

PLANES DE MITIGACIÓN CONTRA PELIGROS NATURALES

Resiliencia Planificada



J U N T A D E P L A N I F I C A C I Ó N

2020

Municipality of Santa Isabel

Natural Hazard Mitigation Plan

Executive Summary



1 Introduction

The Municipality of Santa Isabel 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, local governments 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. Updating requirements offer 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 and updates need to be incorporated to the Plan. 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, 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 Santa Isabel’s 2020 LHMP.

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:

- Santa Isabel’s social characteristics,
- The public participation and outreach effort to the community during the LHMP planning process,
- Santa Isabel’s risk assessment,
- A review of the mitigation strategies, goals and LHMPs action plan, and

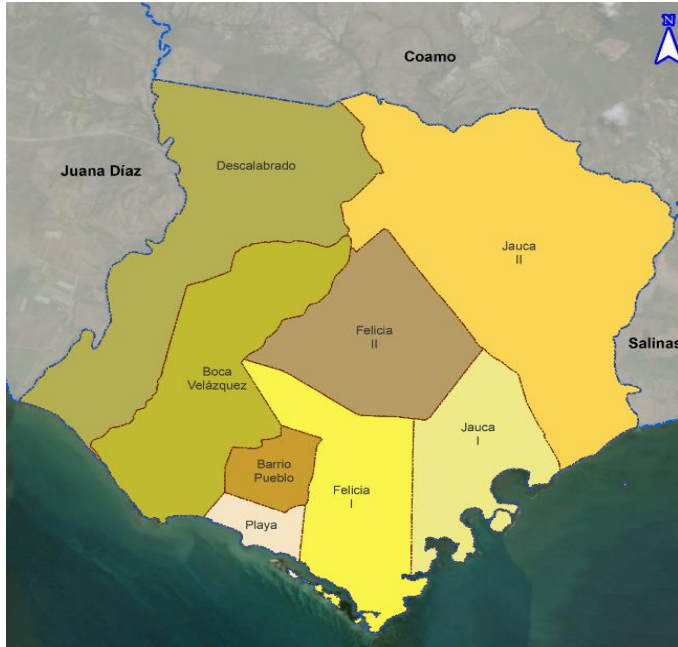
¹ Please note that the 2020 Revised HMP was written in Spanish as per agreement between the Municipality, of Santa Isabel, the Planning Board, the Governor’s Authorized Representative (GAR) and FEMA.

² 42 U.S.C 5165; 44 C.F.R. § 201.6.

³ 21 L.P.R.A § 4054

- Plan maintenance, continuity of public participation and how to keep the Plan current.

2 Santa Isabel: Main Characteristics and Profile



The Municipality of Santa Isabel is in the Coastal Plain of the Southern region of Puerto Rico, and south of the Central Cordillera and the Sierra de Cayey. It borders the municipalities of Salinas to the east, Coamo to the north, Juana Díaz to the west. To the south, it borders with the Caribbean Sea. The geographic extension of the municipality is approximately 34.1 square miles. It also has various cays and small islands as part of its jurisdiction. Administratively, Santa Isabel is divided in eight (8) wards or *barrios*. These *barrios* are: Boca Velázquez, Descalabrado, Felicia I, Felicia II, Jauca I, Jauca II, Playa and Pueblo.

The main bodies of water in the municipality are the Jueyes, Coamo and Cayeres rivers that

Figure 1 Santa Isabel and its wards

run from north to south. The Coamo Reservoir originally had a capacity of 3.5 million cubic meters, but through the years it has become heavily sedimented. Also, a man – made irrigation channel runs east to west (Juana Díaz irrigation channel).

According to the 2010 Census, Santa Isabel had 23,274 inhabitants. The 2017 American Community Survey estimates the population of Santa Isabel decreased to 22,475 inhabitants, a 3.43 % decrease regarding 2010 Census. Of the eight (8) barrios of Santa Isabel, five (5) shown a decrease in population, while three (3) shown a marginal increase (Santa Isabel – Pueblo, Felicia I and Felicia II). Barrio of Playa experienced a percentage change of -23.42 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 Santa Isabel's Population Change

Santa Isabel Population Change			
Population	2010 Census	2017 ACS estimate	% Rate of Change
Younger than 5 years age	1,651	1,206	-26.95
5 to 19 years of age	5,843	4,976	-14.83
20 to 64 years of age	13,091	12,976	-0.87
65 years of age and older	2,689	3,321	23.50
Total	23,274	22,479	-3.41

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 23.50% in the municipality during this seven-year period (2010 to 2017). Hazard mitigation strategies and

actions considers this 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 Santa Isabel appointed the following officials to constitute the Mitigation Planning Committee. The Committee is comprised by representatives from three (3) departments 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 Santa Isabel.

Table 2 Hazard Mitigation Planning Committee

Name	Position	Agency	email
Alberto L. Toro Santiago	Director	Municipal Office for Emergency Management	atorosantiago@gmail.com
Carlos Pérez	Director	Municipal Public Works	obraspublicasmunsi@gmail.com
Kariner Torres	Director	Federal Funds Office	profedstaisabel@aol.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 on Santa Isabel LHMP 2020 draft version. Accordingly, since January 3, 2019 to December 27, 2019, the Planning Committee reviewed and provided comments on the 2020 LHMP preliminary and draft versions.

On April 22, 2019, a notice was published on local newspaper. The said notice informed the public about the first Public Participation meeting in Santa Isabel. On June 17, 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. Therefore, a draft version of the 2020 LHMP was made available on the Puerto Rico Planning Board (PRPB) website. Also, a hard copy of Santa Isabel’s 2020 LHMP was placed in the Municipal Police Department of Santa Isabel for public review. The hard copy was available for public inspection 24 hours a day, 7 days a week. After the second public participation meeting, a ten (10) additional days for public comment period was provided published on December 17, 2019 to notify an extension on the public comment period through December 27, 2019.

4 Santa Isabel’s Risk Assessment

After reviewing the natural hazards identified as priorities on the previous Santa Isabel’s 2011 LHMP, the Municipal Emergency Response Plan, the Santa Isabel Land Use Plan of 2016, 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 Santa Isabel 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 public of Santa Isabel.

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
High Winds/Tropical Cyclones	High	High	High	High
Floods	High	Baja	High	High
Landslides	High	Baja	Low	Low
Climate Change/Sea Level Rise	Moderate	Baja	Moderate	Moderate
Earthquakes/Liquefaction	High	High	High	High
Droughts	High	High	Moderate	High
Tsunamis	High	Low	High	High
Storm Surges	Moderate	Low	Low	Moderate
Coastal Erosion	Moderate	High	Low	Moderate
Wild Fire	Moderate	Low	Low	Low

Based on the Natural Hazard Ranking table, the following hazards are considered as significant for Santa Isabel: (1) flood; (2) earthquake; (3) drought; (4) high winds; and (5) tsunami. However, as stated by the Planning Committee, the flood hazards pose the greatest risk of loss to Santa Isabel’s population, building stock, critical facilities and infrastructure. For example, on a 100-year flood, an estimated 2,009 people in

Santa Isabel will experience a flood between 2 to 3 feet and 1,403 people may experience a flood between 3 to 4 feet. Furthermore, a great extent of buildings is vulnerable to flood. Based on the tools used on the risk assessment, in a 100-year flood, it is estimated that approximately 359 structures will be impacted by a flood between 2 to 3 feet and 858 structures by a flood between 1 to 2 feet.

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; (4) Emergency Services and Education; and (5) Public Outreach. The category with the most mitigation strategies is Property Protection with a total of 15 mitigation projects. Flood is the natural hazard that is most addressed by the projects in the category of Property Protection.

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 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 Santa Isabel wants to achieve in terms of hazards and loss 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 Santa Isabel.

Mitigation strategies are the activities, projects, measures, or processes that Santa Isabel will adopt in order to reduce or eliminate the risk to loss of life and property. Consequently, Santa Isabel reviewed and revised the criteria adopted in the 2012 LHMP to analyze and prioritize potential mitigation strategies for the municipality. In order to develop 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 municipality's capacity 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 actions to increase its resiliency. 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 project in the action plan concern the hazard of flooding. Among the strategies to mitigate this hazard are:

- Flood control projects for communities adjacent or near the Descalabrado River
- Flood control projects for communities adjacent or near the Coamo River
- Improvement to flood control canals and stormwater system on individual communities.

- One interesting feature of the LHMP action plan is that it proposes using the planning mechanism of an Area Plan, as described in Puerto Rico’s Autonomous Municipality Act, to address flooding hazards.

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 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 Santa Isabel.

7 Plan Approval and Adoption

The Federal Emergency Management Agency (FEMA) completed review of the Hazard Mitigation Plan for the Municipality of Santa Isabel, 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 13, 2020. Accordingly, the Municipality of Santa Isabel, adopted said Plan on August 24, 2020 via Resolution No. 05, Series 2020-2021.

Upon receiving the record of adoption from the municipality, FEMA issued an Official Approval Letter stating the jurisdiction has adopted said Plan, thus approved and eligible for FEMA Hazard Mitigation Assistance programs, having approved the Plan formally on August 24, 2020. This approval letter establishes the expiration date five (5) years from the date of approval, or until August 23, 2025.