

Hazard Mitigation Plan



May 2020

Territory of American Samoa



Reduce the risk of all natural hazards (identified and unidentified) to the Territory, thus, alleviating loss of life and property to insure the well-being of the people of American Samoa.

HAZARD MITIGATION PLAN

TERRITORY OF AMERICAN SAMOA

MAY 2020

American Samoa Governor's Office
American Samoa Government, A.P. Lutali Executive Office Building
Pago Pago, American Samoa 96799
Phone: 011 (684) 633-4116 | Website: <http://americansamoa.gov>

American Samoa Territorial Hazard Mitigation Council
Governor's Authorized Representative, A.P. Lutali Executive Office Building
Pago Pago, American Samoa 96799
Phone: 011 (684) 633-4116 | Website: <http://americansamoa.gov>

Prepared by:

JAMIE CAPLAN CONSULTING LLC
Emergency Management Services

351 Pleasant Street, Suite B # 208 · Northampton, MA 01060
Phone: 413-586-0867 · Fax: 413-727-8282 · www.jamiecaplan.com

Acknowledgements

American Samoa Hazard Mitigation Council

- GAR/Chairperson, Governor's Office
- Legislative Branch (Senate) Representative, Appointed by President of Senate
- Legislative Branch (House) Representative, Appointed by Speaker of the House
- Secretary, Samoan Affairs
- Director, Department of Commerce
- Director, Department of Port Administration
- Director, Department of Public Works
- Director, American Samoa Environmental Protection Agency
- Representative, American Samoa Historic Preservation Office
- CEO, American Samoa Power Authority
- CEO, American Samoa Telecommunication Authority
- Chairperson, Chambers of Commerce
- Acting Director, American Samoa Department of Homeland Security

Planning Team

- Lima Fiatoa, State Hazard Mitigation Officer, Office of Disaster Assistance and Petroleum Management

Adoption Agreement



LOLO M. MOLIGA
GOVERNOR

OFFICE OF THE GOVERNOR
AMERICAN SAMOA GOVERNMENT
Telephone: (684)633-4116 Fax: (684)633-2269

LEMANU P. MAUGA
LIEUTENANT GOVERNOR

EXECUTIVE ORDER NO. ----2020

AN ORDER ADOPTING THE AMERICAN SAMOA REVISION AND UPDATE OF THE TERRITORY MULTI-HAZARD MITIGATION PLAN.

Section 1. Authority

This Executive Order is issued under the authority granted to the Governor in Article IV, Section 6 and 7 of the Revised Constitution of American Samoa, and Sections 4.0111 and 26.0105, American Samoa Code Annotated.

Section 2. Preamble

WHEREAS, American Samoa has suffered substantial losses of life and property from natural disasters. The flash flood of 2003, Hurricane Heta in 2004, Hurricane Olaf in 2005, the Tsunami in December 2009, the Severe Storm and Flooding in 2014, Tropical Storm Gita in 2018, constant heavy rain during hurricane season, and severe landslides have caused considerable human suffering and damage to homes, businesses and government buildings, and infrastructure. Population growth and development continue to increase the vulnerability of American Samoa to natural disasters and unless steps are taken to reduce the risk, disaster losses will continue to increase in the future; and

WHEREAS, American Samoa has taken steps to mitigate the risk of disaster losses. Strides in building codes and standards, land use procedures and protective outreach mitigation awareness programs have been considerable factors in alleviating the impact of disasters. New constructions face stringent regulations, in Special Hazard Flood Areas (SHFA) prone to flooding, tsunamis, high surf, landslides and other hazards; and

WHEREAS, the United States Congress adopted the Disaster Mitigation Act (DMA) of 2000, commonly known as the 2000 Stafford Act, amended on October 10, 2000. On October 30, 2000, the President signed the bill into law, creating Public Law 106-390. The purpose of the DMA is to amend the Stafford Act, which establish a national program for Pre-Disaster Mitigation (PDM). The PDM provides funds for mitigation planning and mitigation projects to communities. The law also requires local and Tribal governments to develop and submit mitigation plans to FEMA for approval in order to qualify for future funding. The law also stipulates Hazard Mitigation Grant Program (HMGP) funds for planning purposes, and increases HMGP, from 7.5% to 20% for states meeting enhanced planning criteria. The Plan outlines the requirement for the Flood Mitigation Assistance (FMA) for flood planning and small projects; and

WHEREAS, in 2002, the American Samoa Hazard Mitigation Council was established to assist the Territorial Emergency Management Coordination Office (TEMCO) in the development of the American Samoa Hazard Mitigation Plan. TEMCO was assisted also by the Pacific Disaster Center/East-West Center and the University of Hawaii's Social Research Institute to facilitate development of a draft plan. The Mitigation Council and its sub-committees met several times to review building codes and standards, land use regulations, and infrastructure standards and flooding. The Mitigation Council also met to formulate and identify mitigation projects and prioritize the projects accordingly. The product of this combined effort is contained in the American Samoa Hazard Mitigation Plan; and

WHEREAS, in 2007 the American Samoa Hazard Mitigation Plan matured to the state three-year updated plan requirement the updated plan was mandated by the Disaster Mitigation Act of 2000.

WHEREAS, in 2011 and 2015, the American Samoa Hazard Mitigation Plan was revised, updated, and adopted by Executive Order; and

WHEREAS, in 2020 the American Samoa Hazard Mitigation Plan was required to be updated. This is the updated plan mandated by the Disaster Mitigation Act of 2000.

Section 3. Order

The American Samoa Revision and Update of the Territory Multi-Hazard Mitigation Plan, dated June 8, 2020 is hereby adopted pursuant to ASCA Title 26, Chapter 01, the Stafford Act, and 44 CFR 201.4(c) (6).

Section 4. Effective Date

This Order shall take effect immediately.

Dated: _____ 8th of June _____, 2020



Honorable Lemanu Peleti Mauga
Lt. Governor of American Samoa
Governor's Authorized Representative

Distribution: Per standard list.

Table of Contents

Acknowledgements.....	2
Record of Changes	3
Adoption Agreement	4
Table of Contents	6
Chapter 1. Introduction.....	9
1.1 Plan Updates	12
1.2 2020 Mitigation Strategy	13
1.3 Changes Since 2015	13
1.4 Authority and Assurances	17
Chapter 2. Planning Area Profile for Hazard Mitigation Analysis.....	19
2.1 Geography.....	22
2.2 Climate	23
2.3 Demographics	24
2.4 Land Use.....	27
2.5 Economy	31
2.6 Government Structure	33
2.7 Infrastructure and Utilities.....	34
Chapter 3. Planning Process	38
3.1 Plan Update Process	38
3.2 Project Management Team	39
3.3 Coordination and Engagement with Stakeholders	39
3.4 Planning Process Integration with Other Planning Efforts.....	43
3.5 History of the Planning Process	44
3.6 Plan Adoption.....	46
Chapter 4. Risk and Vulnerability Assessment	48
4.1 Introduction	48
4.2 Coastal Erosion.....	58
4.3 Drought	72
4.4 Earthquake.....	81
4.5 Extreme Heat	103
4.6 Flood	108
4.7 Hazardous Materials	144
4.8 High Surf.....	145

Territory of American Samoa Hazard Mitigation Plan

4.9 Landslide	147
4.10 Lightning.....	158
4.11 Public Health Risks (including Infectious Disease)	161
4.12 Sea Level Rise	172
4.13 Soil Hazards (Expansion and Sinkhole).....	185
4.14 Subsidence	187
4.15 Tropical Cyclone	188
4.16 Tsunami.....	204
4.17 Volcano	220
4.18 Wildfire	228
4.19 Summary of Hazard Risk and Vulnerability	233
Chapter 5: Capability Assessment	241
5.1 Hazard Mitigation Council.....	241
5.2 Additional Government Plans, Programs and Policies	258
5.3 Land Use and Development	265
5.4 Using Funding to Mitigate Risk	266
5.5 National Flood Insurance Program	270
5.6 Summary of Obstacles and Challenges	271
Chapter 6: Mitigation Strategy	275
6.1 Multi-Hazard Mitigation Goals and Objectives	275
6.2 Mitigation Actions.....	282
6.3 Future Mitigation Actions to Consider	292
6.4 How the Territory Supports Local Mitigation through Funding and Technical Assistance	293
Chapter 7: Plan Maintenance Process	297
7.1 Keeping the Plan Current	297
7.2 System for Monitoring Plan Implementation	300
Acronyms.....	303
Resources	307
Appendix A. Planning Profile Supporting Material.....	318
2010 Census Population and Housing Density Statistics.....	318
Population Distribution for each Village	320
Total Population by County.....	322
Percent Change in Population by County: 2000 to 2010	323
U.S. Energy Information Administration, American Samoa Territory Energy Profile.....	324
How a Pacific Island Changes from Diesel to 100% Solar Power	335
American Samoa Government News	339
This Island in American Samoa is Almost 100% Powered by Tesla Solar Panels.....	340
Appendix B. Planning Process Supporting Material	343

Territory of American Samoa Hazard Mitigation Plan

Press Release May 1, 2020.....	343
BizFest opens today at Suigaula o le Atuvasa	346
Public Survey Results	349
Appendix C. Risk Assessment Supporting Material	379
Critical Facilities and Risk Analysis	379
Previous Occurrences	402
Appendix D. Capability Assessment Supporting Material	460
TOFR Existence Extended, Renamed a Mouthful.....	460
American Samoa remembers tsunami tragedy, territory declared 'Tsunami Ready'	462
No Relief for Tualauta; Boil Water Notice Remains	464
Appendix E. Mitigation Strategy Supporting Material.....	465
FEMA's Four Mitigation Action Categories	465
Gita Mitigation Funds	467
2015 Hazard Mitigation Projects Moved Forward to 2020.....	469
2015 Hazard Mitigation Projects and their Status	470

Table of Tables

Table 1. Summary of changes.	3
Table 2 2010 Census Housing Unit Counts	24
Table 3 Population Change 1970-2010	25
Table 4 Summary of Demographic Category, 2010 Data	26
Table 5 Acreage Aggregated by Ownership Type.....	28
Table 6 Building Permits Issued (2002-2012)	28
Table 7 New Buildings Built between 2015-2020.....	29
Table 8 Balance of Trade 2007-2012	32
Table 9 Hazard Mitigation Council Membership List.....	40
Table 10: Hazards Included in the 2020 Hazard Mitigation Plan.....	51
Table 11: FEMA Declared Disasters.....	53
Table 12: Priority Risk Index Criteria for American Samoa Hazard Mitigation Plan	57
Table 13: Amount of Critical Shoreline on Tutuila	61
Table 14: Buildings Potentially at Risk to Coastal Erosion	68
Table 15: Number of Critical Facilities (CFs) at Risk to Coastal Erosion.....	70
Table 16: Drought Types	72
Table 17: U.S. Drought Monitor Categories	73
Table 18: Summaries of Significant Droughts	75
Table 19: Richter Scale	83
Table 20: Modified Mercalli Intensity Scale for Earthquakes.....	83
Table 21: Moment Magnitude Scale	84
Table 22: Richter v. Moment Magnitude Values.....	84
Table 23: Peak Horizontal Acceleration (% g) Extent for American Samoa by Island.....	92
Table 24: Damage Levels Associated with %g	93
Table 25: Buildings Potentially at Risk to Earthquake Hazard	95
Table 26: Number of Critical Facilities (CFs) Potentially at Risk to Earthquakes	97
Table 27: Critical Facilities (CFs) Potentially at Risk to Earthquakes by County	97
Table 28: Amount of Floodplain by County in American Samoa.....	120
Table 29: NFIP Policies in American Samoa as of May 17, 2020	126
Table 30: Buildings Potentially at Risk to the A/AE Zones and V/VE Zones.....	128
Table 31: Number of Critical Facilities (CFs) in the Floodplain hazard Area.....	129
Table 32: Buildings Located in High Risk Landslide Areas	155
Table 33: Number of Critical Facilities (CFs) in High Risk Landslide Areas	157
Table 34: Reported Lightning Occurrences in American Samoa	159
Table 35: Buildings Potentially at Risk to Sea Level Rise	181
Table 36: Number of Critical Facilities (CFs) in the SLR Hazard Area.....	183
Table 37: Cross-comparison of Tropical Cyclone Categories.....	190
Table 38: Hurricane Damage Classification on the Saffir-Simpson Scale	192

Territory of American Samoa Hazard Mitigation Plan

Table 39: Australian Cyclone Severity Scale	193
Table 40: Household Damage due to Tropical Storm Gita	199
Table 41: Tropical Storm Gita Impacts	199
Table 42: Buildings Potentially at Risk to Tsunami Based on Buffer Area	214
Table 43: Number of Critical Facilities (CFs) in the Tsunami Buffer Zone	216
Table 44: Volcanic Explosivity Index (VEI) (based on global observations)	221
Table 45: Recorded Eruptions on American Samoa’s Islands.....	226
Table 46: Summary of Hazards in American Samoa.....	235
Table 47: Summary of PRI Results for American Samoa	238
Table 48: Ranking of American Hazards	240
Table 49 PNRS Board Members and their Responsibilities	247
Table 50 FEMA Hazard Mitigation Funding Received.....	266
Table 51 Mitigation Action Capabilities of Departments	271
Table 52 2015 Mitigation Action Projects Completed.....	284
Table 53 2020 Mitigation Actions.....	285
Table 54 Eligible Activities for HMGP, PDM, and FMA.....	295
Table 55 Plan Maintenance Schedule	300
Table 56 Tutuila Critical Facilities	380
Table 57 Ta'u Critical Facilities	398
Table 58 Previous Flood Occurrences	402
Table 59 High Surf Occurrences	428
Table 60 Recorded Landslide Occurrences.....	448
Table 61 Hurricane and Tropical Storm Tracks within 75 miles of American Samoa Occurrences (1945-2012)	452
Table 62 Summaries of Historic Cyclone Events.....	454
Table 63 Summary of Significant Tsunami Previous Events Table	457