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 Aguas Buenas’s 2020 LHMP was placed in the Office of Planning of Aguas Buenas for public review. The hard copy was available for public inspection from 8:00 am to 4:00 pm during weekdays from October 22, 2019 to November 21,2019.

4 Aguas Buenas Risk Assessment

After reviewing the natural hazards identified as priorities on the previous Aguas Buenas’ 2013 LHMP, the Municipal Emergency Response Plan, the Land Use Plan of 2011, 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) Droughts (3) Earthquakes: (4) Flooding: (5) Landslides (6) High Winds (tropical storms); (7) Tsunamis (8) Coastal erosion, (9) Storm surge: and (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 Aguas Buenas and Puerto

Rico accounting for future developments 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, tsunamis, flood, landslides, storm surge, high winds, sea level rise, and costal erosion was performed by assessing the potential impacts from each hazard using geographic information system data.

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 Committee and the residents and business owners of Aguas Buenas.

The following table shows the conclusions of the Committee based on the risk assessment.

Table 3 Natural Hazard Ranking

Natural Hazard	Risk to people	Risk to facilities	Risk to Operations	Classification
Drought	Low	Low	Low	Low
Earthquake/Liquefaction	Moderate	High	High	Moderate
Flooding	Low	Moderate	Moderate	High
Landslides	High	Moderate	Moderate	High
Strong winds	High	Moderate	Moderate	Moderate
Wild fire	Low	Low	Low	Low

Based on the Natural Hazard Ranking table, the following hazards are considered as significant for Aguas Buenas: (1) flood; (2) earthquake; (3) landslides; (4) strong winds. However, as stated by the Planning Committee, the flooding and landslides hazards pose the greatest risk of loss to Aguas Buenas’ population, building stock, critical facilities and infrastructure. For example, on a 100-year flood, an estimated 56 people in Aguas Buenas will experience a flood between 2 to 3 feet and 4,240 people may experience a flood between 5 to 8 feet. In addition, landslides historically have been prevalent in the municipality and a high majority of the population falls between moderate and very high risk.

This ranking methodology was adopted to develop the mitigation strategies discussed in Chapter 6 of the revised LHMP. The Mitigation Strategies in Chapter 6 are divided into the following categories: (1) Prevention, (2) Property Protection, (3) Natural Resources Protection, and (4) Emergency Services.

5 Mitigation Strategies, Goals, and Action Plan

The municipal capabilities, together with the risk assessments, serves a foundation for the design, development and implementation of the mitigation strategies. The mitigation strategies, found in Chapter 6, consist of a broad local goals and strategies. The local mitigation actions were gathered from the 2013 LHMP and were incorporated into the 2020 LHMP. The chapter provided information about the assigned implementation mechanisms and target completion dates. Also, the sections of Chapter 6 are designed to make the Plan strategic by identifying long-term goals, but functional by identifying short term and immediate actions that will guide the daily local decision-making process and project implementation.

The mitigation goals consist of general guidelines that explain what the Municipality of Aguas Buenas wants to achieve in terms of hazard and loss mitigation. Thus, the goals included in the 2020 LHMP, offers the Planning Committee and the communities a framework for identifying, prioritizing and implementing actions to reduce the risks associated to natural hazards in Aguas Buenas.

On the other hand, mitigation strategies are activities, projects, measures, or processes that Aguas Buenas will adopt in order to reduce or eliminate risk to people and property from hazards. Consequently, Aguas Buenas reviewed and revised the criteria adopted in the 2013 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 Aguas Buenas and its residents. Accordingly, the Planning Committee adopted these criteria, the results from the risk assessment, and the suggestions of the communities to prioritize each mitigation strategy that was contained in the 2020 LHMP.

Among the strategies to mitigate hazards are:

- Habilitation of an older sports facility as a Safe Room.
- Inventory of homes in high risk areas.
- Improvement to flood control canals and stormwater system on individual communities.

6 Maintenance to Keep the Plan Current

Chapter 7 of this updated 2020 LHMP details the revision and monitoring process in great extent. The formal maintenance process, selected by the Planning Committee of Aguas Buenas, aims to keep the document viable and living. The plan maintenance process provides the procedures an evaluation and review every third quarter of each fiscal year during its 5-year life-cycle evaluation. This evaluation will include a review of the mitigation action plan implementation, continued public involvement in the LHMP planning and review process, and for updating the 2020 LHMP within the life cycle of the Plan, as required by federal legislation. As part of the review process, the members of the Planning Committee or representants from municipal departments will be asked to participate in an emergency LHMP meeting if a major natural disaster occurs in Aguas Buenas. As a result of the emergency, the municipality might choose to update or amend the 2020 LHMP if the Planning Committee determines that it is needed. 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 regarding their strengths and weaknesses to deal with natural hazards and how to mitigate the associated risks
- Advising local communities regarding what resources are available before, during and after a natural disaster
- Creating a database of citizens that are interested in hazard mitigation issues in order to keep them up to date on any information that may increase their capabilities in that subject matter.
- Keeping a least two members in the local hazard mitigation planning committee that represent the community,
- 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 Aguas Buenas.

7 Plan Approval and Adoption

The Federal Emergency Management Agency (FEMA) completed review of the Municipality of Aguas Buenas' 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 August 19, 2020. Accordingly, the Municipality of Aguas Buenas, adopted said Plan on September 11, 2020 via Executive Order No. 6, Series 2020-2021.

Upon receiving the record of adoption from the municipality, FEMA approved Plan by September 16, 2020 and issued an official approval letter to municipality that dates from September 16, 2020 stating the jurisdiction has adopted said Plan thus approved and eligible for FEMA Hazard Mitigation Assistance programs. The approval letter establishes the expiration date 5 years from the date of approval, or until September 15, 2025.